

OIL ANALYSIS REPORT

Sample Rating Trend

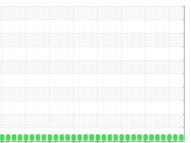
NORMAL



MACK 920016-192537 Component

Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (--- LTR)



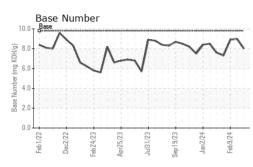


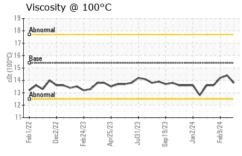
5002 0....002 Le2022 Au-2023 Lu2022 Ca-2023 La-2024 Le2024

Recommendation Sample Number Client Info GFL0115613 GFL0115512 GFL0112522 GFL0112522 GFL0112522 GFL0112513 GFL0112522 GFL0112513 GFL0112522 GFL0112513 GFL0112513 <thgfl0112513< th=""> GFL012513 G</thgfl0112513<>	DIAGNOSIS	SAMPLE INFOR			limit/base	Jul2023 Sep2023 Jan2024 Current	history1	history2
Resample at the next service interval to monitor. Sample Date Interval to monitor. TriA6 11620 11462 11462 Al component wear rates are normal. Oil Rhanged hrs Client Info 376 256 32 Di Rhanged hrs Client Info 376 256 32 11462 There is no indication of any contamination in the d. introbasis Client Info NORMAL NORMAL NORMAL The Nr costi indicates that there is suitable alkalinity remaining in the oil. The condition of the alkalinity remaining in the oil. The condition of the condition of the alkalinity remaining in the oil. The condition of the condition of the alkalinity remaining in the oil. The condition of					minubase			GFL0088637
Ware Age ins Cient Info 11746 1162 1162 All component wear rates are normal. Client Info 376 256 32 Contamination Nor Changed Info Nor Changed								09 Feb 2024
Oil Age No 376 256 327 Id component wear rates are normal. Oil Ange No Chient Info 376 256 327 There is no indication of any contamination in the oil. Sample Status No		•	bro					
Contamination Oli Changed Client Info Not Change Not Change Not Change Not Change The so indication of any contamination in the sit. Sample Status Imbody Imbody Nor MAL NoRMAL <		-						
Sample Status NORMAL		Ū	1115					
CONTAMINATION method limbbas current History1 H The DN result indicates that there is suitable alkalinity remaining in the oil. The condition of the alkalinity remaining remain		-		Client Inio		-		
Fuel Condition The Sult indicates that there is suitable Fuel WC Method >3.0 <1.0 <1.4 Water WC Method So.0 <1.0	-							
Fuel WC Method >0.0 <1.0		CONTAMINAT	ION	method	limit/base	current	history1	history2
Bill is suitable for further service. Glycol WC Method NEG NEG NEG Veran Unit is suitable for further service. method limit/base current history1 history		Fuel				<1.0	<1.0	<1.0
WEAR METALS method lim/base current history1 hit Iron ppm ASTM 05185n >12.0 8 0 4 Chromium ppm ASTM 05185n >2.0 0 0 -1 Nickel ppm ASTM 05185n >2.0 0 0 -1 Silver ppm ASTM 05185n >2 0 0 -1 Aluminum ppm ASTM 05185n >2 0 0 -1 0 0 Aluminum ppm ASTM 05185n >20 -1 1 0 0 -1 0 0 -1 0 0 -1 0	alkalinity remaining in the oil. The condition of the	Water		WC Method	>0.2	NEG	NEG	NEG
Iron ppm ASTM D5186m >12.0 8 0 4 Chromium ppm ASTM D5186m >20 0 0 <1 Nickel ppm ASTM D5186m >5 <1 0 0 <1 Titanium ppm ASTM D5186m >2 0 0 0 <1 Silver ppm ASTM D5186m >2 0 0 0 0 Lead ppm ASTM D5186m >20 <1 0 2 0 0 <1 0 Vanadium ppm ASTM D5186m >20 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 0 2 4 0 <1 0 0 2 2 2 <td>il is suitable for further service.</td> <td>Glycol</td> <td></td> <td>WC Method</td> <td></td> <th>NEG</th> <td>NEG</td> <td>NEG</td>	il is suitable for further service.	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 0 0 <1 Nickel ppm ASTM D5185m >5 <1		WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5165m >5 <1 0 0 Titanium ppm ASTM D5165m >2 0 0 <1		Iron	ppm	ASTM D5185m	>120	8	0	4
Titanium ppm ASTM D5185m >2 0 0 <1 Silver ppm ASTM D5185m >2 0 0 0 Auminum ppm ASTM D5185m >20 0 0 0 Lead ppm ASTM D5185m >40 0 <1 0 <1 0 Copper ppm ASTM D5185m >40 0 <1 0 <1 0 Vanadium ppm ASTM D5185m >40 0 <1 0 <1 0 Vanadium ppm ASTM D5185m >15 0 <1 0 12 0 0 0 12 0 0 0 12 0 0 0 12 0 0 12 0 0 0 12 13 0 0 0 12 13 <		Chromium	ppm	ASTM D5185m	>20	0	0	<1
Titanium ppm ASTM D5185m >2 0 0 <1 Silver ppm ASTM D5185m >20 0 0 0 Auminum ppm ASTM D5185m >20 <1		Nickel	ppm	ASTM D5185m	>5	<1	0	0
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 <1		Titanium		ASTM D5185m	>2	0	0	<1
Aluminum ppm ASTM D5185m >20 <1 1 2 Lead ppm ASTM D5185m >40 0 <1		Silver	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >440 0 <1 0 Copper ppm ASTM D5185m >330 <1		Aluminum		ASTM D5185m	>20	<1	1	2
Copper ppm ASTM D5185m >330 <1 0 <1 Tin ppm ASTM D5185m >15 0 <1		Lead					<1	0
Tin ppm ASTM D5185m >15 0 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 history1 Boron ppm ASTM D5185m 0 2 4 0 Barium ppm ASTM D5185m 0 0 0 12 Molybdenum ppm ASTM D5185m 0 0 <1		Copper				<1	0	<1
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 hil Boron ppm ASTM D5185m 0 2 4 0 Barium ppm ASTM D5185m 0 0 0 112 Molybdenum ppm ASTM D5185m 0 0 0 12 Magnesium ppm ASTM D5185m 0 0 -1 0 Magnesium ppm ASTM D5185m 1010 1020 952 914 Calcium ppm ASTM D5185m 1070 1113 1049 106 Phosphorus ppm ASTM D5185m 1070 11307 1248 117 Sulfur ppm ASTM D5185m 1270 1307 1248 117 Sulfur ppm ASTM D5185m 2260 3 3 4<						0	<1	0
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 2 4 0 Barium ppm ASTM D5185m 0 0 0 0 12 Molybdenum ppm ASTM D5185m 60 59 57 58 Manganese ppm ASTM D5185m 0 0 0 0 0 Magnesium ppm ASTM D5185m 1010 1020 952 914 Calcium ppm ASTM D5185m 1070 1113 1049 106 Phosphorus ppm ASTM D5185m 1070 1113 1049 106 Phosphorus ppm ASTM D5185m 1070 1113 1049 106 Solitor ppm ASTM D5185m 1270 1307 1248 117 Sulfaro ppm ASTM D5185m <td></td> <td>Vanadium</td> <td></td> <td></td> <td></td> <th></th> <td>0</td> <td>0</td>		Vanadium					0	0
Boron ppm ASTM D5185m 0 2 4 0 Barium ppm ASTM D5185m 0 0 0 12 Molybdenum ppm ASTM D5185m 60 59 57 58 Manganese ppm ASTM D5185m 0 0 -1 0 Magnesium ppm ASTM D5185m 1010 1020 952 914 Calcium ppm ASTM D5185m 1010 1020 952 914 Calcium ppm ASTM D5185m 1070 1113 1049 106 Phosphorus ppm ASTM D5185m 1070 1087 1058 112 Zinc ppm ASTM D5185m 1270 1307 1248 117 Sulfur ppm ASTM D5185m 2060 3709 3636 366 Sodium ppm ASTM D5185m 22 3 3 4 Sodium ppm ASTM D5185m >20 2 0 2 Potassium ppm ASTM D5185m <t< td=""><td></td><td>Cadmium</td><td></td><td></td><td></td><th>0</th><td></td><td>0</td></t<>		Cadmium				0		0
Barium ppm ASTM D5185m 0 0 0 12 Molybdenum ppm ASTM D5185m 60 59 57 58 Manganese ppm ASTM D5185m 0 0 <1		ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 59 57 58 Manganese ppm ASTM D5185m 0 0 <10 0 Magnesium ppm ASTM D5185m 1010 1020 952 914 Calcium ppm ASTM D5185m 1010 1020 952 914 Calcium ppm ASTM D5185m 1070 1113 1049 1066 Phosphorus ppm ASTM D5185m 1070 1087 1058 112 Zinc ppm ASTM D5185m 1270 1307 1248 1177 Sulfur ppm ASTM D5185m 2060 3709 3636 386 CONTAMINANTS method limit/base current history1 hit Silicon ppm ASTM D5185m >20 Q <1 2 Potassium ppm ASTM D5185m >20 Q <1 2 NFRA-RED method limit/base current history1 hit Soot % % 'ASTM D784		Boron	ppm	ASTM D5185m	0	2	4	0
Manganesse ppm ASTM D5185m 0 0 <1 0 Magnesium ppm ASTM D5185m 1010 1020 952 914 Calcium ppm ASTM D5185m 1070 1113 1049 1066 Phosphorus ppm ASTM D5185m 1070 1113 1049 1066 Phosphorus ppm ASTM D5185m 1120 1087 1058 1122 Zinc ppm ASTM D5185m 1270 1307 1248 1117 Sulfur ppm ASTM D5185m 2060 3709 3636 386 CONTAMINANTS method limit/base current history1 hit Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >20 0 <11		Barium	ppm	ASTM D5185m	0	0	0	12
Manganesse ppm ASTM D5185m 0 0 <1 0 Magnesium ppm ASTM D5185m 1010 1020 952 914 Calcium ppm ASTM D5185m 1070 1113 1049 1066 Phosphorus ppm ASTM D5185m 1070 1113 1049 1066 Phosphorus ppm ASTM D5185m 1120 1087 1058 1122 Zinc ppm ASTM D5185m 1270 1307 1248 1117 Sulfur ppm ASTM D5185m 2060 3709 3636 386 CONTAMINANTS method limit/base current history1 hit Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >20 0 <11		Molybdenum	ppm	ASTM D5185m	60	59	57	58
Magnesium ppm ASTM D5185m 1010 1020 952 914 Calcium ppm ASTM D5185m 1070 1113 1049 1066 Phosphorus ppm ASTM D5185m 1150 1087 1058 112 Zinc ppm ASTM D5185m 1270 1307 1248 117 Sulfur ppm ASTM D5185m 2060 3709 3636 3866 CONTAMINANTS method limit/base current history1 history1 history1 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >20 0 <1		Manganese	ppm	ASTM D5185m	0	0	<1	0
Calcium ppm ASTM D5185m 1070 1113 1049 1060 Phosphorus ppm ASTM D5185m 1150 1087 1058 112 Zinc ppm ASTM D5185m 1270 1307 1248 117 Sulfur ppm ASTM D5185m 2060 3709 3636 386 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >20 0 <1		-	ppm	ASTM D5185m	1010	1020	952	914
Phosphorus ppm ASTM D5185m 1150 1087 1058 112 Zinc ppm ASTM D5185m 1270 1307 1248 117 Sulfur ppm ASTM D5185m 2060 3709 3636 386 CONTAMINANTS method limit/base current history1 history1 history1 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >20 0 <112 0 Potassium ppm ASTM D5185m >20 0 <11 2 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >4 0.5 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 7.3 4.5 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 17.2 17.4 <td></td> <td>-</td> <td></td> <td>ASTM D5185m</td> <td>1070</td> <th>1113</th> <td>1049</td> <td>1065</td>		-		ASTM D5185m	1070	1113	1049	1065
Zinc ppm ASTM D5185m 1270 1307 1248 117 Sulfur ppm ASTM D5185m 2060 3709 3636 386 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m >20 0 <1								1121
SulfurppmASTM D5185m206037093636386CONTAMINANTSmethodlimit/basecurrenthistory1history1SiliconppmASTM D5185m>25334SodiumppmASTM D5185m>2020PotassiumppmASTM D5185m>200<1		1						1175
Silicon ppm ASTM D5185m >25 3 3 4 Sodium ppm ASTM D5185m C 2 2 0 Potassium ppm ASTM D5185m >20 0 <1 2 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >4 0.5 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 7.3 4.5 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 17.2 17.4						3709		3864
Sodium ppm ASTM D5185m 2 2 0 Potassium ppm ASTM D5185m<>20 0 <1		CONTAMINAN	NTS	method	limit/base	current	history1	history2
Sodium ppm ASTM D5185m 2 2 0 Potassium ppm ASTM D5185m >20 0 <1		Silicon	ppm	ASTM D5185m	>25	3	3	4
Potassium ppm ASTM D5185m >20 0 <1 2 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >4 0.5 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 7.3 4.5 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 17.2 17.5		Sodium		ASTM D5185m		2		0
Soot % *ASTM D7844 >4 0.5 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 7.3 4.5 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 17.2 17.5		Potassium	ppm	ASTM D5185m	>20	0		2
Soot % % *ASTM D7844 >4 0.5 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 7.3 4.5 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 17.2 17.5		INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 7.3 4.5 4.9 Sulfation Abs/.1mm *ASTM D7415 >30 18.3 17.2 17.5			%	*ASTM D7844	>4	0.5	0.1	0.2
Sulfation Abs/.1mm *ASTM D7415 >30 18.3 17.2 17.5								
FLUID DEGRADATION method limit/base current history1 history1								17.5
		FLUID DEGRA	DATION	met <u>hod</u>	limi <u>t/base</u>	current	history1	history2
Oxidation Abs/.1mm *ASTM D7414 >25 14.2 13.4 13.4								13.2
								8.9

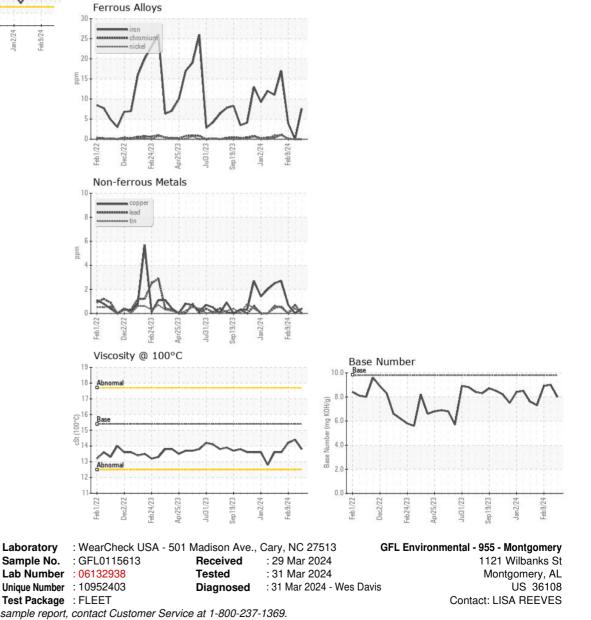


OIL ANALYSIS REPORT





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 PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	14.4	14.2
GRAPHS						





 Certificate L2367
 Test Package
 : FLEET

 To discuss this sample report, contact Customer Service at 1-800-237-1369.
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 * - 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)