



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Area
TRUCK - URBAN
Machine Id
WESTERN STAR T147
Component
Diesel Engine
Fluid
SHELL Rotella T5 15W-40 (10 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		PE0003252	PE0000485	PE0003196
Sample Date		Client Info		29 Apr 2024	14 Mar 2024	19 Jan 2024
Machine Age	hrs	Client Info		5472	4965	4524
Oil Age	hrs	Client Info		507	441	473
Filter Age	hrs	Client Info		507	441	473
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>165	17	16	14
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	4	4
Lead	ppm	ASTM D5185m	>150	6	4	2
Copper	ppm	ASTM D5185m	>90	0	<1	<1
Tin	ppm	ASTM D5185m	>5	1	2	1
Vanadium	ppm	ASTM D5185m		0	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

There is no indication of any contamination in the oil.

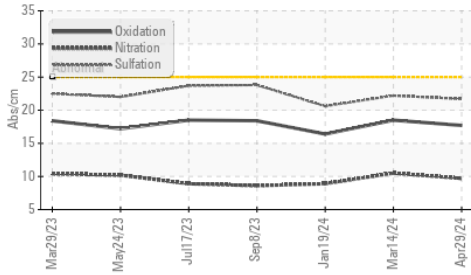
Silicon	ppm	ASTM D5185m	>35	6	4	5
Potassium	ppm	ASTM D5185m	>20	3	6	7
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>7.5	0.4	0.5	0.4
Nitration	Abs/cm	*ASTM D7624	>20	9.7	10.5	8.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	21.7	22.2	20.6
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

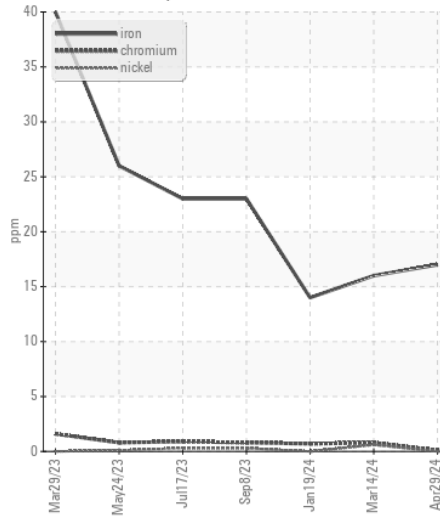
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m		1	3	1
Boron	ppm	ASTM D5185m		8	6	12
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		66	61	54
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		936	910	925
Calcium	ppm	ASTM D5185m		1186	1206	1093
Phosphorus	ppm	ASTM D5185m		1064	990	961
Zinc	ppm	ASTM D5185m		1300	1251	1179
Sulfur	ppm	ASTM D5185m		3375	3364	2692
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.7	18.5	16.4
Base Number (BN)	mg KOH/g	ASTM D2896	10	7.1	6.9	5.9
Visc @ 100°C	cSt	ASTM D445	14.9	12.9	12.9	12.9

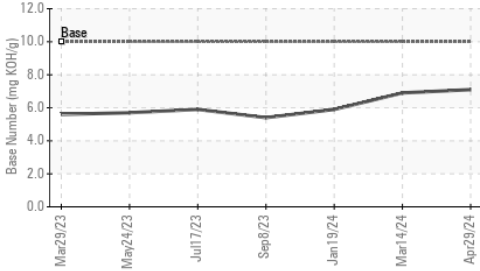
FT-IR (Direct Trend)



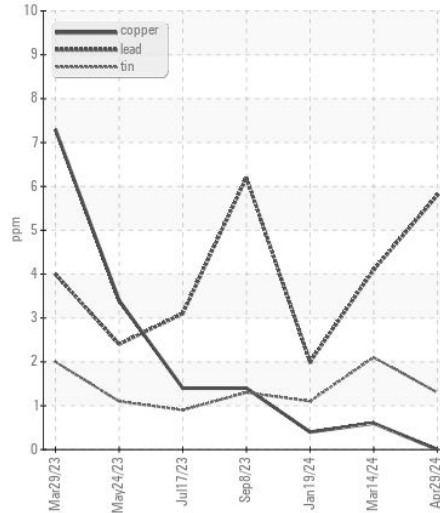
Ferrous Alloys



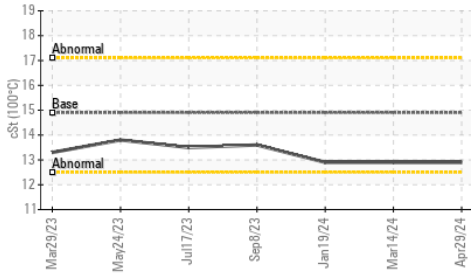
Base Number



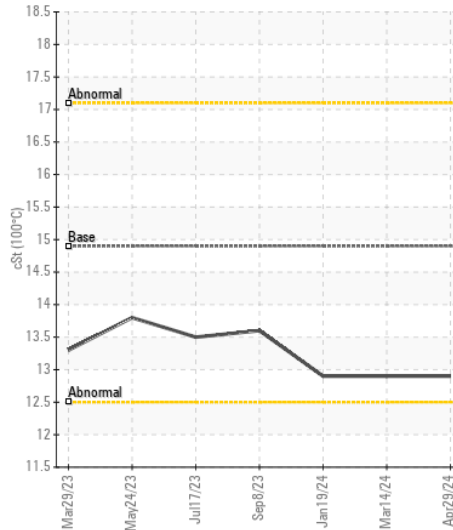
Non-ferrous Metals



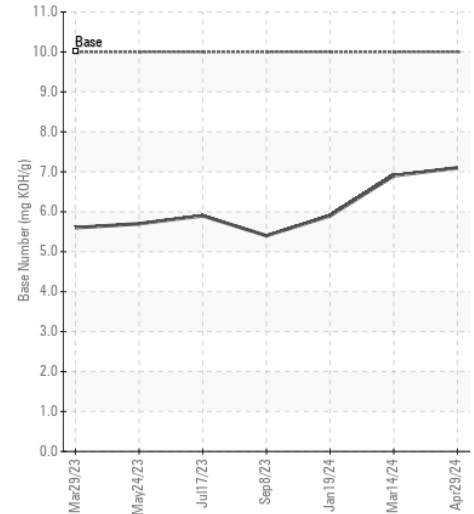
Viscosity @ 100°C



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PE0003252
Lab Number : 06187015
Unique Number : 11043767
Test Package : CONST (Additional Tests: FT-IR, ICP, KV100, SCREEN, TBN)

Received : 21 May 2024
Tested : 23 May 2024
Diagnosed : 23 May 2024 - Sean Felton

PetroCard - Aberdeen
 110 Commerce St
 Aberdeen, WA
 US 98520

Contact: Sean McNealley
 smcnealley@petrocard.com

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: