



# OIL ANALYSIS REPORT

WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Machine Id  
**FREIGHTLINER 2321**  
Component  
**Diesel Engine**  
Fluid  
**DIESEL ENGINE OIL SAE 5W40 (19 QTS)**

## RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>RW0004753</b>	RW0004807	RW0004795
Sample Date		Client Info		<b>17 Apr 2024</b>	08 Feb 2024	05 Oct 2023
Machine Age	hrs	Client Info		<b>8368</b>	4512	7334
Oil Age	hrs	Client Info		<b>0</b>	4512	316
Filter Age	hrs	Client Info		<b>0</b>	4512	316
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>Changed</b>	Changed	Changed
Sample Status				<b>NORMAL</b>	ABNORMAL	NORMAL

## WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>90	<b>43</b>	66	35
Chromium	ppm	ASTM D5185m	>20	<b>1</b>	2	<1
Nickel	ppm	ASTM D5185m	>2	<b>&lt;1</b>	1	<1
Titanium	ppm	ASTM D5185m	>2	<b>&lt;1</b>	<1	0
Silver	ppm	ASTM D5185m	>2	<b>0</b>	<1	0
Aluminum	ppm	ASTM D5185m	>20	<b>7</b>	6	4
Lead	ppm	ASTM D5185m	>40	<b>&lt;1</b>	<1	<1
Copper	ppm	ASTM D5185m	>330	<b>130</b>	167	<1
Tin	ppm	ASTM D5185m	>15	<b>1</b>	2	<1
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
White Metal	scalar	*Visual	NONE	<b>LIGHT</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

## CONTAMINATION

There is no indication of any contamination in the oil.

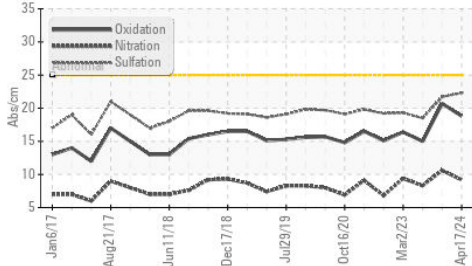
Silicon	ppm	ASTM D5185m	>25	<b>13</b>	▲ 49	4
Potassium	ppm	ASTM D5185m	>20	<b>3</b>	3	3
Fuel		WC Method	>3.0	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>6	<b>0.6</b>	0.6	0.5
Nitration	Abs/cm	*ASTM D7624	>20	<b>9.2</b>	10.6	8.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>22.3</b>	21.7	18.5
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	<b>NEG</b>	NEG	NEG

## FLUID CONDITION

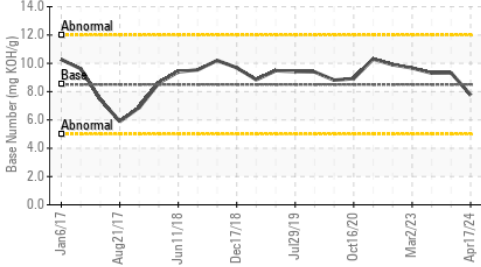
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>44	<b>3</b>	6	1
Boron	ppm	ASTM D5185m	250	<b>124</b>	44	6
Barium	ppm	ASTM D5185m	10	<b>&lt;1</b>	7	0
Molybdenum	ppm	ASTM D5185m	100	<b>9</b>	53	61
Manganese	ppm	ASTM D5185m		<b>2</b>	5	<1
Magnesium	ppm	ASTM D5185m	450	<b>193</b>	948	948
Calcium	ppm	ASTM D5185m	3000	<b>1823</b>	748	1057
Phosphorus	ppm	ASTM D5185m	1150	<b>993</b>	887	1055
Zinc	ppm	ASTM D5185m	1350	<b>1119</b>	1073	1277
Sulfur	ppm	ASTM D5185m	4250	<b>3272</b>	3230	3043
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>18.8</b>	20.7	15.0
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	<b>7.76</b>	9.32	9.31
Visc @ 100°C	cSt	ASTM D445	14.4	<b>14.4</b>	13.5	13.7

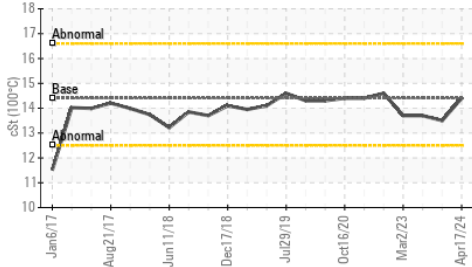
FT-IR (Direct Trend)



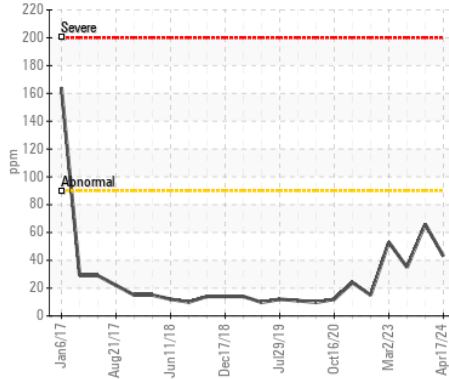
Base Number



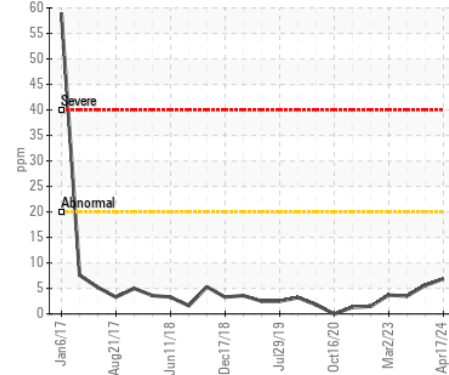
Viscosity @ 100°C



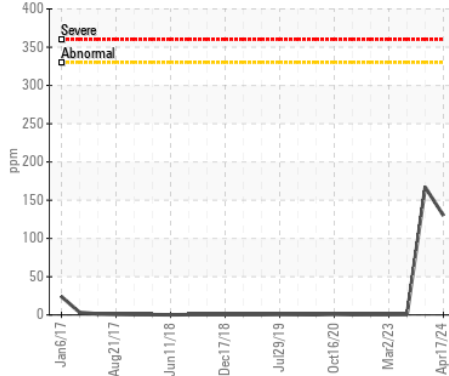
Iron (ppm)



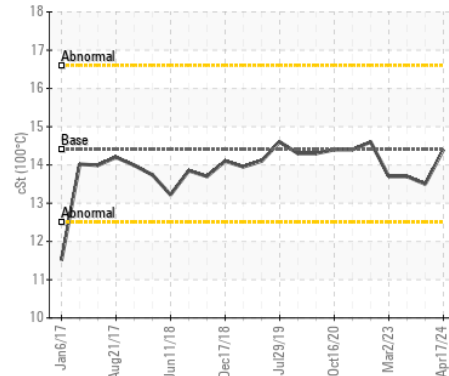
Aluminum (ppm)



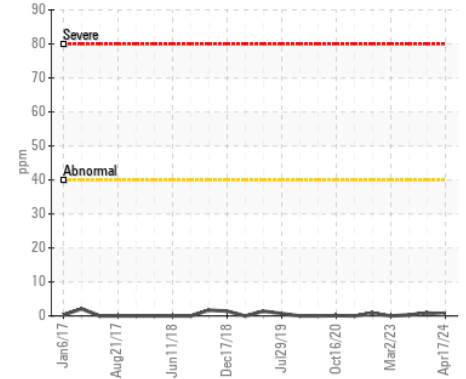
Copper (ppm)



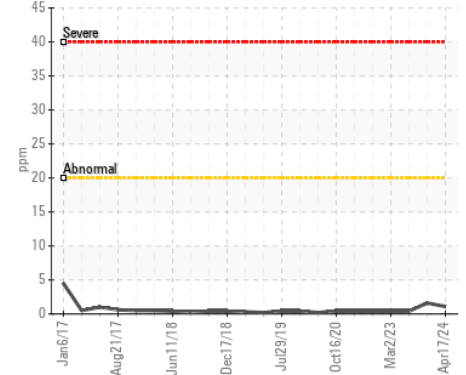
Viscosity @ 100°C



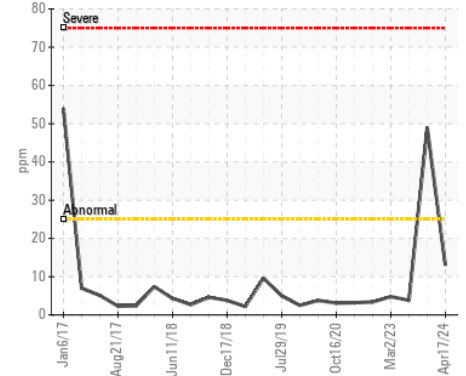
Lead (ppm)



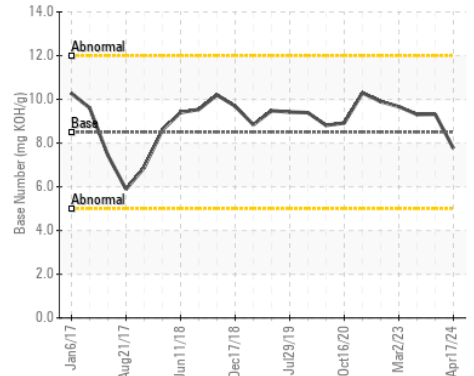
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : RW0004753

Lab Number : 06158490

Unique Number : 10993913

Test Package : MOB 2

Received : 23 Apr 2024

Tested : 24 Apr 2024

Diagnosed : 24 Apr 2024 - Wes Davis

CITY OF FARMINGTON HILLS

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FARMINGTON HILLS, MI

US 48331

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F:

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)