

OIL ANALYSIS REPORT



Machine Id

428135 Component Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. (Customer Sample Comment: Sample only, out of service)

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 acceptable for the time in service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0116294	GFL0116264	
Sample Date		Client Info		21 May 2024	14 Mar 2024	
Machine Age	mls	Client Info		409781	409781	
Oil Age	mls	Client Info		409781	0	
Oil Changed		Client Info		Not Changd	Not Changd	
Sample Status				NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	6	9	
Chromium	ppm	ASTM D5185m	>20	0	<1	
Nickel	ppm	ASTM D5185m	>4	0	0	
Titanium	ppm	ASTM D5185m		0	<1	
Silver	ppm	ASTM D5185m	>3	<1	0	
Aluminum	ppm	ASTM D5185m	>20	2	2	
Lead	ppm	ASTM D5185m	>40	0	0	
Copper	ppm	ASTM D5185m	>330	0	<1	
Tin	ppm	ASTM D5185m	>15	<1	0	
Vanadium	ppm	ASTM D5185m		0	<1	
Cadmium	ppm	ASTM D5185m		0	0	
				U	0	
ADDITIVES	•••	method	limit/base	current	history1	history2
ADDITIVES Boron	ppm		limit/base	-	-	history2
		method		current	history1	
Boron	ppm	method ASTM D5185m	0	current 82	history1 68	
Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 82 0	history1 68 0	
Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 82 0 63	history1 68 0 69	
Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 82 0 63 <1	history1 68 0 69 <1	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 82 0 63 <1 551	history1 68 0 69 <1 612	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current 82 0 63 <1 551 1513	history1 68 0 69 <1 612 1670	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 82 0 63 <1 551 1513 744	history1 68 0 69 <1 612 1670 783	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current 82 0 63 <1 551 1513 744 869	history1 68 0 69 <1 612 1670 783 942	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 82 0 63 <1 551 1513 744 869 2832	history1 68 0 69 <1 612 1670 783 942 3256	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current 82 0 63 <1 551 1513 744 869 2832 current	history1 68 0 69 <1 612 1670 783 942 3256 history1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	current 82 0 63 <1 551 1513 744 869 2832 current 5	history1 68 0 69 <1 612 1670 783 942 3256 history1 5	 history2
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	0 0 60 1010 1070 1150 1270 2060 limit/base	current 82 0 63 <1 551 1513 744 869 2832 current 5 9	history1 68 0 69 <1 612 1670 783 942 3256 history1 5 10	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Jimit/base >25	current 82 0 63 <1 551 1513 744 869 2832 current 5 9 19	history1 68 0 69 <1 612 1670 783 942 3256 history1 5 10 20	 history2
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	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20	current 82 0 63 <1 551 1513 744 869 2832 current 5 9 19 current	history1 68 0 69 <1 612 1670 783 942 3256 history1 5 10 20 history1	 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	current 82 0 63 <1 551 1513 744 869 2832 current 5 9 19 current 0.1	history1 68 0 69 <1 612 1670 783 942 3256 history1 5 10 20 history1 0.1	 history2 history2 history2
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 ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	current 82 0 63 <1 551 1513 744 869 2832 current 5 9 19 current 0.1 8.0	history1 68 0 69 <1 612 1670 783 942 3256 history1 5 10 20 history1 0.1 8.0	history2 history2 history2
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	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20	current 82 0 63 <1 551 1513 744 869 2832 current 5 9 19 current 0.1 8.0 21.0	history1 68 0 69 <1 612 1670 783 942 3256 history1 5 10 20 history1 0.1 8.0 21.3	 history2 history2 history2
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 TS ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >3 >20 >30 3 imit/base	current 82 0 63 <1 551 1513 744 869 2832 current 5 9 19 current 0.1 8.0 21.0 current	history1 68 0 69 <1 612 1670 783 942 3256 history1 5 10 20 history1 0.1 8.0 21.3 history1	 history2 history2 history2 history2



OIL ANALYSIS REPORT

Oxidation		VISUAL		method	limit/base	current		history2
30 - Nitration		White Metal	scalar	*Visual	NONE	NONE	NONE	
25 - Sulfation		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
5 20 -		Precipitate	scalar	*Visual	NONE	NONE	NONE	
8		Silt	scalar	*Visual	NONE	NONE	NONE	
10 -		Debris	scalar	*Visual	NONE	NONE	NONE	
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
4/24	1/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	
Mar14/24	May21/24	Odor	scalar	*Visual	NORML	NORML	NORML	
Base Number		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
10.0 Base Number		Free Water	scalar	*Visual		NEG	NEG	
8.0 6.0 4.0		FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
6.0		Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.7	
4.0		GRAPHS						
2.0		Ferrous Alloys						
Wai-14/24 0.0	NC(1C,	8						
Viscosity @ 100°C	_	6			<u> </u>			
19 18 Abnormal		4						
17-		2						
© 16 - Base 0 15 -								
3 14		24			24			
13 - Abnormal		Mar14/24			May21/24			
12		∠ Non-ferrous Meta	le		2			
11 1 + 2 2+	A CI 1	¹⁰ T						
Mar14/24		copper						
		° =tin						
		6						
		E dd						
		*						
		2-						
		2						
					1/24			
		2			May21/24			
		Viscosity @ 100°	C		May21/24	Base Number		
		Viscosity @ 100°	C		May21	Base Number		
		Viscosity @ 100°	C		Z/BW	Base		
		Viscosity @ 100° ¹⁹ ¹⁸ ¹⁸ ¹⁷	C		Z/BW	Base		
		Viscosity @ 100° ¹⁹ ¹⁸ ¹⁸ ¹⁷	C		Z/BW	Base		
		Viscosity @ 100° ¹⁹ ¹⁸ ¹⁸ ¹⁷	C		Z/BW	Base		
		Viscosity @ 100° Viscosity @ 100° Abnomal 17 5000 15 14 12	C		Z/BW	Base	-	
		Viscosity @ 100° ¹⁹ Abnomal ¹⁷ ¹⁹ ¹⁹ ¹⁹ ¹⁰ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁰ ¹⁹ ¹⁰ ¹⁹ ¹⁰ ¹¹ ¹	C		0.0 8.0 6.0 9.0 9.0 9.0 9.0			
		Viscosity @ 100° Viscosity @ 100° Abnomal 17 5000 15 14 12	C		(0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,			
		Viscosity @ 100° ¹⁹ ¹⁹ ¹⁰	C		(0)HOX (0) Base Number 4.0 Base 2.0 0.0			1/24
		Viscosity @ 100° ¹⁹ Abnomal ¹⁷ ¹⁹ ¹⁹ ¹⁹ ¹⁰ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁰ ¹⁹ ¹⁰ ¹⁹ ¹⁰ ¹¹ ¹			(0,110,0 (0,110,0)) (0,110,0)) (0,110,0) (0,110,0)) (0,110,0) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,110,0)) (0,10,0			Max21/24
Certificate L2367 To discuss this s	Laboratory Sample No. Lab Number Unique Number Test Package sample report,	Viscosity @ 100°0 ¹⁹ ¹⁹ ¹⁰	01 Madisc Rece Teste Diagr	ived : 24 ed : 29 nosed : 29 800-237-1368	2/eW 10.0	GFL Env	vironmental - 625 - 1 248 Contact: G	

Submitted By: also GFL632 and GFL638 - Glenda Standen