



Montana Renewables, LLC

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SPK HEFA Certificate of Analysis

DATE: 9/23/2024
TANK NO: TK-307
BATCH NO: SPK HEFA - 9/23/2024
BATCH VOLUME (GALLONS): 287092
PRODUCT: SPK HEFA

TESTS: D7566 Annex 2, Table A2.1	UNIT:	RESULTS:	SPECIFICATIONS:	METHODS:
Composition				
TOTAL ACID, MAX	mgKOH/g	0.002	0.015 MAX	D3242
Volatility				
Physical Distillation				
10% RECOVERY POINT	DEG. C	168	205 MAX	D86
50% RECOVERY POINT	DEG. C	239	REPORT	D86
90% RECOVERY POINT	DEG. C	282	REPORT	D86
END BOILING POINT	DEG. C	291	300 MAX	D86
T90-T10,	DEG. C	114	22 MIN	D86
RESIDUE, MAX	%	1.3	1.5 MAX	D86
LOSS, MAX	%	1.1	1.5 MAX	D86
Simulated Distillation				
10% RECOVERED TEMP (T10)	DEG. C	150	REPORT	D2887
20% RECOVERED TEMP (T20)	DEG. C	174	REPORT	D2887
50% RECOVERED TEMP (T50)	DEG. C	245	REPORT	D2887
80% RECOVERED TEMP (T80)	DEG. C	291	REPORT	D2887
90% RECOVERED TEMP (T90)	DEG. C	302	REPORT	D2887
FINAL BOILING POINT	DEG. C	316	REPORT	D2887
FLASH POINT	DEG. C	41.3	38 MIN	D56
DENSITY @ 15 C	kg/m3	0	730 MIN - 772 MAX	D4052
FREEZING POINT	DEG. C	-40.6	-40 MAX	D5972
EXISTENT GUM	mg/100 ml	0	7 MAX	D381
FAME	mg/kg	<4.5	<5 MAX	IP 585
Thermal Stability				
TEMPERATURE		325	325 MIN	D3241
FILTER PRESSURE DROP		0.0	25 MAX	D3241
Tube Rating				
(1) Annex A1 VTR	VTR Color Code	1	LESS THAN 3	D3241
Additives				
ANTIOXIDANTS	mg/L	20	17 MIN - 24 MAX	

TESTS: D7566 Annex 2, Table A2.2

Hydrocarbon Composition*

CYCLOPARAFFINS	MASS %	5.7	15.0 MAX	D2425
AROMATICS	MASS %	0.3	0.5 MAX	D2425
PARAFFINS	MASS %	94	REPORT	D2425
CARBON AND HYDROGEN	MASS %	100	99.5 MIN	D5291

Non-hydrocarbon Composition

NITROGEN	mg/kg	0	2 MAX	D4629
WATER	mg/kg	33.1	75 MAX	D6304
SULFUR	mg/kg	0	15 MAX	D5453

Metals*

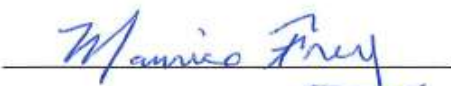
Al	mg/kg	0.04	0.1 MAX	D7111
Ca	mg/kg	0.01	0.1 MAX	D7111
Co	mg/kg	0.01	0.1 MAX	D7111
Cr	mg/kg	0.01	0.1 MAX	D7111
Cu	mg/kg	0.01	0.1 MAX	D7111
Fe	mg/kg	0.01	0.1 MAX	D7111
K	mg/kg	0.03	0.1 MAX	D7111
Mg	mg/kg	0.01	0.1 MAX	D7111
Mn	mg/kg	0.01	0.1 MAX	D7111
Mo	mg/kg	0.01	0.1 MAX	D7111
Na	mg/kg	0.09	0.1 MAX	D7111
Ni	mg/kg	0.01	0.1 MAX	D7111
P	mg/kg	0.02	0.1 MAX	D7111
Pb	mg/kg	0.02	0.1 MAX	D7111
Pd	mg/kg	0.01	0.1 MAX	D7111
Pt	mg/kg	0.03	0.1 MAX	D7111
Sn	mg/kg	0.01	0.1 MAX	D7111
Sr	mg/kg	0.01	0.1 MAX	D7111
Ti	mg/kg	0.01	0.1 MAX	D7111
V	mg/kg	0.01	0.1 MAX	D7111
Zn	mg/kg	0.01	0.1 MAX	D7111

HALOGENS*	mg/kg	0	1 MAX	D7359
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This Certificate of Analysis confirms that all tests were conducted in accordance with and the fuel tested meets the specifications of ASTM D7566-24d Annex 2, Tables A2.1 and A2.2

* indicates tests that were performed by outsourced labs

Approved by company representative:

MRL Signature: 
Maurice Frey 