



LIEBHERR

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	ATTENTION



Machine Id
LIEBHERR R938 050886-1650

Component
Diesel Engine

Fluid
LIEBHERR MOTOROIL 10W-40 LOW ASH (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LH0267310	LH0258262	LH0258962
Sample Date		Client Info		19 Dec 2023	08 Oct 2023	09 Aug 2023
Machine Age	hrs	Client Info		2998	431	1993
Oil Age	hrs	Client Info		0	0	1993
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Filter Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				ATTENTION	ATTENTION	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	9	36	9
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	0	0
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>15	3	4	3
Lead	ppm	ASTM D5185m	>30	<1	0	2
Copper	ppm	ASTM D5185m	>125	2	24	4
Tin	ppm	ASTM D5185m	>5	1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

Fuel content negligible. There is no indication of any contamination in the oil.

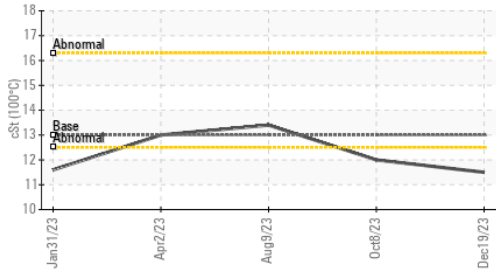
Silicon	ppm	ASTM D5185m	>60	30	60	13
Potassium	ppm	ASTM D5185m	>20	0	3	4
Fuel	%	ASTM D3524	>5	1.9	0.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	13.1	10.3	10.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	16.8	31.6	21.4
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG

FLUID CONDITION

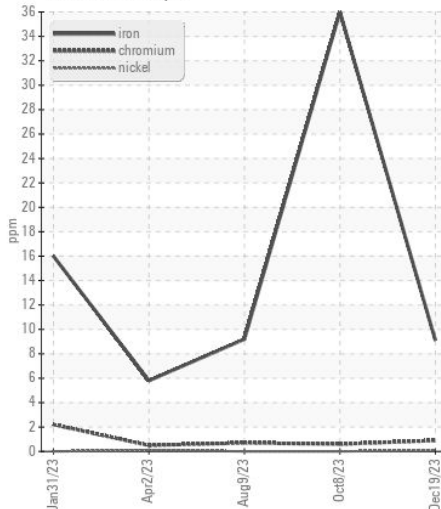
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

Sodium	ppm	ASTM D5185m		3	1	3
Boron	ppm	ASTM D5185m	169	251	86	52
Barium	ppm	ASTM D5185m	0	<1	8	0
Molybdenum	ppm	ASTM D5185m	2	<1	30	2
Manganese	ppm	ASTM D5185m	<1	<1	3	1
Magnesium	ppm	ASTM D5185m	724	97	689	834
Calcium	ppm	ASTM D5185m	1323	4124	1589	1395
Phosphorus	ppm	ASTM D5185m	678	1068	749	811
Zinc	ppm	ASTM D5185m	776	1221	911	974
Sulfur	ppm	ASTM D5185m	2859	2996	2887	4344
Oxidation	Abs/.1mm	*ASTM D7414	>25	13.3	36.4	22.3
Base Number (BN)	mg KOH/g	ASTM D2896	9.28	13.5	6.0	6.1
Visc @ 100°C	cSt	ASTM D445	13.0	▲ 11.5	▲ 12.0	13.4

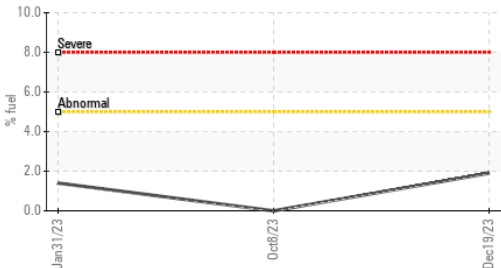
▲ Viscosity @ 100°C



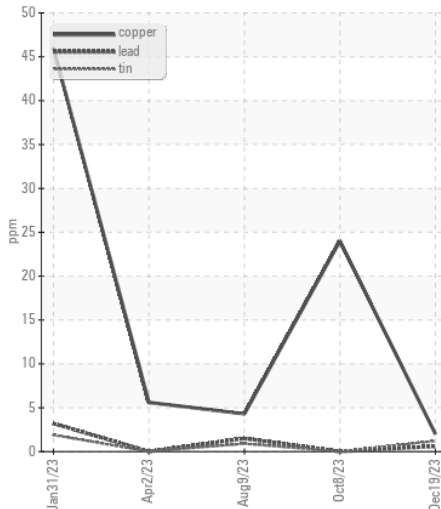
Ferrous Alloys



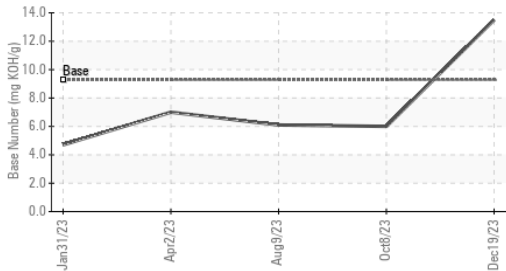
Fuel Dilution



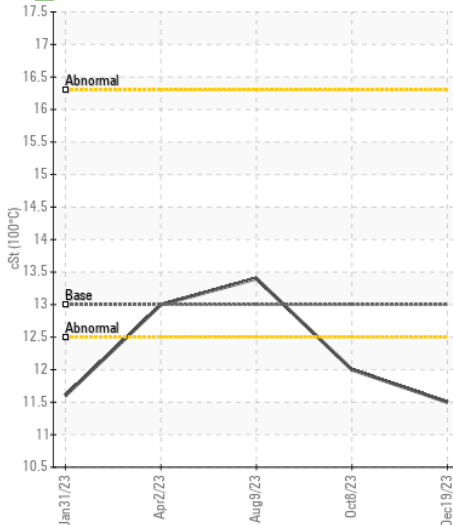
Non-ferrous Metals



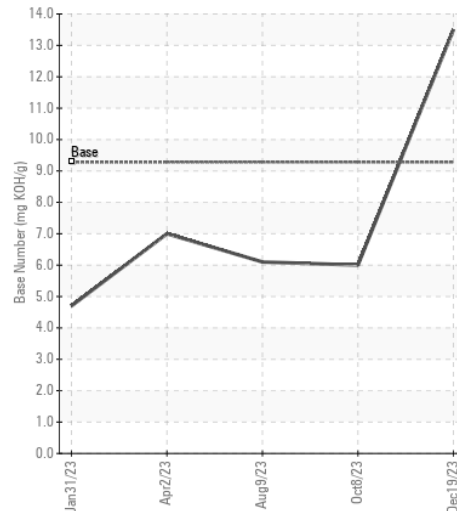
Base Number



▲ Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LH0267310 **Received** : 12 Jan 2024
Lab Number : 06060055 **Diagnosed** : 16 Jan 2024
Unique Number : 10831437 **Diagnostician** : Doug Bogart
Test Package : CONST (Additional Tests: FuelDilution, PercentFuel, TBN)

M&F CONCRETE PRODUCTS CO
 4002 CATLETT RD
 CATLETT, VA
 US 20119
 Contact: Service Manager

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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