



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
TW20 (S/N MP3378)
Component
Diesel Engine
Fluid
VALVOLINE PREMIUM BLUE 2000 15W40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0885556	WC0849043	WC0849051
Sample Date		Client Info		23 May 2024	11 Jan 2024	13 Oct 2023
Machine Age	hrs	Client Info		5099	4220	3598
Oil Age	hrs	Client Info		879	622	284
Filter Age	hrs	Client Info		879	622	284
Oil Changed		Client Info		Changed	Changed	Not Changd
Filter Changed		Client Info		Changed	Changed	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	38	40	16
Chromium	ppm	ASTM D5185m	>20	2	1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	4	8	8
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	2	3	2
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	<1	0
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.

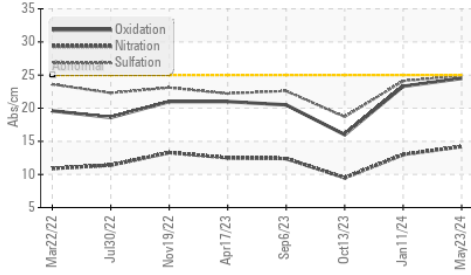
Silicon	ppm	ASTM D5185m	>25	6	7	4
Potassium	ppm	ASTM D5185m	>20	8	22	20
Fuel	%	ASTM D3524	>5	<1.0	<1.0	1.2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.8	0.7	0.3
Nitration	Abs/cm	*ASTM D7624	>20	14.2	13.0	9.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	24.9	24.1	18.7
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

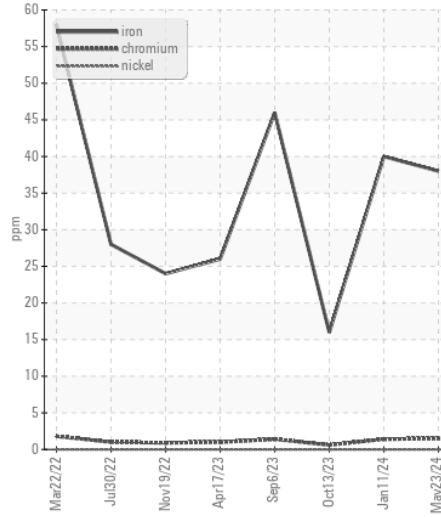
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

Sodium	ppm	ASTM D5185m		3	2	<1
Boron	ppm	ASTM D5185m		18	20	24
Barium	ppm	ASTM D5185m		<1	0	0
Molybdenum	ppm	ASTM D5185m		51	61	62
Manganese	ppm	ASTM D5185m		<1	<1	0
Magnesium	ppm	ASTM D5185m		655	629	644
Calcium	ppm	ASTM D5185m		1164	1103	1098
Phosphorus	ppm	ASTM D5185m		658	637	625
Zinc	ppm	ASTM D5185m		775	802	819
Sulfur	ppm	ASTM D5185m		2635	2550	2847
Oxidation	Abs/.1mm	*ASTM D7414	>25	24.5	23.3	16.0
Base Number (BN)	mg KOH/g	ASTM D2896	10.0	4.4	4.0	6.8
Visc @ 100°C	cSt	ASTM D445	15.2	12.4	12.0	12.1

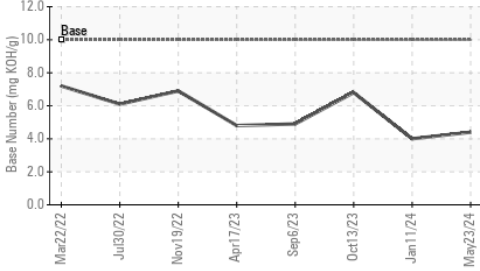
FT-IR (Direct Trend)



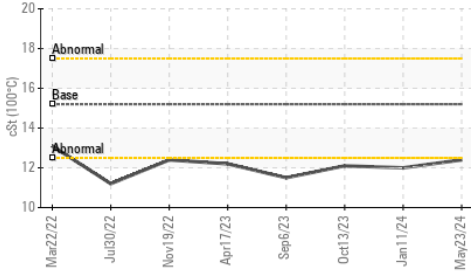
Ferrous Alloys



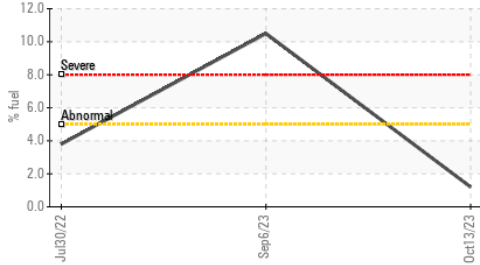
Base Number



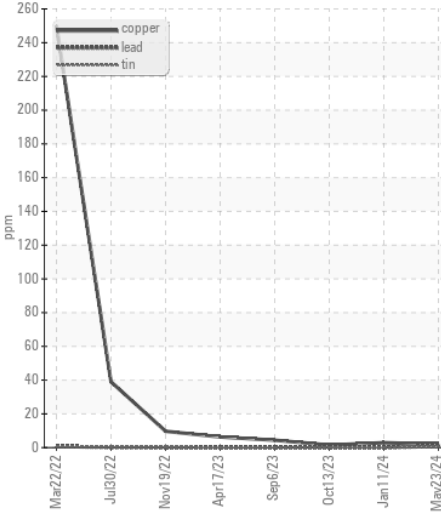
Viscosity @ 100°C



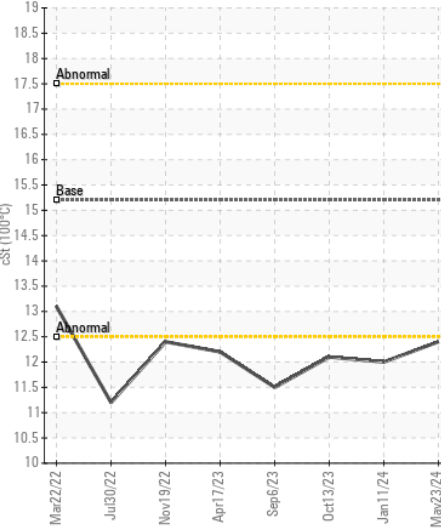
Fuel Dilution



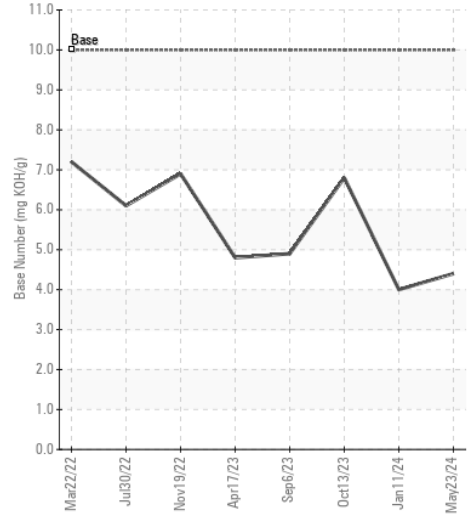
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0885556 **Received** : 29 May 2024
Lab Number : 06194842 **Tested** : 31 May 2024
Unique Number : 11056965 **Diagnosed** : 31 May 2024 - Sean Felton
Test Package : CONST (Additional Tests: FuelDilution, PercentFuel, TBN)

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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)