OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Machine Id
LIEBHERR 31256
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL 10W40 (--- GAL)

RECOMMENDATION

The oil change at the time of sampling has been noted. Please specify the brand, type, and viscosity of the oil on your next sample.

WEAR

All component wear rates are normal.

CONTAMINATION

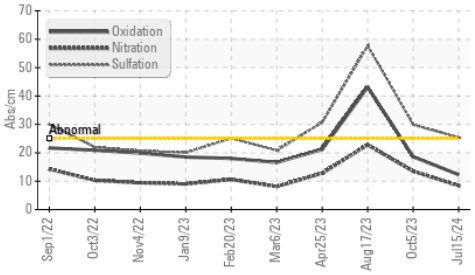
Light concentration of carbon/soot present in the oil.

FLUID CONDITION

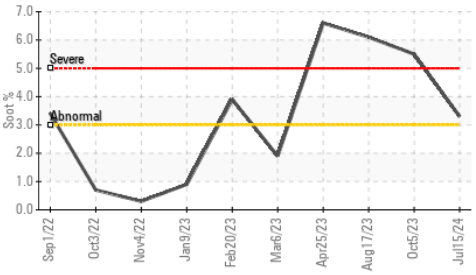
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0950518	WC0856738	WC0809967
Sample Date		Client Info		15 Jul 2024	05 Oct 2023	17 Aug 2023
Machine Age	hrs	Client Info		10335	10199	9950
Oil Age	hrs	Client Info		250	1000	250
Filter Age	hrs	Client Info		250	1000	250
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	SEVERE	SEVERE
Iron	ppm	ASTM D5185m	>100	31	34	54
Chromium	ppm	ASTM D5185m	>5	1	1	2
Nickel	ppm	ASTM D5185m	>5	<1	0	0
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>15	4	3	<1
Lead	ppm	ASTM D5185m	>30	0	<1	0
Copper	ppm	ASTM D5185m	>125	3	1	8
Tin	ppm	ASTM D5185m	>5	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>60	6	7	7
Potassium	ppm	ASTM D5185m	>20	2	<1	2
Fuel	%	ASTM D3524	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	▲ 3.3	▲ 5.5	▲ 6.1
Nitration	Abs/cm	*ASTM D7624	>20	8.4	13.5	22.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	25.4	29.9	57.7
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
Sodium	ppm	ASTM D5185m		<1	<1	4
Boron	ppm	ASTM D5185m	250	426	317	85
Barium	ppm	ASTM D5185m	10	0	0	0
Molybdenum	ppm	ASTM D5185m	100	93	45	20
Manganese	ppm	ASTM D5185m		<1	<1	1
Magnesium	ppm	ASTM D5185m	450	417	360	812
Calcium	ppm	ASTM D5185m	3000	1728	2645	1529
Phosphorus	ppm	ASTM D5185m	1150	1096	1055	831
Zinc	ppm	ASTM D5185m	1350	1290	1253	1004
Sulfur	ppm	ASTM D5185m	4250	3458	3316	4011
Oxidation	Abs/.1mm	*ASTM D7414	>25	12.3	18.6	43.1
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	6.4	▲ 0.0	▲ 0.0
Visc @ 100°C	cSt	ASTM D445	14.4	14.6	▲ 17.1	▲ 24.9

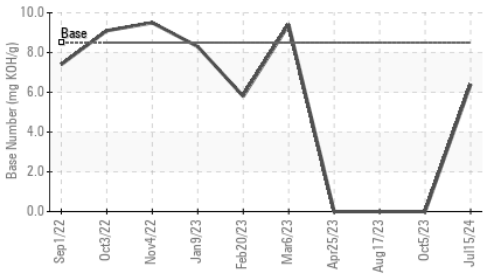
FT-IR (Direct Trend)



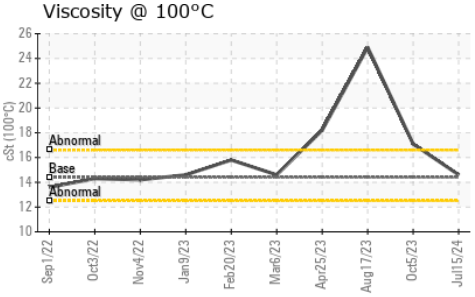
Soot %



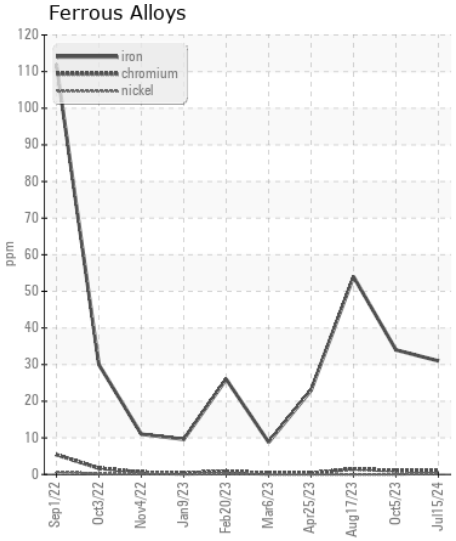
Base Number



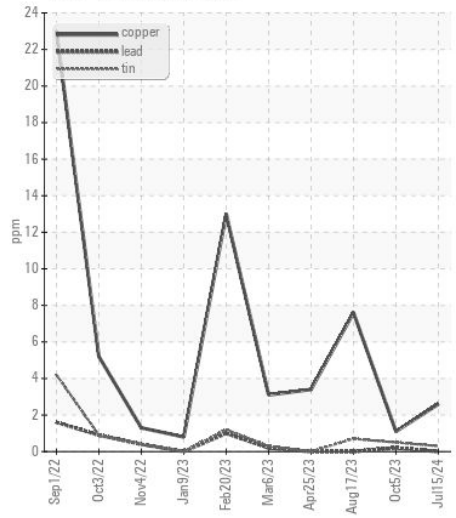
Viscosity @ 100°C



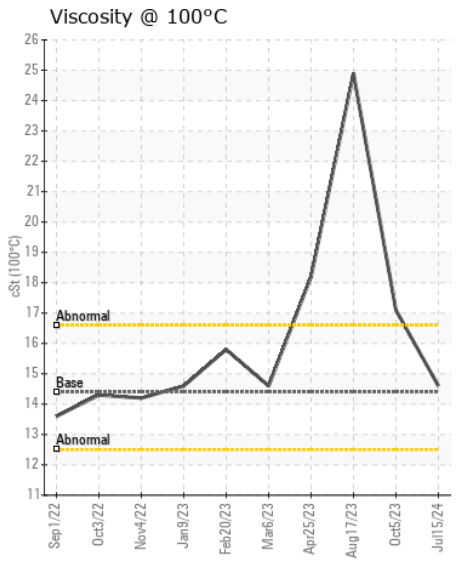
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



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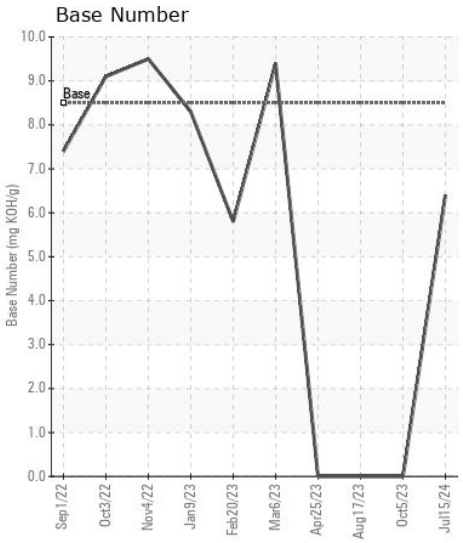

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0950518
Lab Number : 06239886
Unique Number : 11128720
Test Package : CONST (Additional Tests: FuelDilution, TBN)

Received : 18 Jul 2024
Tested : 19 Jul 2024
Diagnosed : 19 Jul 2024 - Wes Davis

SULLIVAN EASTERN INC-LIEBHERR
2860 C SLATER RD
MORRISVILLE, NC
US 27560
Contact: CHRIS CALTON

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)

T:
F: (919)484-2136