

OIL ANALYSIS REPORT

(BD08631) 912046

Diesel Engine

Fluid

PETRO CANADA DURON SHP 15W40 (46 QTS)

Sample Rating Trend Maj2022 Nov2022 Maj2023 Aug2023 Nov2023 Feb2024



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

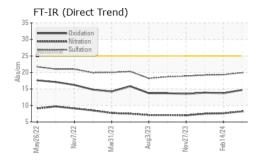
Fluid Condition

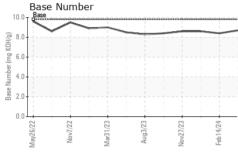
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

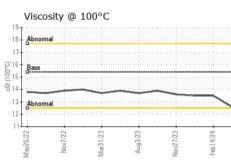
Oil Age Oil Changed Sample Status CONTAMINATIO Fuel Water Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium	ppm	method Client Info Method WC Method WC Method WC Method WC Method MSTM D5185m ASTM D5185m	limit/base >90 >20 >2 >2 >2 >2 >2 >2 >40	Current GFL0110311 19 Apr 2024 7129 580 Changed NORMAL	history1 GFL0110273 14 Feb 2024 6549 593 Changed NORMAL history1 <1.0 NEG NEG history1 21 2 <1 0 0 11	history2 GFL0102819 07 Dec 2023 5956 601 Changed NORMAL history2 <1.0 NEG NEG history2 19 2 0 0 0 11
Sample Date Machine Age Oil Age Oil Changed Sample Status CONTAMINATIO Fuel Water Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium	ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info Client Info Client Info Client Info WC Method WC Method WC Method MC M	>3.0 >0.2 limit/base >90 >20 >2 >2 >2 >2 >2 >2	19 Apr 2024 7129 580 Changed NORMAL	14 Feb 2024 6549 593 Changed NORMAL history1 <1.0 NEG NEG history1 21 2 <1 0 0	07 Dec 2023 5956 601 Changed NORMAL history2 <1.0 NEG NEG 19 2 0 0 0 11
Machine Age Oil Age Oil Age Oil Changed Sample Status CONTAMINATIO Fuel Water Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium	ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info Client Info Method WC Method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >90 >20 >2 >2 >2 >2 >2 >2	7129 580 Changed NORMAL	6549 593 Changed NORMAL history1 <1.0 NEG NEG 21 22 <1 0 0 11	5956 601 Changed NORMAL history2 <1.0 NEG NEG 19 2 0 0 11
Oil Age Properties of the Content of	ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info Method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >90 >20 >2 >2 >2 >2 >2 >2	580 Changed NORMAL current <1.0 NEG NEG current 17 <1 0 0 0 4	593 Changed NORMAL history1 <1.0 NEG NEG history1 21 2 <1 0 0 11	601 Changed NORMAL history2 <1.0 NEG NEG history2 19 2 0 0 11
Oil Changed Sample Status CONTAMINATIO Fuel Water Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium	ppm ppm ppm ppm ppm ppm ppm	method WC Method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >90 >20 >2 >2 >2 >2 >2 >2	Changed NORMAL current <1.0 NEG NEG current 17 <1 0 0 0 4	Changed NORMAL history1 <1.0 NEG NEG history1 21 2 <1 0 0 11	Changed NORMAL history2 <1.0 NEG NEG history2 19 2 0 0 11
Sample Status CONTAMINATIO Fuel Water Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium	ppm ppm ppm ppm ppm ppm ppm ppm	method WC Method WC Method WC Method MC Method ASTM D5185m	>3.0 >0.2 limit/base >90 >20 >2 >2 >2 >2 >2 >2	NORMAL current <1.0 NEG NEG current 17 <1 0 0 0 4	NORMAL history1 <1.0 NEG NEG history1 21 2 <1 0 0 11	NORMAL history2 <1.0 NEG NEG history2 19 2 0 0 11
Fuel Water Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium	ppm ppm ppm ppm ppm ppm ppm ppm	WC Method WC Method WC Method MC Method ASTM D5185m	>3.0 >0.2 limit/base >90 >20 >2 >2 >2 >2 >2 >2	<1.0 NEG NEG current 17 <1 0 0 0 4	<1.0 NEG NEG history1 21 2 <1 0 0 11	<1.0 NEG NEG Nistory2 19 2 0 0 11
Water Glycol WEAR METALS Iron	ppm	WC Method WC Method method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>0.2 limit/base >90 >20 >2 >2 >2 >2 >2 >2 >40	NEG NEG current 17 <1 0 0 0	NEG NEG history1 21 2 <1 0 0	NEG NEG history2 19 2 0 0 0
Glycol WEAR METALS Iron	ppm	WC Method method ASTM D5185m	limit/base >90 >20 >2 >2 >2 >2 >2 >2 >40	NEG current 17 <1 0 0 4	NEG history1 21 2 <1 0 0 11	NEG history2 19 2 0 0 11
WEAR METALS Iron	ppm	method ASTM D5185m	>90 >20 >2 >2 >2 >2 >2 >2 >20 >40	current 17 <1 0 0 0 4	history1 21 2 <1 0 0 11	history2 19 2 0 0 11 11
Iron processing the components of the components	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>90 >20 >2 >2 >2 >2 >2 >2 >20 >40	17 <1 0 0 0 4	21 2 <1 0 0	19 2 0 0 0 11
Chromium process proce	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >2 >2 >2 >2 >2 >20 >40	<1 0 0 0 0	2 <1 0 0	2 0 0 0 0
Nickel pritanium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>2 >2 >2 >2 >20 >40	0 0 0 4	<1 0 0 11	0 0 0 11
Titanium p Silver p Aluminum p Lead p Copper p Tin p Vanadium p	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>2 >2 >20 >40	0 0 4	0 0 11	0 0 11
Silver p Aluminum p Lead p Copper p Tin p Vanadium p	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>2 >20 >40	0	0 11	0
Aluminum p Lead p Copper p Tin p Vanadium p	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>20 >40	4	11	11
Aluminum p Lead p Copper p Tin p Vanadium p	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	>40	-		
Copper p	ppm ppm	ASTM D5185m		n	0	0
Tin K	ppm		>330	U	0	0
Tin K	ppm			2	0	0
	nnm		>15	0	<1	0
		ASTM D5185m		0	0	0
	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron p	ppm	ASTM D5185m	0	5	6	4
Barium p	ppm	ASTM D5185m	0	0	0	0
Molybdenum p	ppm	ASTM D5185m	60	57	55	58
Manganese p	ppm	ASTM D5185m	0	<1	<1	0
Magnesium p	ppm	ASTM D5185m	1010	888	813	843
Calcium	ppm	ASTM D5185m	1070	1025	934	966
Phosphorus p	ppm	ASTM D5185m	1150	972	915	949
Zinc	ppm	ASTM D5185m	1270	1169	1118	1138
Sulfur p	ppm	ASTM D5185m	2060	3183	2727	3222
CONTAMINANT	S	method	limit/base	current	history1	history2
Silicon p	ppm	ASTM D5185m	>25	3	2	2
Sodium p	ppm	ASTM D5185m		1	2	3
Potassium p	ppm	ASTM D5185m	>20	8	27	26
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>6	1	0.9	0.8
Nitration /	Abs/cm	*ASTM D7624	>20	8.2	7.6	7.5
	Abs/.1mm	*ASTM D7415	>30	19.9	19.3	19.2
FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
Oxidation A	Abs/.1mm	*ASTM D7414	>25	14.7	13.7	13.9
		ASTM D2896	9.8	8.7	8.4	8.6



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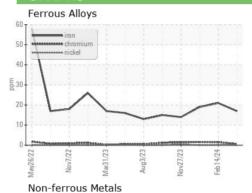


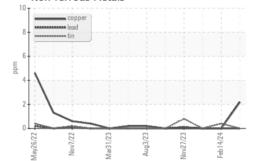


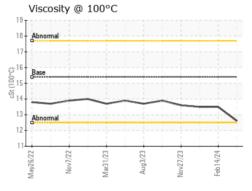
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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
Free Water	scalar	*Visual		NEG	NEG	NEG

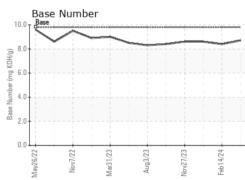
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.6	13.5	13.5

GRAPHS













Certificate 12367

Laboratory Sample No.

: GFL0110311 Lab Number : 06158375

Unique Number : 10993798 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 23 Apr 2024

Tested : 24 Apr 2024 Diagnosed : 24 Apr 2024 - Wes Davis

160 Hughes Dr Traverse City, MI US 49686

Contact: GARY BREWER

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)

GFL Environmental - 622 - Traverse City Hauling

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