US Critical Materials Corp.
Sheep Creek Exploration Project
Plan of Operations

West Fork Ranger District
Ravalli County, Montana

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I. General Information

Purpose of the Plan of Operations

US Critical Materials Corp. has prepared this Plan of Operations (Plan) for the Sheep Creek Exploration Project (project) pursuant to 36 CFR Part 228, Subpart A, to describe proposed mineral exploration activities that will result in surface disturbance on National Forest System lands[1]. This Plan has been prepared in substantial conformance with the US Forest Service (Forest Service) "Plan of Operations for Mining Activities on National Forest System Lands" (FS-2800-5).

The exploration project involves bulk sampling and surface drilling for rare earth elements classified as "critical risk" by the United States Government, including gallium, samarium, scandium, neodymium, and praseodymium. The project activities are temporary, will involve less than one acre of surface disturbance, will not involve construction or reconstruction of roads, and will not involve commercial mining or processing.

The project will begin immediately upon authorization and last for one year or less, including completion of reclamation. The proposed start date of operations is April 1, 2027, and the estimated completion date is March 31, 2028.

Project Objectives

The objective of the project is to conduct mineral exploration at four locations to confirm and further evaluate subsurface geology identified through prior surface exploration and data interpretation, and to secure two existing adits to ensure public safety. The program is intended to better define the type, extent, quality, and quantity of minerals.

II. Principals

The owner and operator of the mining claims is:

US Critical Materials Corp. (USCM)
4190 S. Highland Drive, Suite 230
Salt Lake City, Utah 84124
801.680.7448

USCM will be responsible for implementing the Plan, including reclamation performance and bonding. There are no lessees, assigns, agents, or other principals involved in the project.

[1] All previous plans associated with the project have been withdrawn and this Plan of Operations will supersede all previous plans submitted for the project by US Critical Materials Corp.

III. Property or Area

Name of claim, if applicable, and the legal land description where the operation will be located.

Within and surrounding the project's work areas, USCM holds over 300 unpatented mining claims on ±7,000 acres, the majority of which are in Montana. The following mining claims will be involved with this project:

- Mining Claim Serial No. MT105273118 (Claim Name SC 17)
- Mining Claim Serial No. MT105273122 (Claim Name SC 21)
- Mining Claim Serial No. MT105273134 (Claim Name SC 33)
- Mining Claim Serial No. MT105273136 (Claim Name SC 35)
- Mining Claim Serial No. MT105780772 (Claim Name SC 223)
- Mining Claim Serial No. MT105824819 (Claim Name RE 1)
- Mining Claim Serial No. MT105824822 (Claim Name RE 4)
- Mining Claim Serial No. MT105824828 (Claim Name RE 11)

See **Figure 1, Claims Map**, and **Appendix A, List of Claims**.

The project will involve activities at four locations on unpatented mining claims in Sections 3 and 10, T4S, R22W of the Montana Meridian. The four approximate locations are as follows:

- Location #1 is at Adit 1 at 45.519280˚N, -114.317445˚W.
- Location #2 is at the carbonatite ridge at 45.498559˚N, -114.293998˚W.
- Location #3 is a mid-point between the carbonatite ridge and Adit 3 at 45.50978˚N, -114.30195˚W.
- Location #4 is near Adit 3 at 45.514094˚N, -114.302502˚W.

See **Figure 2, Location Map**.

The project is located in the Bitterroot National Forest, West Fork Ranger District in Ravalli County, approximately 40 miles southwest of Darby, Montana. The Bitterroot National Forest is characterized by steep, rocky terrain with deep canyons and elevations ranging from 3,800 feet to over 10,000 feet above mean sea level. Vegetation is predominantly dense pine and fir trees, with snow in the winter and warm, dry weather in the summer.

IV. Description of the Operation

A. Access

Show on a map (USGS quadrangle map or a National Forest map) the claim boundaries and all access needs such as roads and trails, on and off the claim. Specify which Forest Service roads will be used, where maintenance or reconstruction is proposed, and where new construction is

necessary. For new construction, include construction specifications such as widths, grades, etc., location and size of culverts, describe maintenance plans, and the type and size of vehicles and equipment that will use the access routes.

The project will be primarily serviced by helicopter from R&R Conner Aviation located in Conner, Montana, approximately 30 miles north/northeast of the project.

Where the exploration locations are located near an existing Forest Service road, personnel and project-related visitors may park in pullouts or widened areas to access the sites by UTV or on foot (collectively, these temporary parking spots are identified as "truck parking locations" on Figure 2); UTV use is proposed at Location #2 only. Additionally, the truck parking location on private property off West Fork Road will serve as an interim staging area. Fuel, water, equipment, and materials will be transported to this truck parking / interim staging area and flown to the site by helicopter. A second fuel tank will be maintained at the interim staging area for helicopter refueling. Vehicle access will be provided by the following Forest Service roads:

- West Fork (Forest Service Road No. 91)
- Sheep Creek (Forest Service Road No. 5677)
- Sheep Creek Trail (Forest Service Trail No. 13862)

Figure 2 identifies the roads/trail and the truck parking locations. The project will adhere to vehicle restrictions identified on Motor Vehicle Use Maps or seek a variance from the Forest Service, if necessary. Use of Forest Service roads will be minimal and is not anticipated to cause surface disturbance substantially different from existing conditions. No road construction or reconstruction is proposed, and activities at the exploration locations will not impede public or Forest Service use of the roads.

B. Map, Sketch or Drawing

Show location and layout of the area of operation. Identify any streams, creeks or springs if known. Show the size and kind of all surface disturbances such as trenches, pits, settling ponds, stream channels and run-off diversions, waste dumps, drill pads, timber disposal or clearance, etc. Include sizes, capacities, acreage, amounts, locations, materials involved, etc.

Layouts of the exploration locations are shown in **Figures 3 – 6, Site Plans**. Photographs of the existing site conditions at Adit 1 and Adit 3 are included in **Appendix B, Adit Photographs**.

C. Project Description

Describe all aspects of the operation including mining, milling, and exploration methods, materials, equipment, workforce, construction and operation schedule, power requirements, how clearing will be accomplished, topsoil stockpile, waste rock placement, tailings disposal, proposed number of drillholes and depth, depth of proposed suction dredging, and how gravels

will be replaced, etc. Calculate production rates of ore. Include justification and calculations for settling pond capacities, and the size of runoff diversion channels.

USCM proposes to execute a short-term bulk sampling and diamond-core drilling exploration program primarily using helicopter support for access. The program is designed to minimize surface disturbance and be completed within one year.

Overview

At Location #1, exploration work will involve bulk sampling in the existing adit. At Locations #2 - #4, exploration work will involve surface drilling. To prevent unauthorized entry and ensure public safety, exploration locations will be isolated with barriers (e.g., temporary safety fencing) and signage where necessary, and the entrances at Adit 1 (Location #1) and Adit 3 (Location #4) will be stabilized and security gates will be installed. The surface disturbances at all four locations are anticipated to be minimal, given that the majority of the work will be located in currently disturbed areas and access will be primarily provided by helicopter. The timber platforms are temporary project features that will be removed following exploration activities; the stabilized adit entrances and gates will remain. A breakdown of the estimated surface disturbance[2] is shown in Table 1, below.

Table 1. Breakdown of Work Area and Estimated Surface Disturbance

Location	Activity	Est. Surface Disturbance
Location #1 (at Adit 1)	Construct 16' x 16' timber helicopter landing platform.	256 sq. ft.
	Enlarge adit entrance to accommodate a 12' x 12' gate and establish 20' x 30' working pad at entrance.	744 sq. ft.
	Establish 10' x 70' and 10' x 100' laydown areas.	1,700 sq. ft.
Location #2 (Carbonatite Ridge)	Construct 16' x 16' timber helicopter landing platform.	256 sq. ft.
	Establish 30' x 40' laydown area and 30' x 40' drill pad.	2,400 sq. ft.
	Excavate 10' x 10' sump.	100 sq. ft.
Location #3 (Midway Point)	Construct 16' x 16' timber helicopter landing platform (if needed).	256 sq. ft.
	Establish 10' x 75' laydown area and 20' x 50' drill pad.	1,750 sq. ft.
	Excavate 10' x 10' sump.	100 sq. ft.
Location #4 (near Adit 3)	Construct 16' x 16' timber helicopter landing platform.	256 sq. ft.
	Enlarge adit entrance to accommodate a 12' x 15' gate and utilize existing 35' x 85' working area.	3,155 sq. ft.
	Establish a second 10' x 80' laydown area.	800 sq. ft.
	Excavate 10' x 10' sump.	100 sq. ft.
TOTAL		**11,873 sq. ft. (±0.3 Ac.)**

[2] In some areas, equipment and materials will be placed on existing grade or in formerly disturbed areas. However, to be conservative, the footprints of the project features have been assumed as "surface disturbance".

Schedule

Bulk sampling at Location #1 will be conducted concurrently with surface drilling; surface drilling at Locations #2 - #4 will occur sequentially. Surface drilling will not occur at more than one location at a time. The program is anticipated to take approximately 9 to 10 months over the course of one year. An estimated schedule of activities is shown in Table 2, below, for planning purposes.

Table 2. Anticipated Schedule

Exploration Activity	Est. Duration	Est. Timeframe
Location #1 (at Adit 1)		**April 2027 - March 2028**
Selectively Clear Vegetation	5 Days	
Construct Helicopter Landing Platform (if needed)	45 Days	
Establish Working Pad / Laydown Areas		
Expand, Stabilize, and Install Gate at Adit 1		
Bulk Sample	120 – 180 Days	
Reclaim Site, Lock Adit Gate, and Demobilize	10 Days	
Location #2 (Carbonatite Ridge)		
Selectively Clear Vegetation/Burn Scar Debris	5 Days	
Construct Helicopter Landing Platform (if needed)	15 Days	
Establish Drill Pad / Laydown Area		
Drill Holes	60 Days	
Reclaim Site and Demobilize	10 Days	
Location #3 (Midway Point)		
Construct Helicopter Landing Platform (if needed)	15 Days	
Establish Drill Pad / Laydown Area		
Drill Holes	60 Days	
Reclaim Site and Demobilize	10 Days	
Location #4 (near Adit 3)		
Selectively Clear Vegetation	5 Days	
Construct Helicopter Landing Platform (if needed)	45 Days	
Establish Working Pad / Drill Pad / Laydown Areas		
Expand, Stabilize, and Install Gate at Adit 3		
Drill Holes	60 Days	
Reclaim Site and Demobilize	10 Days	

Exploration activities will occur up to seven days per week and up to 12 hours per day. Although nighttime operations are not proposed, if lighting is needed, solar, battery, or generator-powered temporary lighting will be used. The work and all reclamation activities will be completed within 12 months of the date when activities first begin.

Workforce

The project is anticipated to employ up to 12 personnel. The majority of the personnel will be crews, with the occasional technical support staff (e.g., geologist) or visitor. The project will

have three crews: one bulk sampling crew at Location #1, one drilling crew that moves between Locations #2 - #4, and one field crew that performs site preparation and clean-up work. Manpower may be shared across activities as needed (e.g., if a field crew member is free for the day, they may join the bulk sampling crew to assist). There will be a supervisor on-site during active operations.

No personnel will be housed on-site. As described above under "Access", personnel and project-related visitors may either access the site via helicopter or, where feasible, may park in pullouts or widened areas to access the sites by UTV or on foot.

Exploration Details: Location #1

Exploration activities at Location #1 will involve bulk sampling within the existing Adit 1. Before exploration, vegetation will be selectively removed to facilitate access to the adit (described further below in Section VI.D).

Exploration will begin with construction of a 16' x 16' timber helicopter landing platform[3] at a location west of the adit entrance on the existing historic road; the historic road runs parallel to the hillside and measures approximately 10' wide. Using hand tools, the landing platform will be constructed with timber decking supported by timber beams and posts constructed in an "H" pattern with diagonal bracing; the posts will be pinned into the ground using a screw-in earth anchor system. See **Appendix C, Helicopter Landing Platform Schematic**.

Two laydown areas, the first measuring approximately 10' x 70' and the second measuring approximately 10' x 100', will be established along the existing historic road on either side of the adit entrance and will serve as staging areas for the equipment and materials listed in Section IV.E (below). Using a mini excavator, approximately 100 cubic yards of sloughed dirt will be removed from the historic road prism to create level laydown areas. Excess dirt will be beneficially reused to establish a flat 20' x 30' working pad at the adit entrance. See **Figure 3, Site Plan for Location #1**.

Following construction of the landing platform, delivery of equipment and materials by helicopter to the laydown areas, and establishment of the working pad, the Adit 1 entrance will be enlarged using a mini excavator and compact skid steer to accommodate installation of a 12' x 12' metal gate with a Forest Service-approved closure design and allow for safe personnel access into the adit. The ceiling and sidewalls of the adit entrance will be stabilized with ground support (e.g., rock bolts, wire mesh, rebar) using light-weight jack-leg drills. The jack-leg drills will be powered by a portable compressor. Approximately 75 cubic yards of excess dirt and rock will be removed to facilitate the adit entrance expansion; this

[3] At each location, the helicopter may be able to land on existing ground and not require a timber landing platform. However, construction of a landing platform is described throughout to account for the potential need.

excess material will be confined to placement on the working pad and/or will be stored inside the adit. The adit has an existing drift/tunnel of approximately 300 feet; the tunnel will not be lengthened in connection with this project. An existing area in the adit tunnel will be expanded and used as an underground sump for water detention and reuse/recirculation (described further below in Section VI.B).

A ventilation system with fans and ducting will be installed along the adit ceiling to provide fresh air to the working face of the tunnel. The fans will be powered by a portable generator.

To facilitate bulk sampling, a series of blast holes will be advanced in the sidewalls of the adit using jack-leg drills along the carbonatite vein. Explosives will be placed in the holes and a controlled blast deployed to fragment the rock. Blasting will generate waste rock and mineralized rock. Waste rock will be placed within an existing void space (offshoot) on the south side of the adit tunnel and/or will be placed on the ground in the tunnel as road base. Mineralized rock will be hauled out of the adit and placed into super sacks for off-site transport. Approximately 3,000 short tons of bulk material will be generated. Bulk material samples will be collected by helicopter daily and flown to the truck parking / interim staging area, where they will be transported to a lab for testing. Bulk sampling will occur for an estimated 120 – 180 days. See schedule (above) for more detail.

Following bulk sampling at Location #1, reclamation activities will take place described in Section VI.H (below).

Exploration Details: Locations #2 - #4

Exploration activities at Locations #2 - #4 will involve surface drilling using a diamond drill rig, powered by a portable generator. Before exploration, brush/debris at Location #2 and vegetation at Location #4 will be selectively removed to facilitate access to the work areas.

Exploration at all locations will begin with construction of one 16’ x 16’ timber helicopter landing platform (as described in detail above). At Location #2, the helicopter landing platform will be constructed on a ridge in an existing clearing at the end of Forest Service Road No. 5677. One 30’ x 40’ drill pad and one 30’ x 40’ laydown area will be sited on flat, unvegetated surfaces in the same clearing adjacent to the helicopter landing platform; little to no surface preparation is anticipated – equipment and materials will be placed on existing ground. See **Appendix D, Drill Pad Schematic**. The drill pad and laydown area will serve as staging areas for the equipment and materials listed in Section IV.E (below). One 10’ x 10’ sump will be excavated to six feet deep adjacent to the drill pad; excavated soil material will be staged on the drill pad or laydown area for future use in reclamation. See **Figure 4, Site Plan for Location #2**.

At Location #3, the helicopter landing platform will be constructed in an existing clearing on the hillside. One 20' x 50' drill pad and one 10' x 75' laydown area will be sited on flat, unvegetated surfaces in the same clearing adjacent to the helicopter landing area, including along an existing historic road; little to no surface preparation is anticipated – equipment and materials will be placed on existing ground. The drill pad and laydown area will serve as staging areas for the equipment and materials listed in Section IV.E (below). One 10' x 10' sump will be excavated to six feet deep adjacent to the drill platform; excavated soil material will be staged adjacent to the sump for future use in reclamation. See **Figure 5, Site Plan for Location #3**.

At Location #4, the helicopter landing platform will be constructed north of Adit 3. An existing, relatively flat 35' x 85' working area will be utilized as a joint drill pad, working pad, and laydown area (identified as a "drill pad" on Figure 6). A 10' x 80' laydown area will be sited along an existing historic road to the west of the drill pad; little to no surface preparation is anticipated – equipment and materials will be placed on existing ground. The multi-use working area and second laydown area will serve as staging areas for the equipment and materials listed in Section IV.E (below). One 10' x 10' sump will be excavated to six feet deep adjacent to the drill pad; excavated soil material will be staged on the drill pad or laydown area for future use in reclamation. Following construction of the landing platform and delivery of equipment and materials by helicopter to the laydown area, the Adit 3 entrance will be enlarged to accommodate installation of a 12' x 15' metal gate with a Forest Service-approved closure design using a mini excavator. The ceiling and sidewalls of the adit entrance will be stabilized with ground support (e.g., rock bolts, wire mesh, rebar) using light-weight jack-leg drills. The jack-leg drills will be powered by a portable compressor. It is anticipated that ±100 cubic yards of excess dirt and rock will be removed to facilitate the adit entrance expansion; this excess material will be beneficially reused to surface the laydown area. No work within Adit 3 is proposed. See **Figure 6, Site Plan for Location #4**.

An estimated combined total of 45 NQ-sized drill holes (96 mm outside diameter) will be advanced using a diamond drill rig during the exploration program. The total number of drill holes at each location will vary; however, no more than 16 drill holes will be advanced at any given drilling location. The diamond drill rig will be staged over mapped carbonatite veins and will extract a solid core from the vein at design depth. The total depth of each drill hole will vary, depending on surface slope, drilling inclination, geologic, and drilling conditions. The average depth of each drill hole is estimated at 400 feet, with a total of up to 18,000 feet of drilling during the exploration program. Core samples will be collected by helicopter periodically and flown to an off-site staging location for eventual testing. The project will generate core samples from 45 drill holes (anticipated to total approximately 200 short tons

of core samples) over the course of the exploration program for testing. Drilling will occur for an estimated 60 days at each location. See schedule (above) for more detail.

Following diamond drilling at Locations #2 - #4, reclamation activities will take place described in Section VI.H (below).

Power Requirements

At Location #1, the jack-leg drills will be powered by a portable air compressor and the ventilation fans will be powered by a portable generator. At Locations #2 - #4, the diamond drill rigs will be powered by a portable generator.

D. Equipment and Vehicles

Describe that which is proposed for use in your operation (Examples: drill, dozer, wash plant, mill, etc.). Include: sizes, capacity, frequency of use, etc.

Off-road accessory equipment needed to facilitate the operation is anticipated to include the following listed in Table 3, below.

Table 3. Off-Road Equipment

Equipment Description	Number of Units	Size/Capacity	Est. Frequency and Location of Use
Jack Leg Drills	3	Hand-Held	Up to 10 hours/day during operations at Location #1.
Compact Skid Steer	1	RT-25 or Equivalent	Up to 10 hours/day intermittently during operations at Locations #1 and #4.
Diamond-Core Drill Rigs	1	Boart Longyear LF70 or Equivalent	Up to 12 hours/day during operations at Locations #2 - #4.
Mini Excavator	1	CanDig or Equivalent	Up to 10 hours/day intermittently during operations at all locations.
Diesel Generator (large)	1	100kw	Up to 12 hours/day during operations at Location #1.
Diesel Generator (small)	1	20kw	Up to 12 hours/day during operations at Locations #2 - #4.
Air Compressor	1	50kw	Up to 12 hours/day during operations at Locations #1 and #4.
Chainsaws	2	Hand-Held	Up to 6 hours/day primarily at Locations #1 and #2, and as needed at Locations #3 and #4.
Small Light Plants/Towers, if needed	2	Compact, Trailer-Mounted	As needed at all locations.

A commercially-available utility helicopter will deliver the majority of the equipment and materials to and from the truck parking / interim staging area located on private property off West Fork Road (e.g., drills, mini excavator, compact skid steer, generators, compressor). Where the exploration locations are located near an existing road, support staff in an equipment service truck, pickup trucks, and/or UTVs may deliver other small accessory equipment and materials to and from the project site. A UTV is proposed for use at Location #2 only.

E. Structures and Materials

Include information about fixed or portable structures or facilities planned for the operation. Show locations on the map. Include such things as living quarters, storage sheds, mill buildings, thickener tanks, fuel storage, powder magazines, pipelines, water diversions, trailers, sanitation facilities including sewage disposal, etc. Include engineering design and geotechnical information for project facilities, justification and calculations for sizing of tanks, pipelines and water diversions, etc.

No temporary or permanent buildings will be constructed.

Materials are anticipated to include:

- *Diesel
- *Gasoline
- *Equipment Maintenance Products (e.g., oils, grease, antifreeze)
- *Ground Support Products (e.g., resin)
- *Blasting Products (e.g., ANFO)
- *Water Treatment Products (e.g., floc log, lime)
- *Drilling Products (e.g., bentonite)
- Ventilation Fan and Ducting for Adit #1
- Timber and Survey Stakes
- Drill Bits and Drill Steel
- Ground Support Supplies (e.g., rock bolts, wire mesh, rebar, steel arches)
- Cables and Cable Trays
- Hand-held Tools (e.g., shovels, battery-powered and pneumatic tools)
- Maintenance Parts and Tooling
- Spare Batteries and Tires
- Water for Drilling and Dust Suppression
- Water Tank(s)
- Portable Toilets and Handwashing Stations

**Starred materials are potentially considered hazardous substances. More information on hazardous substances is provided in Section VI.G, below.*

Materials will be staged on the drill pads and/or laydown areas at all locations, or within the adit at Location #1. Portable toilets, hand wash stations, and bottled drinking water will be provided for on-site personnel.

V. Potential Federal, State, and Local Permits

The following federal, state, and local permits/authorizations may be necessary for the project:

- Plan of Operations: USFS
- Mine Identification Number: Mine Health and Safety Administration (MSHA)
- Various Safety Approvals (e.g., classification of environmental hazards from the Mining and Tunneling Unit): MSHA and Federal Occupational Safety and Health Administration
- Exploration License: Montana Department of Environmental Quality (MDEQ) Mining Bureau
- Hazardous Materials Tier II Reporting: Ravalli County Local Emergency Planning Committee through E-Plan
- EPA ID Number: US EPA
- Hazardous Waste Annual Generator Registration: MDEQ
- Storm Water Pollution Prevention Permit and Plan: MDEQ
- Spill Prevention, Control and Countermeasure Plan: MDEQ
- Air Permits: MDEQ

VI. Environmental Protection Measures

The following environmental protection measures have been integrated as project features:

A. Air Quality

Describe measures proposed to minimize impacts on air quality such as obtaining a burning permit for slash disposal or dust abatement on roads.

Best management practices to control air emissions will be implemented throughout the exploration program, including:

- Equipment will be operated within manufacturer specifications and will be equipped with pollution control devices (e.g., mufflers, converters).

- Sufficient water will be applied during drilling operations to lubricate equipment and control fugitive dust.
- Flight paths will be optimized and idling time will be minimized for helicopter(s) supporting the project to reduce unnecessary fuel consumption.

Additionally, the project will implement wildfire prevention measures and maintain appropriate fire prevention and suppression equipment on-site. Equipment will be maintained in a condition that minimizes ignition risk.

B. Water Quality

State how applicable state and federal water quality standards will be met. Describe measures or management practices to be used to minimize water quality impacts and meet applicable standards.

1. *State whether water is to be used in the operation, and describe the quantity, source, methods and design of diversions, storage, use, disposal, and treatment facilities. Include assumptions for sizing water conveyance or storage facilities.*

Water will be used during bulk sampling and diamond drilling as a lubricant and dust suppressant. A helicopter will sling water to the project site as needed from a source outside the project area. Water will be stored in high capacity holding tank(s) and sumps on-site (e.g., 1,000-gallon water tank).

At Location #1, bulk sampling is anticipated to require up to 300 gallons of water per day, most of which will be recycled. An underground sump will be constructed within the adit for water detention and reuse/recirculation. The sump will measure approximately 18’ x 30’ and will collect excess water from bulk sampling activities via ditches on either side of the main access passage. The sump will provide storage and settling capacity for water. The sump will use a series of chambers and a flocculent log to settle suspended solids in the water. Once solids in the water have been settled out, water will be piped to a water holding tank and then plumbed to the working face of the tunnel. Calcium carbonate (lime) will be used to raise the water pH, if needed.

At Locations #2 - #4, diamond drilling is anticipated to require up to 8,500 gallons of water per day, most of which will be recycled. Lined sumps measuring approximately 10’ x 10’ excavated to six feet deep will be staged adjacent to the drill pads for detention of drill cuttings and water, and will allow for water to be recirculated into the drilling process.

2. *Describe methods to control erosion and surface water runoff from all disturbed areas, including waste and tailings dumps.*

Best management practices to protect water quality will be implemented throughout the exploration project, including:

1. Erosion and sediment control measures (e.g., silt fence, fiber rolls) will be deployed during operations to reduce water runoff and siltation. Sediment control measures will also be used to prevent accidental deposition downhill of surface preparation work (e.g., downhill side of working areas at Locations #1 and #4 to protect nearby waterways).
2. Materials with the potential to mobilize during a rain event will be stored under cover, where possible.
3. Sumps will be lined with a poly liner and visually monitored during drilling to ensure adequate freeboard and prevent overtopping.
4. Areas where equipment is used and staged will be inspected daily and any identified drips/leaks will be cleaned up immediately.
5. Unless otherwise exempt, the project will be enrolled under the Montana Construction Stormwater General Permit (MTR100000) and implementing a Storm Water Pollution Prevention Plan ("SWPPP"). The SWPPP would identify Best Management Practices ("BMPs") to reduce or eliminate pollutants in stormwater discharge and authorized non-stormwater discharges from the site.

3. Describe proposed surface water and groundwater quality monitoring, if required, to demonstrate compliance with federal or state water quality standards.

If required by a permit or authorization listed in Section V, surface water and/or groundwater quality monitoring will be conducted pursuant to the applicable requirements. Separate from a permit or authorization, no surface water or groundwater quality monitoring is necessary given the nature of the project and minimal surface disturbance.

4. Describe the measures to be used to minimize potential water quality impacts during seasonal closures, or for a temporary cessation of operations.

If exploration work is not complete prior to inclement weather, which is anticipated to peak between December 2027 and February 2028, the project will likely need to temporarily cease operations. To minimize the potential for water quality impacts during temporary cessation, drill holes will be plugged, outdoor sumps will be temporarily reclaimed by removing the liner and backfilling the sump to grade, and the gates at Adit 1 and Adit 3 will be closed and locked. Except for the constructed timber platforms, which will remain on-site throughout the winter, mobile equipment and materials will be removed from the site. In any event, the project will be completed within one year.

5. If land application is proposed for waste water disposal, the location and operation of the land application system must be described. Also describe how vegetation, soil, and surface and groundwater quality will be protected if land application is used.

Other than the excavated and lined sumps previously described, which will temporarily contain drill cuttings and water, no land application is proposed for waste water disposal.

C. Solid Wastes

Describe the quantity and the physical and chemical characteristics of solid waste produced by the operation. Describe how the wastes will be disposed of including location and design of facilities, or treated so as to minimize adverse impacts.

A minor amount of general refuse (food and trash) will be generated during project activities, which will be stored in closed containers, and removed as necessary to be disposed of at an authorized off-site landfill, consistent with applicable regulations.

Up to four portable toilets will be provided at the exploration locations, with an additional portable toilet provided at the interim staging area, for site personnel. The toilets will be equipped with an individual, removable holding tank that will be flown to the trucking parking / interim staging area to be emptied, cleaned, and disinfected by a third-party vendor. The toilets will be serviced as-needed.

D. Scenic Values

Describe protection of scenic values such as screening, slash disposal, or timely reclamation.

At Location #1, approximately 30 Douglas fir trees will be selectively removed (cut at the base) with a chainsaw and/or hand tools to facilitate access to the work area; the majority of the trees measure 24" or less in diameter. At Location #2, which is in an old burn area, it is anticipated that burned trees and brush/debris will need to be cleared to facilitate UTV access to the site and installation of the timber platform. At Location #4, approximately 100 trees comprised of lodgepole pines, Douglas fir, and ponderosa pine will be selectively removed with a chainsaw and/or hand tools to facilitate access to the work area; the majority of the trees measure 16" or less in diameter. If needed at Location #3, trees and/or shrubs may be trimmed for visibility and access; however, no tree removal is anticipated at this location.

No whitebark pine will be removed; if whitebark pine is identified, a 33-foot buffer will be maintained. Removed vegetation will used for reclamation purposes. No vegetation will be piled in a streamside zone.

Disturbed soil areas will be scarified, revegetated with a native / local seed mix determined in coordination with the Forest Service, and covered with straw.

E. Fish and Wildlife

Describe measures to maintain and protect fisheries and wildlife, and their habitat (includes threatened, endangered, and sensitive species) affected by the operations.

To minimize the potential for impacts to listed and sensitive fish and wildlife species and their habitat, the project will employ the following measures:

- Only the minimum amount of vegetation will be removed to facilitate project activities.
- If temporary lighting is needed, light fixtures will be shielded, directed downward, and designed to focus light only on the immediate area. Temporary lighting will be turned off when workers are no longer present.
- The project will adhere to the Bitterroot National Forest Food Storage Order; no trash will be left on-site and wildlife-proof containers will be used for temporary storage.
- No crossings will be constructed over waterways (e.g., creeks or streams).
- The sumps will be enclosed by temporary safety fencing to prevent wildlife from falling into the sump, and will be reclaimed prior to the seasonal closure.
- During helicopter approach, if wildlife is observed in the project area, the approach will be conducted slowly and cautiously to avoid disturbance and will avoid landing if wildlife is near any of the project's helicopter landing locations.
- Helicopter operations will be conducted during daytime hours to avoid surprise encounters with wildlife.
- Wildlife encountered during exploration activities, if any, will be allowed to the leave the work area unharmed and on its own.
- If threatened, endangered, or species of special concern (e.g., Canada Lynx, Grizzly Bear, North America Wolverine), and/or carcasses that could become wildlife attractants, are spotted within or near the work areas, project personnel will immediately notify the Forest Service.
- Exploration operations will avoid pollinator species and milkweed, if encountered.
- To avoid introducing or spreading invasive weed species, vehicles and equipment will be decontaminated (e.g, brushing, blowing, and/or knocking dirt and vegetation off tires) before transportation to the site and the project will avoid wet terrain travel where practical.
- Weed-free seed mix and weed-free straw will be used during reclamation.
- A qualified biologist will provide worker environmental awareness training to site personnel prior to start of operations, including species identification and ways to reduce conflicts with wildlife in the area.

F. Cultural Resources

Describe measures for protecting known historic and archeological values, or new sites in the project area.

To minimize the potential for impacts to cultural resources, the project will employ the following measures:

- A qualified cultural resources specialist will provide cultural awareness training to site personnel prior to start of operations.
- If cultural properties, items, or artifacts are encountered during exploration, activities will cease immediately and the Forest Service will be notified. Activities will remain halted until an archaeologist can complete a significance evaluation of the find(s) pursuant to Section 106 of the NHPA. If human remains are encountered at any point during the project, activities will cease within a minimum of 50 feet of the find and the county coroner will be contacted.

G. Hazardous Substances

1. *Identify the type and volume of all hazardous materials and toxic substances which will be used or generated in the operations including cyanide, solvents, petroleum products, mill, process and laboratory reagents.*

The hazardous material types, approximate quantities, container sizes, and location of use on USFS land (or, in the case of waste, location of generation) are provided in Table 4, below.

Table 4. Hazardous Materials

Material	Quantity	Container Size	Location
Diesel	200 gallons	200-GA Double-Walled Fly Tank	All locations.
Gasoline	15 gallons	5-GA Portable Safety Cans	All locations.
Equipment Maintenance: Various Oils, Grease, Fuel Additive, Antifreeze, Solvents, and Degreasers	55 gallons (total for products listed)	1-GA Jugs, 5-GA Buckets, Tubes, and/or Aerosols	All locations.
Equipment Waste: Used Oil / Used Antifreeze	10 gallons (total for wastes listed)	1-GA or 5-GA Buckets	All locations.
Equipment Waste: Oily Solids	200 pounds	55-GA Drum	All locations.
Ground Support: Resin Cartridges	300	Cardboard Boxes (25 per box)	Location #1
Blasting: ANFO	2,000 pounds	Type 5 Magazine	Location #1
Blasting: Emulsion Explosive	500 pounds	Type 5 Magazine	Location #1
Blasting: Detonators	200	Type 5 Magazine	Location #1

Water Treatment: Floc Log	80 pounds	Cardboard Boxes (4 per box)	Location #1
Water Treatment: Lime	1,000 pounds	50-lb Bags	Location #1
Drilling: Polymer Additive	110 gallons	55-GA Drum	Locations #2 - #4
Drilling: Bentonite	1,200 pounds	50-lb Bags	Locations #2 - #4
Drilling: Portland Cement	2,000 pounds	50-lb bags	Locations #2 - #4

To provide a general understanding of the hazardous properties of the products listed above, example Safety Data Sheets (SDSs) are included in **Appendix E**.

2. *For each material or substance, describe the methods, volume, and frequency of transport (include type of containers and vehicles), procedures for use of materials or substances, methods, volume, and containers for disposal of materials and substances, security (fencing), identification (signing/labeling), or other special operations requirements necessary to conduct the proposed operations.*

Approximately 10 deliveries of a combination of the above products are anticipated per month. Hazardous materials will be transported in containers compatible with the individual materials. The fuel tanks will be double-walled (i.e., secondarily contained) and other oil containers will either be secured within the bed of a truck while located at the truck parking / interim staging area off West Fork Road or will be placed within plastic secondary containment trays at the exploration locations. Dry hazardous materials will be stored in weather-resistant containers. Blasting products will be stored in a ventilated magazine and the magazine will be double-locked at all times. No hazardous materials will be left on-site when the site is unmanned (e.g., during the winter).

Hazardous material storage containers will be labeled in accordance with National Fire Protection Agency and Occupational Safety and Health Administration standards. Hazardous waste containers will be labeled in accordance with 40 CFR §262.16(b)(6)(i).

3. *Describe the measures to be taken for release of a reportable quantity of a hazardous material or the release of a toxic substance. This includes plans for spill prevention, containment, notification, and cleanup.*

Equipment refueling and maintenance will comply with proper fueling and spill control procedures, including using drip pans, maintaining visual contact during fueling operations, and maintaining a 300-foot setback from nearby waterways. In the event of a spill, the spilled product and affected soils will be cleaned-up immediately (within 24 hours), documented, and disposed of in accordance with local, state, and federal regulations. Documentation will consist of the date of the spill and cleanup methodology. If the spill is at or over reportable quantities (e.g., 25

gallons for oil spills to land) or creates an oil sheen, the Forest Service, Montana Disaster and Emergency Services (DES), and National Response Center will be notified within the first hour of discovery. If DES cannot be reached, MDEQ will be notified. See **Appendix F, Emergency Response Plan**.

H. Reclamation

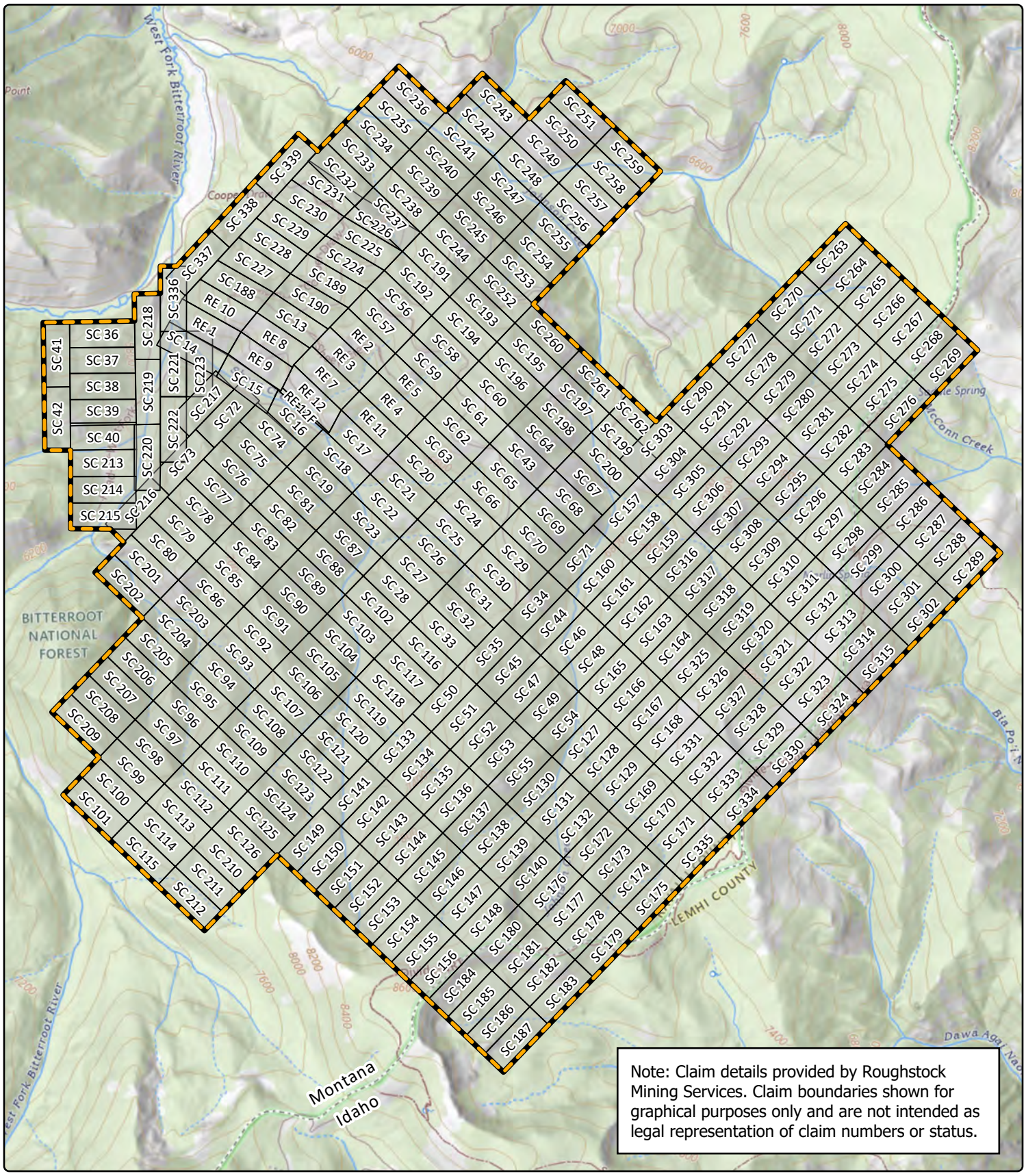
Describe the annual and final reclamation standards based on the anticipated schedule for construction, operations, and project closure. Include such items as the removal of structures and facilities including bridges and culverts, a revegetation plan, permanent containment of mine tailings, waste, or sludges which pose a threat of a release into the environment, closing ponds and eliminating standing water, a final surface shaping plan, and post operations monitoring and maintenance plans.

Final reclamation of the site will conform to the Requirements for Environmental Protection at 36 CFR §228.8. Reclamation will involve the following activities:

- The timber platforms will be deconstructed, the posts removed from the ground, and materials flown off-site for reuse or disposal.
- Equipment and materials will be removed from the adit entrance pads, drill pads, and laydown areas. All refuse associated with the project will be removed and disposed of in proper disposal sites.
- At Location #1, the adit will be secured by closing the entrance gate to prevent unauthorized entry and ensure public safety.
- At Locations #2 - #4, exploration drill holes will be plugged with bentonite and cement pursuant to applicable exploration drill hole plugging standards.
- At Locations #2 and #4, the sumps containing drill cuttings and water will be allowed to dry out. The dried out material will be temporarily removed from the sump to expose the liner. The liner will then be removed and disposed of off-site and the dried material placed back into the sump. Excavated soil from creation of the sump will then be used to backfill the sump to grade.
- At all locations, the timber platforms will be deconstructed, the posts removed from the ground, and materials flown off-site for reuse or disposal.
- At all locations, equipment and materials (including any remaining bulk samples and drill cores) will be removed from the adit entrance pads, drill pads, and laydown areas. All refuse associated with the project will be removed and disposed of in proper disposal sites.

Minor contouring to ensure proper drainage in the areas of adit entrances at Adit 1 and Adit 3 is anticipated. Concurrent with or subsequent to the activities above, disturbed soil areas at the adit entrance pads, drill pads (including the plugged drill holes), and laydown areas will be scarified, revegetated with a native / local seed mix determined in coordination with the Forest Service, and covered with straw. The revegetation seed mix will follow the Forest Service Region 1 seed mix requirements. Revegetation at each location will occur as soon as possible following completion of exploration operations. Revegetated areas will be monitored once per year for two years to confirm revegetation success.

FIGURE 1
CLAIM MAP



USGS National Map Service

Legend:

Claim Block

Mining Claim

0 2,000 4,000 Feet

N

Claims Map
Sheep Creek Exploration Project
U S Critical Materials
Ravalli County, Montana

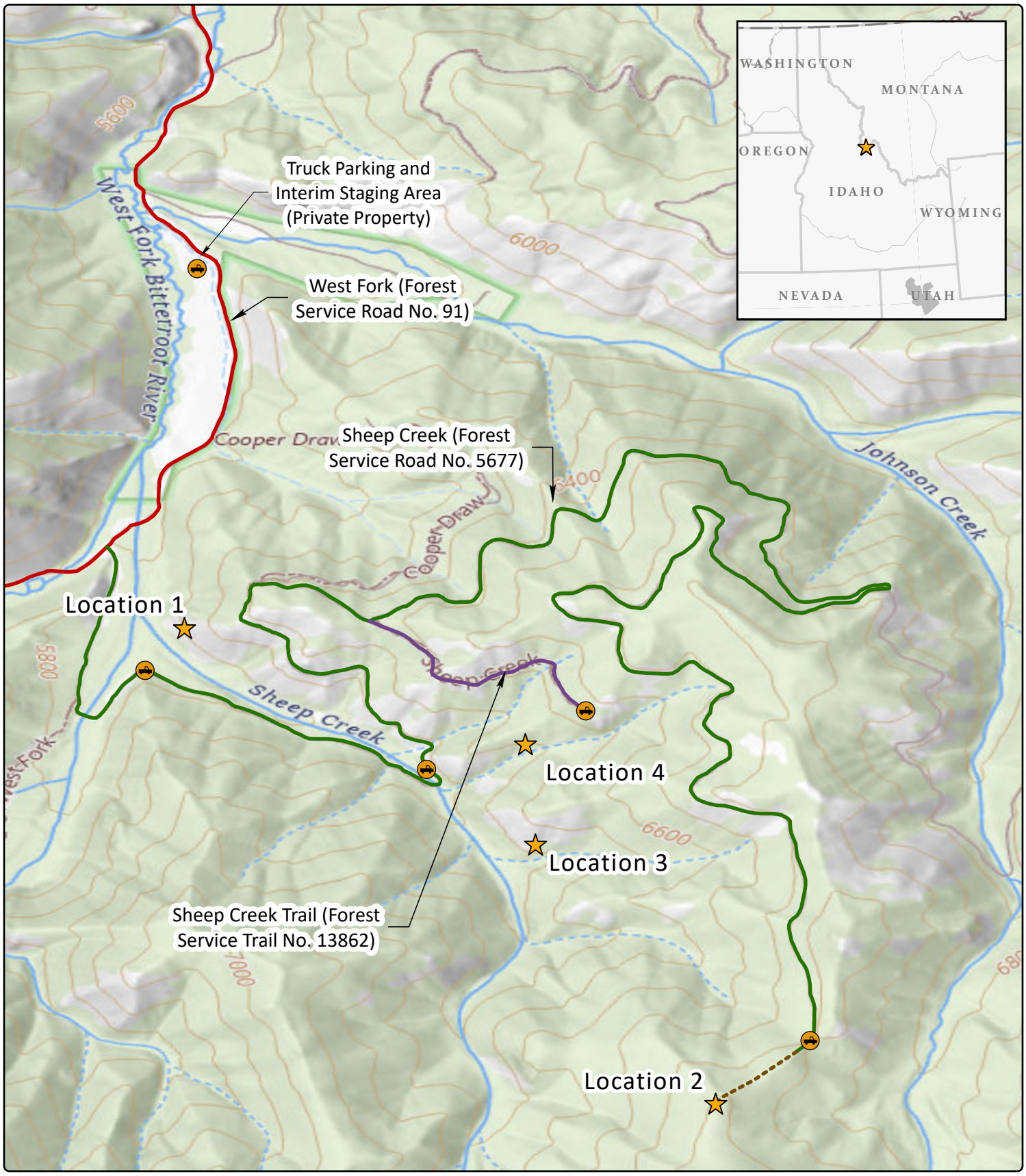
Figure 1

4/20/2026

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

FIGURE 2
LOCATION MAP



USGS National Map Service

Legend:
- Exploration Location
- Truck Parking Location
- Forest Service Road 91
- Forest Service Road 5677
- Forest Service Trail 13862
- UTV Access Route

0 1,000 2,000 3,000 Feet

N

Location Map
Sheep Creek Exploration Project
U S Critical Materials
Ravalli County, Montana

Figure 2

8/13/2026

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

FIGURE 3

SITE PLAN FOR LOCATION #1

Aerial Imagery Mosaic provided by Montana State Library, Moasaic of Ravalli County, 2025

Legend:
- Heliocopter Platform
- Laydown Area
- Working Pad
- Existing Adit
- Timber Platform

0 30 60 Feet

Site Plan for Location #1
Sheep Creek Exploration Project
U S Critical Materials
Ravalli County, Montana

Figure 3

4/22/2026

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

FIGURE 4

SITE PLAN FOR LOCATION #2

Aerial Imagery Mosaic provided by Montana State Library, Moasaic of Ravalli County, 2025

Legend:
- Heliocopter Platform
- Laydown Area
- Drill Pad
- Sump
- Timber Platform

0 30 60 Feet

N

Site Plan for Location #2
Sheep Creek Exploration Project
U S Critical Materials
Ravalli County, Montana

Figure 4

8/26/2026

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

FIGURE 5

SITE PLAN FOR LOCATION #3

Aerial Imagery Mosaic provided by Montana State Library, Moasaic of Ravalli County, 2025

Legend:
- Heliocopter Platform
- Laydown Area
- Drill Pad
- Sump
- Timber Platform

0 25 50 Feet

N

Site Plan for Location #3
Sheep Creek Exploration Project
U S Critical Materials
Ravalli County, Montana

Figure 5

4/22/2026

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

FIGURE 6

SITE PLAN FOR LOCATION #4

Aerial Imagery Mosaic provided by Montana State Library, Moasaic of Ravalli County, 2025

Legend:
- Heliocopter Platform
- Laydown Area
- Drill Pad
- Sump
- Existing Adit
- Timber Platform

0 25 50 Feet

N

Site Plan for Location #4
Sheep Creek Exploration Project
U S Critical Materials
Ravalli County, Montana

Figure 6

4/22/2026

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

APPENDIX A
LIST OF CLAIMS

Count	Claim Name	Serial Number
Please note that some claim numbers have more than one serial number.		
1	RE 1	MT105824819
2	RE 2	MT105824820
3	RE 3	MT105824821
4	RE 4	MT105824822
5	RE 5	MT105824823
6	RE 7	MT105824824
7	RE 8	MT105824825
8	RE 9	MT105824826
9	RE 10	MT105824827
10	RE 11	MT105824828
11	RE 12	MT105824829
12	RE 12F	MT105824830
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APPENDIX B
ADIT PHOTOGRAPHS

Sheep Creek Exploration Project
Adit 1 and Adit 3 Photos
Existing Conditions

PHOTO 1: Adit 1 (looking at pad to the south/southeast)	PHOTO 2: Adit 1 (looking northwest)

PHOTO 3: Adit 1 (looking southeast)	PHOTO 4: Adit 3 (looking north at adit entrance)

PHOTO 5: Adit 3 (looking west)	PHOTO 6: Adit 3 (looking east)

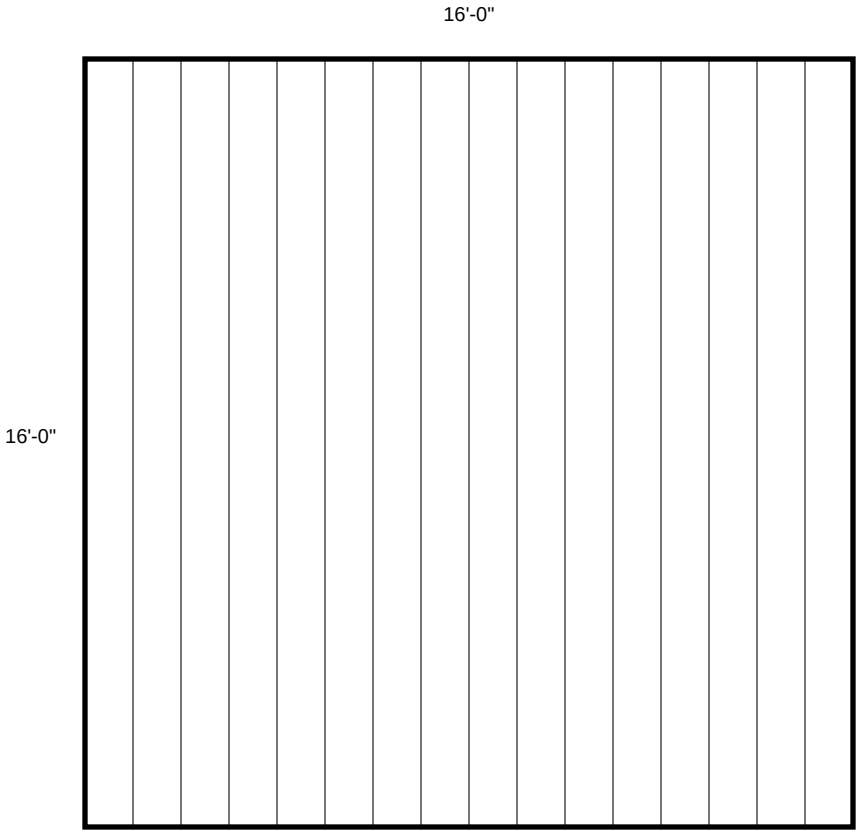
APPENDIX C

TYPICAL PLATFORM SCHEMATIC

HELICOPTER LANDING PLATFORM - 16' x 16'

PLAN VIEW

C-2 1" = 4'-0"



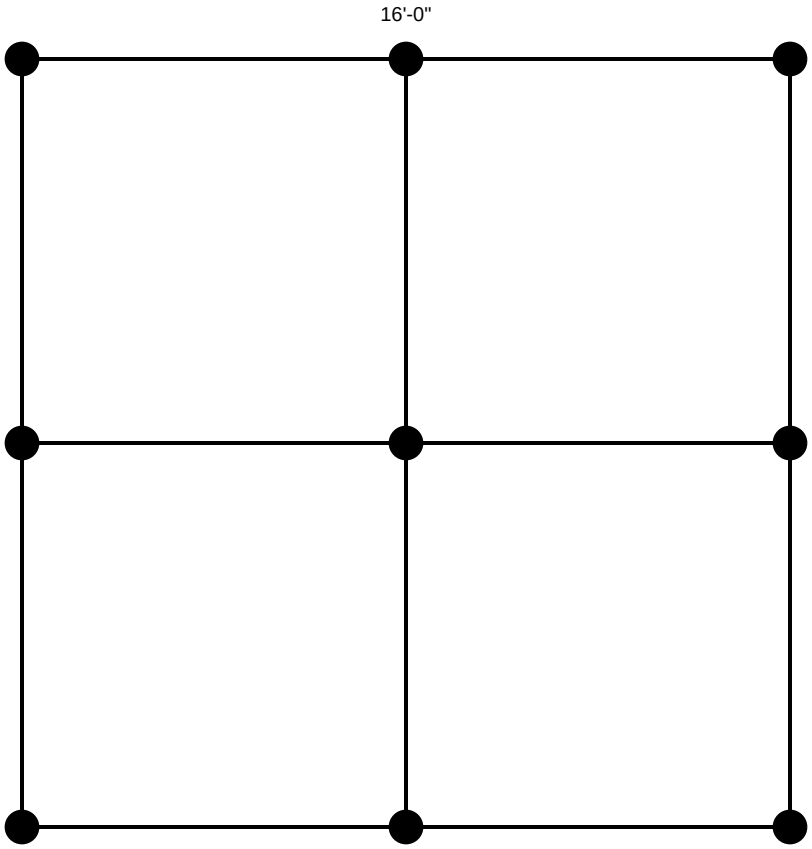
PLAN NOTES

1. Overall platform size: 16'-0" x 16'-0".
2. Landing surface has no perimeter rails.
3. Provide anti-skid finish on all deck planks.

HELICOPTER LANDING PLATFORM - 16' x 16'

FRAMING PLAN

C-3 1" = 4'-0"



MEMBER CALLOUTS

Posts: 10"x10" timber, typ.

Primary beams: 6x12 or built-up eq., typ.

Joists/stringers: 4x12 or 6x12.

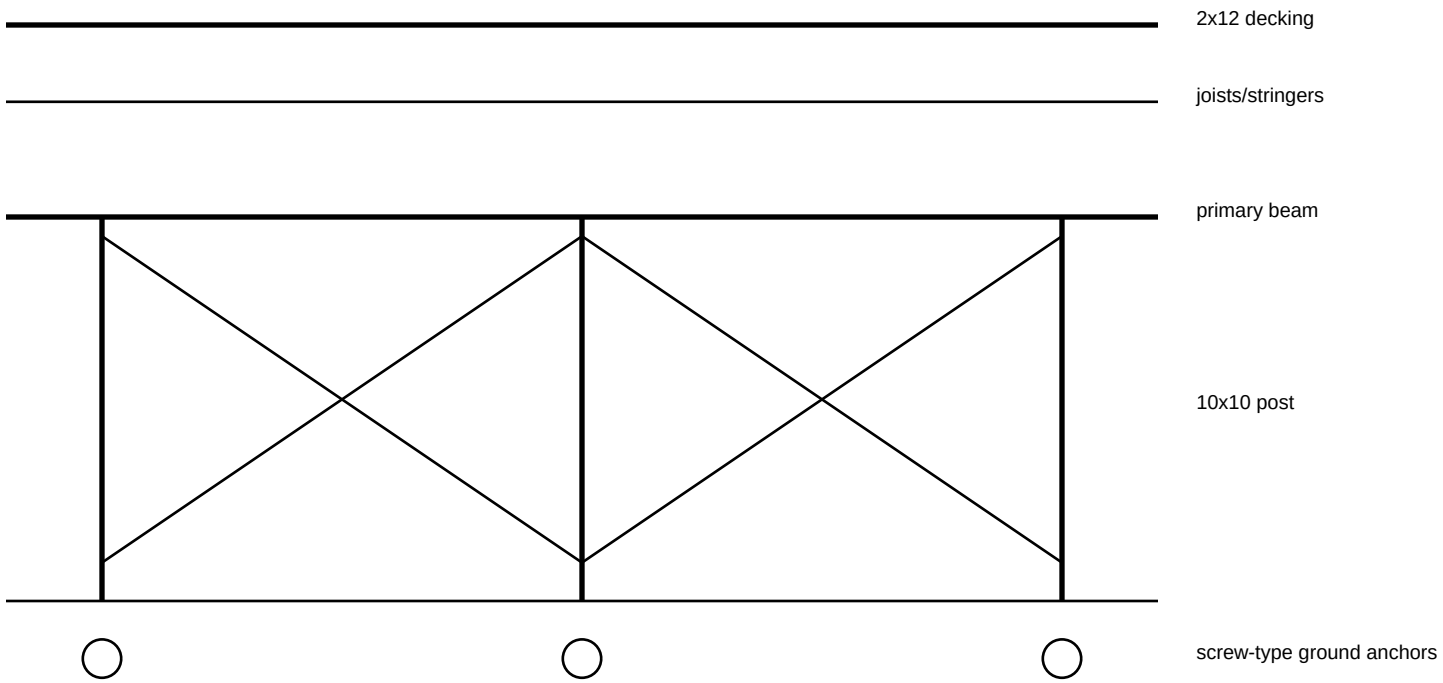
Decking: 2x12 roughcut planks.

Provide diagonal cross-bracing.

HELICOPTER LANDING PLATFORM - 16' x 16'

SECTION AND ELEVATION

C-4 1" = 4'-0"



HELICOPTER LANDING PLATFORM - 16' x 16'

CONNECTION DETAILS

C-5 1" = 4'-0"

Beam to Post:

(2)-(4) 3/4" thru-bolts

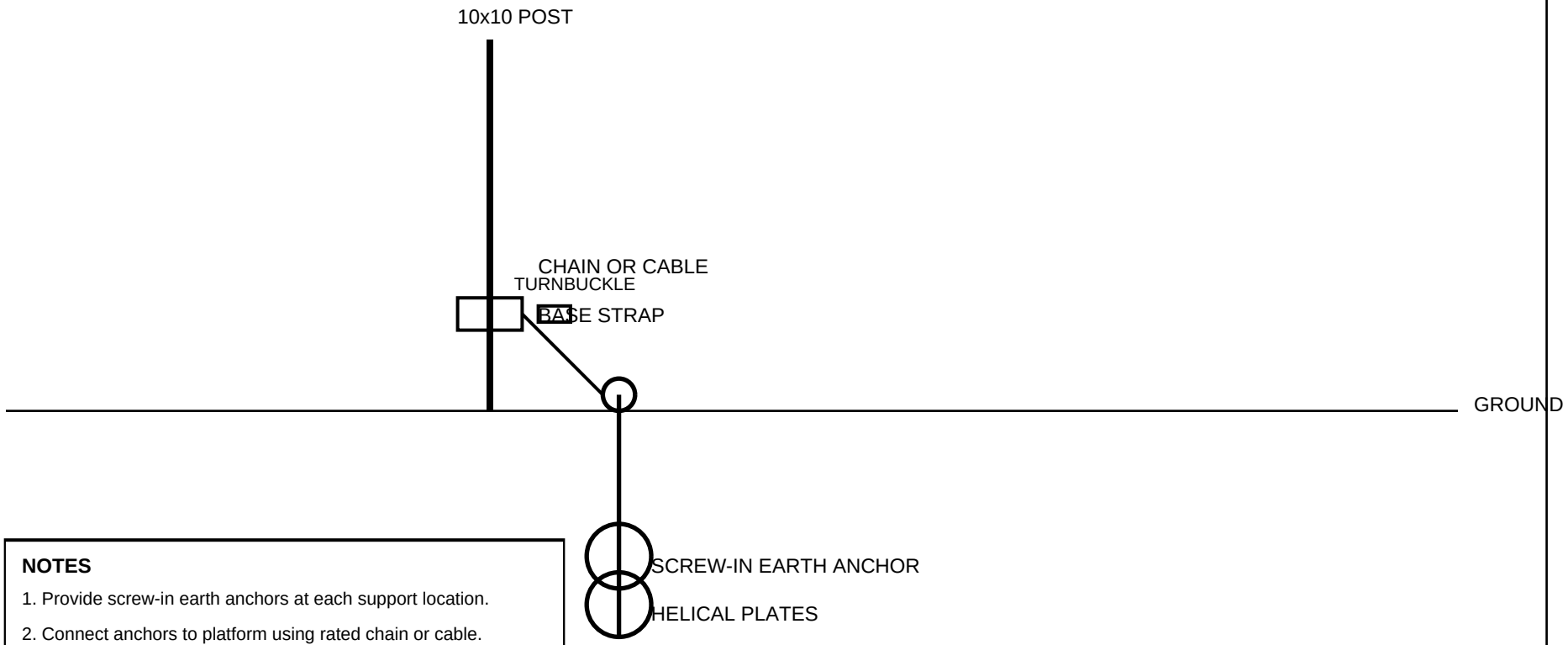
Ground Anchor:

Screw-type anchor w/ steel plate

Bracing:

2x8 diagonal both directions

ANCHOR DETAIL - SCREW-IN EARTH ANCHOR SYSTEM

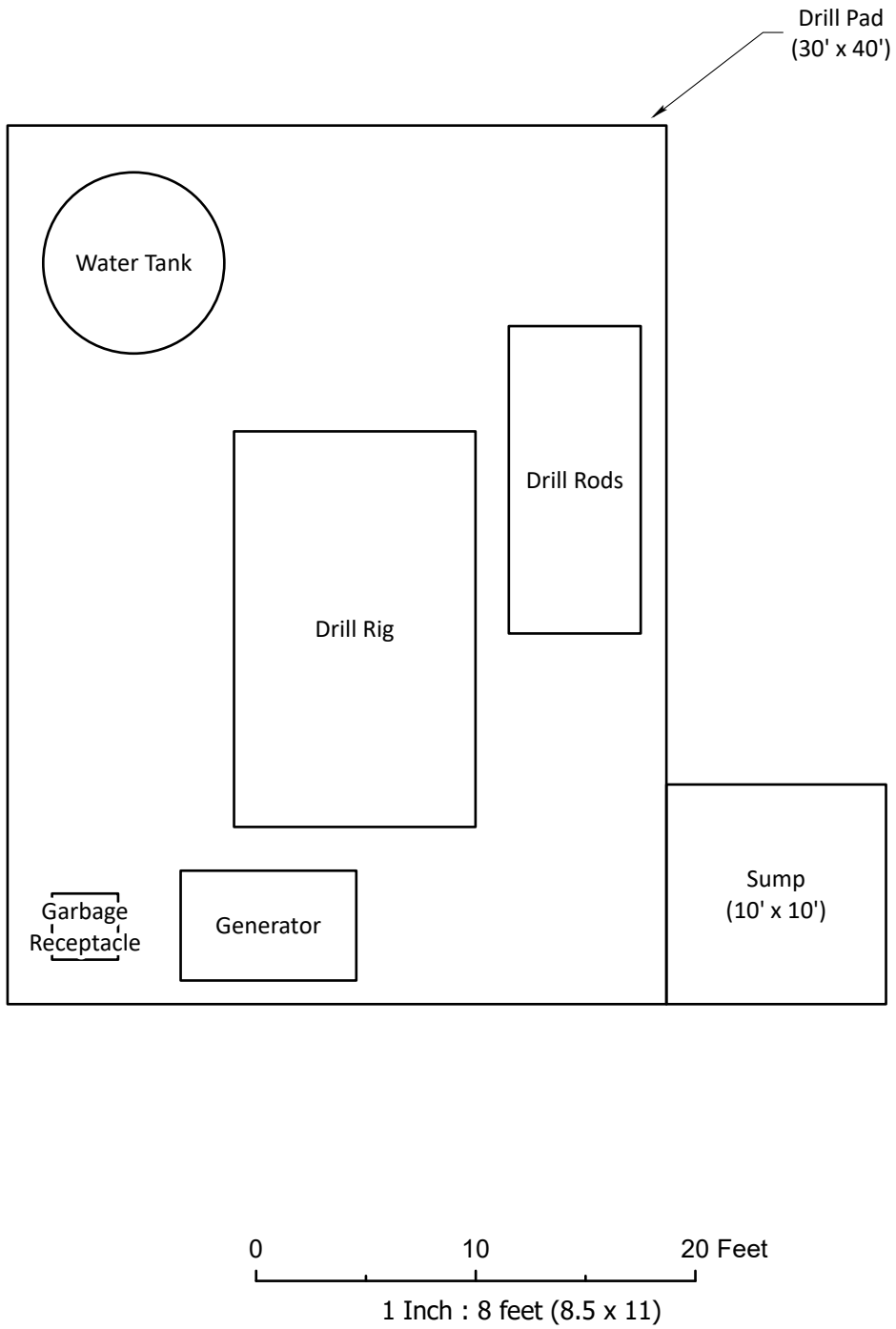


NOTES

1. Provide screw-in earth anchors at each support location.
2. Connect anchors to platform using rated chain or cable.
3. Install turnbuckles to allow tension adjustment.
4. Attach base straps approximately 2 feet above ground.
5. Anchor embedment depth per manufacturer recommendations.

APPENDIX D

TYPICAL DRILL PAD SCHEMATIC



Typical Drill Pad Schematic
Sheep Creek Exploration Project
U S Critical Materials
Ravalli County, Montana

Appendix D | 4/20/2026

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP

APPENDIX E
SAFETY DATA SHEETS

Safety Data Sheet

SECTION 1 IDENTIFICATION

DIESEL FUEL (GENERIC)

Recommended Use: Fuel
Restrictions on Use: Consult supplier when used other than those specified.
Other means of identification: Not applicable
Company Identification
Chevron Products Company
1400 Smith Street
Houston, TX 77002
United States of America

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887
Health Emergency
Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623
Product Information
SDS Requests: http://www.chevron.com/contact/
Technical Information: (510) 242-5357

SPECIAL NOTES: This SDS covers all Chevron, Texaco and Calco CARB & non-CARB Diesel No. 2 Fuels. The sulfur content is less than 0.5% (mass). Red dye is added to non-taxable fuel. (SDS 6894)
SPECIAL NOTES: This SDS covers all Chevron and Calco CARB Low Sulfur Diesel No. 2 Fuels. Red dye is added to non-taxable fuel. (SDS 7098)

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION:
- Flammable liquid: Category 3.
- Acute inhalation toxicant: Category 4.
- Aspiration toxicant: Category 1.
- Carcinogen: Category 1B.
- Skin irritation: Category 2.
- Target organ toxicant (central nervous system): Category 3.
- Target organ toxicant (repeated exposure): Category 2.
- Acute aquatic toxicant: Category 2.
- Chronic aquatic toxicant: Category 2.

Signal Word: Danger
Physical Hazards:
- Flammable liquid and vapour.

Health Hazards:
- May be fatal if swallowed and enters airways.
- Causes skin irritation.
- Harmful if inhaled.
- May cause drowsiness or dizziness.
- May cause cancer.
- May cause damage to organs (Blood/Blood Forming Organs, Liver, Thymus) through prolonged or repeated exposure.

Environmental Hazards:
- Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:
General:
- Keep out of reach of children.
- Read label before use.

Prevention:
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat, sparks, open flames, and hot surfaces. - No smoking.
- Keep cool.
- Ground and bond container and receiving equipment.
- Use explosion-proof electrical, ventilating, lighting, and equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Do not breathe fume, gas, mist, vapours, or spray.
- Wash thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Avoid release to the environment.
- Wear protective gloves, protective clothing, eye protection, and face protection.

Response:
- IF SWALLOWED: Immediately call a POISON CENTER, doctor, or physician.
- IF ON SKIN: Wash with plenty of soap and water.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF exposed or concerned: Get medical advice or attention.
- Specific treatment (see Notes to Physician on this label).
- Do NOT induce vomiting.
- If skin irritation occurs: Get medical advice or attention.
- Take off contaminated clothing and wash it before reuse.
- In case of fire: Use media specified in the SDS to extinguish.
- Collect spillage.

Storage:
- Store in a well-ventilated place. Keep container tightly closed.
- Store locked up.

Disposal:
- Dispose of contents and container in accordance with applicable local, regional, national, and international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Diesel Fuel No. 2	68476-34-6	95 - 100 %vol/vol
Alkanes, C10-20-branched and linear	928771-01-1	0 - 5 %vol/vol
Fatty Acid Methyl Esters (FAME)	Mixture	0 - 5 %vol/vol
Naphthalene	91-20-3	0.02 - 0.2 %vol/vol
Total sulfur	Mixture	0 - 5000 ppm (weight)

SECTION 4 FIRST AID MEASURES

Description of first aid measures
Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.
Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

Most important symptoms and effects, both acute and delayed
IMMEDIATE HEALTH EFFECTS
Eye: Not expected to cause prolonged or significant eye irritation.
Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response.
Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.
Inhalation: Harmful if inhaled. Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:
Cancer: Whole diesel engine exhaust has been classified as a Group 1 carcinogen (probably carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Prolonged or repeated exposure to this material may cause cancer. Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).
Target Organs: Contains material that may cause damage to the following organ(s) following repeated inhalation at concentrations above the recommended exposure limit based on animal data: Liver Blood/Blood Forming Organs Thymus See Section 11 for additional information. Risk depends on duration and level of exposure.

Indication of any immediate medical attention and special treatment needed
Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO_2) to extinguish flames.
UNSUITABLE EXTINGUISHING MEDIA: No data available
Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Observe all relevant local and international regulations. Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator. Keep out unnecessary and unprotected personnel. Persons entering the contaminated area to correct the problem or to determine whether it is safe to resume normal activities must comply with all instructions and wear appropriate personal protective equipment as indicated in Section 8.
Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Precautionary Measures: This material presents a fire hazard. Liquid quickly evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above -10C (15F). Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Do not breathe mist. Wash thoroughly after handling. Keep out of the reach of children.
Unusual Handling Hazards: WARNING! Do not use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death. Slow heat generation may occur with oil-soaked rags, spent filter aids and spent absorbent material and may cause spontaneous combustion if stored near combustibles and not handled properly. Store biodiesel soaked rags, filter aids, and spill absorbent material in approved safety disposal containers and dispose of properly. Biodiesel soaked rags may be washed with soap and water and allowed to dry in well ventilated area.
Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by

themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the workplace when designing engineering controls and selecting personal protective equipment (PPE). If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, refer to PPE information below.

Factors that affect PPE include, but are not limited to: properties of the chemical, other chemicals which may contact the same PPE, physical requirements (fit & sizing, cut/puncture protection, dexterity, thermal protection, etc.), and potential allergic reactions to the PPE material. It is the responsibility of the user to read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

ENGINEERING CONTROLS:
Use general ventilation, local exhaust ventilation, or a combination of both.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.
Skin Protection: Wear chemical personal protective equipment (PPE) to prevent skin contact. Selection of chemical protective clothing should be performed by an Occupational Hygienist or Safety Professional and be based upon applicable standards (ASTM F739 or EN 374). Using chemical PPE depends upon operations conducted and may include chemical gloves, boots, chemical apron, chemical suit, and complete facial protection. **Refer to PPE manufacturers to obtain breakthrough time information to determine how long PPE can be used before it needs to be replaced.** Unless specific glove manufacturer data indicates otherwise, the below table is based upon available industry data to assist in the glove selection process and is intended to be used as reference only.

Chemical Glove Material	Thickness (mm)	Typical Breakthrough Time (minutes)
Neoprene	1.4	30
Nitrile	0.5	60
Nitrile	0.11	7
Polyvinyl Chloride (PVC)	1.5	30
Viton Butyl	0.3	240

Respiratory Protection: A site-specific risk assessment should be conducted by an Occupational

Hygienist or a Safety Professional to determine the type and use of respiratory protective equipment. When a site-specific risk assessment determines that respiratory protection is required, use an approved respirator such as:

Air purifying respirator -
If airborne concentration limits exceed the applicable occupational exposure limit, but are below the maximum use concentration.
Vapors only: organic vapor cartridge (filter type A3 per EN 529:2005).
Vapors and particulates (including generated mists): both an organic vapor cartridge & particulate filter (AP3 filter per EN 529:2005).
Refer to respirator manufacturers to obtain service life of cartridge / filter.

Positive pressure air-supplying respirator -
If airborne concentration limits exceed the maximum use concentration offered from an air purifying respirator.

Refer to EN 529:2005, USA OSHA 1910.134, and/or other applicable local/regional/national/international standards for regulatory requirements.

Occupational Exposure Limits:

Component	Agency	Form	TWA	STEL	Ceiling	Notation
Diesel Fuel No. 2	ACGIH	Inhalable fraction and vapor	100 mg/m3	--	--	Skin total hydrocarbon
Diesel Fuel No. 2	ACGIH	Vapor	100 mg/m3	--	--	Skin
Diesel Fuel No. 2	ACGIH	Vapor and aerosol	100 mg/m3	--	--	Skin total hydrocarbon
Diesel Fuel No. 2	CVX	Vapor and aerosol	100 mg/m3	--	--	Skin total hydrocarbon
Naphthalene	ACGIH	--	10 ppm	--	--	Skin
Naphthalene	ACGIH	Vapor	10 ppm	15 ppm	--	A4 Skin
Naphthalene	OSHA Z-1	--	50 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Varies depending on specification
Physical State: Liquid
Odor: Petroleum odor
Odor Threshold: No data available
pH: Not Applicable
Vapor Pressure: 0.04 kPa (Approximate) @ 40 °C (104 °F)
Relative Vapor Density: >1
Initial Boiling Point: 175.6°C (348°F) - 370°C (698°F)
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: Not Applicable
Melting Point: Not Applicable
Specific Gravity: 0.80 - 0.88 @ 15.6°C (60.1°F) (Typical)
Particle Characteristics: Not applicable
Density: No data available

Kinematic Viscosity: 1.9 cSt - 4.1 cSt @ 40°C (104°F)
Evaporation Rate: No data available
Decomposition temperature: No data available
Partition coefficient n-octanol/water (logarithmic value): No data available

FLAMMABLE PROPERTIES:
Flammability (solid, gas): No Data Available

Flashpoint: (Pensky-Martens Closed Cup) 52 °C (125 °F) (Minimum)
Autoignition: 257 °C (494 °F)
Flammability (Explosive) Limits (% by volume in air): Lower: 0.6 Upper: 4.7

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Conditions to Avoid: Avoid contact with heat, sparks, fire and oxidizing agents
Possibility of Hazardous Reactions: Hazardous polymerization will not occur. May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Incompatibility With Other Materials: Not applicable
Hazardous Decomposition Products: None known (None expected)

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects
Serious Eye Damage/Irritation: The material is not considered an eye irritant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Skin Corrosion/Irritation: This material causes skin irritation. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Skin Sensitization: The material is not considered a skin sensitizer. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Dermal Toxicity: The material is not considered a dermal toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Oral Toxicity: The material is not considered an oral toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: This material is harmful if inhaled. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.
Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The material is not considered a mutagen. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Carcinogenicity: This material may cause cancer. The product has not been tested. The statement is based on evaluation of data for similar materials or product components. Whole diesel engine exhaust has been classified as a Group 1 carcinogen (probably carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Reproductive Toxicity: The material is not considered a reproductive toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Single Exposure: This material may cause drowsiness or dizziness. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Repeated Exposure: This material may cause damage to organs through prolonged or repeated exposure. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Aspiration Hazard: This material is considered an aspiration hazard based on the kinematic viscosity of the material.

ADDITIONAL TOXICOLOGY INFORMATION:
The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. This recommendation was based on test results showing increased lung cancer in laboratory animals exposed to whole diesel exhaust.

This product contains gas oils.
CONCAWE (product dossier 95/107) has summarized current health, safety and environmental data available for a number of gas oils, typically hydrodesulfurized middle distillates, CAS 64742-80-9, straight-run middle distillates, CAS 64741-44-2, and/or light cat-cracked distillate CAS 64741-59-9.
CARCINOGENICITY: All materials tested have caused the development of skin tumors in mice, but all featured severe skin irritation and sometimes a long latency period before tumors developed. Straight-run and cracked gas oil samples were studied to determine the influence of dermal irritation on the carcinogenic activity of middle distillates. At non-irritant doses the straight-run gas oil was not carcinogenic, but at irritant doses, weak activity was demonstrated. Cracked gas oils, when diluted with mineral oil, demonstrated carcinogenic activity irrespective of the occurrence of skin irritation. Gas oils were tested on male mice to study tumor initiating/promoting activity. The results demonstrated that while a straight-run gas oil sample was neither an initiator or promotor, a blend of straight-run and FCC stock was both a tumor initiator and a promoter.
GENOTOXICITY: Hydrotreated & hydrodesulfurized gas oils range in activity from inactive to weakly positive in in-vitro bacterial mutagenicity assays. Mouse lymphoma assays on straight-run gas oils without subsequent hydrodesulphurization gave positive results in the presence of S9 metabolic activation. In-vivo bone marrow cytogenetics and sister chromatic exchange assay exhibited no activity for straight-run components with or without hydrodesulphurization. Thermally or catalytically cracked gas oils tested with in-vitro bacterial mutagenicity assays in the presence of S9 metabolic activation were shown to be mutagenic. In-vitro sister chromatic exchange assays on cracked gas oil gave equivocal results both with and without S9 metabolic activation. In-vivo bone marrow cytogenetics assay was inactive for two cracked gas oil samples. Three hydrocracked gas oils were tested with in-vitro bacterial mutagenicity assays with S9, and one of the three gave positive results. Twelve distillate fuel samples were tested with in-vitro bacterial mutagenicity assays & with S9 metabolic activation and showed negative to weakly positive results. In one series, activity was shown to be related to the PCA content of samples tested. Two in-vivo studies were also conducted. A mouse dominant lethal assay was negative for a sample of diesel fuel. In the other study, 9 samples of No 2 heating oil containing 50% cracked stocks caused a slight increase in the number of chromosomal aberrations in bone marrow cytogenetics assays. DEVELOPMENTAL TOXICITY: Diesel fuel vapor did not cause fetotoxic or teratogenic effects when pregnant rats were exposed on days 6-15 of pregnancy. Gas oils were applied to the skin of pregnant rats daily on days 0-19 of gestation. All but one (coker light gas oil) caused fetotoxicity (increased resorptions, reduced litter weight, reduced litter size) at dose levels that were also maternally toxic.

This product contains naphthalene.
GENERAL TOXICITY: Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts.
REPRODUCTIVE TOXICITY AND BIRTH DEFECTS: Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta. GENETIC TOXICITY: Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests.CARCINOGENICITY: In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30, and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY
This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. A series of studies on the acute toxicity of 4 diesel fuel samples were conducted by one laboratory using water accommodated fractions. The range of effective (EC50) or lethal concentrations (LC50) expressed as loading rates were:

48 hour(s) EC50: 20-210 mg/l (Daphnia magna)
96 hour(s) LC50: 21-210 mg/l (Salmo gairdneri)
72 hour(s) EC50: 2.6-25 mg/l (Selenastrum capricornutum)

MOBILITY
No data available.

PERSISTENCE AND DEGRADABILITY
This material is not expected to be readily biodegradable. On release to the environment the lighter components of diesel fuel will generally evaporate but depending on local environmental conditions (temperature, wind, mixing or wave action, soil type, etc.) the remainder may become dispersed in the water column or absorbed to soil or sediment. Diesel fuel would not be expected to be readily biodegradable. In a modified Strum test (OECD method 301B) approximately 40% biodegradation was recorded over 28 days. However, it has been shown that most hydrocarbon components of diesel fuel are degraded in soil in the presence of oxygen. Under anaerobic conditions, such as in anoxic sediments, rates of biodegradation are negligible.
The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE
Bioconcentration Factor: No data available.
Partition coefficient n-octanol/water (logarithmic value): No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: For packages with an Initial Boiling Point > 35 deg C and a Flash Point (PM Closed Cup) >/= 23 deg C but </= 60 deg C: UN1202, GAS OIL, 3, III; OPTIONAL DISCLOSURE: UN1202, GAS OIL, 3, III, MARINE POLLUTANT (DIESEL FUEL) Optional disclosure per 49 CFR when Flash Point (PM Closed Cup) >/= 38 deg C < 93 deg C per 49 173.150 (f): UN1202, GAS OIL, COMBUSTIBLE LIQUID, III; NON-BULK PACKAGES ARE EXEMPTED FROM THE PROVISIONS OF 49 CFR IN USA JURISDICTIONS Optional disclosure as a GHS Environmental Hazard/Marine Pollutant when Flash Point (PM Closed Cup) > 60 deg C: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(DIESEL FUEL), 9, III, MARINE POLLUTANT (DIESEL FUEL)

IMO/IMDG Shipping Description: For packages with an Initial Boiling Point > 35 deg C and a Flash Point (PM Closed Cup) >/= 23 deg C, </= 60 deg C: UN1202, GAS OIL, 3, III, FLASH POINT SEE SECTION 5 OR 9, MARINE POLLUTANT (DIESEL FUEL); OPTIONAL DISCLOSURE: UN1268, PETROLEUM DISTILLATES, N.O.S. (DIESEL FUEL), 3, III, FLASH POINT SEE SECTION 5 OR 9, MARINE POLLUTANT (DIESEL FUEL) For packages with a Flash Point (PM Closed Cup) > 60 deg C: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (DIESEL FUEL), 9, III, MARINE POLLUTANT (DIESEL FUEL)

ICAO/IATA Shipping Description: For packages with an Initial Boiling Point > 35 deg C and a Flash Point (PM Closed Cup) >/= 23 deg C, </= 60 deg C: UN1202, GAS OIL, 3, III For packages with a Flash Point (PM Closed Cup) > 60 deg C: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (DIESEL FUEL), 9, III, MARINE POLLUTANT (DIESEL FUEL)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:

Acute toxicity (any route of exposure)
Aspiration Hazard
Carcinogenicity
Flammable (gases, aerosols, liquids, or solids)
Skin Corrosion or Irritation
Specific target organ toxicity (single or repeated exposure)

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	05=MA RTK
01-2A=IARC Group 2A	06=NJ RTK
01-2B=IARC Group 2B	07=PA RTK
02=NTP Carcinogen	08-1=TSCA 5(e)
03=EPCRA 313	08-2=TSCA 12(b)
04=CA Proposition 65	

The following components of this material are found on the regulatory lists indicated.

Naphthalene	01-2B, 02, 03, 04, 05, 06, 07	
Total PAC	03	4.81E-05 %weight

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AIIC (Australia), DSL (Canada), IECSC (China), NZIoC (New Zealand), TCSI (Taiwan), TSCA (United States).

One or more components does not comply with the following chemical inventory requirements: EINECS (European Union), ENCS (Japan), KECI (Korea), PICCS (Philippines).

NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: DIESEL FUEL

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 2 Flammability: 2 Reactivity: 0

HMIS RATINGS: Health: 2* Flammability: 2 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the American Coatings Association (ACA) (for HMIS ratings).

REVISION STATEMENT:
SECTION 01 - Health Emergency information was modified.
SECTION 15 - Regulatory Information information was added.
SECTION 15 - Regulatory Information information was modified.

Revision Date: September 17, 2025

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	PNOS - Particles Not Otherwise Specified

Prepared according to the 29 CFR 1910.1200 (2024) by Chevron.

The information in this SDS is based on the knowledge, information, and belief of Chevron and its affiliates as of the publication date. It is not a quality specification, and no warranty, express or implied, is given. We assume no responsibility or liability for the results of using this material. The information presented here pertains only to the listed product. Since conditions of use are beyond our control, it is the user's responsibility to determine the conditions for safe use of this product and assess its suitability for their application. Users should seek additional guidance if necessary.

Safety Data Sheet

SECTION 1 CHEMICAL IDENTIFIER AND COMPANY IDENTIFICATION

Chevron and Texaco Unleaded Gasolines (All Grades)

Recommended Use of the Chemical and Restrictions on Use: Fuel
Synonyms: Automotive; Calco Mid-Grade Unleaded Gasoline; Calco Premium Gasoline; Calco Regular Unleaded Gasoline; CHEVRON and TEXACO MID-GRADE UNLEADED GASOLINES; CHEVRON and TEXACO PREMIUM UNLEADED GASOLINES; CHEVRON and TEXACO REGULAR UNLEADED GASOLINES; Chevron Mid-Grade Unleaded Gasoline; Chevron Plus Unleaded Gasoline; Chevron Premium Unleaded Gasoline; Chevron Regular Unleaded Gasoline; Chevron Supreme Plus Unleaded Gasoline; Chevron Supreme Unleaded Gasoline; Chevron UL/CQ Gasoline; GASOLINE (GENERIC); Gasolines; Texaco Power Plus Gasoline; Texaco Power Premium Unleaded Gasoline; Texaco Unleaded Gasoline; UNLEADED GASOLINE FOR EXPORT
Company Identification
Chevron Products Company
5001 Executive Parkway, Suite 200
San Ramon, CA 94583
United States of America

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887
Health Emergency
Chevron Emergency & Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623
Product Information
Product Information: (800) 582-3835
SDS Requests: lubemsds@chevron.com

SPECIAL NOTES: This SDS applies to: all motor gasoline.

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION:
- Flammable liquid: Category 1.
- Aspiration toxicant: Category 1.
- Carcinogen: Category 1B.
- Eye irritation: Category 2A.
- Germ Cell Mutagen: Category 1B.
- Reproductive toxicant (developmental): Category 2.
- Skin irritation: Category 2.
- Target organ toxicant (central nervous system): Category 3.
- Target organ toxicant (repeated exposure): Category 2.
- Acute aquatic toxicant: Category 2.
- Chronic aquatic toxicant: Category 2.

Signal Word: Danger
Physical Hazards:
- Extremely flammable liquid and vapour (H224).

Health Hazards:
- May be fatal if swallowed and enters airways (H304).
- Causes skin irritation (H315).
- Causes serious eye irritation (H319).
- May cause drowsiness or dizziness (H336).
- May cause genetic defects (H340).
- May cause cancer (H350).
- Suspected of damaging the unborn child (H361D).
- May cause damage to organs (Blood/Blood Forming Organs) through prolonged or repeated exposure (H373).

Environmental Hazards:
- Toxic to aquatic life with long lasting effects (H411).

PRECAUTIONARY STATEMENTS:
General:
- Keep out of reach of children (P102).
- Read label before use (P103).

Prevention:
- Obtain special instructions before use (P201).
- Do not handle until all safety precautions have been read and understood (P202).
- Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking (P210).
- Keep container tightly closed (P233).
- Keep cool (P235).
- Ground and bond container and receiving equipment (P240).
- Use explosion-proof electrical/ventilating/lighting/equipment (P241).
- Use non-sparking tools (P242).
- Take action to prevent static discharge (P243).
- Do not breathe dust/fume/gas/mist/vapours/spray (P260).
- Wash thoroughly after handling (P264).
- Use only outdoors or in a well-ventilated area (P271).
- Avoid release to the environment (P273).
- Wear protective gloves/protective clothing/eye protection/face protection (P280).

Response:
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician (P301+P310).
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower (P303+P361+P353).
- IF INHALED: Remove person to fresh air and keep comfortable for breathing (P304+P340).
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing (P305+P351+P338).
- IF exposed or concerned: Get medical advice/attention (P308+P313).
- Specific treatment (see Notes to Physician on this label) (P321).
- Do NOT induce vomiting (P331).
- If skin irritation occurs: Get medical advice/attention (P332+P313).

- If eye irritation persists: Get medical advice/attention (P337+P313).
- Wash contaminated clothing before reuse (P363).
- In case of fire: Use media specified in the SDS to extinguish (P370+P378).
- Collect spillage (P391).

Storage:

- Store in a well-ventilated place. Keep container tightly closed (P403+P233).
- Store locked up (P405).

Disposal:

- Dispose of contents/container in accordance with applicable local/regional/national/international regulations (P501).

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

This material is a mixture.

COMPONENTS	CAS NUMBER	AMOUNT
Gasoline	86290-81-5	100 %volume
Toluene	108-88-3	1 - 35 %volume
Pentane, 2,2,4-trimethyl-	540-84-1	10 - 15 %volume
Xylene	1330-20-7	1 - 15 %volume
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5-isomer)	25551-13-7	5 - 10 %volume
Pentane isomers (pentanes)	Mixture	1 - 13 %volume
Butane	106-97-8	1 - 12 %volume
Ethanol	64-17-5	0 - 10 %volume
Hexane	110-54-3	1 - 5 %volume
Benzene	71-43-2	0.1 - 5 %volume
Heptane	142-82-5	1 - 4 %volume
Cyclohexane	110-82-7	1 - 3 %volume
Ethylbenzene	100-41-4	0.1 - 3 %volume
Methylcyclohexane	108-87-2	1 - 2 %volume
Naphthalene	91-20-3	0.1 - 2 %volume

Motor gasoline is considered a mixture by EPA under the Toxic Substances Control Act (TSCA). The refinery streams used to blend motor gasoline are all on the TSCA Chemical Substances Inventory. The appropriate CAS number for refinery blended motor gasoline is 86290-81-5. The product specifications of motor gasoline sold in your area will depend on applicable Federal and State regulations.

SECTION 4 FIRST AID MEASURES

Eye: Flush eyes with water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get immediate medical attention.
Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.
Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Dry Chemical, CO2, Aqueous Film Forming Foam (AFFF) or alcohol resistant foam.
Unusual Fire Hazards: See Section 7 for proper handling and storage.
UNSUITABLE EXTINGUISHING MEDIA: No data available

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures:
Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.
Environmental Precautions:
Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater.
Methods and Material For Containment and Cleaning Up:
Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting:
Report spills to local authorities as appropriate or required.

SECTION 7 HANDLING AND STORAGE PRECAUTIONS

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Precautionary Measures: This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Never siphon gasoline by mouth.
Do not store in open or unlabeled containers. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. Use only as a motor fuel. Do not use for cleaning, pressure appliance fuel, or any other such use. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.
Static Hazard: Improper filling of portable gasoline containers creates danger of fire. Only dispense gasoline into approved and properly labeled gasoline containers. Always place portable containers on the ground. Be sure pump nozzle is in contact with the container while filling. Do not use a nozzle's lock-open device. Do not fill portable containers that are inside a vehicle or truck/trailer bed.

Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty

container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the workplace when designing engineering controls and selecting personal protective equipment (PPE). If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, refer to PPE information below.

Factors that affect PPE include, but are not limited to: properties of the chemical, other chemicals which may contact the same PPE, physical requirements (fit & sizing, cut/puncture protection, dexterity, thermal protection, etc.), and potential allergic reactions to the PPE material. It is the responsibility of the user to read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

ENGINEERING CONTROLS:
Use general ventilation, local exhaust ventilation, or a combination of both.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.
Skin Protection: Wear chemical personal protective equipment (PPE) to prevent skin contact. Selection of chemical protective clothing should be performed by an Occupational Hygienist or Safety Professional and be based upon applicable standards (ASTM F739 or EN 374). Using chemical PPE depends upon operations conducted and may include chemical gloves, boots, chemical apron, chemical suit, and complete facial protection. Refer to PPE manufacturers to obtain breakthrough time information to determine how long PPE can be used before it needs to be replaced. Unless specific glove manufacturer data indicates otherwise, the below table is based upon available industry data to assist in the glove selection process and is intended to be used as reference only.

Chemical Glove Material	Thickness (mm)	Typical Breakthrough Time (minutes)
Butyl	0.7	7
Neoprene	0.61	7
Nitrile	0.8	60
Nitrile	0.23	2
Polyvinyl Chloride (PVC)	1.1	2
Viton Butyl	0.3	120

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors. When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon

monoxide. If not, wear an approved positive-pressure air-supplying respirator.
Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Country/ Agency	Form	TWA	STEL	Ceiling	Notation
Gasoline	ACGIH	Vapor	300 ppm	500 ppm	--	A3
Gasoline	ACGIH	--	300 ppm	500 ppm	--	--
Toluene	ACGIH	--	20 ppm	--	--	--
Toluene	JSOH	--	188 mg/m3	--	--	Skin
Pentane, 2,2,4-trimethyl-	ACGIH	--	300 ppm	--	--	--
Pentane, 2,2,4-trimethyl-	JSOH	--	1400 mg/m3	--	--	--
Xylene	ACGIH	--	20 ppm	--	--	--
Xylene	JSOH	--	217 mg/m3	--	--	--
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5- isomer)	ACGIH	--	10 ppm	--	--	--
Butane	ACGIH	--	--	1000 ppm	--	--
Butane	JSOH	--	1200 mg/m3	--	--	--
Ethanol	ACGIH	--	1000 ppm	1000 ppm	--	A4
Hexane	ACGIH	--	50 ppm	--	--	Skin
Hexane	JSOH	--	140 mg/m3	--	--	Skin
Benzene	ACGIH	Vapor	0.50 ppm	2.50 ppm	--	--
Benzene	ACGIH	--	0.05 ppm	2.50 ppm	--	Skin
Benzene	CVX	Vapor	0.50 ppm	2.50 ppm	--	--
Heptane	ACGIH	--	400 ppm	500 ppm	--	--
Heptane	JSOH	--	820 mg/m3	--	--	--
Cyclohexane	ACGIH	--	100 ppm	--	--	--
Cyclohexane	JSOH	--	520 mg/m3	--	--	--
Ethylbenzene	ACGIH	Vapor	100 ppm	--	--	--
Ethylbenzene	ACGIH	--	20 ppm	--	--	--
Ethylbenzene	JSOH	--	87 mg/m3	--	--	Skin
Methylcyclohexane	ACGIH	--	400 ppm	--	--	--
Methylcyclohexane	JSOH	--	1600 mg/m3	--	--	--
Naphthalene	ACGIH	Vapor	10 ppm	15 ppm	--	A4 Skin
Naphthalene	ACGIH	--	10 ppm	--	--	Skin

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Colorless to yellow
Physical State: Liquid
Odor: Petroleum odor
Odor Threshold: No data available
pH: Not Applicable
Vapor Pressure: 5 psi - 15.50 psi (Typical) @ 37.8 °C (100 °F)
Relative Vapor Density: 3 - 4 (Typical)
Particle Characteristics: No data available
Boiling Point: 27.2°C (81°F) - 52.8°C (127°F) (Typical)

Solubility: Negligible
Freezing Point: Not Applicable
Melting Point: Not Applicable
Specific Gravity: 0.70 g/ml - 0.80 g/ml @ 15.6°C (60.1°F) (Typical)
Density: No data available
Viscosity: <1 SUS @ 37.8°C (100°F)
Evaporation Rate: No data available
n-Octanol/Water Partition Coefficient: 2 - 7
Combustion Characteristics (Solids/Gases): No data available
Decomposition Temperature: No data available
Boiling Range: No data available

FLAMMABLE PROPERTIES:
Flashpoint: (Tagliabue Closed Cup ASTM D56) < -45 °C (< -49 °F)

Autoignition: > 280 °C (> 536 °F)
Flammability (solid, gas): Not Applicable
Flammability (Explosive) Limits (% by volume in air): Lower: 1.4 Upper: 7.6

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: Not applicable
Hazardous Decomposition Products: None known (None expected)
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 HAZARD INFORMATION

IMMEDIATE HEALTH EFFECTS
Eye: Contact with the eyes causes severe irritation. Symptoms may include pain, tearing, reddening, swelling and impaired vision.
Eye Irritation: This material causes serious eye irritation. The product has not been tested. The statement is based on evaluation of data for product components.

Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response.
Acute Dermal Toxicity: LD50: >3.75 g/kg (rabbit).
Skin Irritation: For a 4-hour exposure, the Primary Irritation Index (PII) in rabbits is: 4.8/8.0.
Skin Sensitization: This material did not cause skin sensitization reactions in a Buehler guinea pig test.

Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.
Acute Oral Toxicity: LD50: >5 ml/kg (rat).

Inhalation: Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of

consciousness, coma or death.
Acute Inhalation Toxicity: 4 hour(s) LD50: >20000 mg/m3 (rat).
Acute Toxicity Estimate: Not Determined

DELAYED OR OTHER HEALTH EFFECTS:
Reproductive Toxicity: Contains material that may cause harm to the unborn child if inhaled above the recommended exposure limit. This material is suspected of damaging the unborn child. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.
Carcinogenicity: Prolonged or repeated exposure to this material may cause cancer. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).
Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).
This material may cause cancer. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.
Germ Cell Mutagenicity: This material may cause genetic defects. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Target Organs: Contains material that may cause damage to the following organ(s) following repeated inhalation at concentrations above the recommended exposure limit: Blood/Blood Forming Organs
Specific Target Organ Toxicity - Single Exposure: This material may cause drowsiness or dizziness. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.
Specific Target Organ Toxicity - Repeated Exposure: This material may cause damage to organs through prolonged or repeated exposure. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.
Aspiration Hazard: This material is considered an aspiration hazard based on the kinematic viscosity of the material.

ADDITIONAL TOXICOLOGY INFORMATION:
This product contains naphthalene.
GENERAL TOXICITY: Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts.
REPRODUCTIVE TOXICITY AND BIRTH DEFECTS: Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta. GENETIC TOXICITY: Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests.CARCINOGENICITY: In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30,

and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

This product contains cyclohexane.
Cyclohexane primarily affects the central nervous systems of laboratory animals and humans. Acute or prolonged inhalation of cyclohexane at levels below the recommended exposure limits does not result in toxic effects while acute exposures to levels above these recommended limits can cause reversible central nervous system depression. Prolonged exposures of laboratory animals to high levels (up to low thousands of parts per million) have also caused reversible effects which included hyperactivity, diminished response to stimuli, and adaptive liver changes while very high levels (high thousands of parts per million) were fatal. No developmental effects were seen in rats or rabbits following exposures of up to 7000 ppm cyclohexane. No reproductive effects occurred in rats, although postnatal pup growth was reduced at 7000 ppm in a similar manner as observed in the parental animals. Cyclohexane has not been shown to be mutagenic in several in vitro and in vivo assays and has not produced tumors in several dermal application long-term bioassays. Based on these results and the lack of any mutagenic or genotoxic metabolites, cyclohexane is not expected to be mutagenic or genotoxic. Following dermal exposure, cyclohexane is rapidly absorbed, metabolized,and excreted.

This product contains butane.
An atmospheric concentration of 100,000 ppm (10%) butane is not noticeably irritating to the eyes, nose or respiratory tract, but will produce slight dizziness in a few minutes of exposure. No chronic systemic effect has been reported from occupational exposure.

This product contains benzene.
GENETIC TOXICITY/CANCER: Repeated or prolonged breathing of benzene vapor has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal. In some individuals, benzene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation.
REPRODUCTIVE/DEVELOPMENTAL TOXICITY: No birth defects have been shown to occur in pregnant laboratory animals exposed to doses not toxic to the mother. However, some evidence of fetal toxicity such as delayed physical development has been seen at such levels. The available information on the effects of benzene on human pregnancies is inadequate but it has been established that benzene can cross the human placenta.
OCCUPATIONAL: The OSHA Benzene Standard (29 CFR 1910.1028) contains detailed requirements for training, exposure monitoring, respiratory protection and medical surveillance triggered by the exposure level. Refer to the OSHA Standard before using this product.

This product contains n-hexane.
TARGET ORGAN TOXICITY: Prolonged or repeated ingestion, skin contact or breathing of vapors of n-hexane has been shown to cause peripheral neuropathy. Recovery ranges from no recovery to complete recovery depending upon the severity of the nerve damage. Exposure to 1000 ppm n-hexane for 18 hr/day for 61 days has been shown to cause testicular damage in rats. However, when rats were exposed to higher concentrations for shorter daily periods (10,000 ppm for 6 h/day, 5 days/wk for 13 weeks), no testicular lesions were seen.
CARCINOGENICITY: Chronic exposure to commercial hexane (52% n-hexane) at a concentration of 9000ppm was not carcinogenic to rats or to male mice, but did result in an increased incidence of liver tumors in female mice. No carcinogenic effects were observed in female mice exposed to 900 or 3000 ppm hexane or in male mice. The relevance for humans of these hexane-induced mouse liver tumors is questionable.
GENETIC TOXICITY: n-Hexane caused chromosome aberrations in bone marrow of rats, but was

negative in the AMES and mouse lymphoma tests.

This product contains ethanol (ethyl alcohol).
Chronic ingestion of ethanol can damage the liver, nervous system and heart. Chronic heavy consumption of alcoholic beverages has been associated with an increased risk of cancer. Ingestion of ethanol during pregnancy can cause human birth defects such as fetal alcohol syndrome.

Gasolines are highly volatile and can produce significant concentrations of vapor at ambient temperatures. Gasoline vapor is heavier than air and at high concentrations may accumulate in confined spaces to present both safety and health hazards. When vapor exposures are low, or short duration and infrequent, such as during refueling and tanker loading/unloading, neither total hydrocarbon nor components such as benzene are likely to result in any adverse health effects. In situations such as accidents or spills where exposure to gasoline vapor is potentially high, attention should be paid to potential toxic effects of specific components. Information about specific components in gasoline can be found in Sections 2/3, 8 and 15 of this SDS. More detailed information on the health hazards of specific gasoline components can be obtained calling the Chevron Emergency Information Center (see Section 1 for phone numbers).

Pathological misuse of solvents and gasoline, involving repeated and prolonged exposure to high concentrations of vapor is a significant exposure on which there are many reports in the medical literature. As with other solvents, persistent abuse involving repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments.

Lifetime inhalation of wholly vaporized unleaded gasoline at 2056 ppm has caused increased liver tumors in female mice and kidney cancer in male rats. In their 1988 review of carcinogenic risk from gasoline, The International Agency for Research on Cancer (IARC) noted that, because published epidemiology studies did not include any exposure data, only occupations where gasoline exposure may have occurred were reviewed. These included gasoline service station attendants and automobile mechanics. IARC also noted that there was no opportunity to separate effects of combustion products from those of gasoline itself. Although IARC allocated gasoline a final overall classification of Group 2B, i.e. possibly carcinogenic to humans, this was based on limited evidence in experimental animals plus supporting evidence including the presence in gasoline of benzene. The actual evidence for carcinogenicity in humans was considered inadequate.

MUTAGENICITY: Gasoline was not mutagenic, with or without activation, in the Ames assay (Salmonella typhimurium), Saccharamyces cerevisesae, or mouse lymphoma assays. In addition, point mutations were not induced in human lymphocytes. Gasoline was not mutagenic when tested in the mouse dominant lethal assay. Administration of gasoline to rats did not cause chomosomal aberrations in their bone marrow cells. EPIDEMIOLOGY: To explore the health effects of workers potentially exposed to gasoline vapors in the marketing and distribution sectors of the petroleum industry, the American Petroleum Institute sponsored a cohort mortality study (Publication 4555), a nested case-control study (Publication 4551), and an exposure assessment study (Publication 4552). Histories of exposure to gasoline were reconstructed for cohort of more than 18,000 employees from four companies for the time period between 1946 and 1985. The results of the cohort mortality study indicated that there was no increased mortality from either kidney cancer or leukemia among marketing and marine distribution employees who were exposed to gasoline in the petroleum industry, when compared to the general population. More importantly, based on internal comparisons, there was no association between mortality from kidney cancer or leukemia and various indices of gasoline exposure. In particular, neither duration of employment, duration of exposure, age at first exposure, year of first exposure, job category, cumulative exposure, frequency of peak exposure, nor average intensity of exposure had any effect on kidney cancer or leukemia mortality. The results of the nested case-control study confirmed the findings of the original cohort study. That is, exposure to gasoline at the levels experienced by this cohort of distribution workers is not a significant risk factor for leukemia (all cell types), acute myeloid leukemia, kidney cancer or multiple myeloma.

This product contains ethylbenzene.
BIRTH DEFECTS AND REPRODUCTION: Ethylbenzene is not expected to cause birth defects or other developmental effects based on well-conducted studies in rabbits and rats sponsored by NIOSH. Other studies in rats and mice which reported urinary tract malformations have many deficiencies and have limited usefulness in evaluating human risk. Reproductive effects are not expected based on a NIOSH study of fertility, and lack of effects observed for sperm counts and motility, estrous cycle and pathology of reproductive organs following repeated exposures. HEARING: Statistically significant losses in outer hair cells (OHCs) were observed in rats exposed to >=200 ppm ethylbenzene, 6 hours/day, 6 days/week for 13 weeks, after an 8-week recovery period. Following longer exposure, inner hair cells losses were also observed in rats exposed to >= 600 ppm ethylbenzene, but only occasionally in rats exposed to 400 ppm. The Lowest Observed Adverse Effect Level in rats (LOAEL) was 200 ppm for losses of OHCs. Guinea pigs exposed to ethylbenzene at 2,500 ppm, 6 hours/day for 5 days did not show auditory deficits or losses in OHCs. The concentration of ethylbenzene used in the JP-8 study was approximately 10 ppm. GENETIC TOXICITY: Ethylbenzene tested negative in the bacterial mutation test, Chinese Hamster Ovary (CHO) cell in vitro assay, sister chromatid exchange assay and an unscheduled DNA synthesis assay. Conflicting results have been reported for the mouse lymphoma cell assay. Increased micronuclei were reported in an in vitro Syrian hamster embryo cell assay; however, two in vivo micronuclei studies in mice were negative. In Syrian hamster embryo cells in vitro, cell transformation was observed at 7 days of incubation but not at 24 hours. Based on these results, ethylbenzene is not expected to be mutagenic or clastogenic. CARCINOGENICITY: In studies conducted by the National Toxicology Program, rats and mice were exposed to ethylbenzene at 25, 250 and 750 ppm for six hours per day, five days per week for 103 weeks. In rats exposed to 750 ppm, the incidence of kidney tubule hyperplasia and tumors was increased. Testicular tumors develop spontaneously in nearly all rats if allowed to complete their natural life span; in this study, the development of these tumors appeared to be enhanced in male rats exposed to 750 ppm. In mice, the incidences of lung tumors in males and liver tumors in females exposed to 750 ppm were increased as compared to control mice but were within the range of incidences observed historically in control mice. Other liver effects were observed in male mice exposed to 250 and 750 ppm. The incidences of hyperplasia were increased in the pituitary gland in female mice at 250 and 750 ppm and in the thyroid in male and female mice at 750 ppm.

This product contains toluene.
GENERAL TOXICITY: The primary effects of exposure to toluene in animals and humans are on the central nervous system. Solvent abusers, who typically inhale high concentrations (thousands of ppm) for brief periods of time, in addition to experiencing respiratory tract irritation, often suffer permanent central nervous system effects that include tremors, staggered gait, impaired speech, hearing and vision loss, and changes in brain tissue. Death in some solvent abusers has been attributed to cardiac arrhythmias, which appear to be have been triggered by epinephrine acting on solvent sensitized cardiac tissue. Although liver and kidney effects have been seen in some solvent abusers, results of animal testing with toluene do not support these as primary target organs.
HEARING: Humans who were occupationally exposed to concentrations of toluene as low as 100 ppm for long periods of time have experienced hearing deficits. Hearing loss, as demonstrated using behavioral and electrophysiological testing as well as by observation of structural damage to cochlear hair cells, occurred in experimental animals exposed to toluene. It also appears that toluene exposure and noise may interact to produce hearing deficits.
COLOR VISION: In a single study of workers exposed to toluene at levels under 50 ppm, small decreases in the ability to discriminate colors in the blue-yellow range have been reported for female workers. This effect, which should be investigated further, is very subtle and would not likely have been noticed by the people tested.
REPRODUCTIVE/DEVELOPMENTAL TOXICITY: Toluene may also cause mental and/or growth retardation in the children of female solvent abusers who directly inhale toluene (usually at thousands of ppm) when they are pregnant. Toluene caused growth retardation in rats and rabbits when administered at doses that were toxic to the mothers. In rats, concentrations of up to 5000 ppm did not cause birth defects. No effects were observed in the offspring at doses that did not intoxicate the pregnant animals. The exposure level at which no effects were seen (No Observed Effect Level, NOEL) is 750 ppm in the

rat and 500 ppm in the rabbit.

This product contains xylene.
ACUTE TOXICITY: The primary effects of exposure to xylene in animals and humans are on the central nervous system. In addition,in some individuals, xylene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation. DEVELOPMENTAL TOXICITY: Xylene has been reported to cause developmental toxicity in rats and mice exposed by inhalation during pregnancy. The effects noted consisted of delayed development and minor skeletal variations. In addition, when pregnant mice were exposed by ingestion to a level that killed nearly one-third of the test group, lethality (resorptions) and malformations (primarily cleft palate) occurred. Since xylene can cross the placenta, it may be appropriate to prevent exposure during pregnancy. GENETIC TOXICITY/CARCINOGENICITY: Xylene was not genotoxic in several mutagenicity testing assays including the Ames test. In a cancer study sponsored by the National Toxicology Program (NTP),technical grade xylene gave no evidence of carcinogenicity in rats or mice dosed daily for two years. HEARING: Mixed xylenes have been shown to cause measurable hearing loss in rats exposed to 800 ppm in the air for 14 hours per day for six weeks. Exposure to 1450 ppm xylene for 8 hours caused hearing loss while exposure to 1700 ppm for 4 hours did not. Although no information is available for lower concentrations, other chemicals that cause hearing loss in rats at relatively high concentrations do not cause hearing loss in rats at low concentrations. Worker exposure to xylenes at the permissible exposure limit (100 ppm, time-weighted average) is not expected to cause hearing loss.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY
Gasoline studies have been conducted in the laboratory under a variety of test conditions with a range of fish and invertebrate species. An even more extensive database is available on the aquatic toxicity of individual aromatic constituents. The majority of published studies do not identify the type of gasoline evaluated, or even provide distinguishing characteristics such as aromatic content or presence of lead alkyls. As a result, comparison of results among studies using open and closed vessels, different ages and species of test animals and different gasoline types, is difficult.

The bulk of the available literature on gasoline relates to the environmental impact of monoaromatic (BTEX) and diaromatic (naphthalene, methylnaphthalenes) constituents. In general, non-oxygenated gasoline exhibits some short-term toxicity to freshwater and marine organisms, especially under closed vessel or flow-through exposure conditions in the laboratory. The components which are the most prominent in the water soluble fraction and cause aquatic toxicity, are also highly volatile and can be readily biodegraded by microorganisms.

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

48 hour(s) LC50: 3.0 mg/l (Daphnia magna)
96 hour(s) LC50: 1.8 mg/l (Mysidopsis bahia)
96 hour(s) LC50: 8.3 mg/l (Cyprinodon variegatus)
96 hour(s) LC50: 2.7 mg/l (Oncorhynchus mykiss)

MOBILITY IN SOIL
No data available.

PERSISTENCE AND DEGRADABILITY
This material is expected to be readily biodegradable. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions (temperature, wind, mixing or wave action, soil type, etc), photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the

weathering of spilled gasoline.

The aqueous solubility of non-oxygenated unleaded gasoline, based on analysis of benzene, toluene, ethylbenzene+xylenes and naphthalene, is reported to be 112 mg/l. Solubility data on individual gasoline constituents also available.

The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE
Bioconcentration Factor: No data available.
Octanol/Water Partition Coefficient: 2 - 7

ADVERSE EFFECTS FOR OZONE LAYER:
No data available.

SECTION 13 NOTES ON DISPOSAL

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

UN Shipping Description: UN1203, GASOLINE, 3, II

IMO/IMDG Shipping Description: UN1203, GASOLINE, 3, II, FLASH POINT SEE SECTION 9, MARINE POLLUTANT (GASOLINE)

ICAO/IATA Shipping Description: UN1203, GASOLINE, 3, II

Domestic Regulatory Information
Land Regulatory Information: subject to the provisions of the Fire Service Act
Maritime Regulatory Information: subject to the provisions of the Ship Safety Act
Aviation Regulatory Information: subject to the provisions of the Civil Aeronautics Act

SECTION 15 REGULATORY INFORMATION

REGULATORY LISTS SEARCHED:
01-1=IARC Group 1
01-2A=IARC Group 2A
01-2B=IARC Group 2B
02-1=PRTR (Pollutant Release and Transfer Register) Class 1
02-2=PRTR (Pollutant Release and Transfer Register) Class 2
03-1=Industrial Safety and Health Law (Harmful Substances, etc., Prohibited for Manufacture)
03-2=Industrial Safety and Health Law (Harmful Substances Subject to Obtaining Permission for Manufacturing)
03-3=Industrial Safety and Health Law (Harmful Substances Whose Names, etc., are to Be Indicated)
03-4=Industrial Safety and Health Law (Notifiable Substances)
04-1=Poisonous and Deleterious Substances Control Law (Poisonous substance)
04-2=Poisonous and Deleterious Substances Control Law (Deleterious substance)

The following components of this material are found on the regulatory lists indicated.

Gasoline	01-2B
Toluene	02-1, 03-3, 03-4, 04-2
Pentane, 2,2,4-trimethyl-	02-2, 03-3
Xylene	02-1, 03-3, 03-4, 04-2
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5-isomer)	02-1, 03-3, 03-4
Butane	03-3, 03-4
Ethanol	01-1, 03-3, 03-4
Hexane	02-1, 03-3, 03-4
Benzene	01-1, 02-1, 03-1, 03-3, 03-4
Heptane	02-1, 03-3, 03-4
Cyclohexane	02-1, 03-3, 03-4
Ethylbenzene	01-2B, 02-1, 03-3, 03-4
Methylcyclohexane	03-3, 03-4
Naphthalene	01-1, 01-2B, 02-1, 03-3, 03-4

JAPANESE FIRE LAW: Group 4, Class 1 Petroleum

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AIIC (Australia), DSL (Canada), EINECS (European Union), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan).

SECTION 16 OTHER INFORMATION

REVISION STATEMENT: SECTION 08 - Engineering Control Measures information was modified.
SECTION 08 - General Considerations information was modified.
SECTION 08 - Occupational Exposure Limit Table information was modified.
SECTION 08 - Personal Protective Equipment List information was deleted.
SECTION 08 - Personal Protective Equipment information was added.
SECTION 08 - Skin Protection information was modified.
SECTION 15 - Regulatory Information information was modified.

Revision Date: 2023/03/01

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
CVX - Chevron	NFPA - National Fire Protection Association (USA)
	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	

Prepared according to JIS Z 7253:2019 / JIS Z 7252:2019 by Chevron Technical Center, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is

furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name	**Castrol Transmax Manual Long Life 75W-85**
Product code	469703-DE01
SDS #	469703
Product type	Liquid.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/ mixture	Manual transmission fluid For specific application advice see appropriate Technical Data Sheet or consult our company representative.

1.3 Details of the supplier of the safety data sheet

Supplier	Castrol Holdings Europe B.V., d'Arcyweg 76, 3198NA Europoort Rotterdam Castrol France SAS Campus Saint Christophe, Bâtiment Galilée 3, 10 Avenue de l'Entreprise, Cergy-Pontoise, Cedex, 95863 +33 (0) 805 638 301
E-mail address	MSDSadvice@bp.com

1.4 Emergency telephone number

EMERGENCY TELEPHONE NUMBER	Tél 01 45 42 59 59 : ORFILA Tél 01 40 05 48 48 - Centre Anti-Poisons de Paris, Hôpital Fernand Widal - 200, Rue de Faubourg Saint-Denis - 75475 Paris Cedex 10 Tél 04 72 11 69 11 - Centre Antipoison et de Toxicovigilance de LYON, Bâtiment A, 4ème étage, 162, avenue Lacassagne, 69424 Lyon Cedex 03 Tél 04 91 75 25 25 - Centre Anti-Poisons de Marseille, Hôpital Salvator, 249, Boulevard Sainte-Marguerite - 13274 Marseille Cedex 9 Tél: 01 30 30 49 99 - Permanence BP France 24/24 Carechem: +44 (0) 1235 239 670 (24/7)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Not classified.

See sections 11 and 12 for more detailed information on health effects and symptoms and environmental hazards.

2.2 Label elements

Signal word	No signal word.
Hazard statements	No known significant effects or critical hazards.
Precautionary statements	
Prevention	Not applicable.
Response	Not applicable.
Storage	Not applicable.
Disposal	Not applicable.
Hazardous ingredients	Not applicable.
Supplemental label elements	Safety data sheet available on request.

SECTION 2: Hazards identification

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	Not applicable.

Special packaging requirements

Containers to be fitted with child-resistant fastenings	Not applicable.
Tactile warning of danger	Not applicable.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII	This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
Product meets the criteria for endocrine disrupting properties according to Regulation (EC) No. 1907/2006.	This substance/mixture does not contain any components that are considered to have endocrine disrupting properties.
Other hazards which do not result in classification	Defatting to the skin.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Product definition Mixture

Synthetic base stock. Proprietary performance additives.

Product/ingredient name	Identifiers	%	Classification	Specific Conc. Limits, M-factors and ATEs	Type
1-Decene, homopolymer, hydrogenated	REACH #: 01-2119486452-34 EC: 500-183-1 CAS: 68037-01-4	≥10 - ≤25	Asp. Tox. 1, H304	-	[1]
Dec-1-ene, trimers, hydrogenated	REACH #: 01-2119486452-34 EC: 500-393-3 CAS: 157707-86-3	≥10 - ≤25	Asp. Tox. 1, H304	-	[1]
Dec-1-ene, trimers, hydrogenated	REACH #: 01-2119493949-12 EC: 500-393-3 CAS: 157707-86-3	≥10 - ≤25	Asp. Tox. 1, H304	-	[1]
Dec-1-ene, dimers, hydrogenated	REACH #: 01-2119493069-28 EC: 500-228-5 CAS: 68649-11-6	≥10 - ≤25	Acute Tox. 4, H332 Asp. Tox. 1, H304	ATE [Inhalation (dusts and mists)] = 1.5 mg/l	[1]
Distillates (petroleum), solvent-dewaxed heavy paraffinic	REACH #: 01-2119471299-27 EC: 265-169-7 CAS: 64742-65-0 Index: 649-474-00-6	≤3	Asp. Tox. 1, H304	-	[1]
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	REACH #: 01-2119491299-23 EC: 270-128-1 CAS: 68411-46-1	≤1	Repr. 2, H361f	-	[1]

See Section 16 for the full text of the H statements declared above.

Type

[1] Substance classified with a health or environmental hazard

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.

Skin contact Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if irritation develops.

Inhalation If inhaled, remove to fresh air. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. Get medical attention if symptoms occur.

Ingestion Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Potential acute health effects

Inhalation Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion No known significant effects or critical hazards.

Skin contact Defatting to the skin. May cause skin dryness and irritation.

Eye contact See: Section 11. Toxicological Information - Potential acute health effects: Eye contact

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Inhalation Overexposure to the inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.

Ingestion Ingestion of large quantities may cause nausea and diarrhoea.

Skin contact Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.

Eye contact Potential risk of transient stinging or redness if accidental eye contact occurs.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treatment should in general be symptomatic and directed to relieving any effects.
In case of inhalation of decomposition products in a fire, symptoms may be delayed.
The exposed person may need to be kept under medical surveillance for 48 hours.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media In case of fire, use foam, dry chemical or carbon dioxide extinguisher or spray.

Unsuitable extinguishing media Do not use water jet. The use of a water jet may cause the fire to spread by splashing the burning product.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous combustion products Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)
nitrogen oxides (NO, NO_2 etc.)

5.3 Advice for firefighters

Special precautions for fire-fighters No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.

Special protective equipment for fire-fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Floors may be slippery; use care to avoid falling. Put on appropriate personal protective equipment.

For emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

Small spill

Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections

See Section 1 for emergency contact information.
See Section 5 for firefighting measures.
See Section 8 for information on appropriate personal protective equipment.
See Section 12 for environmental precautions.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment.

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep away from heat and direct sunlight. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store and use only in equipment/ containers designed for use with this product. Do not store in unlabelled containers.

Not suitable

Prolonged exposure to elevated temperature.

7.3 Specific end use(s)

Recommendations

See section 1.2 and Exposure scenarios in annex, if applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

Whilst specific OELs for certain components may be shown in this section, other components may be present in any mist, vapour or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Recommended monitoring procedures

Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Biological exposure indices

Product/ingredient name	Exposure indices

SECTION 8: Exposure controls/personal protection

No exposure indices known.

DNELs/DMELs

Not available.

PNECs

Not available.

8.2 Exposure controls

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.
All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Eye/face protection

Safety glasses with side shields.

Skin protection

Hand protection

General Information:

Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. The correct choice of protective gloves depends upon the chemicals being handled, and the conditions of work and use. Most gloves provide protection for only a limited time before they must be discarded and replaced (even the best chemically resistant gloves will break down after repeated chemical exposures).

Gloves should be chosen in consultation with the supplier / manufacturer and taking account of a full assessment of the working conditions.

Recommended: Nitrile gloves.
Breakthrough time:

Breakthrough time data are generated by glove manufacturers under laboratory test conditions and represent how long a glove can be expected to provide effective permeation resistance. It is important when following breakthrough time recommendations that actual workplace conditions are taken into account. Always consult with your glove supplier for up-to-date technical information on breakthrough times for the recommended glove type.
Our recommendations on the selection of gloves are as follows:

Continuous contact:

Gloves with a minimum breakthrough time of 240 minutes, or >480 minutes if suitable gloves can be obtained.
If suitable gloves are not available to offer that level of protection, gloves with shorter breakthrough times may be acceptable as long as appropriate glove maintenance and replacement regimes are determined and adhered to.

Short-term / splash protection:

Recommended breakthrough times as above.
It is recognised that for short-term, transient exposures, gloves with shorter breakthrough times may commonly be used. Therefore, appropriate maintenance and replacement regimes must be determined and rigorously followed.

SECTION 8: Exposure controls/personal protection

Glove Thickness:

For general applications, we recommend gloves with a thickness typically greater than 0.35 mm.

It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.
Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task.

Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:

- Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.

- Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential.

Skin and body

Use of protective clothing is good industrial practice.
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.

Refer to standards:

Respiratory protection: EN 529
Gloves: EN 420, EN 374
Eye protection: EN 166
Filtering half-mask: EN 149
Filtering half-mask with valve: EN 405
Half-mask: EN 140 plus filter
Full-face mask: EN 136 plus filter
Particulate filters: EN 143
Gas/combined filters: EN 14387

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

9.1 Information on basic physical and chemical properties

Physical state	Liquid.
Colour	Brown.
Odour	Not available.
Odour threshold	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flammability	Not available.
Lower and upper explosion limit	Not available.
Flash point	Open cup: >200°C (>392°F) [Cleveland]
Auto-ignition temperature	

SECTION 9: Physical and chemical properties

Ingredient name	°C	°F	Method
1-Decene, homopolymer, hydrogenated	343 to 369	649.4 to 696.2	ASTM D 2159
Dec-1-ene, homopolymer, hydrogenated	343 to 369	649.4 to 696.2	ASTM D 2159
Dec-1-ene, homopolymer, hydrogenated Dec-1-ene, oligomers, hydrogenated	343 to 369	649.4 to 696.2	ASTM D 2159
Dec-1-ene, dimers, hydrogenated	324	615.2	ASTM D 2155

Decomposition temperature Not available.

pH Not applicable.

Kinematic viscosity Kinematic: 64.6 mm^2/s (64.6 cSt) at 40°C
Kinematic: 11.5 to 12 mm^2/s (11.5 to 12 cSt) at 100°C

Solubility

Media	Result
water	Not soluble

Partition coefficient n-octanol/ water (log value) >3

Vapour pressure

Ingredient name	Vapour Pressure at 20˚C			Vapour pressure at 50˚C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
1-Decene, homopolymer, hydrogenated	<0.0041	<0.00055	ASTM E 1194-87			
Dec-1-ene, homopolymer, hydrogenated	<0.0041	<0.00055	ASTM E 1194-87			
Dec-1-ene, dimers, hydrogenated	0.014	0.0019	ASTM E 1194-87			
Distillates (petroleum), solvent-dewaxed heavy paraffinic	<0.07501	<0.01	ASTM D 5191			
Distillates (petroleum), hydrotreated heavy paraffinic	<0.07501	<0.01	ASTM D 5191			

Density and/or Relative density <1000 kg/m³ (<1 g/cm³) at 15°C

Relative vapour density Not available.

Particle characteristics

Median particle size Not applicable.

9.2 Other information

Evaporation rate Not available.

Explosive properties Not available.

Oxidising properties Not available.

Pour point -60 °C

SECTION 10: Stability and reactivity

10.1 Reactivity No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.

10.2 Chemical stability The product is stable.

10.3 Possibility of hazardous reactions Under normal conditions of storage and use, hazardous reactions will not occur.
Under normal conditions of storage and use, hazardous polymerisation will not occur.

10.4 Conditions to avoid Avoid all possible sources of ignition (spark or flame).

10.5 Incompatible materials Reactive or incompatible with the following materials: oxidising materials.

10.6 Hazardous decomposition products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Product/ingredient name	Result
Dec-1-ene, homopolymer, hydrogenated	**Rat - Oral - LD50** >5000 mg/kg OECD 423 **Rat - Dermal - LD50** >2000 mg/kg OECD 402 **Rat - Inhalation - LD50 Dusts and mists** >5.2 mg/l [4 hours] OECD 403
Dec-1-ene, trimers, hydrogenated	**Rat - Oral - LD50** >5000 mg/kg OECD 423 **Rat - Dermal - LD50** >2000 mg/kg OECD 402 **Rat - Inhalation - LD50 Dusts and mists** >5.2 mg/l [4 hours] OECD 403
Dec-1-ene, trimers, hydrogenated	**Rat - Oral - LD50** >5000 mg/kg OECD 423 **Rat - Dermal - LD50** >2000 mg/kg OECD 402 **Rat - Inhalation - LD50 Dusts and mists** >5.2 mg/l [4 hours] OECD 403
Dec-1-ene, dimers, hydrogenated	**Rat - Oral - LD50** >5000 mg/kg OECD 401 **Rat - Dermal - LD50** >2000 mg/kg OECD 402 **Rat - Inhalation - LC50 Dusts and mists** <5 mg/l [4 hours] OECD 403
Distillates (petroleum), solvent-dewaxed heavy paraffinic	**Rat - Oral - LD50** >5000 mg/kg OECD 401 **Rat - Dermal - LD50** >2000 mg/kg OECD 402 **Rat - Inhalation - LC50 Dusts and mists** >5.53 mg/l [4 hours] OECD 403
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	**Rat - Oral - LC50** >5000 mg/kg OECD 401 **Rat - Dermal - LC50** >2000 mg/kg OECD 402

SECTION 11: Toxicological information

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
Castrol Transmax Manual Long Life 75W-85	N/A	N/A	N/A	N/A	15.4
Dec-1-ene, dimers, hydrogenated	N/A	N/A	N/A	N/A	1.5

Skin corrosion/irritation

Product/ingredient name	Result
Dec-1-ene, homopolymer, hydrogenated	**Rabbit - Skin - Non-irritant to skin.** OECD 404
Dec-1-ene, trimers, hydrogenated	**Rabbit - Skin - Non-irritant to skin.** OECD 404
Dec-1-ene, trimers, hydrogenated	**Rabbit - Skin - Non-irritant to skin.** OECD 404
Dec-1-ene, dimers, hydrogenated	**Rabbit - Skin - Non-irritant to skin.** OECD 404
Distillates (petroleum), solvent-dewaxed heavy paraffinic	**Rabbit - Skin - Non-irritant to skin.**
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	**Rabbit - Skin - Slightly irritating to the skin.** OECD 404

Serious eye damage/eye irritation

Product/ingredient name	Result
Dec-1-ene, homopolymer, hydrogenated	**Rabbit - Eyes - Non-irritating to the eyes.** OECD 405
Dec-1-ene, trimers, hydrogenated	**Rabbit - Eyes - Non-irritating to the eyes.** OECD 405
Dec-1-ene, trimers, hydrogenated	**Rabbit - Eyes - Non-irritating to the eyes.** OECD 405
Dec-1-ene, dimers, hydrogenated	**Rabbit - Eyes - Non-irritating to the eyes.** OECD 405
Distillates (petroleum), solvent-dewaxed heavy paraffinic	**Rabbit - Eyes - Non-irritating to the eyes.** OECD 405
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	**Rabbit - Eyes - Not irritant** OECD 405

Respiratory corrosion/irritation

Not available.

Respiratory or skin sensitization

Product/ingredient name	Result
Dec-1-ene, homopolymer, hydrogenated	**Guinea pig - skin** OECD 406 Result: Not sensitising
Dec-1-ene, trimers, hydrogenated	**Guinea pig - skin** OECD 406 Result: Not sensitising
Dec-1-ene, trimers, hydrogenated	**Guinea pig - skin** OECD 406

SECTION 11: Toxicological information

	Result: Not sensitising
Dec-1-ene, dimers, hydrogenated	**Guinea pig - skin** OECD 406 Result: Not sensitising
Distillates (petroleum), solvent-dewaxed heavy paraffinic	**Guinea pig - skin** OECD 406 Result: Not sensitising
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	**Guinea pig - skin** OECD 406 Result: Not sensitising

Germ cell mutagenicity

Product/ingredient name	Result
Dec-1-ene, homopolymer, hydrogenated	**In vitro - Bacteria** OECD [Bacterial Reverse Mutation Test] Result: Negative **In vitro - Mammal - species unspecified** OECD [In vitro Mammalian Chromosomal Aberration Test] Result: Negative **In vivo - Mammal - species unspecified** OECD [Mammalian Erythrocyte Micronucleus Test] Result: Negative
Dec-1-ene, trimers, hydrogenated	**In vitro - Bacteria** OECD [Bacterial Reverse Mutation Test] Result: Negative **In vitro - Mammal - species unspecified** OECD [In vitro Mammalian Chromosomal Aberration Test] Result: Negative **In vivo - Mammal - species unspecified** OECD [Mammalian Erythrocyte Micronucleus Test] Result: Negative
Dec-1-ene, trimers, hydrogenated	**In vitro - Bacteria** OECD [Bacterial Reverse Mutation Test] Result: Negative **In vitro - Mammal - species unspecified** OECD [In vitro Mammalian Chromosomal Aberration Test] Result: Negative **In vivo - Mammal - species unspecified** OECD [Mammalian Erythrocyte Micronucleus Test] Result: Negative
Dec-1-ene, dimers, hydrogenated	**In vitro - Bacteria** OECD 471 [Bacterial Reverse Mutation Test] Result: Negative **In vitro - Mammal - species unspecified** OECD 473 [In vitro Mammalian Chromosomal Aberration Test] Result: Negative **In vitro - Mammal - species unspecified** OECD 476 [In vitro Mammalian Cell Gene Mutation Test] Result: Negative **In vivo - Mammal - species unspecified** OECD 474 [Mammalian Erythrocyte Micronucleus Test] Result: Negative
Distillates (petroleum), solvent-dewaxed heavy	**In vitro - Bacteria**

SECTION 11: Toxicological information

paraffinic	OECD [Bacterial Reverse Mutation Test] Result: Negative **In vitro - Mammal - species unspecified** OECD [In vitro Mammalian Chromosomal Aberration Test] Result: Negative
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	**In vitro - Bacteria** OECD 471 Result: Negative **In vitro - Mammalian-Animal** OECD 487 Result: Negative **In vitro - Mammalian-Animal** OECD 476 Result: Negative

Carcinogenicity

Product/ingredient name	Result
Distillates (petroleum), solvent-dewaxed heavy paraffinic	**Mouse - Dermal - Unspecified** OECD 451 Result: Negative

Reproductive toxicity

Product/ingredient name	Result
Dec-1-ene, homopolymer, hydrogenated	**Rat - Oral** OECD 415 Maternal toxicity: Negative Fertility effects: Negative Developmental: Negative
Dec-1-ene, trimers, hydrogenated	**Rat - Oral** OECD 415 Maternal toxicity: Negative Fertility effects: Negative Developmental: Negative
Dec-1-ene, trimers, hydrogenated	**Rat - Oral** OECD 415 Maternal toxicity: Negative Fertility effects: Negative Developmental: Negative
Dec-1-ene, dimers, hydrogenated	**Rat - Oral** OECD 416 Maternal toxicity: Positive Fertility effects: Negative Developmental: Negative
Distillates (petroleum), solvent-dewaxed heavy paraffinic	**Rat - Oral** OECD 421 Maternal toxicity: Negative Fertility effects: Negative Developmental: Negative
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	**Rat - Oral** OECD 443 Maternal toxicity: Negative Fertility effects: Positive Developmental: Negative

Specific target organ toxicity (single exposure)

Not available.

SECTION 11: Toxicological information

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Product/ingredient name	Result
Dec-1-ene, homopolymer, hydrogenated	ASPIRATION HAZARD - Category 1
Dec-1-ene, trimers, hydrogenated	ASPIRATION HAZARD - Category 1
Dec-1-ene, trimers, hydrogenated	ASPIRATION HAZARD - Category 1
Dec-1-ene, dimers, hydrogenated	ASPIRATION HAZARD - Category 1
Distillates (petroleum), solvent-dewaxed heavy paraffinic	ASPIRATION HAZARD - Category 1

Information on likely routes of exposure Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Inhalation Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion No known significant effects or critical hazards.

Skin contact Defatting to the skin. May cause skin dryness and irritation.

Eye contact No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation May be harmful by inhalation if exposure to vapour, mists or fumes resulting from thermal decomposition products occurs.

Ingestion No specific data.

Skin contact Adverse symptoms may include the following:
irritation
dryness
cracking

Eye contact No specific data.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Inhalation Overexposure to the inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.

Ingestion Ingestion of large quantities may cause nausea and diarrhoea.

Skin contact Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.

Eye contact Potential risk of transient stinging or redness if accidental eye contact occurs.

Potential chronic health effects

Not available.

Conclusion/Summary [Product] Not available.

General No known significant effects or critical hazards.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

Conclusion/Summary [Product] This substance/mixture does not contain any components that are considered to have endocrine disrupting properties.

11.2.2 Other information

Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result

SECTION 12: Ecological information

Dec-1-ene, homopolymer, hydrogenated	**Acute - EL50** Equivalent to OECD 201 Algae >1000 mg/l [72 hours] **Acute - EL50** OECD 202 Daphnia >1000 mg/l [48 hours] **Chronic - NOELR** OECD 211 Daphnia 125 mg/l [21 days] **Acute - LL50** OECD 203 Fish >1000 mg/l [96 hours]
Dec-1-ene, trimers, hydrogenated	**Acute - EL50** Equivalent to OECD 201 Algae >1000 mg/l [72 hours] **Acute - EL50** OECD 202 Daphnia >1000 mg/l [48 hours] **Chronic - NOELR** OECD 211 Daphnia 125 mg/l [21 days] **Acute - LL50** OECD 203 Fish >1000 mg/l [96 hours]
Dec-1-ene, trimers, hydrogenated	**Acute - EL50** OECD 201 Algae >1000 mg/l [72 hours] **Acute - EL50** OECD 202 Daphnia >1000 mg/l [48 hours] **Chronic - NOELR** OECD 211 Daphnia 125 mg/l [21 days] **Acute - LL50** OECD 203 Fish >1000 mg/l [96 hours]
Dec-1-ene, dimers, hydrogenated	**Acute - EL50** OECD 201 Algae >1000 mg/l [72 hours] **Acute - EL50** OECD 202 Daphnia >1000 mg/l [48 hours] **Acute - LL50** OECD 203

SECTION 12: Ecological information

	Fish >1000 mg/l [96 hours] **Chronic - NOEL** OECD 201 Algae 1000 mg/l [72 hours] **Chronic - NOELR** OECD 211 Daphnia 125 mg/l [21 days]
Distillates (petroleum), solvent-dewaxed heavy paraffinic	**Acute - EL50** OECD 201 Algae >100 mg/l [72 hours] **Acute - EL50** OECD 202 Daphnia >10000 mg/l [48 hours] **Acute - LL50** OECD 203 Fish >100 mg/l [96 hours] **Chronic - NOEL** OECD 201 Algae ≥100 mg/l [72 hours] **Chronic - NOEL** OECD 211 Daphnia 10 mg/l [21 days]
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	**Acute - ErC50** OECD 201 Algae >100 mg/l [72 hours] **Acute - EC50** OECD 202 Daphnia 51 mg/l [48 hours] **Acute - LC50** OECD 203 Fish >100 mg/l [96 hours] **Chronic - EC10** OECD 211 Daphnia 1.69 mg/l [21 days] **Chronic - NOEC** OECD 201 Algae ≥10 mg/l [72 hours]

Environmental hazards Not classified as dangerous

12.2 Persistence and degradability

Not expected to be rapidly degradable.

Product/ingredient name	Result

SECTION 12: Ecological information

Dec-1-ene, dimers, hydrogenated	OECD 301B 7% [28 days] - Not readily
Distillates (petroleum), solvent-dewaxed heavy paraffinic	OECD 301F 31% [28 days] - Not readily
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	OECD 301B 1% [28 days]

12.3 Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Castrol Transmax Manual Long Life 75W-85 (Neuhof) Parent	>3	-	Low
Dec-1-ene, homopolymer, hydrogenated	>10	-	High
Dec-1-ene, trimers, hydrogenated	>6.5	-	High
Dec-1-ene, trimers, hydrogenated	>10	-	High
Dec-1-ene, dimers, hydrogenated	>6.5	-	High
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	5.1	-	High

12.4 Mobility in soil

Soil/water partition coefficient

Not available.

Results of PMT and vPvM assessment

Product/ingredient name	PMT	P	M	T	vPvM	vP	vM
Dec-1-ene, homopolymer, hydrogenated	No	No	No	No	No	No	No
Dec-1-ene, trimers, hydrogenated	No	No	No	No	No	No	No
Dec-1-ene, trimers, hydrogenated	No	No	No	No	No	No	No
Dec-1-ene, dimers, hydrogenated	No	No	No	No	No	No	No
Distillates (petroleum), solvent-dewaxed heavy paraffinic	No	No	No	No	No	No	No
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	No	No	No	No	No	No	No

Mobility Spillages may penetrate the soil causing ground water contamination.

Conclusion/Summary The product does not meet the criteria to be considered as a PMT or vPvM.

12.5 Results of PBT and vPvB assessment

Regulation (EC) No. 1907/2006 [REACH]

Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
Dec-1-ene, homopolymer, hydrogenated	No	N/A	N/A	No	N/A	N/A	N/A
Dec-1-ene, trimers, hydrogenated	No	N/A	N/A	No	N/A	N/A	N/A
Dec-1-ene, trimers, hydrogenated	No	N/A	N/A	No	N/A	N/A	N/A
Dec-1-ene, dimers, hydrogenated	No	N/A	N/A	No	N/A	N/A	N/A
Distillates (petroleum), solvent-dewaxed heavy paraffinic	No	N/A	N/A	No	N/A	N/A	N/A
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	N/A	N/A	N/A	Yes	N/A	N/A	N/A

SECTION 12: Ecological information

Regulation (EC) No. 1272/2008 [CLP]

Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
Dec-1-ene, homopolymer, hydrogenated	No	No	No	No	No	No	No
Dec-1-ene, trimers, hydrogenated	No	No	No	No	No	No	No
Dec-1-ene, trimers, hydrogenated	No	No	No	No	No	No	No
Dec-1-ene, dimers, hydrogenated	No	No	No	No	No	No	No
Distillates (petroleum), solvent-dewaxed heavy paraffinic	No	No	No	No	No	No	No
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene	No	No	No	No	No	No	No

Conclusion/Summary Regulation (EC) No. 1272/2008 [CLP] The product does not meet the criteria to be considered as a PBT or vPvB.

12.6 Endocrine disrupting properties

Conclusion/Summary [Product] This substance/mixture does not contain any components that are considered to have endocrine disrupting properties.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

12.7 Other adverse effects No known significant effects or critical hazards.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal Where possible, arrange for product to be recycled. Dispose of via an authorised person/ licensed waste disposal contractor in accordance with local regulations.

Hazardous waste Yes.

European waste catalogue (EWC)

Waste code	Waste designation
13 02 08*	other engine, gear and lubricating oils

However, deviation from the intended use and/or the presence of any potential contaminants may require an alternative waste disposal code to be assigned by the end user.

Packaging

Methods of disposal Where possible, arrange for product to be recycled. Dispose of via an authorised person/ licensed waste disposal contractor in accordance with local regulations.

Special precautions This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

References Commission 2014/955/EU
Directive 2008/98/EC

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number or ID number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-

SECTION 14: Transport information

14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

14.6 Special precautions for user Not available.

14.7 Maritime transport in bulk according to IMO instruments Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

No listed substance

Labelling Not applicable.

Other regulations

REACH Status The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.

United States inventory (TSCA 8b) All components are active or exempted.

Australia inventory (AIIC) All components are listed or exempted.

Canada inventory All components are listed or exempted.

China inventory (IECSC) All components are listed or exempted.

Japan inventory (CSCL) At least one component is not listed.

Korea inventory (KECI) All components are listed or exempted.

Philippines inventory (PICCS) All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI) All components are listed or exempted.

Explosive precursors Not applicable.

Ozone depleting substances (EU 2024/590)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Persistent Organic Pollutants

Not listed.

EU - Water framework directive - Priority substances

None of the components are listed.

Seveso Directive

This product is not controlled under the Seveso Directive.

National regulations

Social Security Code, Articles L 461-1 to L 461-7 Sécurité sociale : tableau 36

SECTION 15: Regulatory information

Reinforced medical surveillance Not applicable

15.2 Chemical safety assessment A Chemical Safety Assessment has been carried out for one or more of the substances within this mixture. A Chemical Safety Assessment has not been carried out for the mixture itself.

SECTION 16: Other information

Abbreviations and acronyms

ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
CSA = Chemical Safety Assessment
CSR = Chemical Safety Report
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EINECS = European Inventory of Existing Commercial chemical Substances
ES = Exposure Scenario
EUH statement = CLP-specific Hazard statement
EWC = European Waste Catalogue
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OECD = Organisation for Economic Co-operation and Development
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation [Regulation (EC) No. 1907/2006]
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
RRN = REACH Registration Number
SADT = Self-Accelerating Decomposition Temperature
SVHC = Substances of Very High Concern
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure
STOT-SE = Specific Target Organ Toxicity - Single Exposure
TWA = Time weighted average
UN = United Nations
UVCB = Complex hydrocarbon substance
VOC = Volatile Organic Compound
vPvB = Very Persistent and Very Bioaccumulative
Varies = may contain one or more of the following 64741-88-4 / RRN 01-2119488706-23, 64741-89-5 / RRN 01-2119487067-30, 64741-95-3 / RRN 01-2119487081-40, 64741-96-4/ RRN 01-2119483621-38, 64742-01-4 / RRN 01-2119488707-21, 64742-44-5 / RRN 01-2119985177-24, 64742-45-6, 64742-52-5 / RRN 01-2119467170-45, 64742-53-6 / RRN 01-2119480375-34, 64742-54-7 / RRN 01-2119484627-25, 64742-55-8 / RRN 01-2119487077-29, 64742-56-9 / RRN 01-2119480132-48, 64742-57-0 / RRN 01-2119489287-22, 64742-58-1, 64742-62-7 / RRN 01-2119480472-38, 64742-63-8, 64742-65-0 / RRN 01-2119471299-27, 64742-70-7 / RRN 01-2119487080-42, 72623-85-9 / RRN 01-2119555262-43, 72623-86-0 / RRN 01-2119474878-16, 72623-87-1 / RRN 01-2119474889-13

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Not classified.	

Full text of abbreviated H statements

H304	May be fatal if swallowed and enters airways.
H332	Harmful if inhaled.
H361f	Suspected of damaging fertility.

Full text of classifications [CLP/GHS]

Acute Tox. 4	ACUTE TOXICITY - Category 4
Asp. Tox. 1	ASPIRATION HAZARD - Category 1
Repr. 2	REPRODUCTIVE TOXICITY - Category 2

SECTION 16: Other information

History

Date of issue/ Date of revision	09/01/2026.
Date of previous issue	05/10/2025.
Prepared by	Product Stewardship

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

SAFETY DATA SHEET

MOBIL EAL 224H

Section 1. Identification

Product name : MOBIL EAL 224H

Product description : Plant/Vegetable Oil

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Hydraulic fluid

Uses advised against : This product is not recommended for any industrial, professional or consumer use other than the identified uses above.

Supplier : EXXON MOBIL CORPORATION
22777 Springwoods Village Parkway
Spring, TX 77389 USA

24-Hour emergency telephone number : 1-800-424-9300 / +1 703-741-5970 / +1-703-527-3887 (CHEMTREC)

Product Technical Information : 800-662-4525

SDS Internet Address : www.sds.exxonmobil.com

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

Hazards not otherwise classified : None known.

Note : This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% by weight	Identifiers
2,6-di-tert-butylphenol	≤3	CAS: 128-39-2
kerosene	≤0.3	CAS: 8008-20-6
1h-benzotriazole, methyl-	≤0.3	CAS: 29385-43-1

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Ingestion : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : Local necrosis as evidenced by delayed onset of pain and tissue damage a few hours after injection.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. Pressurized mists may form a flammable mixture.

Hazardous combustion products : Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, sulfur oxides

Section 5. Fire-fighting measures

Special protective actions for fire-fighters : Use standard firefighting procedures and consider the hazards of other involved materials. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Assure an extended cooling down period to prevent re-ignition. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Static Accumulator : This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
2,6-di-tert-butylphenol	None.
kerosene	**NIOSH REL (United States, 10/2020)** TWA 10 hours: 100 mg/m³. **ACGIH TLV (United States, 1/2024) [Kerosene]** Absorbed through skin. TWA 8 hours: 200 mg/m³ (as total hydrocarbon vapor). **ExxonMobil (COMPANY)** Absorbed through skin. TWA 8 hours: 5 mg/m³. Form: Stable Aerosol.. TWA 8 hours: 200 mg/m³. Form: Vapor..
1h-benzotriazole, methyl-	None.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. > 8 hours (breakthrough time): Nitrile, minimum 0.38 mm thickness or comparable protective barrier material

Section 8. Exposure controls/personal protection

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Liquid.

Color : Pale yellow

Odor : Characteristic

Odor threshold : Not available.

pH : Not applicable.

Melting point/freezing point : Not available.

Boiling point or initial boiling point and boiling range : Not available.

Flash point : Open cup: >221°C (>429.8°F) [ASTM D-92]

Evaporation rate : Not available.

Flammability : Ignitable

Lower and upper explosion limit/flammability limit : Not available.

Vapor pressure : Not available.

Relative vapor density : Not available.

Relative density : Not available.

Solubility in water : Negligible

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : 36.8 cSt [40 °C] [ASTM D 445]
8.3 cSt [100 °C] [ASTM D 445]

Particle characteristics

Median particle size : Not applicable.

Pour point : -34°C

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Section 10. Stability and reactivity

Conditions to avoid : High energy sources of ignition. Excessive heat.

Incompatible materials : Strong oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Species	Result	Duration
1h-benzotriazole, methyl-	LD50 Oral	Rat	1470 mg/kg	-

Conclusion/Summary

Inhalation : Minimally Toxic. No end point data for material. Based on assessment of the components.

Dermal : Minimally Toxic. No end point data for material. Based on assessment of the components.

Oral : Minimally Toxic. No end point data for material. Based on assessment of the components.

Irritation/Corrosion

Conclusion/Summary

Skin : Negligible irritation to skin at ambient temperatures. No end point data for material. Based on assessment of the components.

Eyes : May cause mild, short-lasting discomfort to eyes. No end point data for material. Based on assessment of the components.

Respiratory : Negligible hazard at ambient/normal handling temperatures. No end point data for material.

Respiratory or skin sensitization

Conclusion/Summary

Skin : Not expected to be a skin sensitizer. No end point data for material. Based on assessment of the components.

Respiratory : Not expected to be a respiratory sensitizer. No end point data for material.

Mutagenicity

Conclusion/Summary : Not expected to be a germ cell mutagen. No end point data for material. Based on assessment of the components.

Carcinogenicity

Conclusion/Summary : Not expected to cause cancer. No end point data for material. Based on assessment of the components.

Classification

Product/ingredient name	OSHA	IARC	NTP
kerosene	-	3	-

Reproductive toxicity

Conclusion/Summary : Not expected to be a reproductive toxicant. No end point data for material. Based on assessment of the components.

Specific target organ toxicity (single exposure)

Conclusion/Summary : Not expected to cause organ damage from a single exposure. No end point data for material.

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Target organs
MOBIL EAL 224H	Not applicable.	-

Section 11. Toxicological information

Conclusion/Summary : Not expected to cause organ damage from prolonged or repeated exposure. No end point data for material. Based on assessment of the components.

Aspiration hazard

Conclusion/Summary : Not expected to be an aspiration hazard. Based on physico-chemical properties of the material. Data available.

Other information

Product : Repeated and/or prolonged exposure may cause irritation to the skin, eyes, or respiratory tract.

Section 12. Ecological information

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

Toxicity

Product/ingredient name	Duration	Species	Result
MOBIL EAL 224H	96 hours	Crustaceans - *Americamysis bahia*	Acute LC50 >5000 mg/l
	96 hours	Fish - *Oncorhynchus mykiss*	Acute LC50 >5000 mg/l
	7 days	Fish - *Pimephales promelas*	Chronic NOEL >5000 mg/l
	7 days	daphnia - *Ceriodaphnia dubia*	Chronic NOEL >5000 mg/l

Conclusion/Summary

Acute toxicity : Not expected to be harmful to aquatic organisms.

Chronic toxicity : Not expected to demonstrate chronic toxicity to aquatic organisms.

Persistence and degradability

Biodegradability : Majority of components -- Expected to be readily biodegradable.

Bioaccumulative potential

Not determined.

Mobility in soil

Not determined.

Other ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Label(s) / Marks				
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

Additional information

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not applicable.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 4(a) proposed test rules**: 1h-benzotriazole, methyl-
TSCA 4(a) final test rules: nonane
TSCA 8(a) PAIR: siloxanes and silicones, di-me; nonane; naphthalene
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
Clean Water Act (CWA) 307: ethyl benzene; naphthalene; toluene
Clean Water Act (CWA) 311: xylenes; ethyl benzene; naphthalene; toluene

TSCA 12(b) - Chemical export notification

Not applicable.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

Section 15. Regulatory information

SARA 313

This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

State regulations

Massachusetts	:	None of the components are listed.
New York	:	None of the components are listed.
New Jersey	:	None of the components are listed.
Pennsylvania	:	None of the components are listed.
Illinois	:	None of the components are listed.

Inventory list

Australia inventory (AIIC)	:	All components are listed or exempted.
Canada inventory (DSL-NDSL)	:	All components are listed or exempted.
China inventory (IECSC)	:	All components are listed or exempted.
Japan inventory (CSCL)	:	All components are listed or exempted.
Japan inventory (Industrial Safety and Health Act)	:	All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC)	:	All components are listed or exempted.
Philippines inventory (PICCS)	:	All components are listed or exempted.
Korea inventory (KECI)	:	All components are listed or exempted.
Taiwan Chemical Substances Inventory (TCSI)	:	All components are listed or exempted.
United States inventory (TSCA 8b)	:	All components are active or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	/	0
Flammability		1
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Procedure used to derive the classification

Not classified.

New Jersey Right to Know Disclosure

Section 16. Other information

Name	CAS #
Petroleum Oil (Lubricant)	

History

Date of issue/Date of revision : 16 July 2024

Date of previous issue : 28 November 2023

Version : 1.01

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

References : Not available.

Indicates information that has changed from previously issued version.

Product code : 201560105010_1162040

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SAFETY DATA SHEET

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Shell Rotella T4 Triple Protection 15W-40

Version	Revision Date:	SDS Number:	Print Date: 05/23/2019
2.0	05/22/2019	800010026636	Date of last issue: 05/22/2019

SECTION 1. IDENTIFICATION

Product name : Shell Rotella T4 Triple Protection 15W-40

Product code : 001F8880

Manufacturer or supplier's details

Manufacturer/Supplier : **Shell Oil Products US**
PO Box 4427
Houston TX 77210-4427
USA

SDS Request : (+1) 877-276-7285

Customer Service :

Emergency telephone number

Spill Information : 877-504-9351

Health Information : 877-242-7400

Recommended use of the chemical and restrictions on use

Recommended use : Engine oil.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Long-term (chronic) aquatic hazard : Category 3

GHS label elements

Hazard pictograms : No symbol

Signal word : No signal word

Hazard statements : PHYSICAL HAZARDS:
Not classified as a physical hazard under GHS criteria.
HEALTH HAZARDS:
Not classified as a health hazard under GHS criteria.
ENVIRONMENTAL HAZARDS:
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P273 Avoid release to the environment.

Response:

No precautionary phrases.

Storage:

No precautionary phrases.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification

Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
Used oil may contain harmful impurities.
Not classified as flammable but will burn.
The classification of this material is based on OSHA HCS 2012 criteria.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Highly refined mineral oils and additives.
The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

* contains one or more of the following CAS-numbers: 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-65-0, 68037-01-4, 72623-86-0, 72623-87-1, 8042-47-5, 848301-69-9.

Hazardous components

Chemical name	Synonyms	CAS-No.	Concentration (% w/w)
Alkaryl amine	bis(nonylphenyl)amine	36878-20-3	1 - 3
Calcium sulphonate	Benzenesulfonic acid, mono-C16-24-alkyl derivs., calcium salts	70024-69-0	0.1 - 0.99
Alkyl borate		Not Assigned	0.1 - 0.99
Dialkyl alkaryl aminomethyl dicarboxylate		Not Assigned	0.1 - 0.99
Alcohol, ethoxylated	Alcohols, C12-16, ethoxylated	68551-12-2	0.1 - 0.5
Interchangeable low viscosity base oil (<20,5 cSt @40°C) *		Not Assigned	0 - 90

SECTION 4. FIRST-AID MEASURES

If inhaled : No treatment necessary under normal conditions of use.
If symptoms persist, obtain medical advice.

In case of skin contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
If persistent irritation occurs, obtain medical attention.

In case of eye contact : Flush eye with copious quantities of water.

		Remove contact lenses, if present and easy to do. Continue rinsing. If persistent irritation occurs, obtain medical attention.
If swallowed	:	In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
Most important symptoms and effects, both acute and delayed	:	Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.
Protection of first-aiders	:	When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
Indication of any immediate medical attention and special treatment needed	:	Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	:	Do not use water in a jet.
Specific hazards during fire-fighting	:	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide may be evolved if incomplete combustion occurs. Unidentified organic and inorganic compounds.
Specific extinguishing methods	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for firefighters	:	Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid contact with skin and eyes.
Environmental precautions	:	Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up	:	Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
Additional advice	:	For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.

SECTION 7. HANDLING AND STORAGE

Technical measures	:	Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Advice on safe handling	:	Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.
Avoidance of contact	:	Strong oxidising agents.
Product Transfer	:	Proper grounding and bonding procedures should be used during all bulk transfer operations to avoid static accumulation.
Further information on storage stability	:	Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closable containers. Store at ambient temperature.
Packaging material	:	Suitable material: For containers or container linings, use mild steel or high density polyethylene. Unsuitable material: PVC.
Container Advice	:	Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Oil mist, mineral	Not Assigned	TWA (Mist)	5 mg/m3	OSHA Z-1
Oil mist, mineral		TWA (Inhalable fraction)	5 mg/m3	ACGIH

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.
Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/
Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hse.gov.uk/
Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA) , Germany http://www.dguv.de/inhalt/index.jsp
L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

Engineering measures : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Adequate ventilation to control airborne concentrations.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

General Information:
Define procedures for safe handling and maintenance of controls.
Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.
Drain down system prior to equipment break-in or maintenance.
Retain drain downs in sealed storage pending disposal or subsequent recycle.
Always observe good personal hygiene measures, such as washing hands after handling the material and before eating,

drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Personal protective equipment

Respiratory protection : No respiratory protection is ordinarily required under normal conditions of use.
In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material.
If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation.
Check with respiratory protective equipment suppliers.
Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.
Select a filter suitable for the combination of organic gases and vapours [Type A/Type P boiling point >65°C (149°F)].

Hand protection
Remarks : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. PVC, neoprene or nitrile rubber gloves Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model.

Eye protection : If material is handled such that it could be splashed into eyes, protective eyewear is recommended.

Skin and body protection : Skin protection is not ordinarily required beyond standard work clothes.
It is good practice to wear chemical resistant gloves.

Protective measures	:	Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
Thermal hazards	:	Not applicable

Environmental exposure controls

General advice	:	Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Section 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water. Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	Clear amber
Odour	:	Slight hydrocarbon
Odour Threshold	:	Data not available
pH	:	Not applicable
pour point	:	-36 °C / -33 °F Method: ASTM D97
Initial boiling point and boiling range	:	> 280 °C / 536 °F estimated value(s)
Flash point	:	234 °C / 453 °F Method: ASTM D92 (COC)
Evaporation rate	:	Data not available
Flammability (solid, gas)	:	Data not available
Upper explosion limit / upper flammability limit	:	Typical 10 %(V)
Lower explosion limit / Lower flammability limit	:	Typical 1 %(V)
Vapour pressure	:	< 0.5 Pa (20 °C / 68 °F) estimated value(s)

Relative vapour density	:	> 1 estimated value(s)
Relative density	:	0.878 (15 °C / 59 °F)
Density	:	878 kg/m3 (15.0 °C / 59.0 °F) Method: ASTM D4052
Solubility(ies)		
Water solubility	:	negligible
Solubility in other solvents	:	Data not available
Partition coefficient: n-octanol/water	:	log Pow: > 6 (based on information on similar products)
Auto-ignition temperature	:	> 320 °C / 608 °F
Decomposition temperature	:	Data not available
Viscosity		
Viscosity, dynamic	:	Data not available
Viscosity, kinematic	:	14.9 mm2/s (100 °C / 212 °F) Method: ASTM D445
Explosive properties	:	Not classified
Oxidizing properties	:	Data not available
Conductivity	:	This material is not expected to be a static accumulator.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
Chemical stability	:	Stable.
Possibility of hazardous reactions	:	Reacts with strong oxidising agents.
Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	Strong oxidising agents.
Hazardous decomposition products	:	No decomposition if stored and applied as directed.

SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment	:	Information given is based on data on the components and the toxicology of similar products.Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Information on likely routes of exposure
Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity	:	LD50 (rat): > 5,000 mg/kg Remarks: Low toxicity: Based on available data, the classification criteria are not met.
Acute inhalation toxicity	:	Remarks: Based on available data, the classification criteria are not met.
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg Remarks: Low toxicity: Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Product:
Remarks: Slightly irritating to skin., Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis., Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Product:
Remarks: Slightly irritating to the eye., Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Product:
Remarks: Not a skin sensitiser.
Based on available data, the classification criteria are not met.

Components:
Calcium sulphonate:
Remarks: May cause an allergic skin reaction in sensitive individuals.

Remarks: Classified Skin Sensitiser Category 1B.

Alkyl borate:
Remarks: May cause an allergic skin reaction in sensitive individuals.

Remarks: Classified Skin Sensitiser Category 1B.

Dialkyl alkaryl aminomethyl dicarboxylate:
Remarks: May cause an allergic skin reaction in sensitive individuals.

Remarks: Classified Skin Sensitiser Category 1B.

Germ cell mutagenicity

Product:

: Remarks: Non mutagenic, Based on available data, the classification criteria are not met.

Carcinogenicity

Product:
Remarks: Not a carcinogen., Based on available data, the classification criteria are not met.

Remarks: Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies., Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Product:

: Remarks: Not a developmental toxicant., Does not impair fertility., Based on available data, the classification criteria are not met.

STOT - single exposure

Product:
Remarks: Based on available data, the classification criteria are not met.

STOT - repeated exposure

Product:

Remarks: Based on available data, the classification criteria are not met.

Aspiration toxicity

Product:
Not an aspiration hazard.

Further information

Product:
Remarks: Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal., ALL used oil should be handled with caution and skin contact avoided as far as possible.

Remarks: Continuous contact with used engine oils has caused skin cancer in animal tests.

Remarks: Slightly irritating to respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment	:	Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).(LL/EL/IL50 expressed as the nominal amount of product required to prepare aqueous test extract).

Ecotoxicity

Product:

Toxicity to fish (Acute toxicity)	:	Remarks: LL/EL/IL50 10-100 mg/l Harmful
Toxicity to daphnia and other aquatic invertebrates (Acute toxicity)	:	Remarks: LL/EL/IL50 10-100 mg/l Harmful
Toxicity to algae (Acute toxicity)	:	Remarks: LL/EL/IL50 10-100 mg/l Harmful
Toxicity to fish (Chronic toxicity)	:	Remarks: Data not available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Remarks: Data not available

Toxicity to microorganisms (Acute toxicity) : Remarks: Data not available

Persistence and degradability

Product:

Biodegradability : Remarks: Not readily biodegradable.
Major constituents are inherently biodegradable, but contains components that may persist in the environment.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Contains components with the potential to bioaccumulate.

Mobility in soil

Product:

Mobility : Remarks: Liquid under most environmental conditions.
If it enters soil, it will adsorb to soil particles and will not be mobile.

Remarks: Floats on water.

Other adverse effects

Product:

Additional ecological information : Does not have ozone depletion potential, photochemical ozone creation potential or global warming potential.
Product is a mixture of non-volatile components, which will not be released to air in any significant quantities under normal conditions of use.

Poorly soluble mixture.
Causes physical fouling of aquatic organisms.

Mineral oil does not cause chronic toxicity to aquatic organisms at concentrations less than 1 mg/l.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Recover or recycle if possible.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses

Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment. Waste, spills or used product is dangerous waste.

Contaminated packaging : Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand. Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Local legislation
Remarks : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

SECTION 14. TRANSPORT INFORMATION

National Regulations

US Department of Transportation Classification (49 CFR Parts 171-180)

Not regulated as a dangerous good

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied. MARPOL Annex 1 rules apply for bulk shipments by sea.

Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
benzene	**71-43-2**	**10**	**10 (D018)**
2-methylpropan-1-ol	**78-83-1**	**100**	**100 (F005)**
benzene	**71-43-2**	**10**	*****

*: Calculated RQ exceeds reasonably attainable upper limit., Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA., The components with RQs are given for information.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

benzene	71-43-2	0.0002 %

US State Regulations

Pennsylvania Right To Know

Distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7
Distillates (petroleum), hydrotreated light paraffinic	64742-55-8
Distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0
Zinc dialkyl dithiophosphate	84605-29-8
Diphenylamine	122-39-4

California Prop. 65

WARNING: This product can expose you to chemicals including benzene, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances

Distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7
Distillates (petroleum), hydrotreated light paraffinic	64742-55-8

Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

The components of this product are reported in the following inventories:

EINECS : Not all components listed.

TSCA : All components listed.

DSL : All components listed.

SECTION 16. OTHER INFORMATION

Further information

NFPA Rating (Health, Fire, Reactivity)	0, 1, 0

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average
Abbreviations and Acronyms	:	The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists
ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS = Australian Inventory of Chemical Substances
ASTM = American Society for Testing and Materials
BEL = Biological exposure limits
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
CAS = Chemical Abstracts Service
CEFIC = European Chemical Industry Council
CLP = Classification Packaging and Labelling
COC = Cleveland Open-Cup
DIN = Deutsches Institut fur Normung
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DSL = Canada Domestic Substance List
EC = European Commission
EC50 = Effective Concentration fifty
ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals
ECHA = European Chemicals Agency
EINECS = The European Inventory of Existing Commercial Chemical Substances
EL50 = Effective Loading fifty
ENCS = Japanese Existing and New Chemical Substances Inventory
EWC = European Waste Code
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer
IATA = International Air Transport Association
IC50 = Inhibitory Concentration fifty
IL50 = Inhibitory Level fifty
IMDG = International Maritime Dangerous Goods
INV = Chinese Chemicals Inventory
IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables
KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty
LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading

LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level
OE_HPV = Occupational Exposure - High Production Volume
PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of Chemicals
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

A vertical bar (|) in the left margin indicates an amendment from the previous version.

Sources of key data used to compile the Safety Data Sheet	:	The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).
Revision Date	:	05/22/2019

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / EN

SAFETY DATA SHEET

MOBILGREASE XHP 222

ExxonMobil

Section 1. Identification

Product name : MOBILGREASE XHP 222

Product description : base oil and additives

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : grease

Uses advised against : This product is not recommended for any industrial, professional or consumer use other than the identified uses above.

Supplier : EXXON MOBIL CORPORATION
22777 Springwoods Village Parkway
Spring, TX 77389 USA

24-Hour emergency telephone number : 1-800-424-9300 / +1 703-741-5970 / +1-703-527-3887 (CHEMTREC)

Product Technical Information : 800-662-4525

SDS Internet Address : www.sds.exxonmobil.com

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

Hazards not otherwise classified : None known.

Note : This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% by weight	Identifiers
benzenamine, n-phenyl-, reaction products with 2,4,4-trimethylpentene	≤3	CAS: 68411-46-1
zinc dialkyl dithiophosphate	<2	CAS: 68457-79-4
naphthenic acids, zinc salts	<1	CAS: 12001-85-3
1h-benzotriazole-1-methanamine, n,n-bis(2-ethylhexyl)-ar-methyl-	≤0.3	CAS: 94270-86-7
naphthalenesulfonic acid, dinonyl-, calcium salt	≤0.3	CAS: 57855-77-3

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Section 3. Composition/information on ingredients

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Ingestion : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : Local necrosis as evidenced by delayed onset of pain and tissue damage a few hours after injection.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : This material is harmful to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products : Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, sulfur oxides

Section 5. Fire-fighting measures

Special protective actions for fire-fighters : Use standard firefighting procedures and consider the hazards of other involved materials. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Assure an extended cooling down period to prevent re-ignition. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Confine the spill immediately with booms. Skim from surface. Warn other shipping. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Static Accumulator : This material is not a static accumulator.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
solvent dewaxed heavy paraffinic distillate	**NIOSH REL (United States, 10/2020) [OIL MIST MINERAL]** TWA 10 hours: 5 mg/m³. Form: Mist. STEL 15 minutes: 10 mg/m³. Form: Mist. **OSHA PEL (United States, 5/2018) [Oil mist, mineral]** TWA 8 hours: 5 mg/m³. **ACGIH TLV (United States, 1/2024) [Mineral Oil, pure, highly and severely refined]** TWA 8 hours: 5 mg/m³. Form: Inhalable fraction.
solvent dewaxed residual oil (petroleum)	**NIOSH REL (United States, 10/2020) [OIL MIST MINERAL]** TWA 10 hours: 5 mg/m³. Form: Mist. STEL 15 minutes: 10 mg/m³. Form: Mist. **OSHA PEL (United States, 5/2018) [Oil mist, mineral]** TWA 8 hours: 5 mg/m³. **ACGIH TLV (United States, 1/2024) [Mineral Oil, pure, highly and severely refined]** TWA 8 hours: 5 mg/m³. Form: Inhalable fraction.
severely hydrotreated heavy paraffinic distillate	**NIOSH REL (United States, 10/2020) [OIL MIST MINERAL]** TWA 10 hours: 5 mg/m³. Form: Mist. STEL 15 minutes: 10 mg/m³. Form: Mist. **OSHA PEL (United States, 5/2018) [Oil mist, mineral]** TWA 8 hours: 5 mg/m³. **ACGIH TLV (United States, 1/2024) [Mineral Oil, pure, highly and severely refined]** TWA 8 hours: 5 mg/m³. Form: Inhalable fraction.
benzenamine, n-phenyl-, reaction products with 2,4,4-trimethylpentene	None.
zinc dialkyl dithiophosphate	None.
naphthenic acids, zinc salts	None.
1h-benzotriazole-1-methanamine, n,n-bis (2-ethylhexyl)-ar-methyl-	None.
naphthalenesulfonic acid, dinonyl-, calcium salt	None.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Liquid. [Semi-fluid]

Color : Dark Blue

Odor : Characteristic

Odor threshold : Not available.

pH : Not applicable.

Melting point/freezing point : Not available.

Boiling point or initial boiling point and boiling range : >315.56°C (>600°F)

Flash point : Open cup: >200°C (>392°F) [EST. FOR OIL, ASTM D-92 (COC)]

Evaporation rate : Not available.

Flammability : Ignitable

Lower and upper explosion limit/flammability limit : Not available.

Vapor pressure : <0.1 mm Hg [20 °C]

Relative vapor density : Not available.

Relative density : 0.88

Solubility in water : Negligible

Partition coefficient: n-octanol/water : >3.5

Section 9. Physical and chemical properties and safety characteristics

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : 220 cSt [40 °C]

Particle characteristics

Median particle size : Not applicable.

DMSO Extract (mineral oil only), IP-346 : <3 % by weight

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : High energy sources of ignition. Excessive heat.

Incompatible materials : Strong oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Species	Result	Duration
1h-benzotriazole-1-methanamine, n,n-bis (2-ethylhexyl)-ar-methyl-	LD50 Oral	Rat	3313 mg/kg	-

Conclusion/Summary

Inhalation : Minimally Toxic. No end point data for material. Based on assessment of the components.

Dermal : Minimally Toxic. No end point data for material. Based on assessment of the components.

Oral : Minimally Toxic. No end point data for material. Based on assessment of the components.

Irritation/Corrosion

Conclusion/Summary

Skin : Negligible irritation to skin at ambient temperatures. No end point data for material. Based on assessment of the components.

Eyes : May cause mild, short-lasting discomfort to eyes. No end point data for material. Based on assessment of the components.

Respiratory : Negligible hazard at ambient/normal handling temperatures. No end point data for material.

Respiratory or skin sensitization

Conclusion/Summary

Skin : Not expected to be a skin sensitizer. No end point data for material. Based on assessment of the components.

Respiratory : Not expected to be a respiratory sensitizer. No end point data for material.

Mutagenicity

Section 11. Toxicological information

Conclusion/Summary : Not expected to be a germ cell mutagen. No end point data for material. Based on assessment of the components.

Carcinogenicity

Conclusion/Summary : Not expected to cause cancer. No end point data for material. Based on assessment of the components.

Reproductive toxicity

Conclusion/Summary : Not expected to be a reproductive toxicant. No end point data for material. Based on assessment of the components.

Specific target organ toxicity (single exposure)

Conclusion/Summary : Not expected to cause organ damage from a single exposure. No end point data for material.

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Target organs
MOBILGREASE XHP 222	Not applicable.	-

Conclusion/Summary : Not expected to cause organ damage from prolonged or repeated exposure. No end point data for material. Based on assessment of the components.

Aspiration hazard

Conclusion/Summary : Not expected to be an aspiration hazard. Based on physico-chemical properties of the material. Data available.

Other information

Contains : C.I. Solvent blue: Positive in the Ames and Mouse Lymphoma mutagenicity assay. Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Section 12. Ecological information

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

Toxicity

Conclusion/Summary

Acute toxicity : Harmful to aquatic life.

Chronic toxicity : Not expected to demonstrate chronic toxicity to aquatic organisms.

Persistence and degradability

Biodegradability : Base oil component -- Expected to be inherently biodegradable

Bioaccumulative potential

Conclusion/Summary : Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

Mobility in soil

Mobility : Base oil component -- Expected to partition to sediment and wastewater solids. Low solubility and floats and is expected to migrate from water to the land.

Other ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Label(s) / Marks				
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not applicable.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 4(a) proposed test rules**: 1h-benzotriazole

TSCA 8(a) PAIR: diphenylamine; naphthalene

TSCA 8(a) CDR Exempt/Partial exemption: At least one component is not listed.

Clean Water Act (CWA) 307: zinc dialkyl dithiophosphate; naphthenic acids, zinc salts; zinc neodecanoate; naphthalene

Clean Water Act (CWA) 311: naphthalene; maleic anhydride

TSCA 12(b) - Chemical export notification

Not applicable.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Section 15. Regulatory information

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	zinc dialkyl dithiophosphate	68457-79-4	<2
Supplier notification	zinc dialkyl dithiophosphate	68457-79-4	<2

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: OIL MIST, MINERAL; OIL MIST, MINERAL; OIL MIST, MINERAL

New York : None of the components are listed.

New Jersey : The following components are listed: ZINC compounds; MINERAL OIL (UNTREATED and MILDLY TREATED)

Pennsylvania : The following components are listed: ZINC COMPOUNDS

Illinois : None of the components are listed.

Inventory list

Australia inventory (AIIC) : All components are listed or exempted.

Canada inventory (DSL-NDSL) : All components are listed or exempted.

China inventory (IECSC) : All components are listed or exempted.

Japan inventory (CSCL) : All components are listed or exempted.

Japan inventory (Industrial Safety and Health Act) : All components are listed or exempted.

New Zealand Inventory of Chemicals (NZIoC) : All components are listed or exempted.

Philippines inventory (PICCS) : All components are listed or exempted.

Korea inventory (KECI) : All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI) : All components are listed or exempted.

United States inventory (TSCA 8b) : All components are active or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	/	0
Flammability		1
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Procedure used to derive the classification

Not classified.

New Jersey Right to Know Disclosure

Name	CAS #
grease	
zinc dialkyl dithiophosphate	68457-79-4
hydrotreated middle distillate (petroleum)	64742-46-7

History

Date of issue/Date of revision : 16 August 2024

Date of previous issue : 16 July 2024

Version : 1.02

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

References : Not available.

Indicates information that has changed from previously issued version.

Product code : 2015A0202530_1196129

Notice to reader

Section 16. Other information

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

ROD GREASE

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Issue date: 6/17/2021 Revision date: 8/7/2023 Supersedes: 8/7/2023 Version: 2.1

SECTION 1 Identification

1.1. Product identifier

Product form : Mixture

Trade name : ROD GREASE

1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

No additional information available

1.4. Supplier's details

Manufacturer

Whitmore Manufacturing LLC
930 Whitmore Drive
Rockwall, Texas, 75087
USA
T 1.972.771.1000
Regulatory@whitmores.com - www.jetlube.com

1.5. Emergency phone number

Emergency number : For Chemical Emergency Call Ricardo Emergency Response 24hr/day 7days/week
Within USA and Canada: +1.215.207.0061
Outside USA and Canada: +44.1235.239670
(collect calls accepted)

Country/Area	Organization/Company	Address	Emergency number	Comment
United States	Ricardo-United States		+1.866.928.0789 (toll-free, US only)	

SECTION 2 Hazard Identification

2.1. Classification of the substance or mixture

GHS US classification

Not classified

2.2. Label elements

GHS US labeling

No labeling applicable

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

No additional information available

2.5. Unknown acute toxicity

No additional information available

SECTION 3 Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
distillates (petroleum), hydrotreated middle (Note N)	CAS-No.: 64742-46-7	1 – 2	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation:dust,mist), H332
white mineral oil (petroleum)	CAS-No.: 8042-47-5	1 – 2	Asp. Tox. 1, H304

Note N: The harmonised classification as a carcinogen applies unless the full refining history is known and it can be shown that the substance from which it is produced is not a carcinogen, in which case a classification in accordance with Title II of this Regulation shall be performed also for that hazard class.

Full text of hazard classes and H-statements : see section 16

SECTION 4 First aid measures

4.1. Description of necessary first-aid measures

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

First-aid measures after skin contact : Wash skin with plenty of water.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms/effects, acute and delayed

No additional information available

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Other medical advice or treatment : Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6 Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Emergency procedures : Exercise caution. Spill area may be slippery.

For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

Environmental precautions : Avoid release to the environment.

6.2. Methods and materials for containment and cleaning up

Methods for cleaning up : Mechanically recover the product.

Other information : Dispose of materials or solid residues at an authorized site.

For further information refer to section 13

SECTION 7 Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including incompatibilities

Storage conditions : Store in a well-ventilated place. Keep cool.

SECTION 8 Exposure controls/personal protection

8.1. Control parameters

white mineral oil (petroleum) (8042-47-5)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	5 mg/m³ (Inhalable fraction)

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures, such as personal protective equipment

Hand protection:

Neoprene or nitrile rubber gloves

Type	Material	Permeation	Thickness (mm)	Penetration
Disposable gloves	Nitrile rubber (NBR), Neoprene rubber (HNBR)	2 (> 30 minutes)	0.3 mm - 0.6 mm	

Eye protection:

Wear eye protection

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

No respiratory protection needed under normal use conditions

SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state	: Solid
Appearance	: Grease.
Color	: light beige
Odor	: Mild odor
Odor threshold	: No data available
pH	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: No data available
Relative vapor density at 20°C	: No data available
Relative density	: No data available
Solubility	: insoluble in water.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: > 25 mm^2/s
Explosion limits	: No data available
Particle characteristics	: No data available

9.2. Data relevant with regard to physical hazard classes (supplemental)

VOC content	: < 0.1 g/l

SECTION 10 Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

white mineral oil (petroleum) (8042-47-5)	
LD50 oral rat	> 5000 mg/kg body weight (Equivalent or similar to OECD 401, Rat, Male / female, Read-across, Oral)
LD50 dermal rabbit	> 2000 mg/kg body weight (Equivalent or similar to OECD 402, 24 h, Rabbit, Male / female, Read-across, Dermal)
LC50 Inhalation - Rat	> 5 mg/l (Equivalent or similar to OECD 403, 4 h, Rat, Male / female, Read-across, Inhalation (aerosol))

distillates (petroleum), hydrotreated middle (64742-46-7)	
LD50 oral rat	> 5000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LD50 dermal rabbit	> 2000 mg/kg body weight Animal: rabbit, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 Inhalation - Rat (Dust/Mist)	> 4.6 mg/l Source: ECHA
ATE US (dust, mist)	1.5 mg/l/4h

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

distillates (petroleum), hydrotreated middle (64742-46-7)	
NOAEL (animal/male, F0/P)	≥ 3000 mg/kg body weight Animal: rat, Animal sex: male

STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified

ROD GREASE	
Viscosity, kinematic	> 25 mm²/s

white mineral oil (petroleum) (8042-47-5)	
Viscosity, kinematic	> 3 mm²/s (40 °C, ISO 3104: Determination of kinematic viscosity and calculation of dynamic viscosity)

distillates (petroleum), hydrotreated middle (64742-46-7)	
Viscosity, kinematic	2 – 8.1 mm²/s Temp.: '40°C' Parameter: 'mm²/smm2/s'

SECTION 12 Ecological information

12.1. Ecotoxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

white mineral oil (petroleum) (8042-47-5)	
LC50 - Fish [1]	> 100 mg/l

12.2. Persistence and degradability

ROD GREASE	
Persistence and degradability	Not rapidly degradable

white mineral oil (petroleum) (8042-47-5)	
Persistence and degradability	Not rapidly degradable.

distillates (petroleum), hydrotreated middle (64742-46-7)	
Persistence and degradability	Not rapidly degradable

12.3. Bioaccumulative potential

white mineral oil (petroleum) (8042-47-5)	
Partition coefficient n-octanol/water (Log Pow)	> 6 (calculated value)

distillates (petroleum), hydrotreated middle (64742-46-7)	
Partition coefficient n-octanol/water (Log Pow)	3.9 – 6 Source: IUCLID

12.4. Mobility in soil

white mineral oil (petroleum) (8042-47-5)	
Ecology - soil	Product adsorbs onto the soil.

12.5. Other adverse effects

Ozone : Not classified

Fluorinated greenhouse gases : No

SECTION 13 Disposal considerations

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14 Transport information

In accordance with DOT / TDG / IMDG / IATA

DOT	TDG	IMDG	IATA
14.1. UN number			
Not regulated for transport			
14.2. Proper Shipping Name			
Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)			
Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group			
Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards			
Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available			

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT

Not regulated

TDG

Not regulated

IMDG

Not regulated

IATA

Not regulated

SECTION 15 Regulatory information

15.1. Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

15.2. International regulations

CANADA

white mineral oil (petroleum) (8042-47-5)

Listed on the Canadian DSL (Domestic Substances List)

distillates (petroleum), hydrotreated middle (64742-46-7)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

white mineral oil (petroleum) (8042-47-5)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

distillates (petroleum), hydrotreated middle (64742-46-7)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

white mineral oil (petroleum) (8042-47-5)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECI (Korean Existing Chemicals Inventory)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)

distillates (petroleum), hydrotreated middle (64742-46-7)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECI (Korean Existing Chemicals Inventory)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)

15.3. State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Component	State or local regulations
talc(14807-96-6)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16 Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 8/7/2023

Issue date : 6/17/2021

Full text of hazard classes and H-statements	
H226	Flammable liquid and vapor
H304	May be fatal if swallowed and enters airways
H332	Harmful if inhaled

Safety Data Sheet (SDS), USA

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

KOPR-KOTE®

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Issue date: 3/13/2020 Revision date: 1/24/2023 Supersedes: 1/17/2023 Version: 3.3

SECTION 1: Identification

1.1. Identification

Product form : Mixture

Trade name : KOPR-KOTE®

Product code : J101

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Drill Collar Compound
Tool Joint Compound

Recommended use : Drill Collar Compound , Tool Joint Compound

1.3. Supplier

Manufacturer

Whitmore Manufacturing LLC
930 Whitmore Drive
Rockwall, Texas, 75087
USA
T 1.972.771.1000
Regulatory@whitmores.com - www.jetlube.com

1.4. Emergency telephone number

Emergency number : For Chemical Emergency Call CHEMTREC 24hr/day 7days/week
Within USA and Canada: 1.800.424.9300
Outside USA and Canada: +1.703.527.3887
(collect calls accepted)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Not classified

2.2. GHS Label elements, including precautionary statements

GHS US labeling

No labeling applicable

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

No additional information available

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
copper	CAS-No.: 7440-50-8	5 - 10	Acute Tox. 4 (Oral), H302
Distillates (petroleum), hydrotreated heavy naphthenic (Note L)	CAS-No.: 64742-52-5	40 - 50	Not classified

Note L: The harmonised classification as a carcinogen applies unless it can be shown that the substance contains less than 3 % of dimethyl sulphoxide extract as measured by IP 346 (“Determination of polycyclic aromatics in unused lubricating base oils and asphaltene free petroleum fractions – Dimethyl sulphoxide extraction refractive index method” Institute of Petroleum, London), in which case a classification in accordance with Title II of this Regulation shall be performed also for that hazard class.

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

First-aid measures after skin contact : Wash skin with plenty of water.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

No additional information available

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Exercise caution. Spill area may be slippery.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Mechanically recover the product.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a well-ventilated place. Keep cool.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

KOPR-KOTE®

No additional information available

Distillates (petroleum), hydrotreated heavy naphthenic (64742-52-5)

No additional information available

copper (7440-50-8)

USA - ACGIH - Occupational Exposure Limits

ACGIH OEL TWA	0.2 mg/m³ 1 mg/m³

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Neoprene or nitrile rubber gloves

Type	Material	Permeation	Thickness (mm)	Penetration
Disposable gloves	Nitrile rubber (NBR), Neoprene rubber (HNBR)	2 (> 30 minutes)	0.3 mm - 0.6 mm	

Eye protection:

Wear eye protection

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

No respiratory protection needed under normal use conditions

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Paste.
Color	: Metallic
Odor	: petroleum-like odor
Odor threshold	: No data available
pH	: 7
Melting point	: No data available
Freezing point	: Not applicable
Boiling point	: No data available
Flash point	: > 232 °C Open cup
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: No data available
Relative vapor density at 20°C	: No data available
Relative density	: No data available
Solubility	: insoluble in water.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: Not applicable
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

VOC content	: 0 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

copper (7440-50-8)	
LD50 oral rat	300 – 500 mg/kg body weight (OECD 423: Acute Oral Toxicity – Acute Toxic Class Method, Rat, Male / female, Experimental value, Oral)
LD50 dermal rat	> 2000 mg/kg body weight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal, 14 day(s))
LC50 Inhalation - Rat	> 5.11 mg/l (OECD 436: Acute inhalation toxicity-acute toxic class method, 4 h, Rat, Male / female, Experimental value, Inhalation)
ATE US (oral)	300 mg/kg body weight

Skin corrosion/irritation : Not classified
pH: 7

copper (7440-50-8)	
pH	No data available in the literature

Serious eye damage/irritation : Not classified
pH: 7

copper (7440-50-8)	
pH	No data available in the literature

Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified
Viscosity, kinematic : No data available

copper (7440-50-8)	
Viscosity, kinematic	Not applicable (solid)

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

KOPR-KOTE®	
LC50 - Other aquatic organisms [1]	> 1000 mg/l copepod Acartia tonsa
EC50 - Other aquatic organisms [1]	> 1000 mg/l Skeletonema costatum (marine diatom)
LC50 - Other aquatic organisms [2]	1800 mg/kg

copper (7440-50-8)	
LC50 - Fish [1]	1.25 mg/l (APHA, 96 h, Cyprinus carpio, Fresh water, Experimental value)

copper (7440-50-8)	
EC50 - Crustacea [1]	0.03 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)

12.2. Persistence and degradability

copper (7440-50-8)	
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

12.3. Bioaccumulative potential

copper (7440-50-8)	
Bioaccumulative potential	Not bioaccumulative.

12.4. Mobility in soil

copper (7440-50-8)	
Ecology - soil	No (test) data on mobility of the substance available.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

DOT	TDG	IMDG	IATA
14.1. UN number			
Not applicable	Not applicable	Not applicable	Not applicable
14.2. Proper Shipping Name			
Not applicable	Not applicable	Not applicable	Not applicable
Transport document description			
Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)			
Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available			

14.6. Special precautions for user

DOT

No data available

TDG

Excepted quantities (TDG) : E1

Emergency Response Guide (ERG) Number : 171

IMDG

No data available

IATA

No data available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory, except for:		
copper	CAS-No. 7440-50-8	5 - 10%

15.2. International regulations

CANADA

Distillates (petroleum), hydrotreated heavy naphthenic (64742-52-5)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Distillates (petroleum), hydrotreated heavy naphthenic (64742-52-5)
Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Component	State or local regulations
graphite(7782-42-5)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
talc(14807-96-6)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
chalk(1317-65-3)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
calcium sulfate(7778-18-9)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
molybdenium(IV) sulfide(1317-33-5)	U.S. - Massachusetts - Right To Know List; U.S. - New York City - Right to Know Hazardous Substances List
quartz, 1%≤conc respirable crystalline silica<10%(14808-60-7)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 1/24/2023

Full text of H-phrases	
H302	Harmful if swallowed

Safety Data Sheet (SDS), USA

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

SAFETY DATA SHEET

1. Identification

Product identifier	**Cold Flow™ Anti-Gel with Lubricity - 12 fl oz**
Other means of identification	
Product Code	No. 05612 (Item# 1003830)
Registration number	EPA: 048320073
Recommended use	Diesel muel additive mor cold weather
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufactured or sold by:

Company name	CRC Industries, Inc.
Address	885 Louis Dr. Warminster, PA 18974 US
Telephone	
General Information	215-674-4300
Technical Assistance	800-521-3168
Customer Service	800-272-4620
24-Hour Emergency (CHEMTREC)	800-424-9300 (US)
Website	www.crcindustries.com

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 3
Health hazards	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Carcinogenicity	Category 2
	Reproductive toxicity (the unborn child)	Category 2
	Specimic target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specimic target organ toxicity, single exposure	Category 3 narcotic emmects
	Specimic target organ toxicity, repeated exposure	Category 2 (auditory system, central nervous system, kidney, liver)
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classimied.	

Label elements

Signal word	Danger
Hazard statement	Flammable liquid and vapor. May be matal im swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. Harmmul im inhaled. May cause respiratory irritation. May cause drowsiness or dizziness. Suspected om causing cancer. Suspected om damaging the unborn child. May cause damage to organs (auditory system, central nervous system, kidney, liver) through prolonged or repeated exposure. Toxic to aquatic lime. Toxic to aquatic lime with long lasting emmects.

Precautionary statement

Prevention Obtain special instructions bemore use. Do not handle until all samety precautions have been read and understood. Keep away mrom heat/sparks/open mlames/hot surmaces. - No smoking. Keep container tightly closed. Use explosion-proom electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe vapors. Use with adequate ventilation. Open doors and windows or use other means to ensure a mresh air supply during use and while product is drying. Im you experience any symptoms listed on this label, increase ventilation or leave the area. Wash thoroughly amter handling. Wear protective gloves/protective clothing/eye protection/mace protection. Avoid release to the environment.

Response Im swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. Im on skin (or hair): Take omm immediately all contaminated clothing. Rinse skin with water/shower. Im skin irritation occurs: Get medical advice/attention. Wash contaminated clothing bemore reuse. Im inhaled: Remove person to mresh air and keep commortable mor breathing. Call a poison center/doctor im you meel unwell. Im in eyes: Rinse cautiously with water mor several minutes. Remove contact lenses, im present and easy to do. Continue rinsing. Im eye irritation persists: Get medical advice/attention. Im exposed or concerned: Get medical advice/attention. In case om mire: Do not use water jet as an extinguisher, as this will spread the mire. Collect spillage.

Storage Keep cool. Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal Dispose om contents/container in accordance with local/regional/national regulations.

Hazard(s) not otherwise classified (HNOC) Static accumulating mlammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause mlash mire or explosion.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
xylene		1330-20-7	50 - 60
solvent naphtha (petroleum), heavy arom.		64742-94-5	20 - 30
ethylbenzene		100-41-4	10 - 20
1,2,4-trimethylbenzene		95-63-6	3 - 5
naphthalene		91-20-3	1 - 3
oleic acid		112-80-1	1 - 3
toluene		108-88-3	< 1
butylated phenol		128-39-2	< 0.2
cumene		98-82-8	< 0.2

Specimic chemical identity and/or percentage om composition has been withheld as a trade secret.

4. First-aid measures

Inhalation Remove victim to mresh air and keep at rest in a position commortable mor breathing. Oxygen or artimicial respiration im needed. Call a POISON CENTER or doctor/physician im you meel unwell.

Skin contact Take omm immediately all contaminated clothing. Rinse skin with water/shower. Im skin irritation occurs: Get medical advice/attention. Wash contaminated clothing bemore reuse.

Eye contact Immediately mlush eyes with plenty om water mor at least 15 minutes. Remove contact lenses, im present and easy to do. Continue rinsing. Get medical attention im irritation develops and persists.

Ingestion Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. Im vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness and dizziness. Narcosis. Headache. Nausea, vomiting. Behavioral changes. Decrease in motor munctions. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain. Edema. Jaundice. Prolonged exposure may cause chronic emmects.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While mlushing, remove clothes which do not adhere to ammected area. Call an ambulance. Continue mlushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information Take omm all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware om the material(s) involved, and take precautions to protect themselves. Show this samety data sheet to the doctor in attendance. Wash contaminated clothing bemore reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water mog. Foam. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide, sand or earth may be used mor small mires only.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the mire.
Specific hazards arising from the chemical	Vapors may morm explosive mixtures with air. Vapors may travel considerable distance to a source om ignition and mlash back. This product is a poor conductor om electricity and can become electrostatically charged. Im summicient charge is accumulated, ignition om mlammable mixtures can occur. This liquid may accumulate static electricity when milling properly grounded containers. Static electricity accumulation may be signimicantly increased by the presence om small quantities om water or other contaminants. Material will mloat and may ignite on surmace om water. During mire, gases hazardous to health may be mormed.
Special protective equipment and precautions for firefighters	Selm-contained breathing apparatus and mull protective clothing must be worn in case om mire.
Fire-fighting equipment/instructions	In case om mire and/or explosion do not breathe mumes. Move containers mrom mire area im you can do so without risk.
General fire hazards	Flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away mrom and upwind om spill/leak. Eliminate all ignition sources (no smoking, mlares, sparks, or mlames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces bemore entering them. Use appropriate containment to avoid environmental contamination. Local authorities should be advised im signimicant spillages cannot be contained. For personal protection, see section 8 om the SDS.
Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, mlares, sparks, or mlames in immediate area). Keep combustibles (wood, paper, oil, etc.) away mrom spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. This product is miscible in water. This material is classimied as a water pollutant under the Clean Water Act and should be prevented mrom contaminating soil or mrom entering sewage and drainage systems which lead to waterways. Small Spills: Absorb with earth, sand or other non-combustible material and transmer to containers mor later disposal. Wipe up with absorbent material (e.g. cloth, mleece). Clean surmace thoroughly to remove residual contamination. Never return spills to original containers mor re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 om the SDS.
Environmental precautions	Avoid release to the environment. Inmorm appropriate managerial or supervisory personnel om all environmental releases. Prevent murther leakage or spillage im same to do so. Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.

7. Handling and storage

Precautions for safe handling	Obtain special instructions bemore use. Do not handle until all samety precautions have been read and understood. Do not handle, store or open near an open mlame, sources om heat or sources om ignition. Protect material mrom direct sunlight. When using do not smoke. Explosion-proom general and local exhaust ventilation. Take precautionary measures against static discharges. Use non-sparking tools and explosion-proom equipment. Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Pregnant or breastmeeding women must not handle this product. Should be handled in closed systems, im possible. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly amter handling. Avoid release to the environment. Observe good industrial hygiene practices. For product usage instructions, see the product label.
Conditions for safe storage, including any incompatibilities	Keep away mrom heat, sparks and open mlame. Eliminate sources om ignition. Avoid spark promoters. Store in a cool, dry place out om direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away mrom incompatible materials (see Section 10 om the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
cumene (CAS 98-82-8)	PEL	245 mg/m3
		50 ppm
ethylbenzene (CAS 100-41-4)	PEL	435 mg/m3
		100 ppm
naphthalene (CAS 91-20-3)	PEL	50 mg/m3
		10 ppm
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)	PEL	400 mg/m3
		100 ppm
xylene (CAS 1330-20-7)	PEL	435 mg/m3
		100 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
toluene (CAS 108-88-3)	Ceiling	300 ppm
	TWA	200 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
1,2,4-trimethylbenzene (CAS 95-63-6)	TWA	25 ppm	
cumene (CAS 98-82-8)	TWA	50 ppm	
ethylbenzene (CAS 100-41-4)	TWA	20 ppm	
naphthalene (CAS 91-20-3)	TWA	10 ppm	
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)	TWA	200 mg/m3	Non-aerosol.
toluene (CAS 108-88-3)	TWA	20 ppm	
xylene (CAS 1330-20-7)	STEL	150 ppm	
	TWA	100 ppm	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
1,2,4-trimethylbenzene (CAS 95-63-6)	TWA	125 mg/m3
		25 ppm
cumene (CAS 98-82-8)	TWA	245 mg/m3
		50 ppm
ethylbenzene (CAS 100-41-4)	STEL	545 mg/m3
		125 ppm
	TWA	435 mg/m3
		100 ppm
naphthalene (CAS 91-20-3)	STEL	75 mg/m3
		15 ppm
	TWA	50 mg/m3
		10 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)	TWA	100 mg/m3
toluene (CAS 108-88-3)	STEL	560 mg/m3
		150 ppm
	TWA	375 mg/m3
		100 ppm
xylene (CAS 1330-20-7)	STEL	655 mg/m3
		150 ppm
	TWA	435 mg/m3
		100 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
ethylbenzene (CAS 100-41-4)	0.15 g/g	Sum om mandelic acid and phenylglyoxylic acid	Creatinine in urine	*
toluene (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*
	0.02 mg/l	Toluene	Blood	*
xylene (CAS 1330-20-7)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

cumene (CAS 98-82-8)	Can be absorbed through the skin.
naphthalene (CAS 91-20-3)	Can be absorbed through the skin.
toluene (CAS 108-88-3)	Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

cumene (CAS 98-82-8)	Skin designation applies.
toluene (CAS 108-88-3)	Skin designation applies.

US - Tennessee OELs: Skin designation

cumene (CAS 98-82-8)	Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

naphthalene (CAS 91-20-3)	Can be absorbed through the skin.
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)	Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

cumene (CAS 98-82-8)	Can be absorbed through the skin.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

cumene (CAS 98-82-8)	Can be absorbed through the skin.

Appropriate engineering controls

Explosion-proom general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Im applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. Im exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash macilities and emergency shower should be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear samety glasses with side shields (or goggles).

Skin protection

Hand protection Wear protective gloves such as: Nitrile. Neoprene. Polyvinyl chloride (PVC).

Other	Wear appropriate chemical resistant clothing. Use om an impervious apron is recommended.
Respiratory protection	Im engineering controls are not measible or im exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with an organic vapor cartridge. Use a selm-contained breathing apparatus in conmined spaces and mor emergencies. Air monitoring is needed to determine actual employee exposure levels.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing amter handling the material and bemore eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Amber.
Odor	Petroleum.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	-52.6 °F (-47 °C) estimated
Initial boiling point and boiling range	278.6 °F (137 °C) estimated
Flash point	89.6 °F (32 °C) Setamlash
Evaporation rate	Slow.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	0.5 % estimated
Flammability limit - upper (%)	6.6 % estimated
Vapor pressure	7.4 hPa estimated
Vapor density	> 1 (air = 1)
Relative density	0.88
Solubility(ies)	
Solubility (water)	Negligible.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	410 °F (210 °C) estimated
Decomposition temperature	Not available.
Percent volatile	96.6 % estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions om use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions om normal use.
Conditions to avoid	Avoid heat, sparks, open mlames and other ignition sources. Contact with incompatible materials.
Incompatible materials	Strong acids. Strong oxidizing agents. Halogens.
Hazardous decomposition products	Carbon oxides. Alkene.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Harmmul im inhaled. May cause damage to organs through prolonged or repeated exposure by inhalation. May cause drowsiness and dizziness. Headache. Nausea, vomiting.

Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Droplets om the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.
Symptoms related to the physical, chemical and toxicological characteristics	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness and dizziness. Narcosis. Headache. Nausea, vomiting. Behavioral changes. Decrease in motor munctions. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain. Edema. Jaundice.

Information on toxicological effects

Acute toxicity May be matal im swallowed and enters airways. Harmmul im inhaled.

Components	Species	Test Results
1,2,4-trimethylbenzene (CAS 95-63-6)		
Acute		
Dermal		
LD50	Rabbit	> 3160 mg/kg
Oral		
LD50	Rat	6 g/kg
butylated phenol (CAS 128-39-2)		
Acute		
Oral		
LD50	Mouse	2995 mg/kg
ethylbenzene (CAS 100-41-4)		
Acute		
Dermal		
LD50	Rabbit	15400 mg/kg
Oral		
LD50	Rat	3500 mg/kg
naphthalene (CAS 91-20-3)		
Acute		
Dermal		
LD50	Rabbit	> 20 g/kg
oleic acid (CAS 112-80-1)		
Acute		
Dermal		
LD50	Guinea pig	> 3000 mg/kg
Oral		
LD50	Rat	74 g/kg
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
Vapor		
LC50	Rat	> 22 mg/l, 4 hours
Oral		
LD50	Rat	> 5000 mg/kg
toluene (CAS 108-88-3)		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg
Inhalation		
LC50	Rat	12.5 mg/l, 4 hours

Components	Species	Test Results
Oral		
LD50	Rat	5580 mg/kg
xylene (CAS 1330-20-7)		
Acute		
Dermal		
LD50	Rabbit	> 4300 mg/kg
Inhalation		
LC50	Rat	29 mg/l, 4 hours

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Suspected om causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

cumene (CAS 98-82-8)	2B Possibly carcinogenic to humans.
ethylbenzene (CAS 100-41-4)	2B Possibly carcinogenic to humans.
naphthalene (CAS 91-20-3)	2B Possibly carcinogenic to humans.
toluene (CAS 108-88-3)	3 Not classimiable as to carcinogenicity to humans.
xylene (CAS 1330-20-7)	3 Not classimiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

cumene (CAS 98-82-8)	Reasonably Anticipated to be a Human Carcinogen.
naphthalene (CAS 91-20-3)	Known To Be Human Carcinogen. Reasonably Anticipated to be a Human Carcinogen.

Reproductive toxicity Components in this product have been shown to cause birth demects and reproductive disorders in laboratory animals. Suspected om damaging the unborn child.

Specific target organ toxicity - single exposure May cause respiratory irritation. May cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure May cause damage to organs (auditory system, central nervous system, kidney, liver) through prolonged or repeated exposure.

Aspiration hazard May be matal im swallowed and enters airways. Im aspirated into lungs during swallowing or vomiting, may cause chemical pneumonia, pulmonary injury or death.

Chronic effects May cause damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmmul. Prolonged exposure may cause chronic emmects.

12. Ecological information

Ecotoxicity Toxic to aquatic lime with long lasting emmects.

Components		Species	Test Results
1,2,4-trimethylbenzene (CAS 95-63-6)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	7.19 - 8.28 mg/l, 96 hours
Acute			
Crustacea	EC50	Water mlea (Daphnia magna)	3.6 mg/l, 48 hours
butylated phenol (CAS 128-39-2)			
Aquatic			
Acute			
Crustacea	EC50	Water mlea (Daphnia magna)	0.45 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	1.4 mg/l, 96 hours

Components		Species	Test Results
cumene (CAS 98-82-8)			
Aquatic			
Crustacea	EC50	Brine shrimp (Artemia sp.)	3.55 - 11.29 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	2.7 mg/l, 96 hours
ethylbenzene (CAS 100-41-4)			
Aquatic			
Acute			
Crustacea	EC50	Daphnia magna	1.8 mg/l, 48 hours
Fish	LC50	Fish	5.1 mg/l, 96 hours
naphthalene (CAS 91-20-3)			
Aquatic			
Acute			
Crustacea	EC50	Water mlea (Daphnia magna)	1.09 - 3.4 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	1.6 mg/l, 96 hours
oleic acid (CAS 112-80-1)			
Aquatic			
Acute			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	56 mg/l, 96 hours
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)			
Aquatic			
Acute			
Crustacea	EC50	Daphnia magna	1.1 mg/l, 48 hours
Fish	EC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	2 mg/l, 96 hours
	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	2 mg/l, 96 hours
toluene (CAS 108-88-3)			
Acute			
Other	EC50	Pseudokirchnerella subcapitata	433 mg/l, 96 hours
			12.5 mg/l, 72 hours
Aquatic			
Acute			
Crustacea	EC50	Water mlea (Daphnia magna)	6 mg/l, 48 hours
Fish	LC50	Coho salmon,silver salmon (Oncorhynchus kisutch)	5.5 mg/l, 96 hours
xylene (CAS 1330-20-7)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	6.702 - 10.032 mg/l, 96 hours
Acute			
Crustacea	EC50	Daphnia magna	3.82 mg/l, 48 hours

Persistence and degradability No data is available on the degradability omany ingredients in the mixture.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)	
butylated phenol	4.92
cumene	3.66
ethylbenzene	3.15
naphthalene	3.3
toluene	2.73
xylene	3.12 - 3.2

Bioconcentration factor (BCF)	
ethylbenzene	1
toluene	90
xylene	23.99

Mobility in soil No data available.

Other adverse effects No other adverse environmental emmects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected mrom this component.

13. Disposal considerations

Hazardous waste code D001: Waste Flammable material with a mlash point <140 F
F003: Waste Non-halogenated Solvent - Spent Non-halogenated Solvent

Disposal instructions This material and its container must be disposed om as hazardous waste. Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.

Contaminated packaging Empty containers should be taken to an approved waste handling site mor recycling or disposal. Since emptied containers may retain product residue, mollow label warnings even amter container is emptied.

14. Transport information

DOT

- **UN number** UN1993
- **UN proper shipping name** Flammable liquids, n.o.s. (xylene RQ = 196 LBS, petroleum naphtha), Limited Quantity
- **Transport hazard class(es)**
  - **Class** 3
  - **Subsidiary risk** -
  - **Label(s)** 3
- **Packing group** III
- **Special precautions for user** Read samety instructions, SDS and emergency procedures bemore handling.
- **Special provisions** B1, B52, IB3, T4, TP1, TP29
- **Packaging exceptions** 150
- **Packaging non bulk** 203
- **Packaging bulk** 242

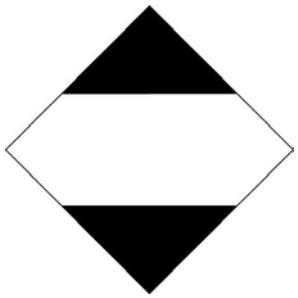
IATA

- **UN number** UN1993
- **UN proper shipping name** Flammable liquid, n.o.s. (xylene, petroleum naphtha), Limited Quantity
- **Transport hazard class(es)**
  - **Class** 3
  - **Subsidiary risk** -
- **Packing group** III
- **ERG Code** 3L
- **Special precautions for user** Read samety instructions, SDS and emergency procedures bemore handling.
- **Other information**
  - **Passenger and cargo aircraft** Allowed with restrictions.
  - **Cargo aircraft only** Allowed with restrictions.

IMDG

- **UN number** UN1993
- **UN proper shipping name** FLAMMABLE LIQUID, N.O.S. (xylene, petroleum naphtha), Limited Quantity
- **Transport hazard class(es)**
  - **Class** 3
  - **Subsidiary risk** -
- **Packing group** III
- **Environmental hazards**
  - **Marine pollutant** Yes, but exempt mrom the regulations.
- **EmS** F-E, S̀-È
- **Special precautions for user** Read samety instructions, SDS and emergency procedures bemore handling.

DOT; IMDG



IATA

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as demined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

1,2,4-trimethylbenzene (CAS 95-63-6)
cumene (CAS 98-82-8)
ethylbenzene (CAS 100-41-4)
naphthalene (CAS 91-20-3)
xylene (CAS 1330-20-7)

CERCLA Hazardous Substance List (40 CFR 302.4)

cumene (CAS 98-82-8)
ethylbenzene (CAS 100-41-4)
naphthalene (CAS 91-20-3)
toluene (CAS 108-88-3)
xylene (CAS 1330-20-7)

CERCLA Hazardous Substances: Reportable quantity

cumene (CAS 98-82-8)	5000 LBS
ethylbenzene (CAS 100-41-4)	1000 LBS
naphthalene (CAS 91-20-3)	100 LBS
toluene (CAS 108-88-3)	1000 LBS
xylene (CAS 1330-20-7)	100 LBS

Spills or releases resulting in the loss om any ingredient at or above its RQ require immediate notimication to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

cumene (CAS 98-82-8)
ethylbenzene (CAS 100-41-4)
naphthalene (CAS 91-20-3)
toluene (CAS 108-88-3)
xylene (CAS 1330-20-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

toluene (CAS 108-88-3) 6594

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

toluene (CAS 108-88-3) 35 %WV

DEA Exempt Chemical Mixtures Code Number

toluene (CAS 108-88-3) 594

Food and Drug Administration (FDA) Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Classified hazard categories
Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route om exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Carcinogenicity
Reproductive toxicity
Specimic target organ toxicity (single or repeated exposure)
Aspiration hazard
Hazard not otherwise classimied (HNOC)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
1,2,4-trimethylbenzene	95-63-6	3 - 5
cumene	98-82-8	< 0.2
ethylbenzene	100-41-4	10 - 20
naphthalene	91-20-3	1 - 3
toluene	108-88-3	< 1
xylene	1330-20-7	50 - 60

US state regulations

US. New Jersey Worker and Community Right-to-Know Act

1,2,4-trimethylbenzene (CAS 95-63-6)
cumene (CAS 98-82-8)
ethylbenzene (CAS 100-41-4)
naphthalene (CAS 91-20-3)
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)
toluene (CAS 108-88-3)
xylene (CAS 1330-20-7)

US. Massachusetts RTK - Substance List

1,2,4-trimethylbenzene (CAS 95-63-6)
cumene (CAS 98-82-8)
ethylbenzene (CAS 100-41-4)
naphthalene (CAS 91-20-3)
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)
toluene (CAS 108-88-3)
xylene (CAS 1330-20-7)

US. Pennsylvania Worker and Community Right-to-Know Law

1,2,4-trimethylbenzene (CAS 95-63-6)
cumene (CAS 98-82-8)
ethylbenzene (CAS 100-41-4)
naphthalene (CAS 91-20-3)
oleic acid (CAS 112-80-1)
toluene (CAS 108-88-3)
xylene (CAS 1330-20-7)

US. Rhode Island RTK

1,2,4-trimethylbenzene (CAS 95-63-6)
cumene (CAS 98-82-8)

ethylbenzene (CAS 100-41-4)
naphthalene (CAS 91-20-3)
oleic acid (CAS 112-80-1)
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)
toluene (CAS 108-88-3)
xylene (CAS 1330-20-7)

California Proposition 65

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

California Proposition 65 - CRT: Listed date/Carcinogenic substance

benzene (CAS 71-43-2)	Listed: February 27, 1987
cumene (CAS 98-82-8)	Listed: April 6, 2010
ethylbenzene (CAS 100-41-4)	Listed: June 11, 2004
naphthalene (CAS 91-20-3)	Listed: April 19, 2002

California Proposition 65 - CRT: Listed date/Developmental toxin

benzene (CAS 71-43-2)	Listed: December 26, 1997
toluene (CAS 108-88-3)	Listed: January 1, 1991

California Proposition 65 - CRT: Listed date/Male reproductive toxin

benzene (CAS 71-43-2)	Listed: December 26, 1997

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

1,2,4-trimethylbenzene (CAS 95-63-6)
cumene (CAS 98-82-8)
ethylbenzene (CAS 100-41-4)
naphthalene (CAS 91-20-3)
solvent naphtha (petroleum), heavy arom. (CAS 64742-94-5)
toluene (CAS 108-88-3)
xylene (CAS 1330-20-7)

Volatile organic compounds (VOC) regulations

EPA

VOC content (40 CFR 51.100(s))	> 95.8 %
Consumer products (40 CFR 59, Subpt. C)	Not regulated

State

Consumer products	Not regulated
VOC content (CA)	> 95.8 %
VOC content (OTC)	> 95.8 %

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory om Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory om Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory om Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List om Notimied Chemical Substances (ELINCS)	No
Japan	Inventory om Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory om Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components om this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components om the product are not listed or exempt mrom listing on the inventory administered by the governi country(s).

16. Other information, including date of preparation or last revision

Issue date	08-01-2019
Prepared by	Allison Yoon
Version #	01
Further information	CRC # 1751615
Disclaimer	The inmormation contained in this document applies to this specimic material as supplied. It may not be valid mor this material im it is used in combination with any other materials. This inmormation is accurate to the best om CRC's knowledge or obtained mrom sources believed by CRC to be accurate. Bemore using any product, read all warnings and directions on the label. For murther clarimication om any inmormation contained on this (M)SDS consult your supervisor, a health & samety promessional, or CRC Industries, Inc..
Revision information	Product and Company Identimication: Product Registration Numbers Hazard(s) identimication: Prevention Composition / Inmormation on Ingredients: Ingredients Accidental release measures: Personal precautions, protective equipment and emergency procedures Handling and storage: Precautions mor same handling Physical & Chemical Properties: Multiple Properties Stability and reactivity: Hazardous decomposition products Disposal considerations: Disposal instructions Disposal considerations: Hazardous waste code Transport Inmormation: Material Transportation Inmormation Regulatory inmormation: Same Drinking Water Act (SDWA) Other inmormation, including date om preparation or last revision: Further inmormation GHS: Classimication

Parts Washer Solvent

Safety Data Sheet

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012

Date of issue: 11/16/2014 Revision date: 11/30/2016 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Substance

Product name : Parts Washer Solvent

Product code : 128-PWS, 5-PWS, 55-PWS

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Degreaser

1.3. Details of the supplier of the safety data sheet

The Blaster Corporation
8500 Sweet Valley Drive
Valley View, Ohio 44125 - USA
T (216) 901-5800 - F (216) 901-5801
www.blastercorp.com

1.4. Emergency telephone number

Emergency number : ChemTel 800-255-3924

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Flam. Liq. 4

Asp. Tox. 1

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :

GHS08

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : Combustible liquid
May be fatal if swallowed and enters airways

Precautionary statements (GHS-US) : Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Wear protective gloves/protective clothing/eye protection/face protection
If swallowed: Immediately call a poison center/doctor
Do NOT induce vomiting
In case of fire: Use media other than water to extinguish
Store in a well-ventilated place. Keep cool
Store locked up
Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Name : Parts Washer Solvent

Name	Product identifier	%
Petroleum distillates, hydrotreated light	(CAS No) 64742-47-8	100

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

First-aid measures after skin contact : If irritation occurs, flush skin with plenty of water. Get medical attention if irritation persists.

First-aid measures after eye contact : In case of contact, immediately flush eyes with plenty of water. Remove contact lenses, if worn. If irritation persists, get medical attention.

First-aid measures after ingestion : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May cause respiratory tract irritation.

Symptoms/injuries after skin contact : May cause skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin.

Symptoms/injuries after eye contact : May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.

Symptoms/injuries after ingestion : May be fatal if swallowed and enters airways. This product may be aspirated into the lungs and cause chemical pneumonitis. May cause stomach distress, nausea or vomiting.

4.3. Indication of any immediate medical attention and special treatment needed

Symptoms may not appear immediately. In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Powder, water fog, foam, carbon dioxide.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Combustible liquid. Products of combustion may include, and are not limited to: oxides of carbon.

Reactivity : No dangerous reaction known under conditions of normal use.

5.3. Advice for firefighters

Firefighting instructions : Cool closed containers exposed to fire with water spray.

Protection during firefighting : Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Eliminate sources of ignition.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

For containment : Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

Methods for cleaning up : Scoop up material and place in a disposal container. Provide ventilation.

6.4. Reference to other sections

See section 8 for further information on protective clothing and equipment and section 13 for advice on waste disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Keep away from sources of ignition - No smoking. Avoid contact with skin and eyes. Avoid breathing vapour or mist. Do not swallow. Handle and open container with care. Use only in well-ventilated areas. When using do not eat, drink or smoke.

Hygiene measures : Launder contaminated clothing before reuse. Wash hands before eating, drinking, or smoking.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep out of the reach of children. Keep container tightly closed, dry and in a well-ventilated place. Keep cool. Store locked up.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Petroleum distillates, hydrotreated light (64742-47-8)		
ACGIH	ACGIH TWA (mg/m³)	200 mg/m³ (as total hydrocarbon vapor) 8h

8.2. Exposure controls

Appropriate engineering controls : Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits.

Hand protection : Wear chemically resistant protective gloves.

Eye protection : Safety glasses or goggles are recommended when using product.

Skin and body protection : Wear suitable protective clothing.

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Environmental exposure controls : Maintain levels below Community environmental protection thresholds.

Other information : Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking. Handle according to established industrial hygiene and safety practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : No data available

Colour : Colourless

Odour : Mild hydrocarbon

Odour threshold : No data available

pH : No data available

Melting point : -49 °C (-56.2 F)

Freezing point : No data available

Boiling point : 190 - 210 °C (374 - 410 ºF)

Flash point : 65 °C (149 ºF)

Relative evaporation rate (butylacetate=1) : 0.03

Flammability (solid, gas) : Combustible liquid.

Vapour pressure : 0.072 kPa (0.54 mm Hg) at Room Temperature

Relative vapour density at 20 °C : 4.5 (Air = 1)

Relative density : 0.783

Solubility : Water: 1.5 g/l

Partition coefficient n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	1.34 cSt (0.0134 cm2/sec) @ 40 °C (104 °F)
Viscosity, dynamic	:	No data available
Explosive limits	:	Lower explosive limit (LEL): 0.6 vol % Upper explosive limit (UEL): 5.5 vol %
Explosive properties	:	No data available
Oxidising properties	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

Stable under normal storage conditions.

10.3. Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid

Heat. Incompatible materials. Sources of ignition

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

May include, and are not limited to: oxides of carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified.

Petroleum distillates, hydrotreated light (64742-47-8)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat	> 5.2 mg/l/4h

Skin corrosion/irritation	:	Not classified.
Serious eye damage/irritation	:	Not classified.
Respiratory or skin sensitisation	:	Not classified.
Germ cell mutagenicity	:	Not classified.
Carcinogenicity	:	Not classified.
Reproductive toxicity	:	Not classified.
Specific target organ toxicity (single exposure)	:	Not classified.
Specific target organ toxicity (repeated exposure)	:	Not classified.
Aspiration hazard	:	May be fatal if swallowed and enters airways.
Symptoms/injuries after inhalation	:	May cause respiratory tract irritation.
Symptoms/injuries after skin contact	:	May cause skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin.
Symptoms/injuries after eye contact	:	May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Symptoms/injuries after ingestion	:	May be fatal if swallowed and enters airways. This product may be aspirated into the lungs and cause chemical pneumonitis. May cause stomach distress, nausea or vomiting.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : May cause long lasting harmful effects to aquatic life.

Petroleum distillates, hydrotreated light (64742-47-8)	
LC50 fish 1	45 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
LC50 fish 2	2.2 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])

12.2. Persistence and degradability

Parts Washer Solvent	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Parts Washer Solvent	
Bioaccumulative potential	Not established.

Petroleum distillates, hydrotreated light (64742-47-8)	
BCF fish 1	61 - 159

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : This material must be disposed of in accordance with all local, state, provincial, and federal regulations. The generation of waste should be avoided or minimized wherever possible.

Additional information : Handle empty containers with care because residual vapours are flammable.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

15.2. International regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Date of issue : 11/16/2014

Revision date : 11/30/2016

Other information : None.

Prepared by : Nexreg Compliance Inc.
www.Nexreg.com

SDS US (GHS HazCom 2012)_NEXREG_NEW

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ES Compleat EG Premix (50-50 and 60-40)

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Issue date: 6/6/2016
Revision date: 10/31/2023
Version: 4.1

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Trade name : ES Compleat EG Premix (50-50 and 60-40)
Product code : CC2825,CC2826,CC2827,CC2848,CC2863,CC2907,CC2907USR,CC8951 and CC8983

1.2. Recommended use and restrictions on use

Recommended use : Concentrate Antiboil/Antifreeze Coolant

1.3. Supplier

Manufacturer
Fleetguard
1200 Fleetguard Road
Cookeville, TN 38506 - USA
T 1-800-22-FILTER (1-800-223-4583)

Distributor
Fleetguard
Canadian Distributor
11751 181 St.
Edmonton, AB T5S 2K5 - Canada
T 1-780-455-2151

1.4. Emergency telephone number

Emergency number : Chemtrec 1-800-424-9300 (Within Continental U.S.)
Chemtrec 703-527-3887 (Outside the U.S.).

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS classification

Acute Tox. 4 (Oral)
Carc. 2
Repr. 1B
STOT SE 1
STOT SE 3

2.2. GHS Label elements, including precautionary statements

GHS labeling

Hazard pictograms (GHS) :

Signal word (GHS) : Danger
Hazard statements (GHS) : Harmful if swallowed
May cause respiratory irritation
Suspected of causing cancer
May damage fertility or the unborn child
Causes damage to organs
Precautionary statements (GHS) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fume/gas/mist/vapours/spray..
Wash hands, forearms and face thoroughly after handling.

Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection..
If swallowed: Call Call a POISON CENTER or doctor if you feel unwell.
Rinse mouth.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If exposed: Call a poison center/doctor.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Chemical name / Synonyms	Product identifier	%
Ethylene glycol	Ethylene glycol 1,2-Dihydroxyethane / Ethane-1,2-diol / 1,2-Ethanediol / Ethanediol / GLYCOL / Glycol / Monoethylene glycol	CAS-No.: 107-21-1	45 – 70
Sodium nitrite	Sodium nitrite Diazotizing salts / Nitrous acid, sodium salt / Nitrous acid, sodium salt (1:1) / SODIUM NITRITE / sodium nitrite	CAS-No.: 7632-00-0	0.1 – 1
Sodium molybdate	Sodium molybdate Disodium molybdate / Molybdate (MoO42-), disodium, (T-4)- / Molybdic acid (H2MoO4), disodium salt / Molybdic acid, disodium salt / Molybdate (MoO42-), sodium (1:2), (T-4)- / Molybdate, disodium, (T-4)- / Sodium molybdate(VI) / Sodium molybdate, anhydrous / SODIUM MOLYBDATE / sodium molybdate	CAS-No.: 7631-95-0	0.1 – 1

***Chemical name, CAS number and/or exact concentration have been withheld as a trade secret**

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

First-aid measures after skin contact : If skin irritation occurs: Wash skin with plenty of water. Obtain medical attention if irritation persists.

First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : IF SWALLOWED: Call a POISON center/doctor. Do NOT induce vomiting unless directed to do so by medical personnel. Rinse mouth. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : May cause irritation to the respiratory tract.
Symptoms/effects after skin contact : May cause skin irritation. Repeated exposure may cause skin dryness or cracking.
Symptoms/effects after eye contact : May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Symptoms/effects after ingestion : Harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Chronic symptoms : Suspected of causing cancer. May damage fertility or the unborn child.
Causes damage to organs.

4.3. Immediate medical attention and special treatment, if necessary

Symptoms may be delayed. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media : Do not use water jet.

5.2. Specific hazards arising from the chemical

Fire hazard : Products of combustion may include, and are not limited to: oxides of carbon.

5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Use water spray to cool exposed surfaces. Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

For containment : Absorb and/or contain spill with inert material (sand, vermiculite or other appropriate material), then place in suitable container. Do not flush into surface water or sewer system. Wear recommended personal protective equipment.
Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal. Provide ventilation.

6.4. Reference to other sections

See section 8 for further information on protective clothing and equipment and section 13 for advice on waste disposal. For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes. Do not swallow. Handle and open container with care. When using do not eat, drink or smoke. Use only outdoors or in a well-ventilated area.

Hygiene measures : Wash contaminated clothing before reuse. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep out of the reach of children. Keep only in original container. Store tightly closed in a dry, cool and well-ventilated place. Store locked up.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

ES Compleat EG Premix (50-50 and 60-40)

No additional information available

Sodium nitrite (7632-00-0)

No additional information available

Sodium molybdate (7631-95-0)

No additional information available

Ethylene glycol (107-21-1)

USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA [ppm]	25 ppm (vapor fraction)
ACGIH OEL STEL	10 mg/m³ (inhalable particulate matter, aerosol only)
ACGIH OEL STEL [ppm]	50 ppm (vapor fraction)
ACGIH chemical category	Not Classifiable as a Human Carcinogen

8.2. Appropriate engineering controls

Appropriate engineering controls : Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits. Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Wear suitable gloves

Eye protection:

Safety glasses or goggles are recommended when using product.

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:
In case of insufficient ventilation, wear suitable respiratory equipment. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Where exposure through inhalation may occur from use, respiratory protection equipment is recommended

Other information:
Do not eat, drink or smoke during use. Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Clear. Blue. Liquid.
Color	:	Blue
Odor	:	odorless
Odor threshold	:	No data available
pH	:	10.2 – 10.8
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	> 325 °F (162 °C)
Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability	:	Not flammable Non flammable.
Vapor pressure	:	No data available
Relative vapor density at 20°C / 68 °F	:	No data available
Relative density	:	1.074 – 1.09 (Water=1)
Solubility	:	Miscible.
Partition coefficient n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known under normal conditions of use.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Heat. Incompatible materials.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

May include, and are not limited to: oxides of carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

ES Compleat EG Premix (50-50 and 60-40)	
ATE CA (oral)	803.885 mg/kg body weight

Sodium nitrite (7632-00-0)	
LD50 oral rat	85 mg/kg
LC50 inhalation rat	5.5 mg/l/4h
ATE CA (oral)	85 mg/kg body weight
ATE CA (vapors)	5.5 mg/l/4h
ATE CA (dust,mist)	5.5 mg/l/4h

Sodium molybdate (7631-95-0)	
LD50 oral rat	4000 mg/kg
LD50 dermal rat	> 2000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 inhalation rat	> 5.84 mg/l/4h
ATE CA (oral)	4000 mg/kg body weight

Ethylene glycol (107-21-1)	
LD50 oral rat	4700 mg/kg
LD50 dermal rat	10600 mg/kg
LC50 inhalation rat	> 2.5 mg/l (Exposure time: 6 h)
ATE CA (oral)	500 mg/kg body weight

Skin corrosion/irritation : Not classified
pH: 10.2 – 10.8
Serious eye damage/irritation : Not classified
pH: 10.2 – 10.8
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Suspected of causing cancer.

Ethylene glycol (107-21-1)	
NOAEL (chronic,oral,animal/male,2 years)	1500 mg/kg body weight Animal: mouse, Animal sex: male, Remarks on results: other:Effect type: carcinogenicity (migrated information)

Reproductive toxicity : May damage fertility or the unborn child.

STOT-single exposure : Causes damage to organs. May cause respiratory irritation.

Ethylene glycol (107-21-1)	
STOT-single exposure	Causes damage to organs. May cause respiratory irritation.

STOT-repeated exposure : Not classified

Sodium nitrite (7632-00-0)	
NOAEL (subchronic,oral,animal/male,90 days)	220 mg/kg body weight Animal: mouse, Animal sex: male
NOAEL (subchronic,oral,animal/female,90 days)	165 mg/kg body weight Animal: mouse, Animal sex: female

Sodium molybdate (7631-95-0)	
NOAEC (inhalation,rat,dust/mist/fume,90 days)	> 0.1 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)

Aspiration hazard : Not classified

Symptoms/effects after inhalation : May cause irritation to the respiratory tract.

Symptoms/effects after skin contact : May cause skin irritation. Repeated exposure may cause skin dryness or cracking.

Symptoms/effects after eye contact : May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.

Symptoms/effects after ingestion : Harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic symptoms : Suspected of causing cancer. May damage fertility or the unborn child.
Causes damage to organs.

Other information : Likely routes of exposure: ingestion, inhalation, skin and eye.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : May cause long-term adverse effects in the aquatic environment.

Sodium nitrite (7632-00-0)	
LC50 - Fish [1]	0.19 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 - Crustacea [1]	15.4 mg/l Test organisms (species): Daphnia magna
LC50 - Fish [2]	0.092 – 0.13 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])

Ethylene glycol (107-21-1)	
LC50 - Fish [1]	41000 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 - Crustacea [1]	46300 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 - Fish [2]	14 – 18 ml/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])
NOEC (chronic)	≥ 1000 mg/l Test organisms (species): Americamysis bahia (previous name: Mysidopsis bahia) Duration: '23 d'
NOEC chronic crustacea	4.2 mg/l

12.2. Persistence and degradability

ES Compleat EG Premix (50-50 and 60-40)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

ES Compleat EG Premix (50-50 and 60-40)	
Bioaccumulative potential	Not established.

Sodium nitrite (7632-00-0)	
Partition coefficient n-octanol/water	-3.7 (at 25 °C)

Ethylene glycol (107-21-1)	
Partition coefficient n-octanol/water	-1.93

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment. No other effects known.

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

SECTION 14: Transport information

In accordance with DOT / TDG

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Not applicable
Proper Shipping Name (TDG) : Not applicable

14.3. Transport hazard class(es)

DOT
Transport hazard class(es) (DOT) : Not applicable

TDG
Transport hazard class(es) (TDG) : Not applicable

14.4. Packing group

Packing group (DOT) : Not applicable
Packing group (TDG) : Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

Special transport precautions : Do not handle until all safety precautions have been read and understood.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory, except for:	
Phosphonic acid, methyl-, mono[3-(trihydroxysilyl)propyl] ester, monosodium salt	CAS-No. 84962-98-1

All components of this product are listed, or excluded from listing, on the Canadian DSL (Domestic Substances List) and NDSL (Non-Domestic Substances List) inventories

15.2. International regulations

No additional information available

15.3. US State regulations

WARNING: This product can expose you to Ethylene glycol (ingested), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

SECTION 16: Other information

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Revision date : 10/31/2023

Other information : None.

Prepared by : Nexreg Compliance Inc.
www.Nexreg.com

Prepared for : Fleetguard

Indication of changes:
SDS update. GHS Classification. Manufacturer Information.

SDS HazCom 2012 - WHMIS 2015 (NexReg)

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SAFETY DATA SHEET

1. Identification

Product identifier	**Brakleen® Brake Parts Cleaner - 14 oz**
Other means of identification	
Product Code	No. 05050 (Item# 1003662)
Recommended use	Brake parts cleaner
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufactured or sold by:	
Company name	CRC Industries, Inc.
Address	885 Louis Dr. Warminster, PA 18974 US
Telephone	
General Information	215-674-4300
Technical Assistance	800-521-3168
Customer Service	800-272-4620
24-Hour Emergency (CHEMTREC)	800-424-9300 (US)
Website	crcindustries.com

2. Hazard(s) identification

Physical hazards	Flammable aerosols	Category 1
	Gases under pressure	Compressed gas
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	Extremely flammable aerosol. Contains gas under pressure; may explode if heated. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness.
Precautionary statement	
Prevention	Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Pressurized container: Do not pierce or burn, even after use. Do not apply while equipment is energized. Extinguish all flames, pilot lights, and heaters. Vapors will accumulate readily and may ignite. Use only outdoors or in a well-ventilated area. Maintain ventilation during use and until all vapors are gone. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. If you experience any symptoms listed on this label, increase ventilation or leave the area. Avoid breathing mist/vapors. Wash thoroughly after handling. Wear eye protection/face protection. Wear protective gloves.

Response	If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.
Storage	Keep container tightly closed. Store locked up. Protect from sunlight. Store in a well-ventilated place. Do not expose to temperatures exceeding 50°C/122°F. Exposure to high temperature may cause can to burst.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
acetone		67-64-1	65 - 85
carbon dioxide		124-38-9	5 - 10
distillates (petroleum), light distillate hydrotreating process, low-boiling		68410-97-9	1 - 5
heptane, branched, cyclic and linear		426260-76-6	1 - 5
naphtha (petroleum), hydrotreated light		64742-49-0	1 - 5
n-heptane		142-82-5	1 - 5

Specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
Skin contact	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness or dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Alcohol resistant foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may rupture when exposed to heat or flame. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Fire-fighting equipment/instructions	In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up. Use standard firefighting procedures and consider the hazards of other involved materials. In the event of fire and/or explosion do not breathe fumes.
General fire hazards	Extremely flammable aerosol. Contents under pressure. Pressurized container may rupture when exposed to heat or flame.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist/vapors. Emergency personnel need self-contained breathing equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. This product is miscible in water. Prevent product from entering drains. Stop the flow of material, if this is without risk. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. Avoid breathing mist/vapors. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices. For product usage instructions, see the product label.

Conditions for safe storage, including any incompatibilities

Level 3 Aerosol.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Avoid spark promoters. These alone may be insufficient to remove static electricity. Store in tightly closed container. Store in a well-ventilated place. Stored containers should be periodically checked for general condition and leakage. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
acetone (CAS 67-64-1)	PEL	2400 mg/m3	
		1000 ppm	
carbon dioxide (CAS 124-38-9)	PEL	9000 mg/m3	
		5000 ppm	
distillates (petroleum), light distillate hydrotreating process, low-boiling (CAS 68410-97-9)	PEL	5 mg/m3	Mist.
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)	PEL	400 mg/m3	
		100 ppm	
n-heptane (CAS 142-82-5)	PEL	2000 mg/m3	
		500 ppm	

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
acetone (CAS 67-64-1)	STEL	500 ppm	
	TWA	250 ppm	
carbon dioxide (CAS 124-38-9)	STEL	30000 ppm	
	TWA	5000 ppm	
distillates (petroleum), light distillate hydrotreating process, low-boiling (CAS 68410-97-9)	TWA	5 mg/m3	Inhalable fraction.
n-heptane (CAS 142-82-5)	STEL	500 ppm	
	TWA	400 ppm	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
acetone (CAS 67-64-1)	TWA	590 mg/m3	
		250 ppm	
carbon dioxide (CAS 124-38-9)	STEL	54000 mg/m3	
		30000 ppm	
	TWA	9000 mg/m3	
		5000 ppm	
distillates (petroleum), light distillate hydrotreating process, low-boiling (CAS 68410-97-9)	STEL	10 mg/m3	Mist.
	TWA	5 mg/m3	Mist.
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)	TWA	400 mg/m3	
		100 ppm	
n-heptane (CAS 142-82-5)	Ceiling	1800 mg/m3	
		440 ppm	
	TWA	350 mg/m3	
		85 ppm	

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
acetone (CAS 67-64-1)	25 mg/l	Acetone	Urine	*

* - For sampling details, please see the source document.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear protective gloves such as: Nitrile. Polyvinyl alcohol (PVA). Viton/butyl.

Other

Wear appropriate chemical resistant clothing.

Respiratory protection

If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with an organic vapor cartridge. Use a self-contained breathing apparatus in confined spaces and for emergencies. Air monitoring is needed to determine actual employee exposure levels.

Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Aerosol.
Color	Colorless.
Odor	Solvent.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	-139.6 °F (-95.4 °C) estimated
Initial boiling point and boiling range	132.8 °F (56 °C) estimated
Flash point	< 0 °F (< -17.8 °C)
Evaporation rate	Fast.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	1 % estimated
Explosive limit - upper (%)	14.3 % estimated
Vapor pressure	5133.2 hPa estimated
Vapor density	> 2 (air = 1)
Relative density	0.84 estimated
Solubility(ies)	
Solubility (water)	Slightly soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	433 °F (222.8 °C) estimated
Decomposition temperature	Not available.
Viscosity	Not available.
Percent volatile	90.8 % estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Heat. Contact with incompatible materials.
Incompatible materials	Acids. Strong oxidizing agents.
Hazardous decomposition products	Carbon oxides. Hydrocarbon fumes and smoke. Aldehydes. Formaldehyde.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause drowsiness or dizziness. Headache. Nausea, vomiting. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Symptoms related to the physical, chemical and toxicological characteristics	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness or dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity	May be fatal if swallowed and enters airways.
Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

distillates (petroleum), light distillate hydrotreating process, low-boiling (CAS 68410-97-9)	3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	May cause drowsiness or dizziness.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	May be fatal if swallowed and enters airways.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	Toxic to aquatic life with long lasting effects.
Persistence and degradability	No data is available on the degradability of any ingredients in the mixture.
Bioaccumulative potential	

Partition coefficient n-octanol / water (log Kow)

acetone	-0.24
n-heptane	4.66

Bioconcentration factor (BCF)

naphtha (petroleum), hydrotreated light	10 - 2500

Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	This material and its container must be disposed of as hazardous waste. Full or partially-full aerosol cans can be treated as universal waste. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. Empty container can be recycled. Contents under pressure. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.
Hazardous waste code	Possible RCRA waste code includes: D001: Waste Flammable material with a flash point <140 F F003: Waste Non-halogenated Solvent - Spent Non-halogenated Solvent However, it is the generator's responsibility to determine the proper classification and disposal method at the time of disposal.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not assigned.
Environmental hazards	
Marine pollutant	Yes, but exempt from the regulations.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	N82
Packaging exceptions	306
Packaging non bulk	None
Packaging bulk	None

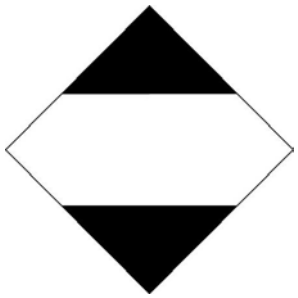
IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not assigned.
ERG Code	10L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	UN1950
UN proper shipping name	AEROSOLS, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not assigned.
Environmental hazards	
Marine pollutant	Yes, but exempt from the regulations.
EmS	F-D, S-U
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

DOT; IMDG



IATA

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

acetone (CAS 67-64-1)

CERCLA Hazardous Substances: Reportable quantity

acetone (CAS 67-64-1)	5000 LBS

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Contains component(s) regulated under the Safe Drinking Water Act.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

acetone (CAS 67-64-1)	6532

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

acetone (CAS 67-64-1)	35 %WV

DEA Exempt Chemical Mixtures Code Number

acetone (CAS 67-64-1)	6532

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

acetone (CAS 67-64-1)	Low priority

Food and Drug Administration (FDA) Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Classified hazard categories
Flammable (gases, aerosols, liquids, or solids)
Gas under pressure
Skin corrosion or irritation
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

US state regulations

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

acetone (CAS 67-64-1)
distillates (petroleum), light distillate hydrotreating process, low-boiling (CAS 68410-97-9)
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-heptane (CAS 142-82-5)

US. New Jersey Worker and Community Right-to-Know Act

acetone (CAS 67-64-1)
carbon dioxide (CAS 124-38-9)
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-heptane (CAS 142-82-5)

US. Massachusetts RTK - Substance List

acetone (CAS 67-64-1)
carbon dioxide (CAS 124-38-9)
distillates (petroleum), light distillate hydrotreating process, low-boiling (CAS 68410-97-9)
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-heptane (CAS 142-82-5)

US. Pennsylvania Worker and Community Right-to-Know Law

acetone (CAS 67-64-1)
carbon dioxide (CAS 124-38-9)
distillates (petroleum), light distillate hydrotreating process, low-boiling (CAS 68410-97-9)
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-heptane (CAS 142-82-5)

US. Rhode Island RTK

acetone (CAS 67-64-1)
carbon dioxide (CAS 124-38-9)
distillates (petroleum), light distillate hydrotreating process, low-boiling (CAS 68410-97-9)
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-heptane (CAS 142-82-5)

California Proposition 65

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

California Proposition 65 - CRT: Listed date/Carcinogenic substance

acetaldehyde (CAS 75-07-0)	Listed: April 1, 1988
benzene (CAS 71-43-2)	Listed: February 27, 1987
cumene (CAS 98-82-8)	Listed: April 6, 2010
ethylbenzene (CAS 100-41-4)	Listed: June 11, 2004
naphthalene (CAS 91-20-3)	Listed: April 19, 2002

California Proposition 65 - CRT: Listed date/Developmental toxin

benzene (CAS 71-43-2)	Listed: December 26, 1997
methanol (CAS 67-56-1)	Listed: March 16, 2012
toluene (CAS 108-88-3)	Listed: January 1, 1991

California Proposition 65 - CRT: Listed date/Male reproductive toxin

benzene (CAS 71-43-2)	Listed: December 26, 1997
n-hexane (CAS 110-54-3)	Listed: December 15, 2017

Volatile organic compounds (VOC) regulations

EPA

VOC content (40 CFR 51.100(s))	9.2 %
Consumer products (40 CFR 59, Subpt. C)	Not regulated

State

Consumer products	This product is regulated as a Brake Cleaner. This product is compliant for use in all 50 states.
VOC content (CA)	9.2 %
VOC content (OTC)	9.2 %

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	04-01-2021
Revision date	03-21-2023
Prepared by	Allison Yoon
Version #	02
Further information	CRC # 920B/1002914
Disclaimer	The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC's knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this (M)SDS consult your supervisor, a health & safety professional, or CRC Industries, Inc..
Revision information	Product and Company Identification: Product and Company Identification Hazard(s) identification: Hazard statement Composition / Information on Ingredients: Disclosure Overrides Physical & Chemical Properties: Multiple Properties Disposal considerations: Disposal instructions Disposal considerations: Hazardous waste code

Safety Data Sheet
California CARB Compliant

1 - Identification

Product Name: WD-40 Multi-Use Product Aerosol **Product Use: Lubricant, Penetrant, Drives Out Moisture and Protects Surfaces from Corrosion** **Restrictions on Use: None identified** **SDS Date of Preparation: November 13, 2024**	**Manufacturer: WD-40 Company** **Address: 9715 Businesspark Avenue San Diego, California, USA 92131** **Telephone:** **Emergency: 1-888-324-7596** **Information: 1-888-324-7596** **Chemical Spills: 1-800-424-9300 (Chemtrec)** **1-703-527-3887 (International Calls)**

2 – Hazards Identification

HCS 2024/GHS Classification:
Aerosol Category 1
Aspiration Toxicity Category 1
Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)

Note: This product is a consumer product and is labeled in accordance with the US Consumer Product Safety Commission regulations which take precedence over OSHA Hazard Communication labeling. The actual container label will not include the label elements below. The labeling below applies to industrial/professional products.

Label Elements:

DANGER!
Extremely Flammable Aerosol.
Pressurized container: may burst if heated.
May be fatal if swallowed and enters airways.
May cause drowsiness or dizziness.

Prevention
Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. – No smoking.
Do not spray on an open flame or other ignition source.
Do not pierce or burn, even after use.
Avoid breathing vapors or mists.
Use only outdoors or in a well-ventilated area.

Response
IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.

Storage
Store locked up.
Protect from sunlight. Do not expose to temperatures exceeding 122°F (50°C). Store in a well-ventilated place.

Disposal
Dispose of contents and container in accordance with local and national regulations.

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent	US HSC 2024 / GHS Classification
LVP Aliphatic Hydrocarbon	64742-47-8	45-50%	Aspiration Toxicity Category 1
Petroleum Base Oil	64742-56-9 64742-65-0 64742-53-6 64742-54-7 64742-71-8	<35%	Not Hazardous
Aliphatic Hydrocarbon	64742-47-8	10 - <25%	Flammable Liquid Category 3 Aspiration Toxicity Category 1 Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)
Carbon Dioxide	124-38-9	2-3%	Simple Asphyxiant Gas Under Pressure, Compressed Gas

Note: The specific chemical identity and exact percentages are a trade secret.

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.
Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.
Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.
Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.
Signs and Symptoms of Exposure: Harmful or fatal if swallowed. Aspiration of liquid into the lungs during swallowing or vomiting may cause lung damage. May cause eye and respiratory irritation. Inhalation of mists or vapors may cause drowsiness, dizziness, and other nervous system effects. Skin contact may cause drying of the skin.
Indication of Immediate Medical Attention/Special Treatment Needed: Immediate medical attention is needed for ingestion.

5 – Fire Fighting Measures

Suitable (and unsuitable) Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.
Specific Hazards Arising from the Chemical: Extremely flammable aerosol. Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Combustion will produce oxides of carbon and hydrocarbons.
Special Protective Equipment and Precautions for Fire-Fighters: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

6 – Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate the area.
Methods and Materials for Containment/Cleanup: Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Precautions for Safe Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces, and open flames. Unplug electrical tools, motors, and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.
Conditions for Safe Storage: Store in a cool, well-ventilated area, away from incompatible materials. Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol. Store away from oxidizers.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure Limits
LVP Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m3 TWA (Inhalable) ACGIH TLV (as Mineral oil) 5 mg/m3 TWA OSHA PEL (as Oil mist, mineral)
Aliphatic Hydrocarbon	1200 mg/m3 TWA (manufacturer recommended)
Carbon Dioxide	5000 ppm TWA, 30,000 ppm STEL ACGIH TLV 5000 ppm TWA OSHA PEL

The Following Controls are Recommended for Normal Consumer Use of this Product
Appropriate Engineering Controls: Use in a well-ventilated area.
Personal Protection:
Eye Protection: Avoid eye contact. Always spray away from your face.
Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.
Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended
Appropriate Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below the occupational exposure limits.
Personal Protection:
Eye Protection: Safety goggles recommended where eye contact is possible.
Skin Protection: Wear chemical resistant gloves.
Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.
Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Physical State:	Liquid packaged as aerosol	Color:	Light green to amber
Odor:	Mild petroleum odor	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8%
Relative Vapor Density:	0.8 – 0.82 @ 60°F	Vapor Pressure:	95-115 PSI @ 70°F
pH:	Not Applicable	Relative Density:	
Melting/Freezing Point:	Not established	Solubilities:	Insoluble in water
Boiling Point/Range:	361 - 369°F (183 - 187°C)	Partition Coefficient; n-octanol/water:	Not established
Flash Point:	138°F (59°C) Tag Closed Cup (liquid)	Autoignition Temperature:	Not established
Particle Characteristics:	Not applicable	Decomposition Temperature:	Not established
Flammability:	Flammable Aerosol	Kinematic Viscosity:	2.79-2.96 cSt @ 100°F

VOC:	24.1% MIR=0.43gO3/gVOC	Pour Point:	-63°C (-81.4°F) ASTM D-97

10 – Stability and Reactivity

Reactivity: Not reactive under normal conditions
Chemical Stability: Stable
Possibility of Hazardous Reactions: May react with strong oxidizers generating heat.
Conditions to Avoid: Avoid heat, sparks, flames, and other sources of ignition. Do not puncture or incinerate containers.
Incompatible Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

Symptoms of Overexposure:
Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness, and nausea. Intentional abuse may be harmful or fatal.
Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.
Eye Contact: Contact may be irritating to eyes. May cause redness and tearing.
Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.
Chronic Effects: None expected.
Carcinogen Status: None of the components are listed as a carcinogen or suspect carcinogen by IARC, NTP, ACGIH or OSHA.
Reproductive Toxicity: None of the components is considered a reproductive hazard.

Numerical Measures of Toxicity:
Acute Toxicity Estimates: Oral > 5,000 mg/kg; Dermal >2,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard.

12 – Ecological Information

Ecotoxicity: No specific aquatic toxicity data is currently available; however components of this product are not expected to be harmful to aquatic organisms
Persistence and Degradability: Components are readily biodegradable.
Bioaccumulative Potential: Bioaccumulation is not expected based on an assessment of the ingredients.
Mobility in Soil: No data available
Other Adverse Effects: None known.

13 - Disposal Considerations

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Do not puncture or incinerate containers, even empty. Dispose in accordance with federal, state, and local regulations.

14 – Transportation Information

DOT Surface Shipping Description: UN1950, Aerosols, 2.1 Ltd. Qty
(Note: Shipping Papers are not required for Limited Quantities unless transported by air or vessel – each package must be marked with the Limited Quantity Mark)
IMDG Shipping Description: UN1950, Aerosols, 2.1, LTD QTY
ICAO Shipping Description: UN1950, Aerosols, flammable, 2.1

NOTE: WD-40 Company does not test aerosol cans to assure that they meet the pressure and other requirements for transport by air. We do not recommend that our aerosol products be transported by air.

15 – Regulatory Information

U.S. Federal Regulations:
CERCLA 103 Reportable Quantity: This product is not subject to CERCLA reporting requirements, however, oil spills are reportable to the National Response Center under the Clean Water Act and many states have more stringent release reporting requirements. Report spills required under federal, state, and local regulations.
SARA TITLE III:
Hazard Category for Section 311/312: Refer to Section 2 for the OSHA Hazard Classification.
Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None
Section 302 Extremely Hazardous Substances (TPQ): None
EPA Toxic Substances Control Act (TSCA) Status: All the components of this product are listed on the TSCA inventory.
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65): This product does not require a California Proposition 65 warning.
VOC Regulations: This product complies with the consumer product VOC limits of CARB, the US EPA and states adopting the OTC VOC rules.
Canadian Environmental Protection Act: All the ingredients are listed on the Canadian Domestic Substances List or exempt from notification.

16 – Other Information

HMIS Hazard Rating:
Health – 1 (slight hazard), Fire Hazard – 4 (severe hazard), Physical Hazard – 0 (minimal hazard)

Revision Date: November 13, 2024 Supersedes: May 16, 2024

Revision Summary: Updates to conform to HCS 2024 – changes to sections 2, 3 and 9.

Prepared by: IHSC, LLC. Milford, CT, USA

Reviewed by: I. Kowalski Regulatory Affairs Dept.

4012200/No.0084708

Section 1: IDENTIFICATION

Product Name: Simple Green® Industrial Cleaner & Degreaser
Additional Names:

Manufacturer's Part Number: **Please refer to Section 16*

Recommended Use: Cleaner & Degreaser for water tolerant surfaces.
Restrictions on Use: Do not use on non-rinseable surfaces.

Company: Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649 USA
Telephone: 800-228-0709 ● 562-795-6000 *Mon – Fri, 8am – 5pm PST*
Fax: 562-592-3830
Email: info@simplegreen.com
Emergency Phone: Chem-Tel 24-Hour Emergency Service: 800-255-3924

Section 2: HAZARDS IDENTIFICATION

This product is not considered hazardous under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

OSHA HCS 2012
Label Elements
Signal Word: None
Hazard Symbol(s)/Pictogram(s): None required
Hazard Statements: None
Precautionary Statements: None
Hazards Not Otherwise Classified (HNOC): None
Other Information: None Known

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Percent Range
Water	7732-18-5	> 85.000%*
Surfactant	Proprietary Mixture	< 5.000%*
C9-11 Alcohols Ethoxylated	68439-46-3	< 5.000%*
Tetrasodium Glutamate Diacetate	51981-21-6	< 2.000%*
Sodium Bicarbonate	144-55-8	< 1.000%*
Hydrochloric Acid	7647-01-0	< 1.000%*
Fragrances	Proprietary Mixture	< 1.000%*
Blend of Polyoxyalkylene Substituted Chromophores (Cyan and Yellow)	Proprietary Mixture	< 0.100%*
Anethole	104-46-1	< 0.100%*
Eucalyptol	470-82-6	< 0.100%*
Methylchloroisothiazolinone	26172-55-4	< 0.001%*
Methylisothiazolinone	2682-20-4	< 0.0001%*

**specific percentages of composition are being withheld as a trade secret*

Section 4: FIRST-AID MEASURES

Inhalation: Not expected to cause respiratory irritation. If adverse effect occurs, move to fresh air.
Skin Contact: Not expected to cause skin irritation. If adverse effect occurs, rinse skin with water.
Eye Contact: Not expected to cause eye irritation. If adverse effect occurs, flush eyes with water.
Ingestion: May cause upset stomach. Drink plenty of water to dilute. See section 11.
Most Important Symptoms/Effects, Acute and Delayed: None known.
Indication of Immediate Medical Attention and Special Treatment Needed, if necessary: Treat symptomatically

Section 5: FIRE-FIGHTING MEASURES

Suitable & Unsuitable Extinguishing Media: Use Dry chemical, CO2, water spray or "alcohol" foam. Avoid high volume jet water.
Specific Hazards Arising from Chemical: In event of fire, fire created carbon oxides may be formed.
Special Protective Actions for Fire-Fighters: Wear positive pressure self-contained breathing apparatus; Wear full protective clothing.

This product is non-flammable. See Section 9 for Physical Properties.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: *For non-emergency and emergency personnel:* See section 8 – personal protection. Avoid eye contact. Safety goggles suggested.

Environmental Precautions: Do not allow into open waterways and ground water systems.

Methods and Materials for Containment and Clean Up: Dike or soak up with inert absorbent material. See section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Precautions for Safe Handling: Ensure adequate ventilation. Keep out of reach of children. Keep away from heat, sparks, open flame and direct sunlight. Do not pierce any part of the container. Do not mix or contaminate with any other chemical. Do not eat, drink or smoke while using this product.

Conditions for Safe Storage including Incompatibilities: Keep container tightly closed. Keep in cool dry area. Avoid prolonged exposure to sunlight. Do not store at temperatures above 109°F (42.7°C). If separation occurs, mix the product for reconstitution.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limit Values: No components listed with TWA or STEL values under OSHA or ACGIH.

Appropriate Engineering Controls: Showers, eyewash stations, ventilation systems

Individual Protection Measures / Personal Protective Equipment (PPE)
Eye Contact: Use protective glasses or safety goggles if splashing or spray-back is likely.
Respiratory: Use in well ventilated areas or local exhaust ventilations when cleaning small spaces.
Skin Contact: Use protective gloves (any material) when used for prolonged periods or dermally sensitive.
General Hygiene Considerations: Wash thoroughly after handling and before eating or drinking.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Green Liquid	**Partition Coefficient: n-octanol/water:**	Not determined		
Odor:	Added sassafras odor	**Autoignition Temperature:**	Non-flammable		
Odor Threshold:	Not determined	**Decomposition Temperature:**	42.7°C (109°F)		
pH:	8.5 – 9.5	**Viscosity:**	Like water		
Freezing Point:	0-3.33°C (32-38°F)	**Specific Gravity:**	1.00 – 1.03		
Boiling Point & Range:	101°C (213.8°F)	**VOCs:**	***Water & fragrance exemption in calculation*		
Flash Point:	> 212°F	SCAQMD 304-91 / EPA 24:	0 g/L	0 lb/gal	0%
Evaporation Rate:	Not determined	CARB Method 310**:	<5 g/L	<0.0417 lb/gal	<0.5%
Flammability (solid, gas):	Not applicable	SCAQMD Method 313:	Not tested		
Upper/Lower Flammability or Explosive Limits:	Not applicable	**VOC Composite Partial Pressure:**	Not determined		

Section 9: PHYSICAL AND CHEMICAL PROPERTIES - continued

Vapor Pressure:	0.60 PSI @77°F, 2.05 PSI @100°F	**Relative Density:**	8.34 – 8.59 lb/gal
Vapor Density:	Not determined	**Solubility:**	100% in water

Section 10: STABILITY AND REACTIVITY

Reactivity: Non-reactive.
Chemical Stability: Stable under normal conditions 70°F (21°C) and 14.7 psig (760 mmHg).
Possibility of Hazardous Reactions: None known.
Conditions to Avoid: Excessive heat or cold.
Incompatible Materials: Do not mix with oxidizers, acids, bathroom cleaners, or disinfecting agents.
Hazardous Decomposition Products: Normal products of combustion - CO, CO2.

Section 11: TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:
Inhalation - Overexposure may cause headache.
Skin Contact - Not expected to cause irritation, repeated contact may cause dry skin.
Eye Contact - Not expected to cause irritation.
Ingestion - May cause upset stomach.

Symptoms related to the physical, chemical and toxicological characteristics: no symptoms expected under typical use conditions.
Delayed and immediate effects and or chronic effects from short term exposure: no symptoms expected under typical use conditions.
Delayed and immediate effects and or chronic effects from long term exposure: headache, dry skin, or skin irritation may occur.
Interactive effects: Not known.

Numerical Measures of Toxicity
Acute Toxicity: Oral LD_{50} (rat) > 5 g/kg body weight
Dermal LD_{50} (rabbit) > 5 g/kg body weight
Calculated via OSHA HCS 2012 / Globally Harmonized System of Classification and Labelling of Chemicals

Skin Corrosion/Irritation: Non-irritant per Dermal Irritection® assay modeling. No animal testing performed.
Eye Damage/Irritation: Non-irritant per Ocular Irritection® assay modeling. No animal testing performed.
Germ Cell Mutagenicity: Mixture does not classify under this category.
Carcinogenicity: No ingredients trigger or classify under this category under NTP, IARC or OSHA.
Reproductive Toxicity: Mixture does not classify under this category.
STOT-Single Exposure: Mixture does not classify under this category.
STOT-Repeated Exposure: Mixture does not classify under this category.
Aspiration Hazard: Mixture does not classify under this category.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Volume of ingredients used does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of Chemicals.
Aquatic: Aquatic Toxicity - Low, based on OECD 201, 202, 203 + Microtox: EC_{50} & IC_{50} ≥100 mg/L. Volume of ingredients used does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of Chemicals.
Terrestrial: Not tested on finished formulation.

Section 12: ECOLOGICAL INFORMATION – continued

Persistence and Degradability: Readily Biodegradable per OCED 301D, Closed Bottle Test. Reaches 100% biodegradation within 60 days.
Bioaccumulative Potential: No data available.
Mobility in Soil: No data available.
Other Adverse Effects: No data available.

Section 13: DISPOSAL CONSIDERATIONS

Unused or Used Liquid: May be considered hazardous in your area depending on usage and tonnage of disposal – check with local, regional, and or national regulations for appropriate methods of disposal.

Empty Containers: May be offered for recycling.

Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Section 14: TRANSPORT INFORMATION

U.N. Number: Not applicable
U.N. Proper Shipping Name: Cleaning Compound, Liquid NOI
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Marine Pollutant - NO
Transport in Bulk (according to Annex II of MARPOL 73/78 and IBC Code): Unknown.
Special precautions which user needs to be aware of/comply with, in connection with transport or conveyance either within or outside their premises: None known.

U.S. (DOT) / Canadian TDG: Not Regulated for shipping.
IMO / IDMG: Not classified as Hazardous
ICAO/ IATA: Not classified as Hazardous
ADR/RID: Not classified as Hazardous

Section 15: REGULATORY INFORMATION

All components are listed on: TSCA and DSL Inventory.

SARA Title III: Sections 311/312 Hazard Categories – Not applicable.
Sections 313 Superfunds Amendments and Reauthorizations Act of 1986 – Not applicable.
Sections 302 – Not applicable.

Clean Air Act (CAA): Not applicable
Clean Water Act (CWA): Not applicable

State Right To Know Lists: No ingredients listed
California Proposition 65: No ingredients listed

Section 16: OTHER INFORMATION

Size	UPC
22 fl. oz.	043318130229
24 fl. oz.	043318000034
32 fl. oz.	043318130328
1 Gallon	043318000003

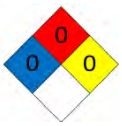
Section 16: OTHER INFORMATION – continued

1 Gallon w/ Dilution Bottle	043318000003
1 Gallon w/ Dilution Bottle	043318001253
1 Gallon w/ Dilution Bottle	043318480416
2.5 Gallon	043318000041
5 Gallon	043318000010
15 Gallon	043318000225
55 Gallon	043318000027
260 Gallon	043318130663
275 Gallon	043318000102

USA items listed only. Not all items listed. USA items may not be valid for international sale.

NFPA:

Health – None
Flammability – Non-flammable
Stability – Stable
Special - None



Acronyms

NTP	National Toxicology Program	IARC	International Agency for Research on Cancer
OSHA	Occupational Safety and Health Administration	CPSC	Consumer Product Safety Commission
TSCA	Toxic Substances Control Act	DSL	Domestic Substances List

Prepared / Revised By: Sunshine Makers, Inc., Regulatory Department.
This SDS has been revised in the following sections: Updated chemical properties in Section 9.

DISCLAIMER: The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Safety Data Sheet

SECTION 1 – IDENTIFICATION

Name, Address, and Telephone of the Responsible Party

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800 Fax 801-321-6703
E-Mail: dnna.hse@am.dynonobel.com
www.dynonobel.com

SDS #: 1009
Date: 07/20/2020
Supersedes: 10/12/2018

Product Identifier
Product Form: Mixture
Product Name: ANFO

Other Means of Identification
Product Class: ANFO, Bulk or Packaged
Trade Names:

ANFO
DYNOMIX™
DYNOMIX™ (U.G.)
DYNOMIX™ WR
DYNOMIX™ HD
FRAGMAX®
FRAGPAK™ SD
WATERBLOCK™
DYNOMIX™ WATERBLOCK™
DYNO ANFO HS

Intended Use of the Product
Industrial applications

Emergency Telephone Number
FOR 24 HOUR EMERGENCY, CALL CHEMTREC (USA) 800-424-9300
CANUTEC (CANADA) 613-996-6666

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture
Classification (GHS-US)

Expl. 1.5	H205
Eye Irrit. 2A	H319
Carc. 2	H351
STOT RE 2	H373

Label Elements
GHS-US Labeling
Hazard Pictograms (GHS-US) :

Signal Word (GHS-US) : Danger
Hazard Statements (GHS-US) : H205 - May mass explode in fire.
H319 - Causes serious eye irritation.
H351 - Suspected of causing cancer.
H373 - May cause damage to organs through prolonged or repeated exposure.

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Precautionary Statements (GHS-US) : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking.
P220 - Keep/Store away from combustible materials.
P221 - Take any precaution to avoid mixing with combustible materials.
P240 - Ground/bond container and receiving equipment. Consult manufacturer for detailed guidance on appropriate grounding/bonding.
P260 - Do not breathe dust, mist, vapors.
P264 - Wash hands, forearms and exposed areas thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear eye protection, protective clothing, protective gloves.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P314 - Get medical advice/attention if you feel unwell.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P370+P378 - In case of fire: Do NOT attempt to fight fire.
P370+P380 - In case of fire: Evacuate area.
P372 - Explosion risk in case of fire.
P373 - DO NOT fight fire when fire reaches explosives.
P401 - Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 555..
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

Other Hazards
Hazards Not Otherwise Classified (HNOC): Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product identifier	% (w/w)	Ingredient Classification (GHS-US)
Ammonium nitrate	(CAS No) 6484-52-2	89 - 95	Ox. Sol. 3, H272 Eye Irrit. 2A, H319
Fuels, diesel, no. 2	(CAS No) 68476-34-6	4 - 7	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Irrit. 2, H315 Carc. 2, H351 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 3, H402 Aquatic Chronic 2, H411
Guar gum	(CAS No) 9000-30-0	< 0.1, 0.1 - 1, 1 - 5, 5 - 6	Comb. Dust
Urea	(CAS No) 57-13-6	0 – 3	Not Classified

More than one of the ranges of concentration prescribed by Controlled Products Regulations has been used where

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necessary, due to varying composition.
Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

Full text of H-phrases: see section 16

SECTION 4 - FIRST AID MEASURES

Description of First Aid Measures
General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.
Skin Contact: Remove contaminated clothing and wash before reuse. Gently wash with plenty of soap and water.
Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.
Ingestion: Rinse mouth. Do not induce vomiting. Immediately call a POISON CENTER or doctor/physician.
Most Important Symptoms and Effects Both Acute and Delayed
General: May cause serious eye irritation. Contains material suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure.
Inhalation: May cause respiratory irritation.
Skin Contact: May cause skin irritation.
Eye Contact: May cause serious eye irritation.
Ingestion: Ingestion is likely to be harmful or have adverse effects.
Chronic Symptoms: Contains material suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure.
Indication of Any Immediate Medical Attention and Special Treatment Needed
If exposed or concerned, get medical advice and attention. If ingested, causes methemoglobenemia – emergency response should treat appropriately, such as by intravenous administration of methylene blue.

SECTION 5 - FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES.
Unsuitable Extinguishing Media: Do not attempt to fight fires involving explosive materials. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions.
Special Hazards Arising from the Substance or Mixture
Fire Hazard: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.
Explosion Hazard: Explosion risk in case of fire. This product is an explosive with mass detonation hazard. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.
Reactivity: Stable under normal conditions. May explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in large quantities.
Advice for Firefighters
Firefighting Instructions: DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Can explode or detonate under fire conditions. Burning material may produce toxic vapors.
Hazardous Combustion Products: Carbon Monoxide (CO) and Nitrogen Oxides (NOx)
Reference to Other Sections: Refer to section 9 for flammability properties.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing (vapor, mist, dust).
For Non-Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Evacuate unnecessary personnel.
For Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Stop release if safe to do so. Eliminate ignition sources. Ventilate area.

Environmental Precautions
Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up
For Containment: Contain any spills with dikes to prevent migration and entry into sewers or streams. Do not use combustible absorbents and do not mix with other materials.
Methods for Cleaning Up: Collect spillage for possible reuse. Clean up spills immediately and dispose of waste in accordance with appropriate Federal, State and local regulations.
Reference to Other Sections
See heading 8, Exposure Controls and Personal Protection

SECTION 7 - HANDLING AND STORAGE

Precautions for Safe Handling
General: It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications.
Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and forearms thoroughly after handling. Do not eat, drink or smoke when using this product.
Conditions for Safe Storage, Including Any Incompatibilities
Technical Measures: Contact manufacturer for appropriate grounding/bonding guidance. Comply with applicable regulations.
Storage Conditions: Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 555. Store in a dry, cool and well-ventilated place. Keep/Store away from direct sunlight, extremely high or low temperatures, heat sources, ignition sources. Keep container closed when not in use. Store locked up.
Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Zinc. Copper and its alloys. Organic materials. Combustible materials.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters
For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

Fuels, diesel, no. 2 (68476-34-6)		
USA ACGIH	ACGIH TWA (mg/m³)	100 mg/m³ (inhalable fraction and vapor)
USA ACGIH	ACGIH chemical category	Skin - potential significant contribution to overall exposure by the cutaneous route, Confirmed Animal Carcinogen with Unknown Relevance to Humans
Alberta	OEL TWA (mg/m³)	100 mg/m³
British Columbia	OEL TWA (mg/m³)	100 mg/m³ (aerosol, inhalable, and vapour)
Manitoba	OEL TWA (mg/m³)	100 mg/m³ (inhalable fraction and vapor)
Newfoundland & Labrador	OEL TWA (mg/m³)	100 mg/m³ (inhalable fraction and vapor)
Nova Scotia	OEL TWA (mg/m³)	100 mg/m³ (inhalable fraction and vapor)

Ontario	OEL TWA (mg/m³)	100 mg/m³ (inhalable fraction and vapor)
Prince Edward Island	OEL TWA (mg/m³)	100 mg/m³ (inhalable fraction and vapor)
Saskatchewan	OEL STEL (mg/m³)	150 mg/m³ (vapour)
Saskatchewan	OEL TWA (mg/m³)	100 mg/m³ (vapour)

Exposure Controls

Appropriate Engineering Controls: Emergency eye wash fountains and safety showers are recommended if exposure is likely. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment: Gloves. Protective eyewear. Protective clothing. If insufficient ventilation, wear respiratory protection.

Materials for Protective Clothing: General work clothing to avoid skin contact.

Hand Protection: Wear chemically resistant protective gloves if exposure is likely.

Eye Protection: Wear suitable eye protection.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations are expected to exceed exposure limits.

Environmental Exposure Controls: Do not allow the product to be released into the environment.

Consumer Exposure Controls: Do not eat, drink or smoke during use.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	Pale, oil-covered prills
Odor	:	Fuel oil
Odor Threshold	:	Not available
pH	:	Not available
Evaporation Rate	:	< 1 (butyl acetate = 1)
Melting Point	:	Not available
Freezing Point	:	Not available
Boiling Point	:	Not available
Flash Point	:	> 120 °F (> 49 °C)
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not available
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	< 5 mm Hg @ 75 °F (23.9 °C)
Relative Vapor Density at 20 °C	:	> 1 (air = 1)
Density	:	0.8 - 1.05 g/cc bulk density
Specific Gravity	:	Not available
Solubility	:	In Water: Ammonium Nitrate component completely soluble
Partition Coefficient: N-Octanol/Water	:	Not available
Viscosity	:	Not available
Explosive properties	:	Explosive; fire, blast or projection hazard

Explosion Data – Sensitivity to Mechanical Impact	:	Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	:	Not expected to present an explosion hazard due to static discharge.

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: May cause or intensify fire; oxidizer. May accelerate the burning of other combustible materials. Contact with organic material or combustible material may cause an explosive situation.
Chemical Stability: Stable under recommended handling and storage conditions (see section 7). May explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in large quantities.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
Conditions to Avoid: Direct sunlight. Extremely high or low temperatures. Heat. Sparks. Open flame. Overheating.
Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Zinc. Copper and its alloys. Organic materials. Combustible materials.
Hazardous Decomposition Products: Carbon monoxide. Nitrogen oxides.

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product
Acute Toxicity: Not classified
LD50 and LC50 Data: Not available
Skin Corrosion/Irritation: Not classified
Serious Eye Damage/Irritation: Causes serious eye irritation.
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Not classified
Teratogenicity: Not classified
Carcinogenicity: Contains an ingredient suspected of causing cancer.
Specific Target Organ Toxicity (Repeated Exposure): May cause damage to organs through prolonged or repeated exposure.
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified
Aspiration Hazard: Not classified
Symptoms/Injuries After Inhalation: May cause respiratory irritation.
Symptoms/Injuries After Skin Contact: May cause skin irritation.
Symptoms/Injuries After Eye Contact: May cause serious eye irritation.
Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects. Overexposure to this material may result in methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.
Chronic Symptoms: Contains an ingredient suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure.
Information on Toxicological Effects - Ingredient(s)
LD50 and LC50 Data:

Fuels, diesel, no. 2 (68476-34-6)	
LD50 Oral Rat	18.7 - 24.9 ml/kg
LD50 Dermal Rabbit	> 4300 mg/kg
ATE US (dust, mist)	3.60 mg/l/4h
Urea (57-13-6)	
LD50 Oral Rat	8471 mg/kg
Ammonium nitrate (6484-52-2)	

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LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h
Guar gum (9000-30-0)	
LD50 Oral Rat	6770 mg/kg

SECTION 12: ECOLOGICAL INFORMATION

Toxicity
Ecology - General: This material is hazardous to the aquatic environment. Keep out of sewers and waterways.
Ecology - Water: Harmful to aquatic life with long lasting effects.

Fuels, diesel, no. 2 (68476-34-6)	
LC50 Fish 1	57 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])

Persistence and Degradability Not available
Bioaccumulative Potential

Urea (57-13-6)	
LC50 Fish 1	16200 - 18300 mg/l (Exposure time: 96 h - Species: Poecilia reticulata)
EC50 Daphnia 1	3910 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

Ammonium nitrate (6484-52-2)	
BCF fish 1	(no bioaccumulation expected)
Log Pow	-3.1 (at 25 °C)

Mobility in Soil Not available
Other Adverse Effects
Other Information: Avoid release to the environment.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Treatment Methods: Contact manufacturer for advice on proper disposal methods.
Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.
Additional Information: Clean up even minor leaks or spills if possible without unnecessary risk.

SECTION 14 - TRANSPORT INFORMATION

In Accordance with DOT

Proper Shipping Name	:	AMMONIUM NITRATE-FUEL OIL MIXTURE containing only prilled ammonium nitrate and fuel oil
Hazard Class	:	1.5D
Identification Number	:	NA0331
Label Codes	:	1.5D
Packing Group	:	II
ERG Number	:	112

In Accordance with IMDG

Proper Shipping Name	:	EXPLOSIVE, BLASTING, TYPE B (AGENT, BLASTING, TYPE B)
Hazard Class	:	1
Identification Number	:	UN0331
Label Codes	:	1.5D
EmS-No. (Fire)	:	F-B
EmS-No. (Spillage)	:	S-Y

In Accordance with IATA

Proper Shipping Name	:	EXPLOSIVE, BLASTING, TYPE B
Identification Number	:	UN0331
Hazard Class	:	1
Label Codes	:	1.5D
ERG Code (IATA)	:	1L
In Accordance with TDG		
Proper Shipping Name	:	EXPLOSIVE, BLASTING, TYPE B
Packing Group	:	II
Hazard Class	:	1.5D
Identification Number	:	UN0331
Label Codes	:	1.5D

SECTION 15 - REGULATORY INFORMATION

US Federal Regulations

ANFO

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard Sudden release of pressure hazard Fire hazard

Fuels, diesel, no. 2 (68476-34-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ammonium nitrate (6484-52-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Urea (57-13-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Guar gum (9000-30-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

US State Regulations

Fuels, diesel, no. 2 (68476-34-6)

U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - 24-Hour
U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - Annual
U.S. - New Jersey - Discharge Prevention - List of Hazardous Substances
U.S. - New Jersey - Environmental Hazardous Substances List
RTK - U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - California - Safer Consumer Products - Initial List of Candidate Chemicals and Chemical Groups
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term

Ammonium nitrate (6484-52-2)

U.S. - California - Toxic Air Contaminant List (AB 1807, AB 2728)
U.S. - Delaware - Accidental Release Prevention Regulations - Sufficient Quantities
U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 1
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 2
U.S. - Massachusetts - Oil & Hazardous Material List - Reportable Quantity
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 1
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 2
RTK - U.S. - Massachusetts - Right To Know List
RTK - U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - New Jersey - Special Health Hazards Substances List RTK - U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List RTK - U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Texas - Effects Screening Levels - Long Term U.S. - Texas - Effects Screening Levels - Short Term	
Guar gum (9000-30-0)	
U.S. - Texas - Effects Screening Levels - Long Term U.S. - Texas - Effects Screening Levels - Short Term	
Fuels, diesel, no. 2 (68476-34-6)	
U.S. - New Jersey - Right to Know Hazardous Substance List	
Ammonium nitrate (6484-52-2)	
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List	
Canadian Regulations	
ANFO	
WHMIS Classification	**Note: Explosives are not regulated under WHMIS. They are subject to the regulations of the Explosives Act of Canada.**
ANFO	
WHMIS Classification	**Note: Explosives are not regulated under WHMIS. They are subject to the regulations of the Explosives Act of Canada.**
Fuels, diesel, no. 2 (68476-34-6)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class B Division 3 - Combustible Liquid Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects Class D Division 1 Subdivision B - Toxic material causing immediate and serious toxic effects
Ammonium nitrate (6484-52-2)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class C - Oxidizing Material Class D Division 2 Subdivision B - Toxic material causing other toxic effects
Urea (57-13-6)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
Guar gum (9000-30-0)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.	

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 07/20/2020

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3

Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Asp. Tox. 1	Aspiration hazard Category 1
Carc. 2	Carcinogenicity Category 2
Comb. Dust	May form combustible dust concentrations in air
Expl. 1.5	Explosive Category 1.5
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Liq. 3	Flammable liquids Category 3
Ox. Sol. 3	Oxidizing solids Category 3
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H205	May mass explode in fire
H272	May intensify fire; oxidizer
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H319	Causes serious eye irritation
H332	Harmful if inhaled
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure

Party Responsible for the Preparation of This Document

Dyno Nobel Inc.
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800

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Dyno Nobel SDS

Safety Data Sheet

SECTION 1 – IDENTIFICATION

Name, Address, and Telephone of the Responsible Party

Dyno Nobel LTD
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800
E-Mail: dna.healthsafety@am.dynonobel.com
www.dynonobel.com

SDS #: **1063**
Date: **05/01/2025**
Supersedes: 01/01/2025

Product Identifier
Product Form: Mixture
Product Name: Packaged Emulsion Explosives

Trade Name(s):
Synonyms:
BLASTEX®
BLASTEX® PLUS
BLASTEX® TX
BLASTEX® PLUS TX

Other Means of Identification
Product Class: Emulsion Explosives, Packaged

Intended Use of the Product:
Industrial blasting applications

Emergency Telephone Number
FOR 24 HOUR EMERGENCY, CALL **CHEMTREC (USA)** **800-424-9300**
CANUTEC (CANADA) **613-996-6666**

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the Substance or Mixture

Classification (GHS-US)
Expl. 1.5 H205

Label Elements
GHS-US Labeling
Hazard Pictograms (GHS-US) :

GHS07

Signal Word (GHS-US) : Danger
Hazard Statements (GHS-US) : H205 – May mass explode in fire
Precautionary Statements (GHS-US) : P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P264 - Wash exposed areas. thoroughly after handling
P280 - Wear protective gloves/protective clothing/eye protection/face protection

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P373 - DO NOT fight fire when fire reaches explosives
P370+P380 - In case of fire: Evacuate area
P372 - Explosion risk in case of fire
P401 – Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR part 555.
P501 - Dispose of contents/container according to local, regional, national, and international regulations

Other Hazards

Hazards Not Otherwise Classified (HNOC): Not available
Other Hazards: None

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product identifier	% (w/w)	Ingredient Classification (GHS-US)
Ammonium nitrate	(CAS No) 6484-52-2	65 - 85	Ox. Sol. 3, H272 Eye Irrit. 2A, H319
Sodium nitrate	(CAS No) 7631-99-4	0.1 – 10	Ox. Sol. 3, H272 Acute Tox. 4 (Oral), H302 Eye Irrit. 2A, H319
Aluminum	(CAS No) 7429-90-5	0.1 - 7	Comb. Dust, H232 Flam. Sol. 1, H228 Water-react. 2, H261
Mineral Oil	(CAS No) 64742-54-7	0 – 2	Asp. Tox. 1, H304
Wax (paraffin)	(CAS No) 8002-72-2	0.0 – 2.2	Not Classified

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).
Full text of H-phrases: see section 16

SECTION 4 - FIRST AID MEASURES

Description of First Aid Measures

This is a packaged product that will not result in exposure to the contents under normal conditions of use. In the event of contact, administer first aid appropriate for symptoms present.

General: Never give anything by mouth to an unconscious person. If exposed or concerned, seek medical advice and attention.

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

Skin Contact: Remove contaminated clothing. Gently wash with plenty of soap and water followed by rinsing with water for at least 15 minutes. Wash contaminated clothing before reuse.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

Ingestion: Rinse mouth. Do not induce vomiting. Immediately call a POISON CENTER or doctor/physician.
Most Important Symptoms and Effects Both Acute and Delayed
General: Avoid ingestion, contact with eyes or skin.
Inhalation: May cause respiratory irritation.
Skin Contact: May cause skin irritation.
Eye Contact: May cause serious eye irritation.
Ingestion: Seek medical attention.
Chronic Symptoms: None expected under normal conditions of use.
Indication of Any Immediate Medical Attention and Special Treatment Needed
If exposed or concerned, get medical advice and attention.

SECTION 5 - FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions.
Unsuitable Extinguishing Media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS
Special Hazards Arising From the Substance or Mixture
Fire Hazard: Can explode or detonate under fire conditions. Burning material may produce toxic vapors.
Explosion Hazard: This product is an explosive with mass detonation hazard. Heating may cause an explosion.
Reactivity: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in a large quantity.

Advice for Firefighters
Firefighting Instructions: DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Guard against re-entry.
Protection During Firefighting: See above
Hazardous Combustion Products: Nitrogen Oxides (NO_X), Carbon Monoxide (CO). Ammonia.
Reference to Other Sections: Refer to section 9 for flammability properties.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
General Measures: Avoid all contact with skin, eyes, or clothing. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Eliminate every possible source of ignition.
For Non-Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Evacuate unnecessary personnel.
For Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).
Emergency Procedures: Eliminate ignition sources. Ventilate area.

Environmental Precautions
Prevent entry to sewers and public waters.

Methods and Material for Containment and Cleaning Up
Methods for Cleaning Up: Protect from all ignition sources. If no fire danger is present, and product is undamaged and/or uncontaminated, pick up or sweep up and repackage product in original packaging or other clean DOT approved container. Ensure that a complete account of product has been made and is verified. Follow applicable Federal, State,

and local spill reporting requirements.

Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection. Concerning disposal elimination after cleaning, see section 13.

SECTION 7 - HANDLING AND STORAGE

Precautions for Safe Handling

This is a packaged product that will not result in exposure to the contents under normal conditions of use.

Additional Hazards When Processed: This product is an explosive and should only be used under the supervision of trained and licensed personnel. Use accepted safe industry practices when handling and using explosive materials. Unintended detonation of explosives or explosive devices can cause serious injury or death.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 555.

Storage Conditions: Store in cool, dry, well-ventialated location. Store in compliance with Federal, State and local regulations. Keep away from heat, flame, ignition sources and strong shock. Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials, combustibles, and sources of heat. Isolate from incompatibles.

Incompatible Materials: Corrosives (strong acids and strong bases or alkalis)

Specific End Use(s) For industrial blasting applications.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits

Ingredients:	Product identifier:	ACGIH TLV-TWA	OSHA PEL-TWA
Ammonium nitrate	(CAS No) 6484-52-2	None	None
Sodium nitrate	(CAS No) 7631-99-4	None	None
Aluminum	(CAS No) 7429-90-5	10 mg/m^3 (dust)	15 mg/m^3 (total)
Mineral Oil	(CAS No) 64742-54-7	5 mg/m^3 (mist)	5 mg/m^3 (mist)
Wax (paraffin)	(CAS No) 8002-72-2	2-10 mg/m^3 (wax fume)	None

Ingredients, other than those mentioned above, as used in this product are not hazardous as defined under current Department of Labor regulations, or are present in deminimus concentrations (less than 0.1% for carcinogens, less than 1.0% for other hazardous materials).

Exposure Controls
Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment: Gloves. Protective goggles. Protective clothing.
Materials for Protective Clothing: protective clothing.
Hand Protection: Protect against incidental skin contact.
Eye Protection: Chemical goggles or safety glasses.
Skin and Body Protection: Wear suitable protective clothing.
Respiratory Protection: Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.
Environmental Exposure Controls: Do not allow the product to be released into the environment.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	White or pink opaque semi-solid, which will appear gray if product contains aluminum. Typically paper or plastic chub packaging.
Odor	:	Faint petroleum odor
Odor Threshold	:	Not available
pH	:	Not applicable
Evaporation Rate	:	< 1
Melting Point	:	Not applicable
Freezing Point	:	Not applicable
Boiling Point	:	Not applicable
Flash Point	:	Not applicable
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Ammonium nitrate: 210 °C (410 °F)
Flammability (solid, gas)	:	Not applicable
Lower Flammable Limit	:	Not applicable
Upper Flammable Limit	:	Not applicable
Vapor Pressure	:	Not applicable
Relative Vapor Density at 20 °C	:	Not applicable
Relative Density	:	Not applicable
Density	:	1.20 - 1.30 g/cc
Specific Gravity	:	Not applicable
Solubility	:	Partially soluble in water
Partition coefficient: n-octanol/water	:	Not available
Viscosity	:	Not available

Explosive properties	:	Explosive; mass explosion hazard
Explosion Data – Sensitivity to Mechanical Impact	:	Not sensitive
Explosion Data – Sensitivity to Static Discharge	:	Not sensitive

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: Stable under normal conditions, may explode when subjected to fire, supersonic shock or high-energy projectile impact, especially when confined or in a large quantity.
Chemical Stability: Stable under normal temperature and pressure.
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
Conditions to Avoid: Keep away from heat, flame, ignition sources and strong shock.
Incompatible Materials: Corrosives (strong acids and strong bases or alkalis).
Hazardous Decomposition Products: Nitrogen Oxides (NO_X), Carbon Monoxide (CO), Ammonia

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product
Acute Toxicity: Not classified
LD50 and LC50 Data: Not available
Skin Corrosion/Irritation: Not classified
Serious Eye Damage/Irritation: May cause eye irritation.
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Not classified
Teratogenicity: Not classified
Carcinogenicity: Not classified
Specific Target Organ Toxicity (Repeated Exposure): Not classified
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified
Aspiration Hazard: Not classified
Symptoms/Injuries After Inhalation: May cause respiratory irritation.
Symptoms/Injuries After Skin Contact: May cause skin irritation.
Symptoms/Injuries After Eye Contact: Causes eye irritation.
Symptoms/Injuries After Ingestion: If ingested, seek medical attention.

Information on Toxicological Effects - Ingredient(s)
LD50 and LC50 Data:

Sodium nitrate (7631-99-4)	
LD50 Oral Rat	> 2000 mg/kg

Ammonium nitrate (6484-52-2)	
LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h

SECTION 12: ECOLOGICAL INFORMATION

Toxicity Not classified

Sodium nitrate (7631-99-4)	
LC50 Fish 1	2000 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
LC 50 Fish 2	994.4 - 1107 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])

Persistence and Degradability

Sodium nitrate (7631-99-4)	
Persistence and Degradability	**Readily biodegradable in water.**

Bioaccumulative Potential

Sodium nitrate (7631-99-4)	
Bioaccumulative Potential	Not expected to bioaccumulate.

Ammonium nitrate (6484-52-2)	
BCF fish 1	No bioaccumulation expected.

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

Toxicity Not classified

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Disposal must comply with Federal, State and local regulations. If product becomes a waste, it is potentially regulated as a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR, part 261. Review disposal requirements with a person knowledgeable with applicable environmental law (RCRA) before disposing of any explosive material.

Additional Information: None

SECTION 14 - TRANSPORT INFORMATION

14.1 In Accordance with DOT

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E or Agent blasting, Type E

Hazard Class : 1.5D

Identification Number : UN0332

Label Codes : 1.5D

Packing Group : II

ERG Number : 140

14.2 In Accordance with IMDG

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E (AGENT, BLASTING, TYPE E)

Hazard Class : 1.5D

Identification Number : UN0332

Label Codes	:	1.5D
EmS-No. (Fire)	:	F-B
EmS-No. (Spillage)	:	S-Y

14.3 In Accordance with IATA

Proper Shipping Name	:	AGENT, BLASTING TYPE E
Identification Number	:	UN0332
Hazard Class	:	1
Label Codes	:	1.5D
ERG Code (IATA)	:	1L

14.4 In Accordance with TDG

Proper Shipping Name	:	EXPLOSIVE, BLASTING, TYPE E
Packing Group	:	II
Hazard Class	:	1.5D
Identification Number	:	UN0332
Label Codes	:	1.5D

SECTION 15 - REGULATORY INFORMATION

US Federal Regulations

Packaged Emulsion Explosives

Bureau of Alcohol Tobacco & Firearms (BATF)
Department of Transportation (DOT)
Mine Safety & Health Administration (MSHA)

Canadian Regulations

Packaged Emulsions

WHMIS Classification	**Note: Explosives are not regulated under WHMIS. They are subject to the regulations of the Explosives Act of Canada.**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision date	:	05/01/2025
Other Information	:	This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Expl. 1.5	Explosive Category 1.5
H205	May mass explode in fire

Party Responsible for the Preparation of This Document

Dyno Nobel LTD
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800

Disclaimer

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Dyno Nobel SDS

Safety Data Sheet

According to: 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS
Trade Name: NONEL® Non-electric Delay Detonators

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Name, Address, and Telephone of the Responsible Party

Dyno Nobel LTD
6440 S. Millrock Drive, Suite 150
Salt Lake City, Utah 84121
Phone: 801-364-4800
E-Mail: dna.healthsafety@am.dynonobel.com
www.dynonobel.com

SDS #: 1122
Date: 05/01/2025
Supersedes: 07/20/2020

Product identifier
Trade name: **NONEL® Non-electric Delay Detonators**
Article number: 1122
Other product identifiers:

NONEL® MS
NONEL® EZ DET®
NONEL® MS ARCTIC
NONEL® EZTL™
NONEL® LP NONEL® EZ DRIFTER ®
NONEL® SL
NONEL® SUPER
NONEL® TD
NONEL® MS CONNECTOR
NONEL® TWINPLEX™
NONEL® STARTER

Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.

Application of the substance / the mixture
Explosive product.
Commercial blasting applications

Emergency telephone number:
CHEMTREC 1-800-424-9300 (US/Canada)
+01 703-527-3887 (International)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
Classifications listed also are applicable to the OSHA GHS Hazard Communication Standard (29CFR1910.1200).

exploding bomb

Expl. 1.1 H201 Explosive; mass explosion hazard.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

Xn; Harmful

R22: Harmful if swallowed.

E; Explosive

R2: Risk of explosion by shock, friction, fire or other sources of ignition.

Information concerning particular hazards for human and environment: The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Classification system: The classification is according to the latest editions of the EU-lists, and extended by company and literature data.
The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.
Additional information: There are no other hazards not otherwise classified that have been identified.
0 percent of the mixture consists of component(s) of unknown toxicity

Label elements
Labelling according to Regulation (EC) No 1272/2008
The product is additionally classified and labelled according to the Globally Harmonized System within the United States (GHS).
The product is classified and labelled according to the CLP regulation.
Hazard pictograms

GHS01

Signal word:	Danger
Hazard-determining components of labelling:	potassium perchlorate pentaerythritol tetranitrate (PETN)
Hazard statements:	H201 Explosive; mass explosion hazard.
Precautionary statements:	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P250	Do not subject to grinding/shock/friction.
P264	Wash thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P240	Ground/bond container and receiving equipment.
P270	Do not eat, drink or smoke when using this product.
P373	DO NOT fight fire when fire reaches explosives.
P370 + P380	In case of fire: Evacuate area.
P372	Explosion risk in case of fire.
P401	Store in accordance with local/regional/national/international regulations.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
Additional information:	EUH208 Contains diazodinitro phenol (DDNP). May produce an allergic reaction.
Hazard description:	
WHMIS-symbols:	Explosive products are not classified under WHMIS.
NFPA ratings (scale 0 - 4):	Not available.

HMIS-ratings (scale 0 - 4): Not available

HMIS Long Term Health Hazard Substances	
13424-46-9	lead diazide
7439-92-1	lead
13463-67-7	titanium dioxide
7758-97-6	lead chromate
7778-74-7	potassium perchlorate

Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

Explosive Product Notice: PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures

Description: Mixture of substances listed below with nonhazardous additions.
Some delay periods may contain potassium perchlorate. Those that do contain between from about 4 to a maximum of approximately 60 mg perchlorate per detonator.

Dangerous components:	
CAS: 78-11-5 EINECS: 201-084-3 Index number: 603-035-00-5	pentaerythritol tetranitrate (PETN) E R3
	Unst. Expl., H200
CAS: 13424-46-9 EINECS: 236-542-1 Index number: 082-003-00-7	lead diazide T Repr. Cat. 1, 3 R61; Xn R62-20/22; E R3; N R50/53 R33
	Unst. Expl., H200 Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373 Aquatic Acute 1, H400; Aquatic Chronic 1, H410 Acute Tox. 4, H302; Acute Tox. 4, H332
CAS: 7439-92-1 EINECS: 231-100-4	lead Repr. Cat. 1 R60-61-48/23/25; N R50/53
	Repr. 1A, H360FD; STOT RE 1, H372 Aquatic Acute 1, H400; Aquatic Chronic 1, H410
CAS: 7440-21-3 EINECS: 231-130-8	silicon R11

	Flam. Sol. 2, H228
CAS: 7782-49-2 EINECS: 231-957-4 Index number: 034-001-00-2	selenium R23/25 R33-53
	Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373 Aquatic Chronic 4, H413
CAS: 1314-41-6 EINECS: 215-235-6 Index number: 082-001-00-6	orange lead T Repr. Cat. 1, 3 R61; Xn R62-20/22; N R50/53 R33
	Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373 Aquatic Acute 1, H400; Aquatic Chronic 1, H410 Acute Tox. 4, H302; Acute Tox. 4, H332
CAS: 13463-67-7 EINECS: 236-675-5	titanium dioxide substance with a Community workplace exposure limit
CAS: 10294-40-3 EINECS: 233-660-5 Index number: 056-002-00-7	barium chromate Xn R20/22
	Carc. 1A, H350 Acute Tox. 4, H302; Acute Tox. 4, H332
CAS: 7758-97-6 EINECS: 231-846-0 Index number: 082-004-00-2	lead chromate T Carc. Cat. 2, Repr. Cat. 1, 3 R45-61; Xn R62; N R50/53 R33
	Carc. 1B, H350; Repr. 1A, H360Df; STOT RE 2, H373 Aquatic Acute 1, H400; Aquatic Chronic 1, H410
CAS: 7727-43-7 EINECS: 231-784-4	barium sulphate, natural substance with a Community workplace exposure limit
CAS: 7778-74-7 EINECS: 231-912-9 Index number: 017-008-00-5	potassium perchlorate Xn R22; O R9
	Ox. Sol. 1, H271 Acute Tox. 4, H302
CAS: 61790-53-2	Diatomaceous earth (Silica-Amorphous) substance with a Community workplace exposure limit
CAS: 7439-98-7 EINECS: 231-107-2	molybdenum substance with a Community workplace exposure limit
CAS: 7440-33-7 EINECS: 231-143-9	tungsten substance with a Community workplace exposure limit
CAS: 7429-90-5 EINECS: 231-072-3 Index number: 013-001-00-6	aluminium powder (pyrophoric) F R15-17
	Pyr. Sol. 1, H250; Water-react. 2, H261
CAS: 7440-36-0 EINECS: 231-146-5	antimony substance with a Community workplace exposure limit
CAS: 2691-41-0 EINECS: 220-260-0	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) T R24; Xn R22; E R2

	Expl. 1.1, H201 Acute Tox. 3, H301; Acute Tox. 3, H311
CAS: 4682-03-5	diazodinitro phenol (DDNP) Xi R36/38; Xi R43; E R3
	Unst. Expl., H200 Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317

SVHC	
13424-46-9	lead diazide
1314-41-6	orange lead
7758-97-6	lead chromate

Additional information: For the listed ingredients, the identity and exact percentages are being withheld as a trade secret. For the wording of the listed risk phrases refer to section 16.

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General information: Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

After inhalation: Unlikely route of exposure.
Supply fresh air; consult doctor in case of complaints.

After skin contact: Generally the product does not irritate the skin. Wash with soap and water.
If skin irritation is experienced, consult a doctor.

After eye contact: Remove contact lenses if worn.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

After swallowing: Rinse out mouth and then drink plenty of water.
Do not induce vomiting; call for medical help immediately.

Most important symptoms and effects, both acute and delayed Blast injury if mishandled.

Hazards
Danger of blast or crush-type injuries. Harmful if swallowed.
Danger of disturbed cardiac rhythm.

Indication of any immediate medical attention and special treatment needed
Medical supervision for at least 48 hours.
Product may produce physical injury if mishandled. Treatment of these injuries should be based on the blast and compression effects.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing agents: DO NOT fight fire when fire reaches explosives.

For safety reasons unsuitable extinguishing agents: None.

Special hazards arising from the substance or mixture
DO NOT ATTEMPT TO FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Evacuate all personnel to a predetermined safe location, no less than 2,500 feet in all directions. Can explode or detonate under fire conditions. Burning material may produce toxic vapors. It is recommended that users of explosives material be familiar with the Institute of Makers of Explosives Safety Library publications.
Explosive; mass explosion hazard.

Advice for firefighters

Protective equipment: Wear self-contained respiratory protective device.
Wear fully protective suit.
Additional information
Eliminate all ignition sources if safe to do so.
Flammability Classification: (defined by 29 CFR 1910.1200) Explosive. Can explode under fire conditions. Individual devices will randomly explode. Mass explosion of multiple devices is possible under certain conditions. Burning material may produce toxic and irritating vapors. In unusual cases, shrapnel may be thrown from exploding devices under containment. See 2012 Emergency response Guidebook for further information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Remove persons from danger area.
Ensure adequate ventilation
Wear protective clothing.
Protect from heat. Evacuate area.
Isolate area and prevent access.
Environmental precautions
No special measures required.

Methods and material for containment and cleaning up
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Dispose unusable material as waste according to item 13.
Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling
Open and handle receptacle with care.
Handle with care. Avoid jolting, friction and impact.
Use only in well ventilated areas.
Do not subject to grinding/shock/friction.
Information about fire - and explosion protection: Protect from heat.
Prevent impact and friction.
Emergency cooling must be available in case of nearby fire.
Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: Store in a cool location.
Avoid storage near extreme heat, ignition sources or open flame.
Information about storage in one common storage facility: Store away from foodstuffs.
Further information about storage conditions: Store under lock and key and with access restricted to technical experts or their assistants only.
Keep away from heat.
Specific end use(s): No further relevant information available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical facilities: No further data; see item 7.

Control parameters

Ingredients with limit values that require monitoring at the workplace:	
13424-46-9 lead diazide	
PEL (USA)	Long-term value: 0,05 mg/m³ as Pb; See 29 CFR 1910,1025
REL (USA)	Long-term value: 0,05* mg/m³ as Pb;*8-hr TWA; See Pocket Guide App. C
TLV (USA)	Long-term value: 0,05 mg/m³ as Pb; BEI
EL (Canada)	Long-term value: 0,05 mg/m³ as Pb; IARC 2A, R
7439-92-1 lead	
PEL (USA)	Long-term value: 0,05* mg/m³ *see 29 CFR 1910,1025
REL (USA)	Long-term value: 0,05* mg/m³ *8-hr TWA,excl. lead arsenate;See PocketGuideApp.C
TLV (USA)	Long-term value: 0,05* mg/m³ *and inorganic compounds, as Pb; BEI
EL (Canada)	Long-term value: 0,05 mg/m³ R; IARC 2B
EV (Canada)	Long-term value: 0,05 mg/m³ as Pb, Skin (organic compounds)
7440-21-3 silicon	
PEL (USA)	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust;**respirable fraction
EV (Canada)	Long-term value: 10 mg/m³ total dust
7782-49-2 selenium	
PEL (USA)	Long-term value: 0,2 mg/m³ as Se
REL (USA)	Long-term value: 0,2 mg/m³ as Se
TLV (USA)	Long-term value: 0,2 mg/m³ as Se
EL (Canada)	Long-term value: 0,1 mg/m³
EV (Canada)	Long-term value: 0,2 mg/m³
1314-41-6 orange lead	

PEL (USA)	Long-term value: 0,05 mg/m³ as Pb; See 29 CFR 1910,1025
REL (USA)	Long-term value: 0,05* mg/m³ as Pb;*8-hr TWA; See Pocket Guide App. C
TLV (USA)	Long-term value: 0,05 mg/m³ as Pb; BEI
EL (Canada)	Long-term value: 0,05 mg/m³ as Pb; IARC 2A, R
EV (Canada)	Long-term value: 0,05 mg/m³ as Pb, Skin (organic compounds)
13463-67-7 titanium dioxide	
PEL (USA)	Long-term value: 15* mg/m³ *total dust
REL (USA)	See Pocket Guide App. A
TLV (USA)	Long-term value: 10 mg/m³ withdrawn from NIC
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust;**respirable fraction; IARC 2B
EV (Canada)	Long-term value: 10 mg/m³ total dust
10294-40-3 barium chromate	
PEL (USA)	Long-term value: 0,005* mg/m³ Ceiling limit: 0,1** mg/m³ *as Cr(VI) **as CrO3; see 29 CFR 1910,1026
REL (USA)	Long-term value: 0,0002 mg/m³ as Cr; See Pocket Guide Apps. A and C
TLV (USA)	Long-term value: 0,01 mg/m³ as Cr
EL (Canada)	Long-term value: 0,01 mg/m³ as Cr; ACGIH A1 IARC 1
7758-97-6 lead chromate	
IOELV (EU)	Long-term value: 2 mg/m³ as Cr
PEL (USA)	Long-term value: 0,005* mg/m³ Ceiling limit: 0,1** mg/m³ *as Cr(VI) **as CrO3; see 29 CFR 1910,1026
REL (USA)	Long-term value: 0,0002 mg/m³ as Cr; See Pocket Guide Apps. A and C
TLV (USA)	Long-term value: 0,05* 0,012** mg/m³ *as Pb; BEI ; **as Cr
EL (Canada)	Long-term value: 0,05* 0,012** mg/m³ ACIGH A2, IARC 2A; R; *as Pb;**as Cr

EV (Canada)	Long-term value: 0,012* 0,05** mg/m³ *as Cr, **as Pb
7727-43-7 barium sulphate, natural	
PEL (USA)	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV (USA)	Long-term value: 5* mg/m³ *inhalable fraction; E
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust, **respirable fraction
EV (Canada)	Long-term value: 10 mg/m³ total dust
61790-53-2 Diatomaceous earth (Silica-Amorphous)	
PEL (USA)	20mppcf or 80mg/m³ /%SiO^2
REL (USA)	Long-term value: 6 mg/m³ See Pocket Guide App. C
TLV (USA)	TLV withdrawn
EL (Canada)	Long-term value: 4* 1,5** mg/m³ *total, **respirable
EV (Canada)	Long-term value: 10* 3** mg/m³ uncalcined; *inhalable;**respirable
7439-98-7 molybdenum	
PEL (USA)	Long-term value: 15* mg/m³ *Total dust
TLV (USA)	Long-term value: 10* 3** mg/m³ as Mo; *inhalable fraction ** respirable fraction
EL (Canada)	Long-term value: 3* 10** mg/m³ as Mo; *respirable **inhalable
EV (Canada)	Long-term value: 10* 3** 0,5*** mg/m³ metal,insol.compd.:*inh;**resp;sol.compd.:***resp
7440-33-7 tungsten	
PEL (USA)	and insoluble compounds, as We
REL (USA)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as W
TLV (USA)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as W
EL (Canada)	Short-term value: 10 mg/m³ Long-term value: 5 mg/m³ as W
EV (Canada)	Short-term value: 10* 3** mg/m³ Long-term value: 5* 1** mg/m³ (as tungsten; compds.:*water-insol.;**water-sol.
7429-90-5 aluminium powder (pyrophoric)	
PEL (USA)	Long-term value: 15*; 15** mg/m³

REL (USA) TLV (USA) EL (Canada) EV (Canada)	*Total dust; ** Respirable fraction Long-term value: 10* 5** mg/m³ as Al*Total dust**Respirable/pyro powd./welding f. Long-term value: 1* mg/m³ as Al; *as respirable fraction Long-term value: 1,0 mg/m³ respirable, as Al Long-term value: 5 mg/m³ aluminium-containing (as aluminium)
7440-36-0 antimony	
PEL (USA) REL (USA) TLV (USA) EL (Canada) EV (Canada)	Long-term value: 0,5 mg/m³ as Sb Long-term value: 0,5 mg/m³ as Sb Long-term value: 0,5 mg/m³ as Sb Long-term value: 0,5 mg/m³ Long-term value: 0,5 mg/m³

DNELs No further relevant information available.
PNECs No further relevant information available.

Ingredients with biological limit values:

13424-46-9 lead diazide	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead
7439-92-1 lead	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead 10 µg/100 ml Medium: blood Time: not critical Parameter: Lead (women of child bearing potential)
1314-41-6 orange lead	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead
10294-40-3 barium chromate	
BEI (USA)	25 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Total chromium (fume)

	10 µg/L Medium: urine Time: increase during shift Parameter: Total chromium (fume)
7758-97-6 lead chromate	
BEI (USA)	30 µg/100 ml Medium: blood Time: not critical Parameter: Lead 10 µg/100 ml Medium: blood Time: not critical Parameter: Lead (women of child bearing potential)

Additional information: The lists valid during the making were used as basis.

Exposure controls
Personal protective equipment:
General protective and hygienic measures: The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Respiratory protection: Not required under normal conditions of use.
Respiratory protection may be required after product use.
Protection of hands: Wear gloves for the protection against mechanical hazards according to NIOSH or EN 388.
Material of gloves: The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
Penetration time of glove material: The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
Eye protection:

Safety glasses

Face protection
Body protection: Impervious protective clothing
Limitation and supervision of exposure into the environment: No further relevant information available.
Risk management measures: Organizational measures should be in place for all activities involving this product.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
General Information
Appearance:

Form:	Solid material
Colour:	According to product specification

Odour:	Characteristic
Odour threshold:	Not determined.
pH-value:	Not applicable.
Change in condition	
Melting point/Melting range:	Not Determined.
Boiling point/Boiling range:	Undetermined.
Flash point:	Not applicable.
Flammability (solid, gaseous):	Explosive; mass explosion hazard.
Auto/Self-ignition temperature:	Not determined.
Decomposition temperature:	Not determined.
Self-igniting:	Product is not self-igniting.
Danger of explosion:	Risk of explosion by shock, friction, fire or other sources of ignition.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapour pressure:	Not applicable.
Density:	Not determined.
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with water:	Variable, dependent upon product composition and packaging.
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
Other information	No further relevant information available.

SECTION 10: STABILITY AND REACTIVITY

Reactivity

Chemical stability

Thermal decomposition / conditions to be avoided: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Possibility of hazardous reactions: Danger of explosion. Toxic fumes may be released if heated above the decomposition point.

Conditions to avoid: No further relevant information available.

Incompatible materials: No further relevant information available.

Hazardous decomposition products: Carbon monoxide and carbon dioxide Hydrocarbons Nitrogen oxides Chlorine compounds Leadoxide vapour Bariumoxide vapour Toxic metal oxide smoke Danger of forming toxic pyrolysis products.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity:

LD/LC50 values relevant for classification:

7439-92-1 lead

Oral LD50 >2000 mg/kg (rat)

7782-49-2 selenium

Oral LD50 6700 mg/kg (rat)
7758-97-6 lead chromate
Oral LD50 12000 mg/kg (mouse)
Primary irritant effect:
on the skin: Not a skin irritant in unused form. Vapors/particles from used product are possibly irritating to skin.
on the eye: Not an eye irritant in unused form. Vapors/particles from used product are possibly irritating to eyes.
Sensitisation: No sensitising effects known.
Subacute to chronic toxicity: No further relevant information available.
Additional toxicological information: The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version: Harmful
Acute effects (acute toxicity, irritation and corrosivity): Danger of blast or crush-type injuries.
Harmful if swallowed.
Repeated dose toxicity: No further relevant information available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Additional ecological information:
General notes: Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No further relevant information available.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods
Recommendation: Must not be disposed together with household garbage. Do not allow product to reach sewage system. Damaged materials pose a danger to anyone in the immediate area; consult experts for disposal of damaged products.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.
Uncleaned packaging:
Recommendation: Disposal must be made according to official regulations.

SECTION 14: TRANSPORT INFORMATION

UN-Number	
DOT, ADR, IMDG:	UN0360
IATA:	FORBIDDEN
UN proper shipping name	
DOT, IMDG:	DETONATOR ASSEMBLIES, NON-ELECTRIC
ADR:	0360 DETONATOR ASSEMBLIES, NON-ELECTRIC

IATA:	FORBIDDEN
Transport hazard class(es)	
DOT	
Class:	1.1
Label:	1.1
ADR, IMDG	
Class:	1.1
Label:	1.1B
IATA	
Class:	FORBIDDEN
Packing group	
DOT, ADR, IMDG:	II
IATA:	FORBIDDEN
Environmental hazards:	
Marine pollutant:	No
Special marking (IATA):	FORBIDDEN BY AIR.
Special precautions for user:	Not applicable.
EMS Number:	F-B,S-X
Segregation groups	Perchlorates
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	
Transport/Additional information:	Not applicable.

ADR	
Limited quantities (LQ)	0
Excepted quantities (EQ)	Code: E0 Not permitted as Excepted Quantity
Tunnel restriction code	1
IMDG	
Limited quantities (LQ)	0
Excepted quantities (EQ)	Code E0 Not permitted as Excepted Quantity
IATA	FORBIDDEN
UN "Model Regulation":	UN0360, DETONATOR ASSEMBLIES, NON- ELECTRIC, 1.1B, II

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

United States (USA)

SARA	
Section 355 (extremely hazardous substances):	
None of the ingredients are listed.	
Section 313 (Specific toxic chemical listings):	
13424-46-9	lead diazide
7439-92-1	lead
7782-49-2	selenium
1314-41-6	orange lead
10294-40-3	barium chromate
7758-97-6	lead chromate
7727-43-7	barium sulphate, natural
7429-90-5	aluminium powder (pyrophoric)
7440-36-0	antimony
TSCA (Toxic Substances Control Act):	
All ingredients are listed.	
Proposition 65 (California):	
Chemicals known to cause cancer:	
13424-46-9	lead diazide
7439-92-1	lead
1314-41-6	orange lead
13463-67-7	titanium dioxide
10294-40-3	barium chromate
7758-97-6	lead chromate
Chemicals known to cause reproductive toxicity for females:	
7439-92-1	lead
10294-40-3	barium chromate
7758-97-6	lead chromate
Chemicals known to cause reproductive toxicity for males:	
7439-92-1	lead
10294-40-3	barium chromate
7758-97-6	lead chromate
Chemicals known to cause developmental toxicity:	
13424-46-9	lead diazide
7439-92-1	lead
10294-40-3	barium chromate
7758-97-6	lead chromate
Carcinogenic Categories	
EPA (Environmental Protection Agency)	

13424-46-9	lead diazide	B2
7439-92-1	lead	B2
7782-49-2	selenium	D
1314-41-6	orange lead	B2
10294-40-3	barium chromate	A(inh), D(oral), K/L(inh), CBD(oral)
7758-97-6	lead chromate	K
7727-43-7	barium sulphate, natural	D, CBD(inh), NL(oral)
7778-74-7	potassium perchlorate	NL
2691-41-0	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	D
IARC (International Agency for Research on Cancer)		
13424-46-9	lead diazide	2A
7439-92-1	lead	2B
7782-49-2	selenium	3
1314-41-6	orange lead	2A
13463-67-7	titanium dioxide	2B
10294-40-3	barium chromate	1
7758-97-6	lead chromate	1
61790-53-2	Diatomaceous earth (Silica-Amorphous)	3
TLV (Threshold Limit Value established by ACGIH)		
13424-46-9	lead diazide	A3
7439-92-1	lead	A3
1314-41-6	orange lead	A3
13463-67-7	titanium dioxide	A4
10294-40-3	barium chromate	A1
7758-97-6	lead chromate	A2
7439-98-7	molybdenum	A3
7429-90-5	aluminium powder (pyrophoric)	A4
NIOSH-Ca (National Institute for Occupational Safety and Health)		
13463-67-7	titanium dioxide	
10294-40-3	barium chromate	
7758-97-6	lead chromate	
Canada		
Canadian Domestic Substances List (DSL)		
Some components are listed on the NDSL.		
All ingredients are listed.		
Canadian Ingredient Disclosure list (limit 0.1%)		
7439-92-1	lead	
7782-49-2	selenium	
10294-40-3	barium chromate	

7758-97-6	lead chromate
Canadian Ingredient Disclosure list (limit 1%)	
7439-98-7	molybdenum
7440-33-7	tungsten
7429-90-5	aluminium powder (pyrophoric)
7440-36-0	antimony
Other regulations, limitations and prohibitive regulations	
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.	
Substances of very high concern (SVHC) according to REACH, Article 57	
13424-46-9	lead diazide
1314-41-6	orange lead
7758-97-6	lead chromate

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: OTHER INFORMATION

Phrases pertinentes

H200 Unstable explosives.	
H201 Explosive; mass explosion hazard.	
H228 Flammable solid.	
H250 Catches fire spontaneously if exposed to air.	
H261 In contact with water releases flammable gases.	
H271 May cause fire or explosion; strong oxidiser.	
H301 Toxic if swallowed.	
H302 Harmful if swallowed.	
H311 Toxic in contact with skin.	
H315 Causes skin irritation.	
H317 May cause an allergic skin reaction.	
H319 Causes serious eye irritation.	
H331 Toxic if inhaled.	
H332 Harmful if inhaled.	
H350 May cause cancer.	
H360Df May damage the unborn child. Suspected of damaging fertility.	
H360FD May damage fertility. May damage the unborn child.	
H372 Causes damage to organs through prolonged or repeated exposure.	
H373 May cause damage to organs through prolonged or repeated exposure.	
H400 Very toxic to aquatic life.	
H410 Very toxic to aquatic life with long lasting effects.	
H413 May cause long lasting harmful effects to aquatic life.	
R11 Highly flammable.	
R15 Contact with water liberates extremely flammable gases.	
R17 Spontaneously flammable in air.	

R2 Risk of explosion by shock, friction, fire or other sources of ignition.	
R20/22 Harmful by inhalation and if swallowed.	
R22 Harmful if swallowed.	
R23/25 Toxic by inhalation and if swallowed.	
R24 Toxic in contact with skin.	
R3 Extreme risk of explosion by shock, friction, fire or other sources of ignition.	
R33 Danger of cumulative effects.	
R36/38 Irritating to eyes and skin.	
R43 May cause sensitisation by skin contact.	
R45 May cause cancer.	
R48/23/25 Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.	
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.	
R53 May cause long-term adverse effects in the aquatic environment.	
R60 May impair fertility.	
R61 May cause harm to the unborn child.	
R62 Possible risk of impaired fertility.	
R9 Explosive when mixed with combustible material.	

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transportation	
IATA: International Air Transport Association	
GHS: Globally Harmonised System of Classification and Labelling of Chemicals	
ACGIH: American Conference of Governmental Industrial Hygienists	
EINECS: European Inventory of Existing Commercial Chemical Substances	
ELINCS: European List of Notified Chemical Substances	
CAS: Chemical Abstracts Service (division of the American Chemical Society)	
NFPA: National Fire Protection Association (USA)	
HMIS: Hazardous Materials Identification System (USA)	
WHMIS: Workplace Hazardous Materials Information System (Canada)	
DNEL: Derived No-Effect Level (REACH)	
PNEC: Predicted No-Effect Concentration (REACH)	
LC50: Lethal concentration, 50 percent	
LD50: Lethal dose, 50 percent	
Expl. 1.1: Explosives, Division 1.1	
Unst. Expl.: Explosives, Unstable explosives	
Flam. Sol. 2: Flammable solids, Hazard Category 2	
Pyr. Sol. 1: Pyorphoric Solids, Hazard Category 1	
Water-react. 2: Substances and Mixtures which, in contact with water, emit	

flammable gases, Hazard Category 2	
Ox. Sol. 1: Oxidising Solids, Hazard Category 1	
Acute Tox. 3: Acute toxicity, Hazard Category 3	
Acute Tox. 4: Acute toxicity, Hazard Category 4	
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2	
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2	
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1	
Carc. 1A: Carcinogenicity, Hazard Category 1A Carc. 1B: Carcinogenicity, Hazard Category 1B	
Repr. 1A: Reproductive toxicity, Hazard Category 1A Repr. 1A: Reproductive toxicity, Hazard Category 1A	
STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1	
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2	
Aquatic Acute 1: Hazardous to the aquatic environment - AcuteHazard, Category 1	
Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1	
Aquatic Chronic 4: Hazardous to the aquatic environment - Chronic Hazard, Category 4	

Sources
SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com

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Applied Polymer Systems

519 Industrial Drive, Woodstock, GA 30189
www.siltstop.com
Phone: 678-494-5998
Toll-free: 866-200-9868
Fax: 678-494-5298

APS 700 Series Floc Logs®

Polyacrylamide Sediment and Turbidity Control Applicator Logs

APS 700 Series Floc Logs are a group of soil-specific tailored log-blocks that contain blends of water treatment components and polyacrylamide co-polymer for water clarification. They reduce and prevent fine particles and colloidal clays from suspension in stormwater. There are several types of Floc Logs designed to treat most water and soil types. Contact Applied Polymer Systems, Inc. or your local distributor for free testing and site-specific application information.

Primary Applications

- Mine tailings and waste pile ditches
- Stormwater drainage from construction and building sites
- Road and highway construction runoff ditches
- Ditch and treatment system placement for all forms of highly turbid waters (less than 4% solids)
- Dredging operations as a flocculent

Features and Benefits

- Removes solubilized soils and clay from water
- Prevents colloidal solutions in water within ditch systems
- Binds cationic metals within water, reducing solubilization
- Binds pesticides and fertilizers within runoff water
- Reduces operational and cleanup costs
- Reduces environmental risks and helps meet compliance

Specifications / Compliances

- ANSI/NSF Standard 60 Drinking water treatment chemical additives
- 48h or 96h Acute Toxicity Tests (*D. magna* or *O. mykiss*)
- 7 Day Chronic Toxicity Tests *(P. promealas* or *C. dubia*

Packaging

APS 700 Series Floc Logs are packaged in boxes of four (4)

Technical Information

Appearance - semi-solid block
Biodegradable internal coconut skeleton
Percent Moisture - 40% maximum
pH 0.5% Solution - 6-8
Shelf Life – up to 5 years when stored out of UV rays

Applied Polymer Systems

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Fax: 678-494-5298

Placement

Floc Logs are designed for placement within ditches averaging three feet wide by two feet deep. Floc log placement is based on gallon per minute flow rates. Note: actual GPM or dosage will vary based on site criteria and soil/water testing.

Directions for Use

(Water and Floc Log Mixing is Very Important!)

APS 700 Series Floc Logs should be placed within the upper quarter to half of a *stabilized* ditch system or as close as possible to active earth moving activities. Floc Logs have built in ropes with attachment loops which can be looped over stakes to ensure they remain where placed. Mixing is key! If the flow rate is too slow, adding sand bags, cinder blocks, etc., can create the turbulence required for proper mixing. Floc Logs are designed to treat dirty water, not liquid mud; when the water contains heavy solids (exceeding 4%), it will be necessary to create a sediment or grit pit to let the heavy solids settle before treating the water.

Floc Logs must not be placed in areas where heavy erosion would result in the Floc Logs becoming buried. Where there is heavy sedimentation, maintenance will be required.

APS 700 Series Floc Logs can easily be moved to different locations as site conditions change. Water quality will be improved with the addition of a dispersion field or soft armor covered ditch checks below the Floc Log(s) to collect flocculated particulate. Construction of mixing weirs may be required in areas where short ditch lines, swelling clays, heavy particle concentrations, or steep slopes may be encountered.

Cleanup:

Latex or rubber gloves are recommended for handling during usage. Use soap and water to wash hands after handling.

Precautions / Limitations

- APS 700 Series Floc Logs are extremely slippery when wet.
- Clean up spills quickly. Do not use water unless necessary as extremely slippery conditions will result and if water is necessary, use pressure washer.
- APS Floc Log will remain viable for up to 5 years when stored out of UV rays.
- APS 700 Series Floc Logs have been specifically tailored to specific water and soil types and samples must be tested. Testing is necessary and is free.
- For product information, treatment system design assistance, or performance issues, contact Applied Polymer Systems.

SAFETY DATA SHEET HYDRATED LIME

OSHA Hazard Communication Standard 29 CFR 1910.1200. Prepared to GHS Rev03.

SECTION 1. IDENTIFICATION

Product Name	Hydrated Lime
Chemical Name	Calcium Hydroxide
Synonyms	Chemical Hydrate, Commercial Hydrate, Industrial Hydrate, Hydrate Lime, Hydrate Tailings
Uses	Soil Stabilization, Fixation, Neutralization, Desulphurization, Agriculture, Water Treatment
Distributor	**Mintek Resources** 3725 Pentagon Blvd. Suite 100 Beavercreek, OH 45431 Phone: 937-431-0218
Emergency Contact	**VelocityEHS: (800) 255-3924** (MIS8507735)

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS08 Health Hazard

GHS05 Corrosion

Signal Word	Danger	
Hazard-Determining Components of Labeling	Calcium Oxide, Calcium Carbonate, Calcium Hydroxide	
Hazard Statements	H303	May be harmful if swallowed.
	H335	May cause respiratory irritation.
	H373	May Cause damage to organs (lungs) through repeated or prolonged exposure.
Precautionary Statements	P101	If medical advice is needed, have product container or label at hand.
	P102	Keep out of reach of children.
	P260	Do not breathe dust.
	P264	Wash hands thoroughly after handling.
	P270	Do not eat, drink when using this product.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P284	Wear respiratory protection.
Response	P303	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
	P304	If inhaled: Remove person to fresh air and keep comfortable for breathing.
	P305	If in eyes: Rinse cautiously with water for several minutes

SECTION 3. COMPOSITION

Component	Formula	% Wt.	CAS No.	PEL
Calcium Hydroxide	$Ca(OH)_2$	>90	1305-62-0	5 mg/m^3
Silica-Crystalline Quartz	SiO_2	<1%	14808-60-7	10 mg/m^3 respirable

SECTION 4. FIRST AID MEASURES

Inhalation
Acute: May cause respiratory irritation.
Chronic: Respiratory tract irritation, coughing, burning sensation.

Eyes
Acute: Causes serious eye damage.
Chronic: Pain, watering, redness.

Skin
Acute: Causes skin irritation.
Chronic: Pain or irritation, redness, blistering may occur.

Ingestion
Acute: No known effects.
Chronic: Burning sensation, abdominal cramps and pain, vomiting.

Treatments

Inhalation
Move victim to fresh air. Seek medical attention if necessary. If breathing has stopped, give artificial respiration.

Eyes
Immediately flush eyes with large amounts of water for at least 15 minutes. Pull back the eyelid to make sure all the lime dust has been washed out. Seek medical attention immediately. Do not rub eyes.

Skin
Flush exposed area with large amounts of water. Seek medical attention immediately.

Ingestion
Give large quantities of water or fruit juice. Do not induce vomiting. Seek medical attention immediately. Never give anything by mouth if victim is rapidly losing consciousness or is unconscious or convulsing.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point
Non-flammable

Autoignition Temperature
Non-flammable

Inflammability Limits
None, Non-combustible solid, but will support combustion by liberation of oxygen.

Explosion Risk
None by itself, but heat produced by reaction with strong acids can generate steam and pressure.

Hazardous Combustion Products
Decomposes to produce calcium oxide (CaO), which can react with water to produce steam and pressure.

Extinguishing Media
Use dry chemical fire extinguisher. Do not use water or halogenated compounds, except that large amounts of water may be used to deluge small quantities of lime kiln dust. Use appropriate extinguishing media for surrounding fire conditions.

Fire Fighting Instructions
Keep personnel away from and upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear), and respiratory protection (self-contained breathing apparatus).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Individual and Collective Precautions	Avoid creating conditions which release dust – use mechanical vacuums to remove dust from workspaces.
Avoid inhalation of Dust	Wear respiratory protection – minimum NIOSH N-95 Dust Mask.
Cleaning Methods (Leaks & Spills)	Use personal protective equipment (eyes, skin, and inhalation, see Section 8). Use dry methods (vacuuming, sweeping) to collect spilled materials. Avoid generating dust. For large spills, evacuate area downwind of clean-up area operations to minimize dust exposure. For small spills, store spilled materials in dry, sealed plastic or metal containers. Dust residue on surfaces may be washed with water.
Precautions for the Protection of the Environment	May not be released into surface waters without controls (increases pH).
Waste Disposal	Dispose according to federal, provincial/state, and local environmental regulations.

SECTION 7. HANDLING & STORAGE

Handling	In open air or in ventilated places, avoid skin and eye contact, avoid creating airborne dust.
Storage	Store in dry places sheltered from humidity. Keep away from acids. Keep out of reach of children.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

	OSHA PEL (mg/m^3)	ACGIH TLV (mg/m^3)	Ont. Reg. 833 TWAEV (mg/m^3)
Calcium Hydroxide	5	2	2
Silica - Crystalline Quartz	2.5 (total dust), 0.8 (respirable)	0.5 (respirable)	0.1

Engineering Controls	Use ventilation and dust collection to control exposure to below applicable limits.

Individual Protection Measures (Personal Protective Equipment):

Respiratory Protection	Wear NIOSH N-95 Dust Mask.
Eye Protection	Eye protection (chemical goggles, safety glasses and/or face shield) should be worn where there is a risk of lime exposure. Contact lenses should not be work when working with lime products.
Hand Protection	Use clean dry gloves.
Skin Protection	Cover body with suitable clothes (long sleeves shirts and trousers). Use over the angle waterproof caustic resistant footwear.

SECTION 9. PHYSICAL & CHEMICAL PROPERTIES

Appearance	Solid, brown/white/tan/gray granular
Odor	Odorless
Odor Threshold	Not Applicable
pH	12.4 graduated solution at 25°C

Melting Point	1076°F (580°C)
Boiling Point	5162°F (2850°C)
Flash Point	Not Applicable
Evaporation Rate	Not Applicable
Flammability	Not Applicable
Upper/Lower Flammability	Not Applicable
Vapor Pressure (+t°)	Non-Volatile
Vapor Density (air=ml)	Non-Volatile
Relative Density	700-900 kg/ m^3
Solubility in Water	0.165g/100g
Partition Coefficient	Not Applicable
Auto-ignition Temperature	Not Applicable
Decomposition Temperature	Not Applicable
Viscosity	Not Applicable

SECTION 10. STABILITY & REACTIVITY

Stability The product is stable.

Decomposition Temperature None

Reactivity No specific test data related to reactivity available for this product.

Conditions to Avoid Vicinity of incompatible materials.

Incompatibility

- Acids
- Reactive Fluoridated
- Brominated or Phosphorous Compounds
- Aluminum (may form hydrogen gas)
- Reactive Powdered Metals
- Organic Acid Anhydrides
- Nitro-organic Compounds
- Interhalogenated Compounds

Hazardous Decomposition Products None

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicity This product is not listed by MSA, OSHA, or IARC as a carcinogen, but this product may contain crystalline silica, which has been classified by IARC as (Group 1) carcinogenic to humans when inhaled in the form of quartz or cristobalite. No reported Carcinogenicity, Reproductive Effects, Teratogenicity or Mutagenicity.

Exposure Limits Refer to Section 8

Irritancy Can cause severe irritation of eyes, skin, respiratory tract, and gastrointestinal tract.

Chronic Exposure: Inhalation of silica can cause a chronic lung disorder, silicosis.

SECTION 12. ECOLOGICAL INFORMATION

Alkaline substance that increases pH to 12.4 in a saturated water solution at 25ºC.
Calcium hydroxide gradually reacts with CO_2 in air to form calcium carbonate ($CaCO_3$).
Calcium carbonate is ecologically neutral.
Uncontrolled spillage in surface waters should be avoided since the increase pH could be detrimental to fish.
Harmful to aquatic life in high concentration.

SECTION 13. DISPOSAL CONSIDERATIONS

Dispose according to federal, provincial/state, and local environmental regulations.

SECTION 14. TRANSPORT INFORMATION

Classification	TDG:	Not listed for ground transportation.
	HMR:	Not listed for ground transportation.

TDG: Transportation of Dangerous Goods Regulation (Canada)
HMR: Hazardous Materials Regulation (USA)

SECTION 15. Regulatory Information

Symbol

WHMIS RATING
D2A, E

NFPA RATING
HEALTH-3 SPECIFIC HAZARD – ALK FLASH POINTS-0 REACTIVITY-1

HMIS RATING
HEALTH-2 SPECIFIC HAZARD – ALK FLASH POINTS-0 REACTIVITY-1

SECTION 16. OTHER INFORMATION

Original Prepared	05/13/2013
Revision Date	9/15/2023
Revision #	2

Calciment can be removed from vehicles using rags dampened with dilute vinegar. After applying dilute vinegar, vehicles (especially chrome surfaces) must be washed with water.

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DYNADRILL L SDS INFORMATION

ChemSol Drilling Fluid Solutions

Safety Data Information

Product Description

Chemical Family: Water Soluble Polymer
Synonyms: PHPA

Company Name:	ChemSol, LLC 601 Carlson Parkway, Suite 400 Minnetonka, MN 55305
Contact:	Jake Bowlsby
Company Phone:	952-807-7459
Company Fax:	952-807-7479
Company Email:	jake@chemsolusa.com

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Family: Anionic water-soluble polymer

3. HAZARDOUS IDENTIFICATION

Spills produce extremely slippery surfaces.

4. FIRST AID MEASURES

Inhalation: Move to fresh air.
Skin Contact: Wash off immediately with soap and plenty of water. In case of persistent skin irritation, consult a physician.
Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids. In case of persistent eye irritation, consult a physician.
Ingestion: The product is not considered toxic based on studies on laboratory animals.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Water, water spray, foam, dry powder, carbon dioxide (CO2)
Special Fire-Fighting Precautions: Spills produce extremely slippery surfaces.
Protective Equipment for Firefighters: No special protective equipment required.

Safety Data Information

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: No special precautions required.
Environmental Precautions: Do not contaminate water.
Methods for Cleaning Up: Do not flush with water. Dam up. Soak up with inert absorbent material. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. When preparing the working solution ensure there is adequate ventilation. When using do not smoke.
Storage: Keep in a dry, cool place (0 - 30ºC). When preparing the working solution ensure there is adequate ventilation. Freezing will affect the physical condition and may damage the material.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Use local exhaust if misting occurs. Natural ventilation is adequate in absence of mists.

Personal Protection Equipment
- **Respiratory Protection:** In case of insufficient ventilation wear respiratory equipment.
- **Hand Protection:** Rubber gloves.
- **Eye Protection:** Safety glasses with side shields. Do not wear contact lenses.
- **Skin and Body Protection:** Chemical resistant apron or protective suit if splashing or repeated contact with solution is likely.

Hygiene Measures: Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Viscous liquid
Color: Milky
Odor: Aliphatic
pH: 6-8 @ 5 g/L
Melting Point (ºC): Not applicable

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Minnetonka, MN 55305 • Ph: 952.807.7459 • Fx: 952.807.7479

Safety Data Information

9. PHYSICAL AND CHEMICAL PROPERTIES

Flash Point (ºC): >100oC
Vapor pressure (mm Hg): 0.002 @ 20oC
Autoignition Point (ºC): >200oC
Bulk Density: See Technical Bulletin
Water Solubility: See Technical Bulletin
Viscosity (mPa s): See Technical Bulletin

10. STABILITY AND REACTIVITY

Stability: Product is stable, no hazardous polymerization will occur.
Materials to Avoid: Oxidizing agents may cause exothermic reactions.
Hazardous Decomposition Products: Thermal decomposition may produce: carbon oxides and nitrogen oxides (NOx).

11. TOXICOLOGICAL INFORMATION

Acute toxicity:
- **Oral:** LD50/oral/rat > 5000 mg/kg
- **Dermal:** The product is not expected to be toxic in contact with the skin.
- **Inhalation:** The product is not expected to be toxic by inhalation.

Irritation
- **Skin** Irritating to skin
- **Eyes:** Irritating to eyes.

Sensitization: The product is not expected to be sensitizing.
Chronic Toxicity: Prolonged skin contact may defat the skin and produce dermatitis.

12. ECOLOGICAL INFORMATION

- **Fish:** LC50/Fathead minnows/96h > 1000 mg/l
- **Algae:** EC50/ 72h / *Phaeodactylum tricournumtum* > 1000 mg/l
- **Daphnia:** LC50 / 48h / *Chaetogrammus marinus* = 15 mg/l

Bioaccumulation: The product is not expected to bioaccumulate.
Persistence / Degradability: Not readily biodegradable (40% after 28 days).

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Safety Data Information

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused In accordance with local and national regulations.

products:

Contaminated Packaging: Rinse empty containers with water and use the rinse water to prepare the working solution. Can be landfilled or incinerated, when in compliance local regulations.

14. TRANSPORT INFORMATION

Not regulated by DOT.

15. REGULATORY INFORMATION

RCRA status: Not a hazardous waste.
Hazardous Waste Number: Not applicable.
Reportable Quantity (40 CFR 302): Not applicable.
Threshold Planning Quantity (40 CFR 355): Not applicable.
HMIS & NFPA Ratings: HMIS NFPA
Health: 1 1
Flammability: 0 0
Reactivity: 0 0

California Proposition 65 Information: The following statement is made in order to comply with the CA Sa Drinking Water and Toxic Enforcement Act of 1986: This product contains a chemical known to the State of California to cause cancer: residual acrylamide.

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SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **J-LOK RESIN CAPSULES**

Synonyms J- LOK SINGLE SPEED RESIN (JLS) ● J-LOK 5 STAR RESIN (JL5) ● J-LOK DUAL SPEED RESIN (JLD) ● J-LOK G SERIES RESIN (JG) ● J-LOK H SERIES RESIN CAPSULE (H) ● J-LOK LOW INSERTION FORCE (LIF) RESIN (JLL, HL) ● J-LOK POSTGROUT CABLE RESIN (JLPG, JL5PG) ● J-LOK RESIN CAPSULE (JL) ● J-LOK TENDON RESIN (JLT) ● J-LOK TWIN RESIN (JLH, JL5H) ● RAPID DEVELOPMENT (RD) RESIN ● SPIN2STALL® RESIN (STS)

1.2 Uses and uses advised against

Uses AS PER MANUFACTURER INSTRUCTIONS ● BONDING AGENT ● REINFORCEMENT

Resin anchoring grout contained within a plastic sheath used for support with rock bolts in mines & tunnels.

1.3 Details of the supplier of the product

Supplier name **ROCBOLT RESINS PTY LTD**

Address 40-44 Anzac Avenue, Smeaton Grange, NSW, 2567, AUSTRALIA

Telephone +61 2 4647 8388

Email asykes@rocboltresins.com.au

Website https://www.rocboltresins.com.au

1.4 Emergency telephone numbers

Emergency +61 4 3152 9183
Emergency +61 4 6721 6449

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Not classified as a Physical Hazard

Health Hazards

Skin Corrosion/Irritation: Category 2
Serious Eye Damage / Eye Irritation: Category 2A
Toxic to Reproduction: Category 2
Specific Target Organ Toxicity (Repeated Exposure): Category 2

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **WARNING**

Pictograms

Hazard statements

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

Prevention statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Response statements

P302 + P352	IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P321	Specific treatment is advised - see first aid instructions.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Storage statements

P405	Store locked up.

Disposal statements

P501	Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

The materials contained in this product may only represent a hazard if the integrity of the packaging is compromised. If the capsule packaging is compromised (eg leaks/splits) the product may cause an allergic skin reaction, skin irritation and serious eye irritation.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
LIMESTONE (CALCIUM CARBONATE)	1317-65-3	215-279-6	>50%
POLYESTER RESIN(S)	39459-88-6	-	<30%
STYRENE	100-42-5	202-851-5	<12.5%
BENZOYL PEROXIDE	94-36-0	202-327-6	<1%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. To protect rescuer, use a Type A (Organic vapour) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting. Ingestion is considered unlikely due to product form.
First aid facilities	None allocated.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Dry agent, carbon dioxide or foam. Prevent contamination of drains and waterways.

5.2 Special hazards arising from the substance or mixture
Non flammable. May evolve toxic gases (carbon oxides, styrene, hydrocarbons) when heated to decomposition. Styrene may polymerise readily at elevated temperatures and may violently rupture sealed containers.

5.3 Advice for firefighters
Non flammable. Evacuate area and contact emergency services. Toxic gases (hydrocarbons, carbon oxides, styrene) may be evolved when heated. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool nearby storage areas.

5.4 Hazchem code
None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Ventilate area where possible.

6.2 Environmental precautions
Prevent product from entering drains and waterways.

6.3 Methods of cleaning up
Contain spillage, then cover / absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal. Eliminate all sources of ignition.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well ventilated area, removed from incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Large storage areas should have appropriate ventilation and fire protection systems.

7.3 Specific end uses
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Benzoyl peroxide	SWA [AUS]	--	5	--	--
Calcium carbonate (Limestone, Marble, Whiting)	SWA [AUS]	--	10	--	--
Styrene, monomer	SWA [AUS]	50	213	100	426
Styrene, monomer	SWA [Proposed]	20	85	40	170

Biological limits

Ingredient	Reference	Determinant	Sampling Time	BEI
STYRENE	ACGIH BEI	Mandelic acid plus phenylglyoxylic acid in urine	End of shift	400 mg/g creatinine
	ACGIH BEI	Styrene in urine	End of shift	40 µg/L

8.2 Exposure controls

Engineering controls Maintain dust / vapour levels below the recommended exposure standard.

PPE

Eye / Face	Wear splash-proof goggles or safety glasses. The selection of PPE is dependent on a detailed site specific risk assessment. This should consider the work situation, the physical form of the chemical, the handling methods and environmental factors.
Hands	Wear barrier gloves.
Body	Wear coveralls. With prolonged use, wear coveralls.
Respiratory	If determined by a risk assessment and inhalation risk exists, wear an organic vapour/particulate respirator or an air supplied mask meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	WHITE CATALYST PREMIX SEPARATED FROM RESIN MASTIC WITH PIGMENTS AND INERT FILLERS, ENCLOSED IN A CAPSULE FILM
Odour	SLIGHT STYRENE SMELL
Flammability	NOT APPLICABLE
Flash point	NOT APPLICABLE
Boiling point	NOT APPLICABLE
Melting point	NOT APPLICABLE
Evaporation rate	NOT APPLICABLE
pH	NOT APPLICABLE
Vapour density	NOT AVAILABLE
Relative density	2.0
Solubility (water)	INSOLUBLE
Vapour pressure	NOT APPLICABLE
Upper explosion limit	NOT APPLICABLE
Lower explosion limit	NOT APPLICABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	NOT APPLICABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Styrene may polymerise with violent rupture/explosion. Polymerises with evolution of heat. Avoid contact with curing agents, accelerators, and/or initiators.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), alkalis (e.g. sodium hydroxide), amines, halogens, sunlight, ferrous salts, heat and ignition sources. May polymerise with violent rupture/explosion.

10.6 Hazardous decomposition products

May evolve toxic gases (carbon and styrene oxides, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Due to the product form (enclosed), contact with contents is not anticipated with normal use.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
LIMESTONE (CALCIUM CARBONATE)	> 5000 mg/kg (rat)	--	--
STYRENE	> 2000 mg/kg (rat)	> 2000 mg/kg (rat) (OECD 402)	11.8 mg/L/4 hours (rat) (vapour)
BENZOYL PEROXIDE	5700 mg/kg (mouse)	> 1000 mg/kg (mammal)	--

Skin Due to product encapsulation, the potential for skin contact with contents is reduced. If the container is damaged, contact may result in irritation, redness, pain, rash, dermatitis and possible burns. Effects may be delayed.

Eye Due to product encapsulation, the potential for eye contact with contents is reduced. If the container is damaged, direct contact may result in irritation, lacrimation and burns.

Sensitisation Exposure to contents may cause skin sensitisation. This product is not classified as a respiratory sensitiser.

Mutagenicity Insufficient data available to classify as a mutagen.

Carcinogenicity Due to the product encapsulation, exposure to contents is not anticipated with normal use. Styrene is classified as probably carcinogenic to humans (IARC Group 2A).

Reproductive Due to the product encapsulation, exposure to contents is not anticipated with normal use. Styrene is classified as possibly carcinogenic to humans (IARC Group 2B).

STOT - single exposure Over exposure may result in irritation of the nose and throat, coughing, nausea, vomiting, dizziness and breathing difficulties. High level exposure may result in respiratory paralysis and unconsciousness.

STOT - repeated exposure Due to product encapsulation, the potential for exposure to the contents is reduced. May cause damage to organs (nasal epithelial and ear) through prolonged or repeated exposure to styrene if inhaled.

Aspiration Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

If released to the atmosphere, styrene will react rapidly with both hydroxyl radicals and ozone with a combined calculated half-life of about 5 hours. If released to environmental bodies of water, styrene will volatilise relatively rapidly and biodegrade, but is not expected to hydrolyse. If released to soil it will biodegrade and have low soil mobility.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal For small quantities, mix with other component/s, absorb with sand, vermiculite or similar and dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required). Ensure protective equipment is worn when mixing. Prevent contamination of drains and waterways as aquatic life may be threatened and environmental damage may result.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

No information provided.

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safe Work Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals (GHS Revision 7).

Inventory listings **AUSTRALIA: AIIC (Australian Inventory of Industrial Chemicals)**
All components are listed on AIIC, or are exempt.

16. OTHER INFORMATION

Additional information

ORGANIC PEROXIDES: Fires involving organic peroxides can be intense and move rapidly due to product rapid decomposition with release of oxygen and may involve explosions. If spilt on combustible materials it may spontaneously ignite. A diluent is often added to organic peroxides to reduce shock sensitivity.

IARC GROUP 2B - POSSIBLE HUMAN CARCINOGEN. This product contains an ingredient which has demonstrated sufficient evidence to have been classified by the International Agency for Research into Cancer (IARC) as possibly carcinogenic to humans and whose use should be strictly monitored and controlled.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m^3	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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[End of SDS]

WYO-BEN, INC.

SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name **EXTRA HIGH YIELD BENTONITE**
Chemical Family Mineral
Application Drilling Fluids

Manufacturer/Supplier
Wyo-Ben, Inc.
1345 Discovery Drive
Billings, MT 59102 USA
Telephone: 800.548.7055
Facsimile: 406.656.0748

Emergency Phone Number CHEMTREC® 1.800.424.9300

SECTION 2 — HAZARD IDENTIFICATION

Hazard Classification
Carcinogenicity (Category 1A)
Specific Target Organ Toxicity (Repeated Exposure) (Category 1)

Signal Word Danger

Hazard Statements
May cause cancer.
Causes damage to organs through prolonged or repeated exposure.

Hazard Symbol

Precautionary Statements

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breath dust. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product.

Response If exposed or concerned: Get medical advice/attention.
Get medical attention/advice if you feel unwell.

Storage Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazards Not Otherwise Classified May cause eye and respiratory irritation.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

Substance	CAS Number	Percent
Crystalline Silica, quartz	14808-60-7	≤6%

SECTION 4 — FIRST AID MEASURES

Inhalation If inhaled, remove to a dust free area. Get medical attention if respiratory irritation develops or if breathing becomes difficult. Inhalation may aggravate existing respiratory illness.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Skin Wash with soap and water. Seek medical attention if irritation persists.

Ingestion Do Not induce vomiting. First aid measures not normally required.

Notes to Physician Treat symptomatically

SECTION 5 — FIRE FIGHTING MEASURES

Suitable Extinguishing Media Product is non-combustible. All standard firefighting media may be used.

Unsuitable Extinguishing Media None

Special Exposure Hazards None known. Product is not combustible.

Special Protective Equipment and Precautions for Firefighters None for product. Wear self-contained breathing apparatus (SCBA) and full protective gear. Caution: slippery when wet.

NFPA Ratings Health 1, Flammability 0, Reactivity 0

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.

Prevent further leakage or spillage if safe to do so.

Environmental Precautionary Measures No special environmental precautions required

Procedure for Cleaning/Absorption Prevent further leakage or spillage if safe to do so. Avoid generating dust. Collect using appropriate dustless method. Dispose in landfill according to local, state and federal regulations.

SECTION 7 — HANDLING AND STORAGE

Handling Precautions This product contains quartz which may become airborne. Avoid breathing dust. Avoid creating dusty conditions. Promptly clean up spills to avoid breathing airborne dust. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH/MSHA European Standard En 149, or equivalent certified for silica bearing dust, respirator when using this product. Material is slippery when wet.

Storage Information Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Substance	CAS Number	ACGIH TLV-TWA	OSHA PEL-TWA*
Crystalline Silica, quartz	14808-60-7	0.025 mg/m^3	$\frac{10\ mg/m^3}{\%SiO2 + 2}$

* Quartz from Bentonite was specifically excluded from the new, lower PEL in the 2016 OSHA Respirable Crystalline Silica rulemaking. More restrictive exposure limits may be enforced by some states, agencies, or other authorities.

Engineering Controls	Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.
Personal Protective Equipment	If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.
Respiratory Protection	Not normally needed. If significant exposures exceeding occupational exposure limit are possible use NIOSH/MSHA respirator approved for silica bearing dust.
Hand Protection	Standard work gloves.
Skin Protection	Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Powdered Solid
Color	Light tan to gray as dry powder
Odor	Odorless
pH	8 – 10 (5% aqueous suspension)
Specific Gravity @ 20 C (Water=1)	2.45 – 2.55
Density @ 20 C (lbs/gallon)	Not determined
Bulk Density @ 20 C (lbs/ft^3)	49 - 55
Boiling Point/Range (F/C)	Not applicable
Freezing Point/Range (F/C)	Not applicable
Vapor Pressure @ 20 C (mmHg)	Not applicable
Vapor Density (Air=1)	Not applicable
Percent Volatiles	Not applicable
Evaporation Rate (Butyl Acetate=1)	Not applicable
Solubility in Water (g/100ml)	Insoluble, forms colloidal suspension
Solubility in Solvents (g/100ml)	Not applicable
VOCs (lbs/gallon)	Not applicable
Viscosity, Dynamic @ 20 C (centipoise)	3.5 – 12.5 (6% aqueous suspension)
Viscosity, Kinematic @ 20 C (centistokes)	Not determined
Partition Coefficient/n-Octanol/Water	Not applicable
Molecular Weight (g/mole)	Not applicable
Flash Point/Range (F/C)	Not applicable
Flash Point Method	Not applicable
Autoignition Temperature (F/C)	Not applicable

Flammability Limits in Air – Lower (%)	Not applicable
Flammability Limits in Air – Upper (%)	Not applicable

SECTION 10 — STABILITY AND REACTIVITY

Reactivity:	Nonreactive
Chemical Stability:	Stable
Possibility of Hazardous Reactions:	Will not occur.
Conditions to Avoid:	None known
Incompatibility (Materials to Avoid):	None known
Hazardous Decomposition Products:	None
Additional Guidelines:	Not applicable

SECTION 11 — TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Symptoms Related to the Physical, Chemical and Toxicological Characteristics

Inhalation	Inhaled crystalline silica in the form or quartz from occupational sources is carcinogenic to humans (IARC, Group 1).
Skin Contact	May cause skin irritation due to drying.
Eye Contact	May cause mechanical eye irritation.
Ingestion	None known
Aggravated Medical Conditions	Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to respirable quartz-bearing dust.
Chronic Effects/Carcinogenicity	Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis. Cancer Status: The International Agency for Research on Cancer (IARC, 1997) concludes that there is sufficient evidence in humans for carcinogenicity of inhaled crystalline silica from occupational sources (IARC Group 1), that carcinogenicity was not detected in all industrial circumstances studied and that carcinogenicity may depend on characteristics of the crystalline silica or on external factors affecting its biological activity. See IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997). The National Toxicology Program (NTP) classifies respirable crystalline silica as "Known to be a human carcinogen" (NTP 9th Report on Carcinogens, 2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).
Other Information	See "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768 (1997).

Toxicity Tests

Oral Toxicity	Not determined
Dermal Toxicity	Not determined
Inhalation Toxicity	Not determined
Primary Irritation Effect	Not classified
Carcinogenicity	Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997).
Genotoxicity	Not classified
Reproductive/Developmental Toxicity	Not classified

SECTION 12 — ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Not determined
Bio-accumulation	Not determined
Ecotoxicological Information	
Acute Fish Toxicity	Not determined
Acute Crustaceans Toxicity	Not determined
Acute Algae Toxicity	Not determined
Chemical Fate Information	Not determined
Other Information	Not applicable

SECTION 13 — DISPOSAL CONSIDERATIONS

Disposal Method	If product should become a waste dispose in a licensed landfill according to federal, state and local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

SECTION 14 — TRANSPORT INFORMATION

Land Transportation

DOT	Not regulated as dangerous goods
Canadian TDG	Not regulated as dangerous goods
ADR	Not regulated as dangerous goods

Air Transportation

ICAO/IATA	Not regulated as dangerous goods

Sea Transportation

IMDG	Not regulated as dangerous goods

Other Transportation Information

Labels	None

SECTION 15 — REGULATORY INFORMATION

US Regulations

US TSCA Inventory	All components listed on inventory or are exempt.
EPA SARA Title III Extremely Hazardous Substances	Not applicable
EPA SARA (311, 312) Hazard Class	Chronic Health Hazard
EPA SARA (313) Chemicals	This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).
EPA CERCLA/Superfund Reportable Spill Quantity	Not applicable
EPA RCRA Hazardous Waste Classification	If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.
California Proposition 65	This product contains crystalline silica (respirable) which is a substance known to the State of California to cause cancer.

Canadian Regulations

Canadian DSL Inventory	All components listed on inventory or are exempt.
WHMIS Hazard Class	This product contains crystalline silica (respirable) and is classified as a Class D, Division 2, Subdivision A substance.

SECTION 16 — OTHER INFORMATION

Prepared	03/18/2015
Last Revision	09/08/2021

DISCLAIMER

All information presented herein is believed to be accurate; however, it is the user's responsibility to determine in advance of need that the information is current and suitable for their circumstances. No warranty or guarantee, expressed or implied, is made by WYO-BEN, INC. as to this information, or as to the safety, toxicity or effect of the use of this product.

Portland Cement – Type IL

Safety Data Sheet

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012.
Issue date: 12/19/2013 Revision date: 2/03/2023 Supersedes: 6/22/2021 Version: 4.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : Portland Cement – Type IL

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Mortar mixes for construction use.

1.3. Supplier

Manufacturer
Sakrete of North America
625 Griffith Rd., Ste 100
Charlotte, NC 28217
T 866-725-7383

1.4. Emergency telephone number

Emergency number : CHEMTREC (800) 424-9300

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Acute Tox. 4 (Oral)	Harmful if swallowed
Skin Corr. 1	Causes severe skin burns and eye damage
Eye Dam. 1	Causes serious eye damage
Skin Sens. 1B	May cause an allergic skin reaction
Carc. 1A	May cause cancer
STOT SE 3	May cause respiratory irritation

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Danger
Hazard statements (GHS US) : Harmful if swallowed
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause respiratory irritation
May cause cancer
Precautionary statements (GHS US) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash hands, forearms and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.

If exposed or concerned: Get medical advice/attention.
If swallowed: rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
If skin irritation or rash occurs: Get medical advice/attention.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison center or doctor.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Supplemental Information : Read and follow all precautions listed in the Safety Data Sheet, which is available on request. Additional information on the selection and use of respirators can be found in the NIOSH Respirator Selection Logic (DHHS [NIOSH] Publication No. 2005-100) and the NIOSH Guide to Industrial Respiratory Protection (DHHS [NIOSH] Publication No. 87-116) available at http://www.cdc.gov/niosh/docs/87-116/.

This product contains greater than 0.1% crystalline silica. Crystalline silica has been linked to cancer, silicosis, and other lung problems in conditions of prolonged airborne over-exposure.

Keep product dry until use. Avoid contact with bleed water from wet product. Clothing saturated with wet product can result in delayed, serious alkali skin burns.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

91.25 % of the mixture consists of ingredient(s) of unknown acute toxicity (Oral)

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
Cement, portland, chemicals	CAS-No.: 65997-15-1	77 – 95
Gypsum (Ca(SO4).2H2O)	CAS-No.: 13397-24-5	4 – 8
Magnesium oxide (MgO)	CAS-No.: 1309-48-4	0.5 – 7
Limestone	CAS-No.: 1317-65-3	0 – 15
Calcium oxide	CAS-No.: 1305-78-8	≤ 3.5
Flue dust, Portland Cement	CAS-No.: 68475-76-3	≤ 2.75
Quartz	CAS-No.: 14808-60-7	0.02 – 0.21
Nickel	CAS-No.: 7440-02-0	0.001 – 0.013
Chromium, ion (Cr 6+)	CAS-No.: 18540-29-9	0 – 0.012

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : IF exposed or concerned: Get medical advice/attention.

First-aid measures after inhalation : If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor/physician.

First-aid measures after skin contact : If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before reuse.

First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

First-aid measures after ingestion : IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : May cause burns to the respiratory tract.

Symptoms/effects after skin contact : Causes severe skin burns. Symptoms may include redness, pain, blisters. May cause an allergic skin reaction. Skin contact during hydration may slowly develop sufficient heat that may cause severe burns possibly resulting in permanent injury. Do not allow product to harden around any body part or allow continuous, prolonged contact with skin. Handling can cause dry skin.

Symptoms/effects after eye contact : Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva. May cause burns.

Symptoms/effects after ingestion : Harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

Chronic symptoms : May cause cancer.

4.3. Immediate medical attention and special treatment, if necessary

Symptoms may be delayed. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : None known.

5.2. Specific hazards arising from the chemical

Fire hazard : Product does not burn; however its packaging may. Products of combustion may include, and are not limited to: oxides of carbon.

5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Avoid contact with skin and eyes.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Contain spill, then place in a suitable container. Minimize dust generation. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

Methods for cleaning up : Vacuum or sweep material and place in a disposal container. Minimize generation of dust. Provide ventilation.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes, on skin, or on clothing. Do not breathe dust. Do not swallow. Good housekeeping is important to prevent accumulation of dust. The use of compressed air for cleaning clothing, equipment, etc, is not recommended. Handle and open container with care.

Hygiene measures : Take off immediately all contaminated clothing and wash it before reuse. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep out of the reach of children. Keep container tightly closed. Store in a well-ventilated place. Avoid any dust buildup by frequent cleaning and suitable construction of the storage area. Do not store in an area equipped with emergency water sprinklers. Clean up spilled material promptly.

Storage area : Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Portland Cement – Type IL
No additional information available

Cement, portland, chemicals (65997-15-1)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Portland Cement – Type IL
ACGIH OEL TWA	1 mg/m³ (particulate matter containing no asbestos and <1% crystalline silica, respirable particulate matter)
Remark (ACGIH)	TLV® Basis: Pulm func; resp symptoms; asthma. Notations: A4 (Not classifiable as a Human Carcinogen)
ACGIH chemical category	Not Classifiable as a Human Carcinogen
Regulatory reference	ACGIH 2020

Cement, portland, chemicals (65997-15-1)	
USA - OSHA - Occupational Exposure Limits	
OSHA PEL (TWA) [1]	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)
USA - IDLH - Occupational Exposure Limits	
IDLH	5000 mg/m³
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)

Gypsum (Ca(SO4).2H2O) (13397-24-5)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	10 mg/m³ (inhalable particulate matter (Calcium sulfate)
USA - OSHA - Occupational Exposure Limits	
OSHA PEL (TWA) [1]	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)

Magnesium oxide (MgO) (1309-48-4)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	10 mg/m³ (inhalable particulate matter)
ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA - OSHA - Occupational Exposure Limits	
OSHA PEL (TWA) [1]	15 mg/m³ (fume, total particulate)
USA - IDLH - Occupational Exposure Limits	
IDLH	750 mg/m³ (fume)

Flue dust, Portland Cement (68475-76-3)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TLV	10 mg/m³ (as inhalable fraction, PNOS) 3 mg/m³ (as respirable fraction, PNOS)
USA - OSHA - Occupational Exposure Limits	
OSHA PEL	15 mg/m³ (as total dust, PNOR) 5 mg/m³ (as respirable fraction, PNOR)

Calcium oxide (1305-78-8)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Calcium oxide
ACGIH OEL TWA	2 mg/m³
Remark (ACGIH)	TLV® Basis: URT irr
Regulatory reference	ACGIH 2020

Calcium oxide (1305-78-8)	
USA - OSHA - Occupational Exposure Limits	
Local name	Calcium oxide
OSHA PEL (TWA) [1]	5 mg/m³
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
IDLH	25 mg/m³
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	2 mg/m³

Quartz (14808-60-7)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	0.025 mg/m³ (respirable particulate matter)
ACGIH chemical category	Suspected Human Carcinogen
USA - OSHA - Occupational Exposure Limits	
Local name	Quartz (Total Dust) (Silica: Crystalline)
OSHA PEL (TWA) [1]	50 µg/m³ (Respirable crystalline silica)
Remark (OSHA)	Table Z-3. For OSHA PEL (TWA) use formula: (30 mg/m3 / (%SiO2+2)) for mg/m3. CAS No. source: eCFR Table Z-1.
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-3 Mineral Dusts
USA - IDLH - Occupational Exposure Limits	
IDLH	50 mg/m³ (respirable dust)
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	0.05 mg/m³ (respirable dust)

Limestone (1317-65-3)	
USA - OSHA - Occupational Exposure Limits	
OSHA PEL (TWA) [1]	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)

8.2. Appropriate engineering controls

Appropriate engineering controls : Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits. Provide readily accessible eye wash stations and safety showers.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure.

Hand protection:
Wear suitable gloves resistant to chemical penetration

Eye protection:
Wear eye/face protection

Skin and body protection:
Wear suitable clothing common to do-it-yourself projects.

Respiratory protection:
A NIOSH approved dust mask or filtering facepiece is recommended in poorly ventilated areas or when permissible exposure limits may be exceeded. Respirators should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

Other information:

Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety procedures.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Appearance	:	Powder.
Color	:	Gray
Odor	:	odorless
Odor threshold	:	No data available
pH	:	12 – 13 (Highly alkaline when wet.)
Melting point	:	No data available
Freezing point	:	Not applicable
Boiling point	:	No data available
Flash point	:	Not applicable
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	Non flammable.
Vapor pressure	:	No data available
Relative vapor density at 20 °C	:	No data available
Relative density	:	2.8 – 3.1
Solubility	:	Slight. Water: 0.1 - 1 %
Partition coefficient n-octanol/water	:	No data available
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	No data available
Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	No data available
Explosion limits	:	Not applicable
Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known under normal conditions of use. An alkali reaction from components of Portland Cement – Type IL will corrode aluminum.

10.2. Chemical stability

Stable under normal storage conditions. Keep dry in storage.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use. Do not mix with other chemcals.

10.4. Conditions to avoid

Moisture – product must be kept dry until ready to use. Heat. Incompatible materials.

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

None known.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Portland Cement – Type IL	
ATE US (oral)	500 mg/kg body weight

Magnesium oxide (MgO) (1309-48-4)	
LD50 oral rat	3870 mg/kg

Flue dust, Portland Cement (68475-76-3)	
LD50 oral rat	> 1848 mg/kg body weight Animal: rat, Guideline: other:OECD 422
LD50 dermal rat	≥ 2000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
LC50 inhalation rat	> 6.04 mg/l air Animal: rat, Guideline: OECD Guideline 436 (Acute Inhalation Toxicity: Acute Toxic Class Method)

Calcium oxide (1305-78-8)	
LD50 dermal rabbit	> 5000 mg/kg body weight Animal: rabbit, Guideline: other:US Federal Register 38: 187, Part 1500, Section 41, 1973.

Skin corrosion/irritation : Causes severe skin burns.
pH: 12 – 13 (in water)

Serious eye damage/irritation : Causes serious eye damage.
pH: 12 – 13 (in water)

Respiratory or skin sensitization : May cause an allergic skin reaction.

Product may contain trace concentrations of Chromate and Nickel compounds that can cause an allergic skin reaction, allergic contact dermatitis, or ACD. Once sensitized, brief skin contact with very small amounts of Cr 6+ may result in inflammation, rash, itching or severe skin ulcers. ACD is long-lasting and employees can remain sensitized to Cr 6+ for many years.

Germ cell mutagenicity : Not classified
Carcinogenicity : May cause cancer.

Quartz (14808-60-7)	
IARC group	1 - Carcinogenic to humans

Quartz (14808-60-7)	
National Toxicology Program (NTP) Status	Known Human Carcinogens
In OSHA Hazard Communication Carcinogen list	Yes

Reproductive toxicity : Not classified

STOT-single exposure : May cause respiratory irritation.

Cement, portland, chemicals (65997-15-1)	
STOT-single exposure	May cause respiratory irritation.

Flue dust, Portland Cement (68475-76-3)	
STOT-single exposure	May cause respiratory irritation.

Calcium oxide (1305-78-8)	
STOT-single exposure	May cause respiratory irritation.

STOT-repeated exposure : Not classified

Calcium oxide (1305-78-8)	
LOAEL (oral,rat,90 days)	300 mg/kg body weight Animal: rat, Animal sex: male, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
NOAEC (inhalation,rat,dust/mist/fume,90 days)	0.413 mg/l air Animal: rat, Animal sex: male, Guideline: OECD Guideline 412 (Subacute Inhalation Toxicity: 28-Day Study)

Quartz (14808-60-7)	
STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified

Viscosity, kinematic : Not applicable

Potential Adverse human health effects and symptoms : No data available.

Symptoms/effects after inhalation : May cause burns to the respiratory tract.

Symptoms/effects after skin contact : Causes severe skin burns. Symptoms may include redness, pain, blisters. May cause an allergic skin reaction. Skin contact during hydration may slowly develop sufficient heat that may cause severe burns possibly resulting in permanent injury. Do not allow product to harden around any body part or allow continuous, prolonged contact with skin. Handling can cause dry skin.

Symptoms/effects after eye contact : Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva. May cause burns.

Symptoms/effects after ingestion : Harmful if swallowed. May cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

Chronic symptoms : May cause cancer.

Other information : Likely routes of exposure: ingestion, inhalation, skin and eye.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No ecological consideration when used according to directions. Normal dilution of this product to drains, sewers, septic systems and treatment plants is not considered environmentally harmful. Do not flush to sewer or allow to enter waterways.

Calcium oxide (1305-78-8)	
LC50 - Fish [1]	1070 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [static])
NOEC chronic fish	100 mg/l Test organisms (species): other:Tilapia nilotica Duration: '46 d'

12.2. Persistence and degradability

Portland Cement – Type IL	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Portland Cement – Type IL	
Bioaccumulative potential	Not established.

Calcium oxide (1305-78-8)	
BCF - Fish [1]	(no bioaccumulation)

12.4. Mobility in soil

Portland Cement – Type IL	
Ecology - soil	No data available.

12.5. Other adverse effects

Other adverse effects : No data available.
Other information : No other effects known.

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

SECTION 14: Transport information

In accordance with DOT

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Not applicable

14.3. Transport hazard class(es)

DOT
Transport hazard class(es) (DOT) : Not applicable

14.4. Packing group

Packing group (DOT) : Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

Special transport precautions : Do not handle until all safety precautions have been read and understood.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed as Active, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory	
Gypsum (Ca(SO4).2H2O)	CAS-No. 13397-24-5

15.2. International regulations

No additional information available

15.3. US State regulations

⚠ **WARNING:** This product can expose you to Silica, crystalline (airborne particles of respirable size), which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

SECTION 16: Other information

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012.

Issue date	:	12/19/2013
Revision date	:	2/03/2023
Other information	:	None.
Prepared by	:	Nexreg Compliance Inc. www.Nexreg.com

Full text of H-phrases	
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Carc. 1A	Carcinogenicity Category 1A
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Skin Corr. 1	Skin corrosion/irritation Category 1
Skin Sens. 1B	Skin sensitization, category 1B
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation

Safety Data Sheet (SDS), USA

Disclaimer: We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

APPENDIX F

EMERGENCY RESPONSE PLAN

US Critical Materials Corp.
Sheep Creek Exploration Project
Emergency Response Plan

West Fork Ranger District
Ravalli County, Montana

Prepared by:

Compass Land Group
4235 Forcum Ave, Suite 100
McClellan, CA 95652

June 2026

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II. Agency Emergency Contacts 3

III. Emergency Response Procedures 3

IV. Emergency Response Equipment 5

V. Urgent Care 5

I. Project Emergency Contacts

Company	Name	Number
US Critical Materials Corp.	W. Scott Osterman	406.697.2339
US Critical Materials Corp.	Chad Miller	406.552.5234
US Critical Materials Corp.	Peter Mejstrick	406.531.0156
Roughstock Mining Services	Steve Cutler	406.580.7016
Roughstock Mining Services	Larry Carr (Site Supervisor)	406.961.9387
Roughstock Mining Services	Jessi Nunez	406.577.6102

II. Agency Emergency Contacts

Agency Name	Number
US Forest Service, West Fork Ranger District	406.821.3269
US Forest Service, Bitterroot National Forest	406.370.7159
National Interagency Fire Center, Bitterroot Dispatch Center	406.363.7133
Montana Department of Natural Resources and Conservation, Forestry and Fire Division	406.542.4300
Montana Disaster and Emergency Services	406.324.4777
Montana Department of Environmental Quality, Emergency/Spill Reporting	406.444.1453, 406.444.1504
National Response Center	1.800.424.8802
MSHA	1.800.746.1553
OSHA	1.800.321.6742

III. Emergency Response Procedures

Employee Or Third Party Injury/Accident

- Call 9-1-1. Follow 9-1-1 operator instructions and stay on the line.
- Provide appropriate care to protected injured parties from further harm.
- Notify the site supervisor and safety emergency contact.
- Secure the accident site and mitigate any hazardous conditions (if appropriate).
- For employee injuries requiring self-treatment, first aid, or doctor's treatment, follow-up with the employee until the injury is healed.

Imminent or Actual Environmental Release Involving Hazardous Materials

If there is an immediate danger or hazard:

- Call 9-1-1. Follow 9-1-1 operator instructions and stay on the line.
- Remove all personnel from the immediate area.
- Notify the site supervisor.

- Secure the incident site. Isolate the spill or leak area in all directions for 150 feet and stay upwind.
- Immediate reporting to the US Forest Service, MDEQ, and National Response Center is required for any spill: that enters or threatens to enter a waterway (e.g., lake, storm drain), on a highway, of petroleum over 25 gallons to land, of a hazardous waste, or of a non-petroleum chemical.

Imminent or Actual Environmental Release Involving Hazardous Materials

If there is no immediate danger or hazard:

- Notify all personnel in the immediate area and remove all non-essential personnel.
- Notify the site supervisor.
- Evaluate the source, amount and aerial extent of the release.
- If the release can be stopped safely by appropriately trained site personnel, stop the release. If not, seek assistance from appropriately trained personnel or emergency responders.
- Isolate the source of the release (e.g., close valves, turn off pumps).
- Contain the release with control measures (e.g., berm).
- Document the release and clean-up actions taken.
- Report the release, if required.
- For copies of chemical Safety Data Sheets, go to the Plan of Operations, Appendix E.

Fire or Explosion, Natural Disaster, or Other (Criminal, Civil Unrest, Acts of Terror)

- Call 9-1-1 or provide response if a minor incident (e.g., extinguish a small fire).
- Evacuate all personnel to a pre-designated meeting area.
- Account for all site personnel.
- Notify the site supervisor.
- Either shelter in place or evacuate based on the threat.
- If remaining on-site during an incident with the potential for fire, eliminate sources of ignition (e.g., close fuel line), and isolate the area (e.g., create a defensible space by removing dead brush and debris).
- If remaining on-site during a flood, move mobile equipment and other important materials/supplies to high ground.
- Follow instructions from the local emergency response agencies.

Earthquakes

- Choose a safe place in every work area.
- DROP, COVER, and HOLD ON. If outdoors, move to an open space where nothing can fall on you. Watch for overhead utility lines!

IV. Emergency Response Equipment

The following equipment will be maintained at all locations. This equipment will be replenished as needed:

a. Common PPE (Safety Glasses, Hearing Protection, Gloves)
b. First Aid Kits
c. Eyewash Stations
d. Fire Extinguishers
e. Spill Kits

V. Urgent Care

The closest urgent care facility to the project is Bitterroot Health (Scripps Clinic) at 820 North Street in Darby, Montana:

APPENDIX G

HELICOPTER OPERATIONS PLAN

US Critical Materials Corp.
Sheep Creek Exploration Project
Helicopter Operations Plan

West Fork Ranger District
Ravalli County, Montana

Prepared by:

Roughstock Mining
250 Blue Sky Trail
Bozeman, MT 59718

R&R Conner Aviation
P.O. Box 313
Conner, MT 59827

Updated August 2026

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I. Introduction

The USCM (United States Critical Minerals) Sheep Creek Project, located within the West Fork Bitterroot drainage, is designed as a helicopter-supported exploration, drilling, and bulk-sampling program intended to minimize surface disturbance, reduce impacts to natural resources, and limit effects on local residents, recreationists, and wildlife populations. Project logistics have been developed to utilize a combination of aviation and ground transportation methods that maximize operational efficiency while reducing the overall transportation footprint within the project area.

Helicopter operations will be based out of the Conner Aviation facility, located approximately 30 miles from the project staging area on Sheep Creek. The helicopter will primarily be stationed at the project site during active operations, with flights between the Conner base and the project area generally limited to the aircraft's daily arrival and departure from the work site. As a result, only two round-trip flights per day between Conner and the project area are anticipated under normal operating conditions. The majority of helicopter activity will consist of short-duration flights occurring within the project footprint (herein referred to as “internal hops”) to support movement of bulk sample material from Adit 1 and to provide logistical support to active drilling operations.

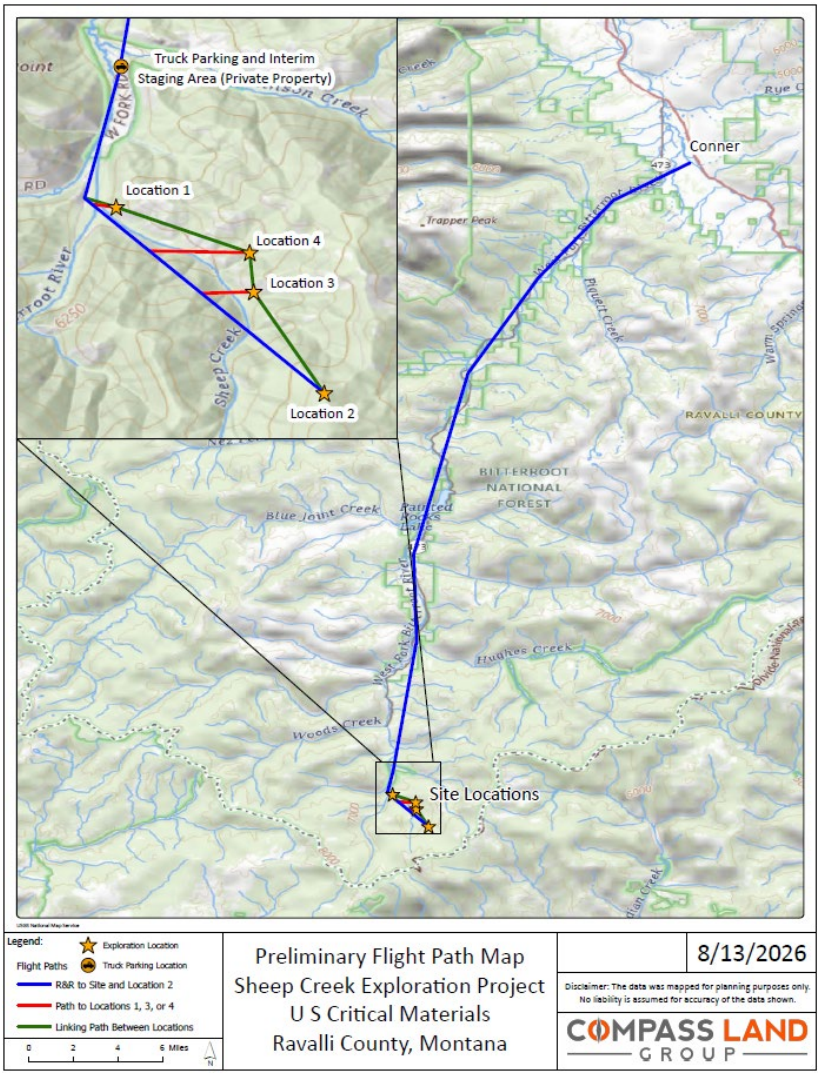
Exploration drilling activities are planned to occur sequentially at Locations 2, 3, and 4, with only one drill site active at any given time. This phased approach reduces the extent of concurrent disturbance, limits aviation activity to a single active drill location, and minimizes the amount of equipment and personnel distributed across the project area.

Ground transportation, utilizing a heavy-duty pickup truck and gooseneck trailer combination, will serve as the primary method for delivery of fuel, water, equipment, and materials to the project’s interim staging area from off-site locations. Bulk sample material transported from Adit 1 to the interim staging area by helicopter will be consolidated and loaded onto a heavy-duty pickup and gooseneck trailer combination for off-site transport to a private location in the Conner/Darby area. Approximately 35,000 pounds of bulk sample material may be transported off site per day during active bulk sampling periods, which is expected to require up to two loaded outbound truck trips per day. Return trips will be utilized to transport fuel, supplies, and other project materials to the interim staging area, maximizing transportation efficiency and minimizing the need for additional flights or vehicle trips.

The integrated use of helicopter and ground transportation is intended to minimize overall disturbance within the project area while maintaining safe and efficient project operations.

II. Designated Flight Path

A map identifying the preliminary designated flight path is attached and shown below. The flight path will generally follow the West Fork Road corridor to the site and the ground contours and will typically maintain an altitude of 500 feet, except during takeoff and landing. The exact altitude will depend on VFR weather conditions.



As indicated on the image above, the blue path designates the path from Conner to the staging area and to the end of the project area. Within that detail, the red lines indicate likely flight paths internal to the project area.

In the event that loads will be long-lined or delivered while crossing the Forest Service roadway or identified personal property, a perimeter of 300' will be maintained from the hazard. In addition, signage will be placed at both ends of the fight path in question and line of sight from the pilots as well as radio communications from the ground will be relied on to notify and react to changing hazards present.

III. Alternative Flight Routes for Contingencies

An alternative flight route will be developed in coordination with the Forest Service in the event of a conflict. Predictively, one of the main reasons an alternate flight route would be needed is for a TFR designated by the Forest Service and, in the event of such a call, the project will follow the direction of the Forest Service's contingency plan and directives based on the location of the emergency. Any other deviations to flight path to and from Conner airfield will be approved prior to occurrence.

IV. Communications Plans

- A pre-flight briefing with the flight crew and ground crew to review departure/arrival times, daily plan of operations, safety considerations (e.g., weather, obstacles), responsible people on the ground for providing landing zone clearance, and designated radio frequency to be used.
- A post-flight briefing to identify any necessary improvements and/or relevant information needed for the next day.
- A satellite phone that will act as a redundancy measure if radio signals are blocked.
- Starlink satellite technology is planned to be in place for communications from site as well in regards to the remote nature of the project.
- Emergency protocols in the event that evacuation of the project site is necessary will be in place at the time of operation, and an evacuation plan will be coordinated and provided prior to commencement.

V. Radio Frequencies

A dedicated radio frequency will be selected and synced between the pilot and ground crew. Currently, Conner Aviation uses frequency 151.5125 utilizing a tone guard at 79.7 to limit traffic and is also scanning the back country channel at 122.9.

VI. Number of Helicopter Flights

Two categories of helicopter flights are anticipated during project operations. The first category consists of daily transit flights between the Conner airfield and the Sheep Creek interim staging area, as illustrated on the Flight Path Map. These flights are solely intended to bring the helicopter to the project site at the beginning of each operating day and return it to the airfield at the conclusion of daily operations with an additional flight referenced daily in the event of needing a different size helicopter for the project or a change out of helicopters. No long-line loads are scheduled to be transported via helicopter to the site from Conner airfield; all long-line loads are scheduled to take place within the project perimeter. Materials brought to site will instead be delivered to and from Conner/Darby to

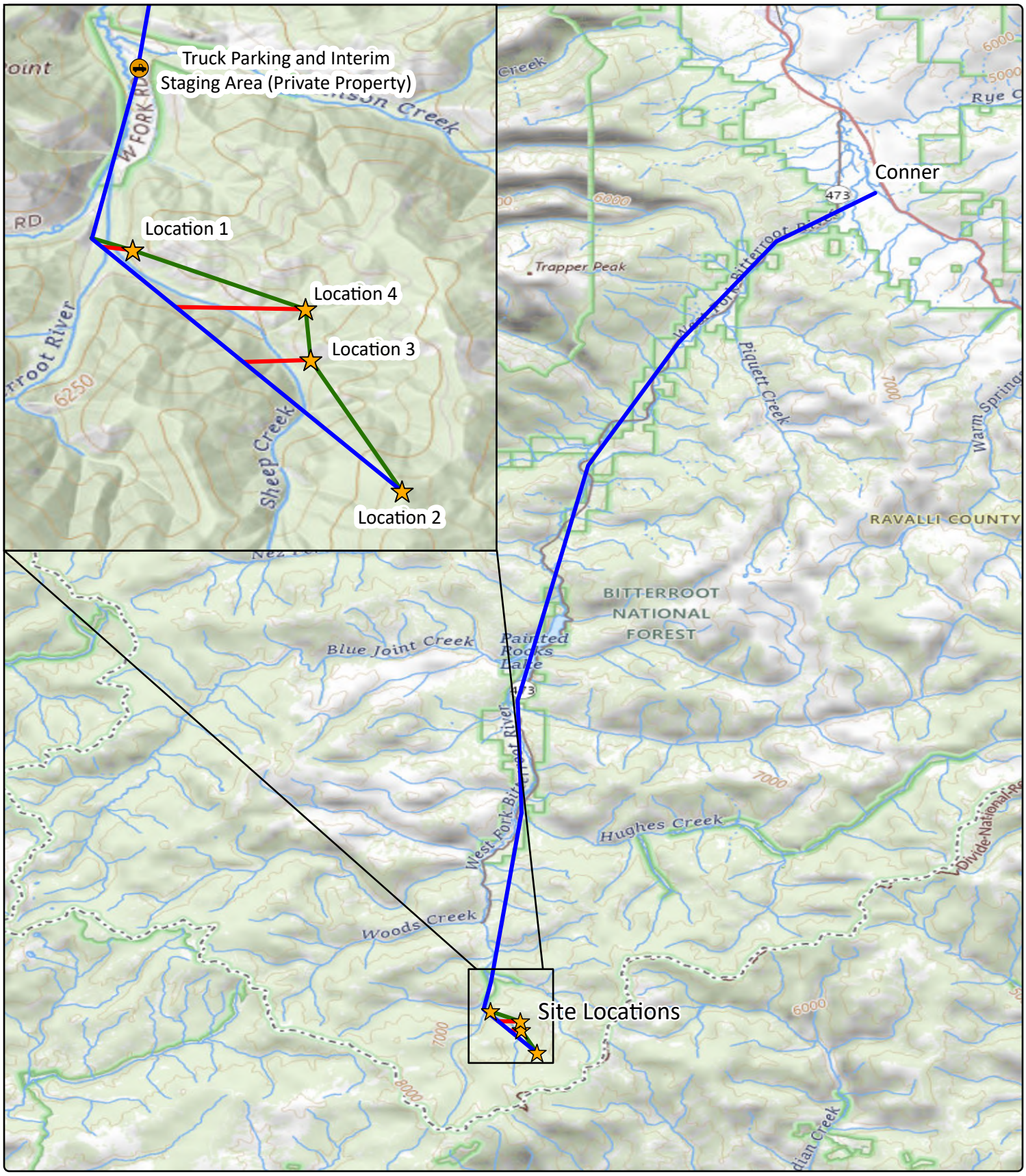
the interim staging area utilizing existing road access and conventional pickup and trailer transportation.

The second category consists of internal hops occurring between the interim staging area and the various exploration locations within the project area. These flights are necessary to support daily exploration activities and to transport personnel, equipment, supplies, and bulk sample material between work locations while minimizing ground disturbance.

During Season 1, approximately 300 roundtrip helicopter transit flights between the Conner airfield and the interim staging area are anticipated. An additional 1,900 internal hops are estimated between the staging area and exploration locations. The majority of these internal hops will be associated with transporting bulk sample material from Location 1 (Adit 1) to the interim staging area. Upon arrival at the interim staging area, bulk sample material will be loaded onto a pickup and trailer combination for transport off-site. During the most active phase of the program, which includes an anticipated 90-day bulk sampling period, helicopter activity is expected to average approximately 16 internal hops per day within the project area for bulk sample delivery from Adit 1 to staging area, and for fuel, water, equipment, and materials supply to the drilling locations.

Season 2 operations are expected to be substantially similar to Season 1. Season 1 is scheduled at 1 month longer than Season 2. Approximately 240 roundtrip helicopter transit flights between the Conner airfield and the interim staging area are anticipated, along with approximately 1,680 internal hops between the interim staging area and exploration locations. Actual flight frequencies may vary based on operational requirements, weather conditions, and project scheduling; however, overall activity levels are expected to remain similar in both seasons.

All helicopter operations will be conducted in accordance with applicable Federal Aviation Administration regulations and Forest Service needs and will be managed to minimize disturbance to wildlife, recreationists, and other forest users to the extent practicable.



USGS National Map Service

Legend:

Exploration Location

Truck Parking Location

Flight Paths

R&R to Site and Location 2

Path to Locations 1, 3, or 4

Linking Path Between Locations

0 2 4 6 Miles

N

Preliminary Flight Path Map
Sheep Creek Exploration Project
U S Critical Materials
Ravalli County, Montana

8/13/2026

Disclaimer: The data was mapped for planning purposes only. No liability is assumed for accuracy of the data shown.

COMPASS LAND GROUP