



OIL ANALYSIS REPORT

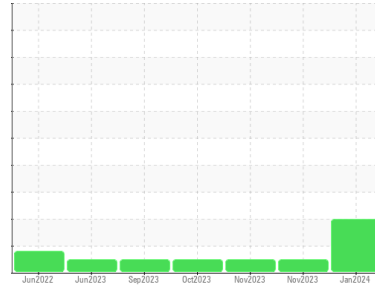
Sample Rating Trend

DEGRADATION

Machine Id
830M

Component
Diesel Engine

Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)



DIAGNOSIS

Recommendation

We advise that you check for faulty combustion, plugged air filters, or aftercoolers. We recommend you service the filters on this component. Resample at the next service interval to monitor. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.

Wear

All component wear rates are normal.

Contamination

There is an abnormal amount of solids and carbon present in the oil.

Fluid Condition

The BN level is low. The condition of the oil is acceptable for the time in service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			GFL0104189	GFL0059307	GFL0059264
Sample Date	Client Info			02 Jan 2024	21 Nov 2023	15 Nov 2023
Machine Age	hrs	Client Info		5914	5725	5624
Oil Age	hrs	Client Info		5914	5725	5624
Oil Changed	Client Info			N/A	N/A	N/A
Sample Status				ABNORMAL	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Water	WC Method	>0.2		NEG	NEG	NEG
Glycol	WC Method			NEG	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	72	70	63
Chromium	ppm	ASTM D5185m	>20	2	2	2
Nickel	ppm	ASTM D5185m	>2	1	2	5
Titanium	ppm	ASTM D5185m	>2	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	5	4	2
Lead	ppm	ASTM D5185m	>40	4	<1	<1
Copper	ppm	ASTM D5185m	>330	3	10	14
Tin	ppm	ASTM D5185m	>15	<1	<1	2
Vanadium	ppm	ASTM D5185m		0	<1	<1
Cadmium	ppm	ASTM D5185m		<1	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	2	1	<1
Barium	ppm	ASTM D5185m	0	8	0	0
Molybdenum	ppm	ASTM D5185m	60	63	58	59
Manganese	ppm	ASTM D5185m	0	1	2	1
Magnesium	ppm	ASTM D5185m	1010	974	854	869
Calcium	ppm	ASTM D5185m	1070	1126	1024	1025
Phosphorus	ppm	ASTM D5185m	1150	952	864	897
Zinc	ppm	ASTM D5185m	1270	1270	1066	1198
Sulfur	ppm	ASTM D5185m	2060	2694	1984	1795

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	11	5	7
Sodium	ppm	ASTM D5185m		6	7	7
Potassium	ppm	ASTM D5185m	>20	4	0	3
Fuel	%	ASTM D3524	>5	<1.0	<1.0	<1.0

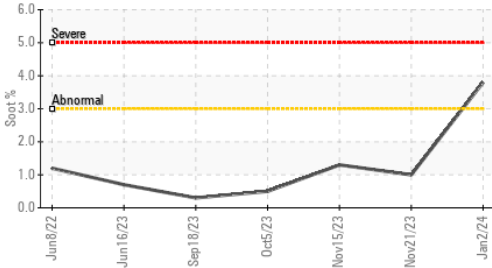
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	▲ 3.8	1	1.3
Nitration	Abs/cm	*ASTM D7624	>20	17.2	10.1	10.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	33.9	22.4	23.5

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	30.2	19.2	21.5
Base Number (BN)	mg KOH/g	ASTM D2896	9.8	▲ 3.8	5.3	5.2

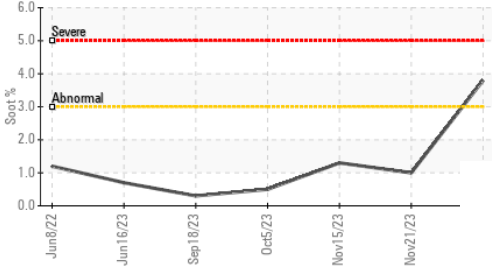


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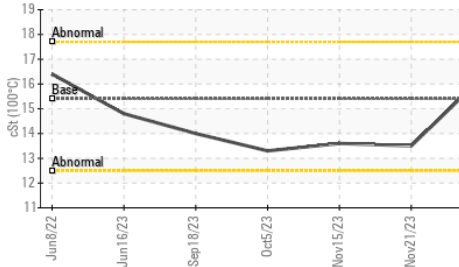
▲ Soot %



▲ Soot %



Viscosity @ 100°C

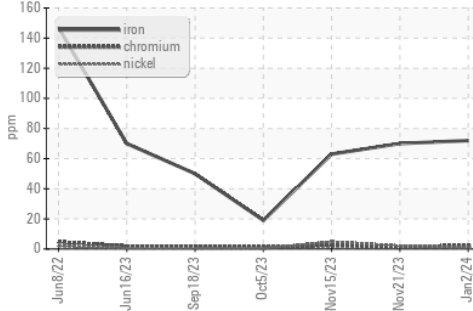


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

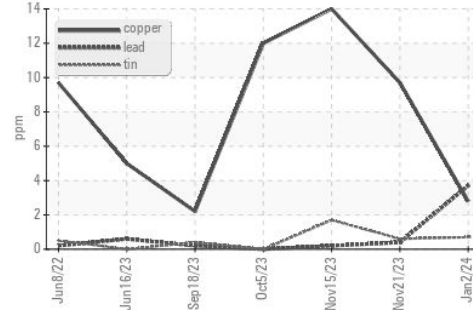
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	16.3	13.5

GRAPHS

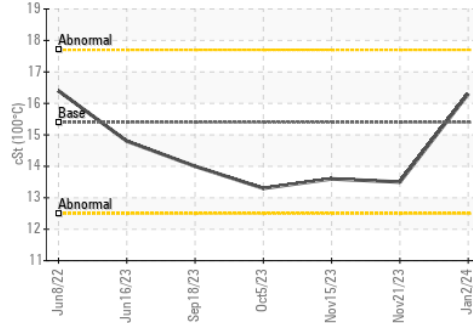
Ferrous Alloys



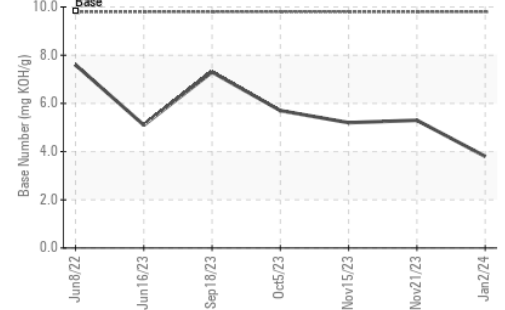
Non-ferrous Metals



Viscosity @ 100°C



▲ Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : GFL0104189
 Lab Number : 06053474
 Unique Number : 10819423
 Test Package : FLEET (Additional Tests: FuelDilution)

GFL Environmental - 410 - Michigan West
 39000 Van Born Rd
 Wayne, MI
 US 48184
 Contact: Belal Dgheish
 bdgheish@gflenv.com
 T: (734)714-2340
 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)