OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
FREIGHTLINER 2003
Component
Diesel Engine
Fluid
ROYAL PURPLE MOTOR OIL 15W40 (45 QTS)

RECOMMENDATION

No corrective action is recommended at this time. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

WEAR

The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). All other component wear rates are normal.

CONTAMINATION

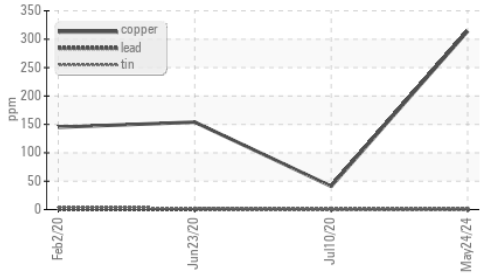
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

FLUID CONDITION

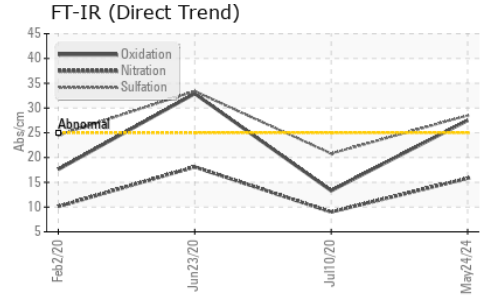
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0720124	WC0416546	WCM1402655
Sample Date		Client Info		24 May 2024	10 Jul 2020	23 Jun 2020
Machine Age	mls	Client Info		128021	139852	123484
Oil Age	mls	Client Info		100000	16368	100000
Filter Age	mls	Client Info		50000	16368	100000
Oil Changed		Client Info		Changed	Not Changd	Changed
Filter Changed		Client Info		Changed	Not Changd	Changed
Sample Status				ABNORMAL	NORMAL	SEVERE
Iron	ppm	ASTM D5185m	>80	78	25	▲ 125
Chromium	ppm	ASTM D5185m	>5	3	3	▲ 15
Nickel	ppm	ASTM D5185m	>2	1	<1	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	<1	<1	<1
Aluminum	ppm	ASTM D5185m	>30	34	17	▲ 89
Lead	ppm	ASTM D5185m	>30	0	<1	0
Copper	ppm	ASTM D5185m	>150	▲ 314	41	154
Tin	ppm	ASTM D5185m	>5	2	1	3
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Silicon	ppm	ASTM D5185m	>20	11	8	10
Potassium	ppm	ASTM D5185m	>20	86	40	▲ 204
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	0.0	NEG
Soot %	%	*ASTM D7844	>3	1.5	0.4	1.3
Nitration	Abs/cm	*ASTM D7624	>20	15.8	9	18.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	28.5	20.8	33.4
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
Sodium	ppm	ASTM D5185m		6	1	4
Boron	ppm	ASTM D5185m	0	2	2	3
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum	ppm	ASTM D5185m	100	7	<1	3
Manganese	ppm	ASTM D5185m		3	<1	3
Magnesium	ppm	ASTM D5185m	60	106	18	95
Calcium	ppm	ASTM D5185m	3050	2607	2283	2438
Phosphorus	ppm	ASTM D5185m	1050	1015	843	840
Zinc	ppm	ASTM D5185m	1200	1184	1031	1074
Sulfur	ppm	ASTM D5185m	12500	3210	2764	2251
Oxidation	Abs/.1mm	*ASTM D7414	>25	27.5	13.3	32.9
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	5.0	---	---
Visc @ 100°C	cSt	ASTM D445	14.9	14.1	14.5	15.2

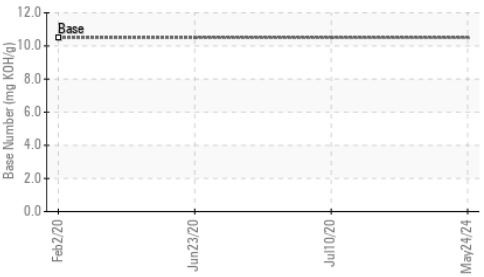
Non-ferrous Metals



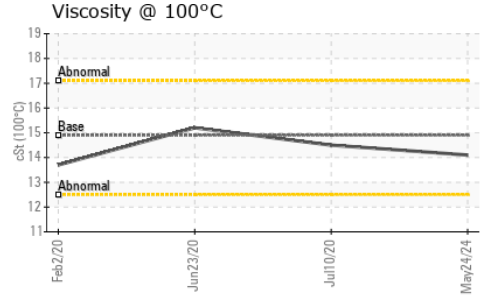
FT-IR (Direct Trend)



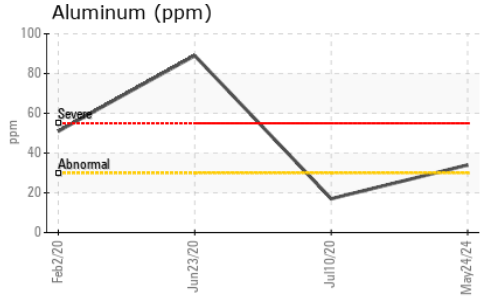
Base Number



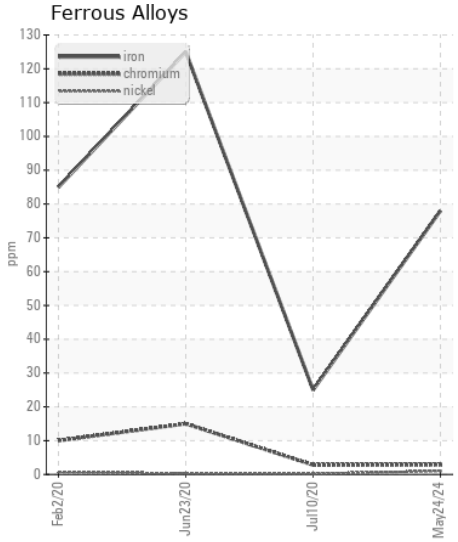
Viscosity @ 100°C



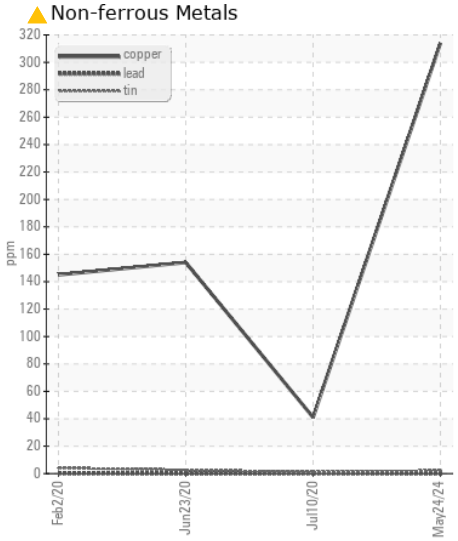
Aluminum (ppm)



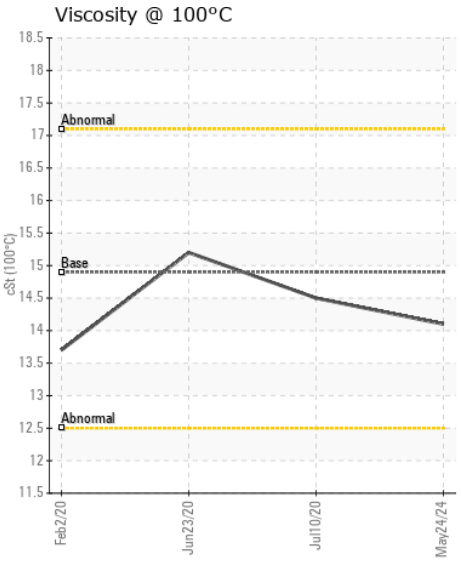
Ferrous Alloys



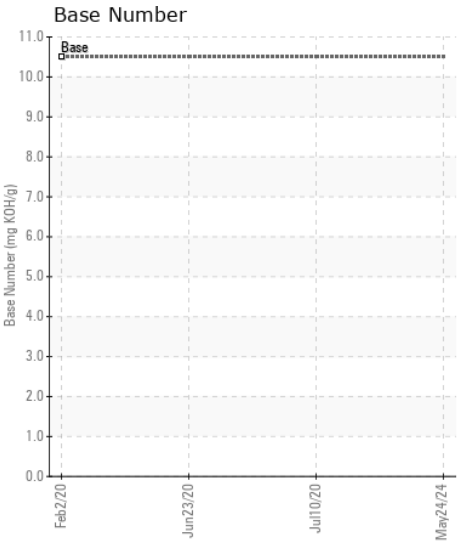
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0720124
Lab Number : 06213275
Unique Number : 11086139
Test Package : FLEET

Received : 18 Jun 2024
Tested : 19 Jun 2024
Diagnosed : 20 Jun 2024 - Sean Felton

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)

DILLON TRANSPORTATION
974 TN WALTZ PARKWAY
ASHLAND CITY, TN
US 37015
Contact: MASON NICHOLSON
M.NICHOLSON@DILLONTRANSPORTATION.COM
T: (615)792-5099
F: (615)469-4200