

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Machine Id 722016-305155

Component Diesel Engine Fluid

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

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.

SAMPLE INFORM	ΛΑΤΙΟΝ	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0046121	GFL0039527	GFL0039517
Sample Date		Client Info		31 Oct 2023	17 Feb 2023	17 Nov 2022
Machine Age	hrs	Client Info		0	450	450
Oil Age	hrs	Client Info		250	0	450
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	ATTENTION	ABNORMAL
		mothod	limit/bass	ourropt	history1	biotory?
CONTAMINATI	UN			current	TIISTOLY I	Thistory2
Fuei		WC Wethod	>3.0	<1.0	<1.0	2.1
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	23	18	33
Chromium	ppm	ASTM D5185m	>20	<1	0	1
Nickel	ppm	ASTM D5185m	>5	12	12	<u> </u>
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	2	<1	1
Lead	ppm	ASTM D5185m	>40	<1	<1	6
Copper	ppm	ASTM D5185m	>330	8	49	127
Tin	ppm	ASTM D5185m	>15	1	1	3
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current	history1 2	history2 4
ADDITIVES Boron Barium	ppm	method ASTM D5185m ASTM D5185m	limit/base 0 0	current 1 <1	history1 2 0	history2 4 0
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	current 1 <1 60	history1 2 0 57	history2 4 0 47
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0	current 1 <1 60 <1	history1 2 0 57 1	history2 4 0 47 3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010	current 1 <1 60 <1 848	history1 2 0 57 1 736	history2 4 0 47 3 706
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070	current 1 <1 60 <1 848 1071	history1 2 0 57 1 736 1227	history2 4 0 47 3 706 1348
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150	current 1 <1 60 <1 848 1071 928	history1 2 0 57 1 736 1227 779	history2 4 0 47 3 706 1348 897
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270	current 1 <1 60 <1 848 1071 928 1165	history1 2 0 57 1 736 1227 779 1085	history2 4 0 47 3 706 1348 897 1158
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060	current 1 <1 60 <1 848 1071 928 1165 2835	history1 2 0 57 1 736 1227 779 1085 2556	history2 4 0 47 3 706 1348 897 1158 2613
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 60 0 1010 1070 1150 1270 2060	current 1 <1 60 <1 848 1071 928 1165 2835 current	history1 2 0 57 1 736 1227 779 1085 2556 history1	history2 4 0 47 3 706 1348 897 1158 2613 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current 1 <1 60 <1 848 1071 928 1165 2835 current 11	history1 2 0 57 1 736 1227 779 1085 2556 history1 18	history2 4 0 47 3 706 1348 897 1158 2613 history2 ▲ 66
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current 1 <1 60 <1 848 1071 928 1165 2835 current 11 2	history1 2 0 57 1 736 1227 779 1085 2556 history1 18 3	history2 4 0 47 3 706 1348 897 1158 2613 history2 ▲ 66 12
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	imit/base 0 0 60 0 1010 1070 1150 1270 2060 imit/base >25 >20	current 1 <1 60 <1 848 1071 928 1165 2835 current 11 2 2	history1 2 0 57 1 736 1227 779 1085 2556 history1 18 3 2	history2 4 0 47 3 706 1348 897 1158 2613 history2 ▲ 66 12 10
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	current 1 <1 60 <1 848 1071 928 1165 2835 current 11 2 2 current	history1 2 0 57 1 736 1227 779 1085 2556 history1 18 3 2 history1	history2 4 0 47 3 706 1348 897 1158 2613 history2 ▲ 66 12 10 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm	ASTM D5185m ASTM D5185m	imit/base 0 0 60 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base	current 1 <1 60 <1 848 1071 928 1165 2835 current 11 2 current 0.4	history1 2 0 57 1 736 1227 779 1085 2556 history1 18 3 2 history1 0.3	history2 4 0 47 3 706 1348 897 1158 2613 history2 ▲ 66 12 10 history2 0 3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	method ASTM D5185m	imit/base 0 0 60 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >20	current 1 <1 60 <1 848 1071 928 1165 2835 current 11 2 current 0.4 10.3	history1 2 0 57 1 736 1227 779 1085 2556 history1 18 3 2 history1 0.3 10.4	history2 4 0 47 3 706 1348 897 1158 2613 history2 ▲ 66 12 10 history2 0.3 11 8
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	method ASTM D5185m	imit/base 0 0 60 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >4 >20 >30	current 1 <1 60 <1 848 1071 928 1165 2835 current 11 2 current 0.4 10.3 22.3	history1 2 0 57 1 736 1227 779 1085 2556 history1 18 3 2 history1 0.3 10.4	history2 4 0 47 3 706 1348 897 1158 2613 history2 66 12 10 history2 0.3 11.8 24.7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	current 1 <1 60 <1 848 1071 928 1165 2835 current 11 2 2 current 0.4 10.3 22.3	history1 2 0 57 1 736 1227 779 1085 2556 history1 18 3 2 history1 0.3 10.4 21.6	 history2 4 0 47 3 706 1348 897 1158 2613 history2 66 12 10 history2 0.3 11.8 24.7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D7185M *ASTM D7624 *ASTM D7415 method	imit/base 0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >4 >20 >30 imit/base	current 1 <1 60 <1 848 1071 928 1165 2835 current 11 2 current 0.4 10.3 22.3 current	history1 2 0 57 1 736 1227 779 1085 2556 history1 18 3 2 history1 0.3 10.4 21.6 history1	history2 4 0 47 3 706 1348 897 1158 2613 history2 66 12 10 history2 0.3 11.8 24.7 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm Abs /.1mm	method ASTM D5185m ASTM D7180 ASTM D71415 *ASTM D7414	imit/base 0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >4 >20 30 imit/base >25	current 1 <1 60 <1 848 1071 928 1165 2835 current 11 2 current 0.4 10.3 22.3 current 18.8	history1 2 0 57 1 736 1227 779 1085 2556 history1 18 3 2 history1 0.3 10.4 21.6 history1 18.3	history2 4 0 47 3 706 1348 897 1158 2613 history2 66 12 10 history2 0.3 11.8 24.7 history2 21.1



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Jan23/19

Mar27/20

OIL ANALYSIS REPORT



lec29/71

Nov17/22

Feb17/23

White Metal		mounou	innin/base	current	Thotory I	mator
	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	NORM
Odor	scalar	*Visual	NORML	NORML	NORML	NORM
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	histor
Visc @ 100°C	cSt	ASTM D445	15.4	12.8	▲ 12.1	▲ 10.76
GRAPHS						
Ferrous Allovs						
n23/19 - ar27/20 -	Vov17/22	Feb17/23	0ct31/23			
Non-ferrous Meta	ls					
Non-ferrous Metal	ls					
Non-ferrous Metal						
Non-ferrous Meta	ls					
Non-ferrous Meta	ls					
Non-ferrous Meta						
Non-ferrous Meta	ls	53	¹²³			
Fr Windowski state Windowski s	IS CULING	teb 17/23	0c31/23			
Non-ferrous Meta	IS	Feb17/23	0ct31/23			
Non-ferrous Meta	Is CZL/IvoN	Feb17/23	0001/133	Base Number	r	
Non-ferrous Meta	IS ZZLINON	Feb17/23	EZI(EPO	Base Number	r	
Non-ferrous Meta	IS ZZLLINON	Feb17/23	10.0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Number	r	
Non-ferrous Meta	IS ZZLINOW	Feb17/23	0031/23 0031/23 0031/23	Base Number	r	
Non-ferrous Meta	IS ZZLLINON	Feb17/23	00431/23 6.0.1 004901 004901 004901	Base Number	r	

0.0

Jan 23/19



 Certificate 12367
 Test Package
 : FLEET

 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)

Dec29/21-

Mar27/20

Nov17/22 -

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received

Diagnosed

Feb17/23 -

Diagnostician : Don Baldridge

0ct31/23 .

: 13 Nov 2023

: 15 Nov 2023

11-10-9-

Laboratory Sample No.

Lab Number

Unique Number : 10738931

Jan23/19

: GFL0046121

: 06005169

GFL Environmental - 834 - Chillicothe Hauling 201 Mitchell Road Chillicothe, MO US 64601 Contact: Carl Shields cshields@gflenv.com T: (660)752-5517 06:2012) F:

Nov17/22

Feb17/23 -

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Dec29/21-

Mar27/20