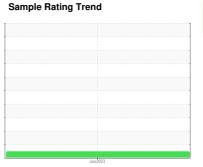


OIL ANALYSIS REPORT



NORMAL



Machine Id **742175**

Component **Diesel Engine**

PETRO CANADA DURON SHP 10W30 (--- 0

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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 Number Client Info PCA0100742	GAL)				Jun 2023		
Sample Date Client Info 30 Jun 2023	SAMPLE INFOR	MATION	method	limit/base	current	history 1	history 2
Machine Age mls Client Info 56649 Oil Changed Client Info 56649 Sample Status NORMAL CONTAMINATION method limit/base current history 1 history 2 Fuel WC Method S <1.0	Sample Number		Client Info		PCA0100742		
Oil Age mls Client Info 56649 Oil Changed Client Info Changed Sample Status NORMAL CONTAMINATION method limit/base current history 1 history 2 Fuel WC Method NEG Glycol WC Method NEG WEAR METALS method limit/base current history 1 history 2 Iron ppm ASTM D5185m >100 88 Chromium ppm ASTM D5185m >20 7 Chromium ppm ASTM D5185m >3 <1	Sample Date		Client Info		30 Jun 2023		
Oil Changed Sample Status Client Info Sample Status Changed NORMAL	•	mls	Client Info		56649		
Oil Changed Sample Status Client Info Changed NORMAL	Oil Age	mls	Client Info		56649		
CONTAMINATION method limit/base current history 1 history 2 Fuel WC Method >5 <1.0	Oil Changed		Client Info		Changed		
Fuel	Sample Status				NORMAL		
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history 1	history 2
WEAR METALS	Fuel		WC Method	>5	<1.0		
Iron	Glycol		WC Method		NEG		
Chromium ppm ASTM D5185m >20 7 Nickel ppm ASTM D5185m >4 1 Titanium ppm ASTM D5185m >3 <1	WEAR METAL	.S	method	limit/base	current	history 1	history 2
Nickel	Iron	ppm	ASTM D5185m	>100	88		
Titanium	Chromium	ppm	ASTM D5185m	>20	7		
Titanium ppm ASTM D5185m <1 Silver ppm ASTM D5185m >3 <1	Nickel	ppm	ASTM D5185m	>4	1		
Aluminum ppm ASTM D5185m >20 68 Lead ppm ASTM D5185m >40 0 Copper ppm ASTM D5185m >330 301 Tin ppm ASTM D5185m >15 8 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 50 4	Titanium	ppm	ASTM D5185m		<1		
Lead ppm ASTM D5185m >40 0 Copper ppm ASTM D5185m >330 301 Tin ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 Barium ppm ASTM D5185m 90 577	Silver	ppm	ASTM D5185m	>3	<1		
Copper ppm ASTM D5185m >330 301 Tin ppm ASTM D5185m 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 0 46 Manganese ppm ASTM D5185m 950 577 Magnesium ppm ASTM D5185m 950 577 Calcium ppm ASTM D5185m 995 784 Phosphorus ppm ASTM D5185m 2600 2217	Aluminum	ppm	ASTM D5185m	>20	68		
Tin ppm ASTM D5185m >15 8 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 50 46 Manganese ppm ASTM D5185m 0 4 Magnesium ppm ASTM D5185m 950 577 Calcium ppm ASTM D5185m 950 1811 Phosphorus ppm ASTM D5185m 1180 990 Sulfur ppm ASTM D5185m 2600 2217 <	Lead	ppm	ASTM D5185m	>40	0		
Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 0 0 Barium ppm ASTM D5185m 0 46 Molybdenum ppm ASTM D5185m 0 4 Magnesium ppm ASTM D5185m 950 577 Calcium ppm ASTM D5185m 950 577 Phosphorus ppm ASTM D5185m 995 784 Phosphorus ppm ASTM D5185m 2600 2217 Sulfur ppm ASTM D5185m 25 9 Sodium ppm ASTM D5185m >20 159	Copper	ppm	ASTM D5185m	>330	301		
Vanadium ppm ASTM D5185m 0 ADDITIVES method limit/base current history 1 history 2 Boron ppm ASTM D5185m 2 19 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 50 46 Manganese ppm ASTM D5185m 950 577 Magnesium ppm ASTM D5185m 950 577 Calcium ppm ASTM D5185m 905 577 Phosphorus ppm ASTM D5185m 905 784 Zinc ppm ASTM D5185m 1180 990 Sulfur ppm ASTM D5185m 2600 2217 CONTAMINANTS method limit/base current </td <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>15</td> <td>8</td> <td></td> <td></td>	Tin	ppm	ASTM D5185m	>15	8		
ADDITIVES	Vanadium		ASTM D5185m		0		
Boron	Cadmium	ppm	ASTM D5185m		0		
Barium	ADDITIVES		method	limit/base	current	history 1	history 2
Molybdenum ppm ASTM D5185m 50 46 Manganese ppm ASTM D5185m 0 4 Magnesium ppm ASTM D5185m 950 577 Calcium ppm ASTM D5185m 1050 1811 Phosphorus ppm ASTM D5185m 995 784 Zinc ppm ASTM D5185m 990 Sulfur ppm ASTM D5185m 2600 2217 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 9 Sodium ppm ASTM D5185m >20 159 Potassium ppm ASTM D5185m >20 159 INFRA-RED method limit/bas	Boron	ppm	ASTM D5185m	2	19		
Manganese ppm ASTM D5185m 0 4 Magnesium ppm ASTM D5185m 950 5777 Calcium ppm ASTM D5185m 1050 1811 Phosphorus ppm ASTM D5185m 995 784 Zinc ppm ASTM D5185m 1180 990 Sulfur ppm ASTM D5185m 2600 2217 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 9 Sodium ppm ASTM D5185m 6 Potassium ppm ASTM D5185m >20 159 INFRA-RED method limit/base current history 1 history 2 Soot % % ASTM D7624 >20	Barium	ppm	ASTM D5185m	0	0		
Magnesium ppm ASTM D5185m 950 577 Calcium ppm ASTM D5185m 1050 1811 Phosphorus ppm ASTM D5185m 995 784 Zinc ppm ASTM D5185m 1180 990 Sulfur ppm ASTM D5185m 2600 2217 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 9 Sodium ppm ASTM D5185m >25 9 Potassium ppm ASTM D5185m >20 159 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D741	Molybdenum	ppm	ASTM D5185m	50	46		
Calcium ppm ASTM D5185m 1050 1811 Phosphorus ppm ASTM D5185m 995 784 Zinc ppm ASTM D5185m 1180 990 Sulfur ppm ASTM D5185m 2600 2217 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 9 Sodium ppm ASTM D5185m >20 159 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 Cvidation Abs/.1mm	Manganese	ppm	ASTM D5185m	0	4		
Phosphorus ppm ASTM D5185m 995 784 Zinc ppm ASTM D5185m 1180 990 Sulfur ppm ASTM D5185m 2600 2217 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 9 Sodium ppm ASTM D5185m 6 Potassium ppm ASTM D5185m >20 159 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7415 >30 26.3 FLUID DEGRADATION *ASTM D7414 >25 30.5	Magnesium	ppm	ASTM D5185m	950	577		
Zinc ppm ASTM D5185m 1180 990 Sulfur ppm ASTM D5185m 2600 2217 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 9 Sodium ppm ASTM D5185m 6 Potassium ppm ASTM D5185m >20 159 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm <t< td=""><td>Calcium</td><td>ppm</td><td>ASTM D5185m</td><td>1050</td><td>1811</td><td></td><td></td></t<>	Calcium	ppm	ASTM D5185m	1050	1811		
Sulfur ppm ASTM D5185m 2600 2217 CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 9 Sodium ppm ASTM D5185m 6 Potassium ppm ASTM D5185m >20 159 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	Phosphorus	ppm	ASTM D5185m	995	784		
CONTAMINANTS method limit/base current history 1 history 2 Silicon ppm ASTM D5185m >25 9 Sodium ppm ASTM D5185m 6 Potassium ppm ASTM D5185m >20 159 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	Zinc	ppm	ASTM D5185m	1180	990		
Silicon ppm ASTM D5185m >25 9 Sodium ppm ASTM D5185m 6 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	Sulfur	ppm	ASTM D5185m	2600	2217		
Sodium ppm ASTM D5185m 6 Potassium ppm ASTM D5185m >20 159 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	CONTAMINAN	ITS	method	limit/base	current	history 1	history 2
Potassium ppm ASTM D5185m >20 159 INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	Silicon	ppm	ASTM D5185m	>25	9		
INFRA-RED method limit/base current history 1 history 2 Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	Sodium	ppm	ASTM D5185m		6		
Soot % % *ASTM D7844 >3 0.9 Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	Potassium	ppm	ASTM D5185m	>20	159		
Nitration Abs/cm *ASTM D7624 >20 14.7 Sulfation Abs/.1mm *ASTM D7415 >30 26.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	INFRA-RED		method	limit/base	current	history 1	history 2
Sulfation Abs/.1mm *ASTM D7415 >30 26.3 FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	Soot %	%	*ASTM D7844	>3	0.9		
FLUID DEGRADATION method limit/base current history 1 history 2 Oxidation Abs/.1mm *ASTM D7414 >25 30.5	Nitration	Abs/cm	*ASTM D7624	>20	14.7		
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	26.3		
	FLUID DEGRAI	DATION	method	limit/base	current	history 1	history 2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	30.5		
	Base Number (BN)	mg KOH/g	ASTM D2896				



OIL ANALYSIS REPORT







Certificate L2367

Laboratory Sample No. Lab Number **Unique Number**

: 05891980 : 10547790

: PCA0100742

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 07 Jul 2023 Diagnosed : 09 Jul 2023 Diagnostician : Doug Bogart

Test Package : MOB 1 (Additional Tests: TBN) 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)

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