OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
FREIGHTLINER 4191
Component
Diesel Engine
Fluid
GIBRALTAR 15W/40 SUPER S-3 LX (11 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

WEAR

Metal levels are typical for a new component breaking in.

CONTAMINATION

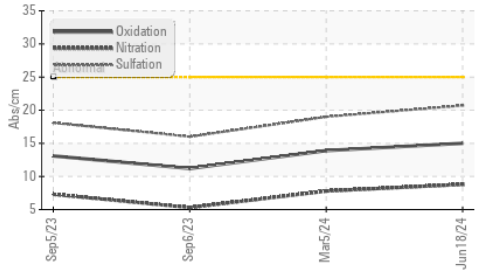
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

FLUID CONDITION

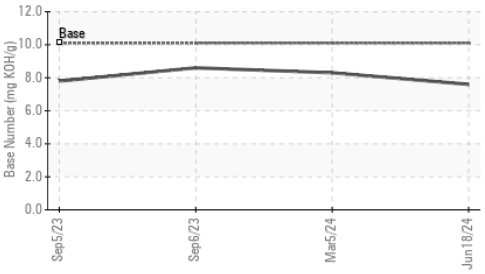
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		**WC0830956**	WC0650872	WC0830905
Sample Date		Client Info		**18 Jun 2024**	05 Mar 2024	06 Sep 2023
Machine Age	hrs	Client Info		**600**	0	1503
Oil Age	hrs	Client Info		**600**	600	450
Filter Age	hrs	Client Info		**600**	600	450
Oil Changed		Client Info		**Changed**	Changed	Changed
Filter Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**NORMAL**	NORMAL	NORMAL
Iron	ppm	ASTM D5185m	>80	**30**	20	3
Chromium	ppm	ASTM D5185m	>5	**2**	1	<1
Nickel	ppm	ASTM D5185m	>2	**0**	0	0
Titanium	ppm	ASTM D5185m		**<1**	<1	0
Silver	ppm	ASTM D5185m	>3	**0**	0	0
Aluminum	ppm	ASTM D5185m	>30	**17**	12	6
Lead	ppm	ASTM D5185m	>30	**0**	0	<1
Copper	ppm	ASTM D5185m	>150	**1**	<1	0
Tin	ppm	ASTM D5185m	>5	**0**	0	0
Vanadium	ppm	ASTM D5185m		**<1**	<1	<1
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silicon	ppm	ASTM D5185m	>20	**4**	4	4
Potassium	ppm	ASTM D5185m	>20	**42**	26	8
Fuel		WC Method	>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	**0.7**	0.4	0.1
Nitration	Abs/cm	*ASTM D7624	>20	**8.8**	7.8	5.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	**20.7**	19.0	16.0
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		**2**	2	<1
Boron	ppm	ASTM D5185m		**5**	8	12
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m	66	**63**	62	54
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m	1000	**1076**	993	868
Calcium	ppm	ASTM D5185m	1050	**1293**	1277	1190
Phosphorus	ppm	ASTM D5185m	1150	**1129**	1102	981
Zinc	ppm	ASTM D5185m	1270	**1467**	1365	1231
Sulfur	ppm	ASTM D5185m		**4137**	3860	3827
Oxidation	Abs/.1mm	*ASTM D7414	>25	**15.0**	13.9	11.2
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	**7.6**	8.3	8.6
Visc @ 100°C	cSt	ASTM D445	15.5	**13.6**	12.8	13.2

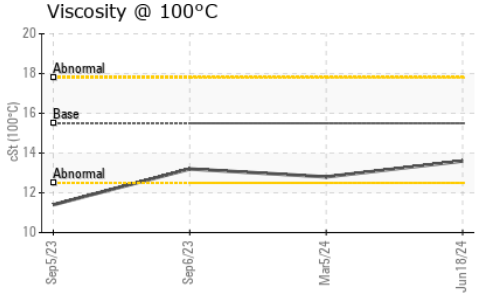
FT-IR (Direct Trend)



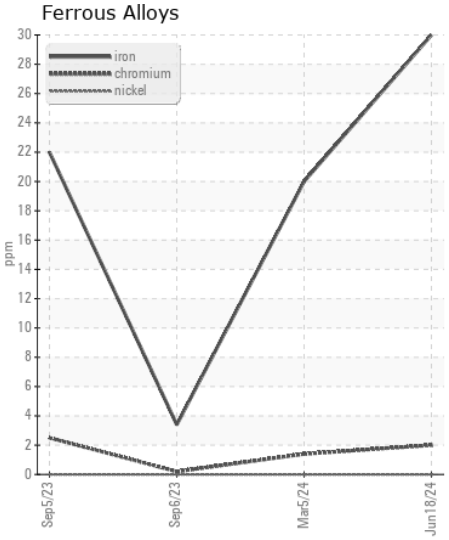
Base Number



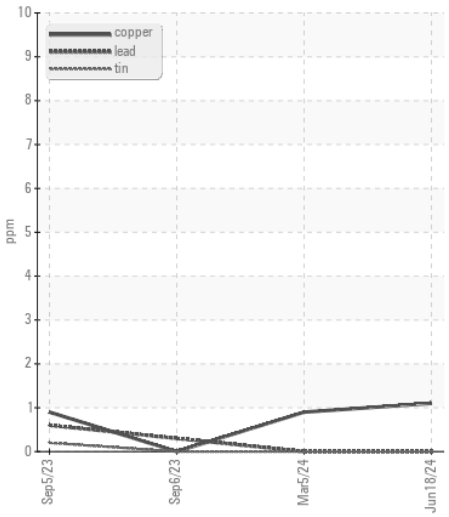
Viscosity @ 100°C



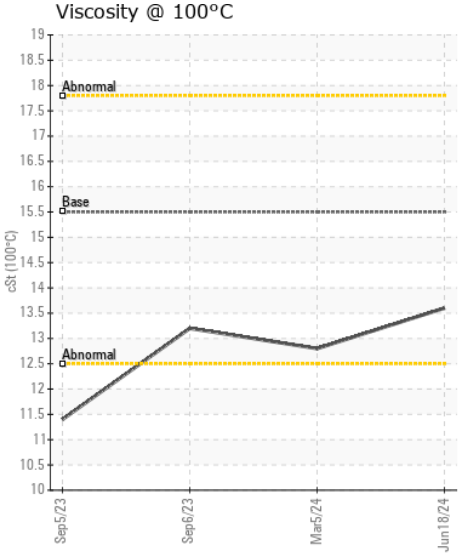
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



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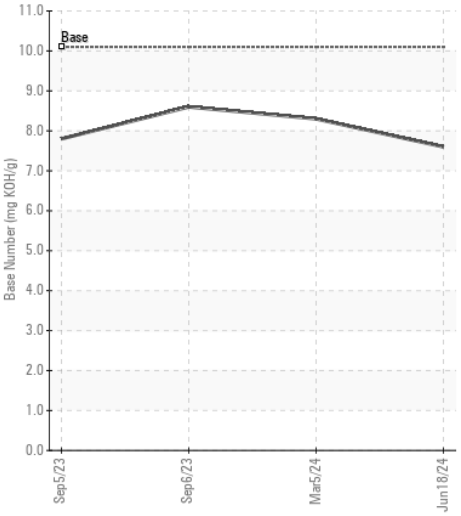

Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0830956
Lab Number : 06223173
Unique Number : 11101370
Test Package : FLEET

Received : 28 Jun 2024
Tested : 28 Jun 2024
Diagnosed : 28 Jun 2024 - Wes Davis

INTERSTATE WASTE-GOSHEN
95 HARTLEY ROAD
GOSHEN, NY
US 10924
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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