



OIL ANALYSIS REPORT

WEAR	ATTENTION
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Machine Id
CATERPILLAR 4
 Component
Diesel Engine
 Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

RECOMMENDATION

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0746092	WC0746167	---
Sample Date		Client Info		07 Mar 2024	10 Nov 2022	---
Machine Age	hrs	Client Info		1403	1019	---
Oil Age	hrs	Client Info		362	500	---
Filter Age	hrs	Client Info		362	500	---
Oil Changed		Client Info		Changed	Changed	---
Filter Changed		Client Info		Changed	Changed	---
Sample Status				ABNORMAL	NORMAL	---

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	79	22	---
Chromium	ppm	ASTM D5185m	>20	<1	<1	---
Nickel	ppm	ASTM D5185m	>4	<1	0	---
Titanium	ppm	ASTM D5185m		<1	2	---
Silver	ppm	ASTM D5185m	>3	0	0	---
Aluminum	ppm	ASTM D5185m	>20	10	6	---
Lead	ppm	ASTM D5185m	>40	<1	0	---
Copper	ppm	ASTM D5185m	>330	4	6	---
Tin	ppm	ASTM D5185m	>15	<1	<1	---
Vanadium	ppm	ASTM D5185m		0	0	---
White Metal	scalar	*Visual	NONE	NONE	NONE	---
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	---

CONTAMINATION

Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

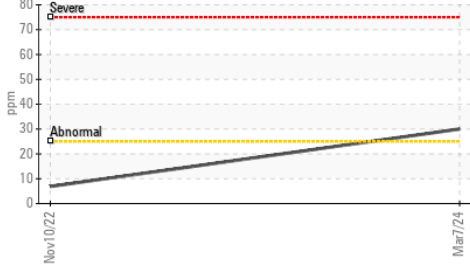
Silicon	ppm	ASTM D5185m	>25	30	7	---
Potassium	ppm	ASTM D5185m	>20	7	1	---
Fuel		WC Method	>5	<1.0	<1.0	---
Water		WC Method	>0.2	NEG	NEG	---
Glycol		WC Method		NEG	NEG	---
Soot %	%	*ASTM D7844	>3	0.5	0.2	---
Nitration	Abs/cm	*ASTM D7624	>20	8.7	7.1	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	23.0	23.4	---
Silt	scalar	*Visual	NONE	NONE	NONE	---
Debris	scalar	*Visual	NONE	NONE	NONE	---
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	---
Appearance	scalar	*Visual	NORML	NORML	NORML	---
Odor	scalar	*Visual	NORML	NORML	NORML	---
Emulsified Water	scalar	*Visual	>0.2	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	>158	4	1	---
Boron	ppm	ASTM D5185m	250	100	281	---
Barium	ppm	ASTM D5185m	10	0	0	---
Molybdenum	ppm	ASTM D5185m	100	61	97	---
Manganese	ppm	ASTM D5185m		<1	<1	---
Magnesium	ppm	ASTM D5185m	450	555	588	---
Calcium	ppm	ASTM D5185m	3000	1664	1484	---
Phosphorus	ppm	ASTM D5185m	1150	961	683	---
Zinc	ppm	ASTM D5185m	1350	1142	748	---
Sulfur	ppm	ASTM D5185m	4250	3089	3020	---
Oxidation	Abs/.1mm	*ASTM D7414	>25	20.4	16.8	---
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	9.3	10.4	---
Visc @ 100°C	cSt	ASTM D445	14.4	13.1	13.5	---

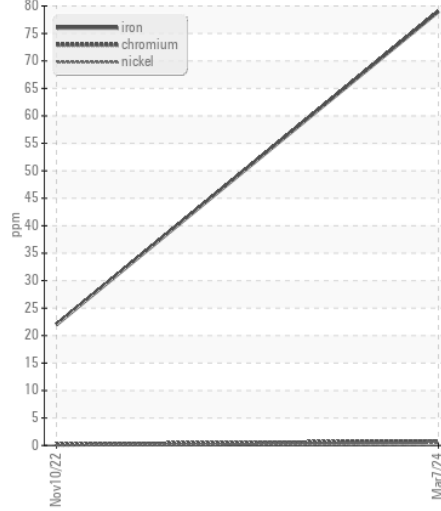
▲ Silicon (ppm)



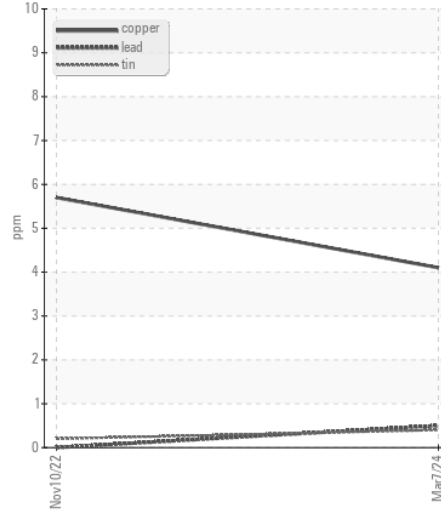
● Aluminum (ppm)



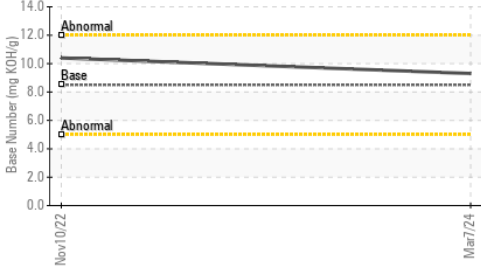
Ferrous Alloys



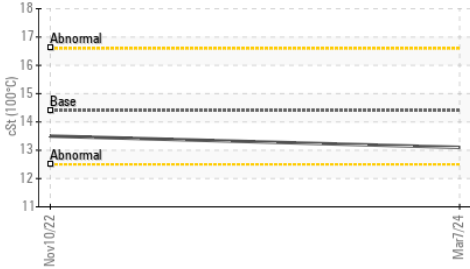
Non-ferrous Metals



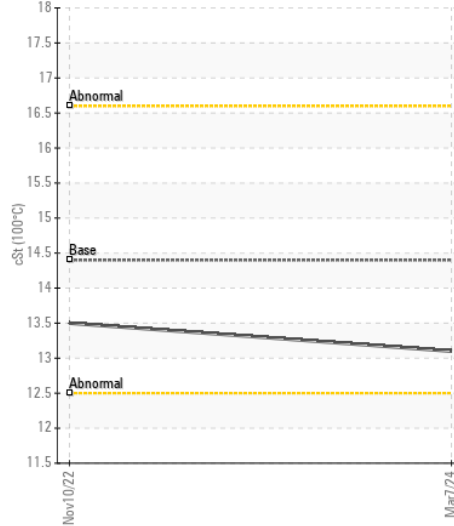
Base Number



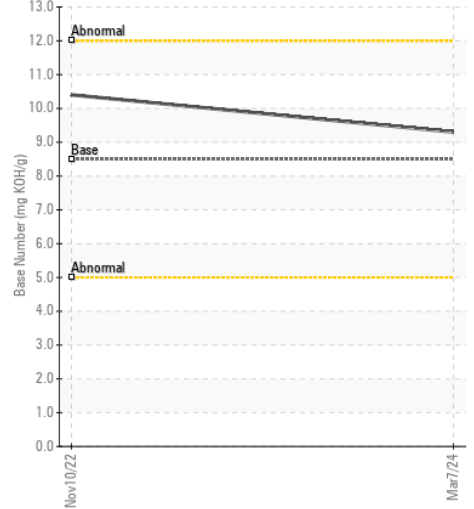
Viscosity @ 100°C



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : WC0746092
 Lab Number : 06121497
 Unique Number : 10930330
 Test Package : FLEET

Received : 18 Mar 2024
 Tested : 19 Mar 2024
 Diagnosed : 21 Mar 2024 - Jonathan Hester

ASSOCIATED GRAIN TERMINALS
 13723 HWY 15
 BRAITHWAITE, LA
 US 70040
 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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F: