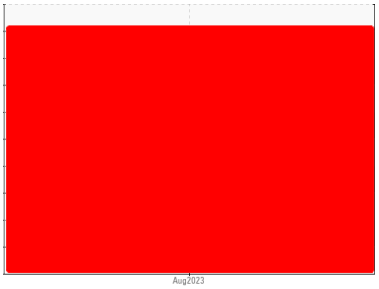
LIEBHERR

FUEL REPORT

Sample Rating Trend



ISO

Machine Id
LIEBHERR LH50M 118290-1216
Component
Fuel Filter Diesel Fuel
Fluid
No.2 DIESEL FUEL (ULTRALOW SULPHUR) (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check all areas where contaminants can enter the system. Laboratory test indicate that this fuel is suitable for use and meets all test requirements. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you filter this fluid before use. Resample in 30-45 days to monitor this situation.

Corrosion

{not applicable}

Contaminants

There is a high amount of particulates (2 to 100 microns in size) present in the fuel. The water content is negligible.

Fuel Condition

The fuel is still serviceable provided that the contaminant(s) can be reduced to acceptable levels. All laboratory tests indicate that this sample meets specifications for No.2 ultra-low-sulfur diesel fuel (US EPA/CGSB-3.517-3 type B).

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**LH0260117**	---	---
Sample Date		Client Info		**11 Aug 2023**	---	---
Machine Age	hrs	Client Info		**19400**	---	---
Sample Status				**SEVERE**	---	---

PHYSICAL PROPERTIES		method	limit/base	current	history1	history2
Specific Gravity		ASTM D1298*	0.839	**0.856**	---	---
Fuel Color	text	Visual Screen*	Yllow	**Red**	---	---
Visc @ 40°C	cSt	ASTM D7279(m)	3.0	**2.9**	---	---
Pensky-Martens Flash Point	°C	ASTM D7215*	52	**64.9**	---	---

SULFUR CONTENT		method	limit/base	current	history1	history2
Sulfur	ppm	ASTM D5185(m)	10	**10**	---	---

DISTILLATION		method	limit/base	current	history1	history2
Initial Boiling Point	°C	ASTM D2887*	165	**176**	---	---
5% Distillation Point	°C	ASTM D2887*		**205**	---	---
10% Distill Point	°C	ASTM D2887*	201	**214**	---	---
15% Distillation Point	°C	ASTM D2887*		**221**	---	---
20% Distill Point	°C	ASTM D2887*	216	**229**	---	---
30% Distill Point	°C	ASTM D2887*	230	**241**	---	---
40% Distill Point	°C	ASTM D2887*	243	**253**	---	---
50% Distill Point	°C	ASTM D2887*	255	**264**	---	---
60% Distill Point	°C	ASTM D2887*	267	**276**	---	---
70% Distill Point	°C	ASTM D2887*	280	**289**	---	---
80% Distill Point	°C	ASTM D2887*	295	**303**	---	---
85% Distillation Point	°C	ASTM D2887*		**313**	---	---
90% Distill Point	°C	ASTM D2887*	310	**323**	---	---
95% Distillation Point	°C	ASTM D2887*		**341**	---	---
Final Boiling Point	°C	ASTM D2887*	341	**359**	---	---

IGNITION QUALITY	method	limit/base	current	history1	history2
API Gravity	ASTM D1298*	37.7	**33**	---	---
Cetane Index	ASTM D4737*	<40.0	**44**	---	---

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	<1.0	**0**	---	---
Sodium	ppm	ASTM D5185(m)	<0.1	**0**	---	---
Potassium	ppm	ASTM D5185(m)	<0.1	**<1**	---	---
Water	%	ASTM D6304*	<0.05	**0.003**	---	---
ppm Water	ppm	ASTM D6304*	<500	**31.8**	---	---

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>2500	▲ **16626**	---	---
Particles >6µm		ASTM D7647	>640	⬢ **9274**	---	---
Particles >14µm		ASTM D7647	>80	⬢ **2432**	---	---
Particles >21µm		ASTM D7647	>20	⬢ **1037**	---	---
Particles >38µm		ASTM D7647	>4	⬢ **76**	---	---
Particles >71µm		ASTM D7647	>3	**5**	---	---
Oil Cleanliness		ISO 4406 (c)	>18/16/13	⬢ **21/20/18**	---	---

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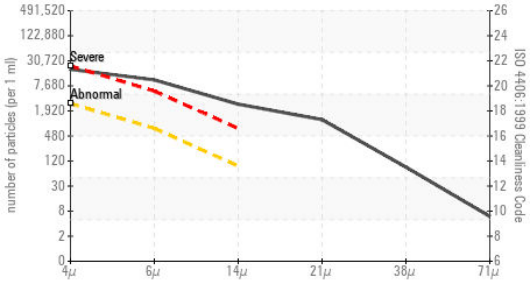
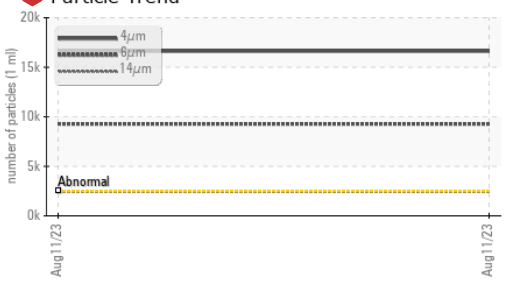
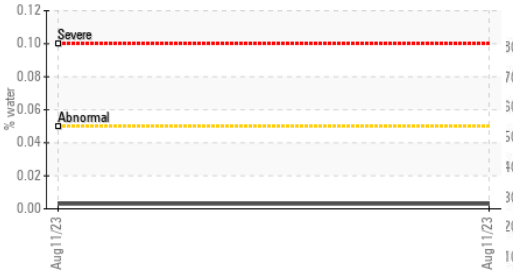
Particle Count



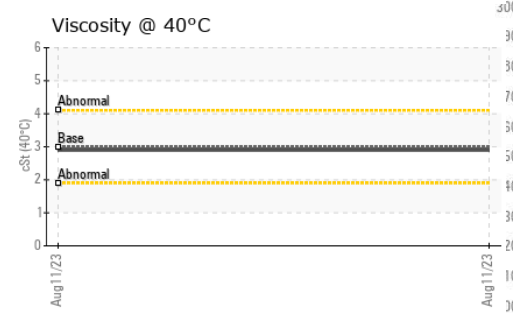
Particle Trend



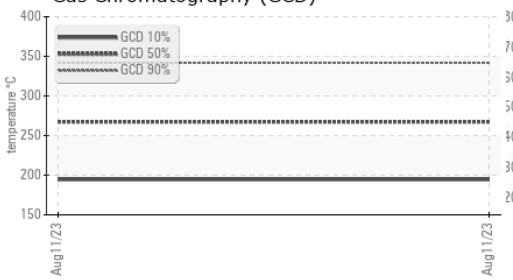
Water



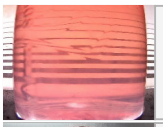
Viscosity @ 40°C



Gas Chromatography (GCD)

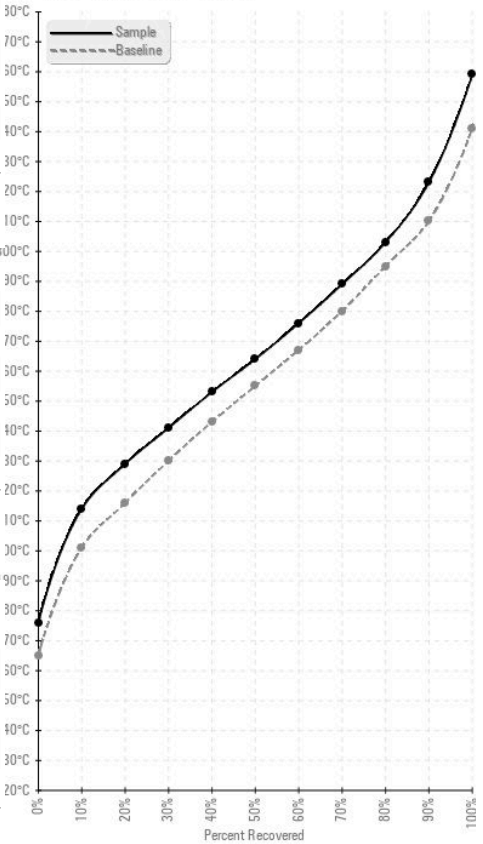


HEAVY METALS		method	limit/base	current	history1	history2
Aluminum	ppm	ASTM D5185(m)	<0.1	**0**	---	---
Nickel	ppm	ASTM D5185(m)	<0.1	**0**	---	---
Lead	ppm	ASTM D5185(m)	<0.1	**0**	---	---
Vanadium	ppm	ASTM D5185(m)	<0.1	**0**	---	---
Iron	ppm	ASTM D5185(m)	<0.1	**<1**	---	---
Calcium	ppm	ASTM D5185(m)	<0.1	**<1**	---	---
Magnesium	ppm	ASTM D5185(m)	<0.1	**0**	---	---
Phosphorus	ppm	ASTM D5185(m)	<0.1	**0**	---	---
Zinc	ppm	ASTM D5185(m)	<0.1	**0**	---	---

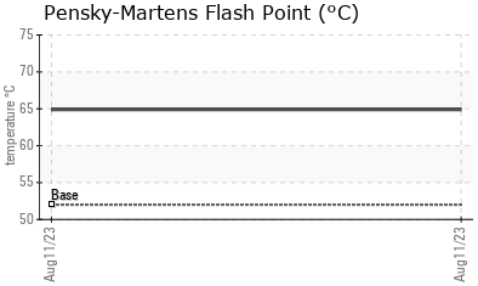
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color				*no image*	*no image*
Bottom				*no image*	*no image*

GRAPHS

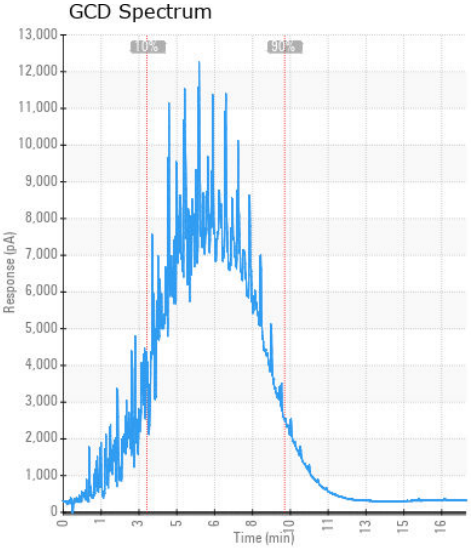
Fuel Distillation Curve



Pensky-Martens Flash Point (°C)



GCD Spectrum



CALA
ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0260117 **Received** : 16 Aug 2023
Lab Number : 02576301 **Diagnosed** : 24 Aug 2023
Unique Number : 5629361 **Diagnostician** : Kevin Marson
Test Package : FUEL (Additional Tests: CC Flash, GC-PercFuel, PrtCount)

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

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