

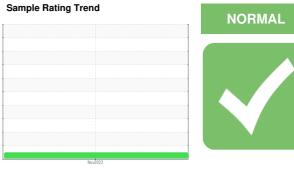
OIL ANALYSIS REPORT

KENWORTH 422034

Component

Diesel Engine

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



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

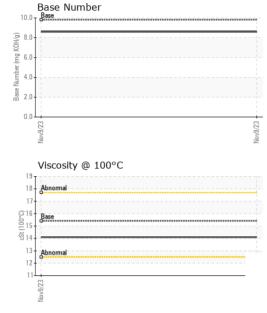
Fluid Condition

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

SAMPLE INFORMATION Sample Number Sample Date Machine Age hrs Oil Age hrs Oil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm Molybdenum ppm Molybdenum ppm Manganese ppm Manganese ppm Calcium ppm Phosphorus ppm Sulfur ppm Sulfur ppm Calcium ppm Calcium ppm Calcium ppm Sulfur ppm Calcium ppm Calcium ppm Calcium ppm Sulfur ppm Calcium ppm Calcium ppm Calcium ppm Sulfur ppm Sulfur ppm Sulfur ppm Sodium ppm	Client Info Method WC Method WC Method ASTM D5185m	limit/base >5 limit/base >5 limit/base >100 >20 >4 >3 >20 >40 >330 >15	current GFL0099159 09 Nov 2023 0 0 N/A NORMAL current <1.0 NEG current 62 2 0 <1 0 3 1 <1 0 0 0	history1 history1 history1	history2 history2 history2
Sample Date Machine Age hrs Oil Age hrs Oil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Calcium ppm Phosphorus ppm Sulfur ppm Sulfur ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	Client Info Client Info Client Info Client Info Client Info Client Info MC Method WC Method WC Method ASTM D5185m	>5 limit/base >100 >20 >4 >3 >20 >40 >330	09 Nov 2023 0 0 N/A NORMAL current <1.0 NEG current 62 2 0 <1 0 3 1 <1 0	history1 history1	history2 history2
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Oil Age hrs Oil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm ADDITIVES Boron ppm Barium ppm Manganese ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Sulfur ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	Client Info Client Info Client Info Method WC Method WC Method ASTM D5185m	>5 limit/base >100 >20 >4 >3 >20 >40 >330	0 N/A NORMAL current <1.0 NEG current 62 2 0 <1 0 3 1 <1 0	history1 history1	history2 history2
Oil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm ADDITIVES Boron ppm Barium ppm Manganese ppm Magnesium ppm Calcium ppm Contaminants	Method WC Method WC Method WC Method ASTM D5185m	>5 limit/base >100 >20 >4 >3 >20 >40 >330	N/A NORMAL current <1.0 NEG current 62 2 0 <1 0 3 1 <1 0	history1 history1 history1	history2 history2
CONTAMINATION Fuel Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Aluminum ppm Vanadium ppm Vanadium ppm ADDITIVES Boron ppm Barium ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Phosphorus ppm Sulfur ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	method WC Method WC Method Method ASTM D5185m	>5 limit/base >100 >20 >4 >3 >20 >40 >330	Current <1.0 NEG Current 62 2 0 <1 0 3 1 <1 0	history1 history1 history1	history2 history2
CONTAMINATION Fuel Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Aluminum ppm Vanadium ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Manganese ppm Magnesium ppm Calcium ppm Calcium ppm Phosphorus ppm Sulfur ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	WC Method WC Method Method ASTM D5185m	>5 limit/base >100 >20 >4 >3 >20 >40 >330	current <1.0 NEG current 62 2 0 <1 0 3 1 <1 0	history1 history1	history2 history2
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WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Aluminum ppm Lead ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Sulfur ppm Sulfur ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	Method ASTM D5185m	>100 >20 >4 >3 >20 >40 >330	current 62 2 0 <1 0 3 1 <1 0	history1	history2
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Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Soulfur ppm Soulfur ppm Contaminants Silicon ppm Sodium ppm	ASTM D5185m	>20 >4 >3 >20 >40 >330	2 0 <1 0 3 1 <1		
Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m	>4 >3 >20 >40 >330	0 <1 0 3 1 <1 0		
Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Vanadium ppm Vanadium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Calcium ppm Calcium ppm Contamination ppm Soulfur ppm Soulfur ppm Contamination ppm Sollicon ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>3 >20 >40 >330	<1 0 3 1 <1		
Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Calcium ppm Chosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >40 >330	0 3 1 <1 0		
Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>20 >40 >330	3 1 <1 0		
Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Contaminant ppm Soulfur ppm Contaminant ppm Sollicon ppm Sollicon ppm Sollicon ppm Sollicon ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>40 >330	1 <1 0		
Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m ASTM D5185m	>330	<1 0		
Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m		0		
Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ACTM DE10Em	>15	-		
Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	וווכסו כע ועוו כא		0		
ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm			U		
Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m		<1		
Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	method	limit/base	current	history1	history2
Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m	0	8		
Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m	0	<1		
Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m	60	69		
Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m	0	<1		
Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m	1010	1054		
Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m	1070	1226		
Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm	ASTM D5185m	1150	1107		
Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm		1270	1388		
Silicon ppm Sodium ppm		2060	3645		
Sodium ppm	method	limit/base	current	history1	history2
1.1.	ASTM D5185m	>25	13		
	ASTM D5185m		5		
Potassium ppm	AO INI DO IOSIII	>20	3		
INFRA-RED		limit/base	current	history1	history2
Soot % %		>3	1.5		
Nitration Abs/	ASTM D5185m	>20	7.1		
Sulfation Abs/.1	ASTM D5185m method *ASTM D7844		20.1		
FLUID DEGRADATION	ASTM D5185m method *ASTM D7844 cm *ASTM D7624	>30			
Oxidation Abs/.1	ASTM D5185m method *ASTM D7844 cm *ASTM D7624 mm *ASTM D7415	>30 limit/base	current	history1	history2
Base Number (BN) mg K0	ASTM D5185m method *ASTM D7844 cm *ASTM D7624 mm *ASTM D7415 ON method		current 13.3	history1	history2



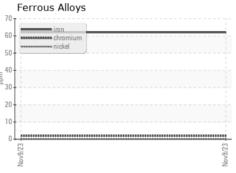
OIL ANALYSIS REPORT

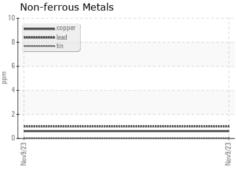


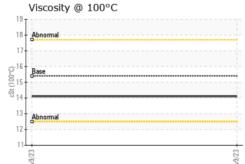
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE		
Yellow Metal	scalar	*Visual	NONE	NONE		
Precipitate	scalar	*Visual	NONE	NONE		
Silt	scalar	*Visual	NONE	NONE		
Debris	scalar	*Visual	NONE	NONE		
Sand/Dirt	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
Odor	scalar	*Visual	NORML	NORML		
Emulsified Water	scalar	*Visual	>0.2	NEG		
Free Water	scalar	*Visual		NEG		
FLUID DDODE			11 11 11			

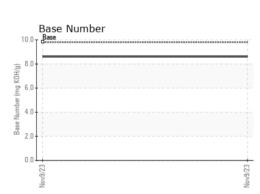
FLUID FNOF		memou			HISTOLAL	HISTORYZ
Visc @ 100°C	cSt	ASTM D445	15.4	14.1		

GRAPHS











Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10750376 Test Package : FLEET

: GFL0099159 : 06011232

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

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

: 17 Nov 2023 : 19 Nov 2023 Diagnostician : Wes Davis

GFL Environmental - 842 - Lewisport Hauling 4995 US Highway 60 West

Lewisport, KY US 42351

Contact: AUSTIN FRALIEX afraliex@gflenv.com T: (270)625-6807

* - 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)

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