Alberta Innovates - Technology Futures ~ Fuels & Lubricants

250 Karl Clark Road, Edmonton, Alberta, Canada T6N 1E4

Certified by the Standards Council of Canada as an Accredited Testing Organization complying with the requirements of ISO/IEC 17025 for specific tests registered with the Council

Report of Analysis

Order Id: FL16_1199
Contract #:
PO#:

Reported: 16-Sep-2016
Revision: 2016-1

Report To:

Discovery Mining Services
Box 2248
Yellowknife, NT X1A 2P7

Attention: Mathieu Beaudoin
E-mail: mathieu.beaudoin@discoverymining.ca
Fax:

Invoice To:

Discovery Mining Services
Box 2248
Yeollowknife, NT X1A 2P7

Attention: DMS Accounts Payable
E-mail:
Fax:

Laboratory Sample Number: FL16_1199-004
Product: Diesel
Specification: CAN/CGSB-3.517-2015 B
Date Received: 13-Sep-2016

Sample Source
Reference: LUP MTF# 02
Location:
Tag Number:
Tank Number:

Sample Notes
1

Specification Details

Analysis	Test Name	Specifications		Results	Units	Test Notes
		Minimum	Maximum			
Copper Corrosion - Classification	ASTM D130		No. 1	1a		
Water and Sediment	ASTM D1796 (modified)		0.02	<0.005	% (v/v)	**2**
Electrical Conductivity	ASTM D2624	25		828	pS/m	
Kinematic Viscosity	ASTM D445 @ 40℃	1.70	4.10	1.856	mm2/s (cSt)	
Ash Content	ASTM D482		0.010	0.001	Mass %	
Carbon Residue, 10% Bottoms	ASTM D524		0.2	0.10	%	
Cetane Number	ASTM D613	40.0		43.5		
Total Sulfur	ASTM D7039		15	189	mg/kg	**3**
Wear Scar Diameter	ASTM D7688		460	510	um	**4**
Distillation 90% Recovered (corr)	ASTM D86		360.0	290.2	℃	
Corrected Flash Point	ASTM D93	40.0		56.0	℃	
Acid Number	ASTM D974		0.10	<0.02	mg KOH/g	

Tested Parameters (Note: Parameters in Specification Detail will also appear in complete listing)

Analysis	Test Name	Results	Units	Test Notes
Copper Corrosion - Test Duration	ASTM D130	3	hours	
Copper Corrosion - Test Temperature	ASTM D130	50	℃	
Copper Corrosion - Classification	ASTM D130	1a		
Water and Sediment	ASTM D1796 (modified)	<0.005	% (v/v)	**2**
Electrical Conductivity	ASTM D2624	828	pS/m	
Temperature of Sample	ASTM D2624	20.1	℃	
Density @ 15℃	ASTM D4052	837.8	kg/m3	
Kinematic Viscosity	ASTM D445 @ 40℃	1.856	mm2/s (cSt)	
Ash Content	ASTM D482	0.001	Mass %	
Carbon Residue, 10% Bottoms	ASTM D524	0.10	%	
Cloud Point	ASTM D5773	-43.4	℃	
Cetane Number	ASTM D613	43.5		
Total Sulfur	ASTM D7039	189	mg/kg	**3**
Major Axis	ASTM D7688	0.53	mm	**4**
Minor Axis	ASTM D7688	0.48	mm	**4**
Wear Scar Diameter	ASTM D7688	510	um	**4**
Distillation IBP	ASTM D86	164.6	℃	
Distillation 5% Recovered (corr)	ASTM D86	184.5	℃	
Distillation 10% Recovered (corr)	ASTM D86	190.4	℃	
Distillation 20% Recovered (corr)	ASTM D86	200.7	℃	
Distillation 30% Recovered (corr)	ASTM D86	212.1	℃	

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Analysis	Test Name	Results	Units	Test Notes
Distillation 40% Recovered (corr)	ASTM D86	222.9	℃	
Distillation 50% Recovered (corr)	ASTM D86	234.4	℃	
Distillation 60% Recovered (corr)	ASTM D86	246.1	℃	
Distillation 70% Recovered (corr)	ASTM D86	257.9	℃	
Distillation 80% Recovered (corr)	ASTM D86	271.6	℃	
Distillation 90% Recovered (corr)	ASTM D86	290.2	℃	
Distillation FBP	ASTM D86	322.4	℃	
Distillation Residue	ASTM D86	1.3	%	
Distillation Loss	ASTM D86	0.4	%	
Corrected Flash Point	ASTM D93	56.0	℃	
Acid Number	ASTM D974	<0.02	mg KOH/g	

Notes and Remarks

1. With the exception of total sulfur and lubricity (wear scar diameter), the results obtained on your sample comply with the requirements Canadian General Standards Board (C.G.S.B.) specification for Diesel Fuel (CAN/CGSB-3.517-2015 Type B) for areas of Canada which do not require lower flow properties than displayed by the cloud point result.
2. CAN/CGSB-3.517-2015 states that the referee test method for water and sediment shall be ASTM D1796 (modified). The test is modified by substituting the centrifuge tube specified in ASTM D2273 for the centrifuge tube in ASTM D1796.
3. The Canadian General Standards Board (CGSB) specification for Diesel Fuel (CAN/CGSB-3.517-2015) states that the sulfur content shall not be greater than 15 mg/kg.
4. The High Frequency Reciprocating Rig (HFRR) analysis can be used as an indicator of base fuel lubricity. The Canadian General Standards Board (C.G.S.B.) specification for Diesel Fuel CAN/CGSB-3.517-2015 states that an acceptable test result is defined as a wear scar diameter of less than or equal to 460 µm at 60℃. Some fuels with higher wear scar diameter may still provide adequate lubricity. The HFRR test does not always show the improved lubricity performance of lubricity additives in diesel fuel. The HFRR is one of five criteria that can be used to determine lubricity requirements.

Approved by: Susan Brown

Susan Brown
Specification Analytical Coordinator

Results relate only to items tested.

Contact Information
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