

OIL ANALYSIS REPORT







Component Diesel Engine

Machine Id

PETRO CANADA DURON SHP 10W30 (--- GAL)

DIAGNOSIS

Recommendation

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

Wear

Metal levels are typical for a new component breaking in.

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 acceptable for the time in service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0103170		
Sample Date		Client Info		25 Aug 2023		
Machine Age	hrs	Client Info		951		
Oil Age	hrs	Client Info		951		
Oil Changed		Client Info		Changed		
Sample Status				NORMAL		
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0		
Glycol		WC Method		NEG		
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	79		
Chromium	ppm	ASTM D5185m	>20	3		
Nickel	ppm	ASTM D5185m	>4	0		
Titanium	ppm	ASTM D5185m		<1		
Silver	ppm	ASTM D5185m	>3	<1		
Aluminum	ppm	ASTM D5185m	>20	97		
Lead	ppm	ASTM D5185m	>40	<1		
Copper	ppm	ASTM D5185m	>330	12		
Tin	ppm	ASTM D5185m	>15	2		
Vanadium	ppm	ASTM D5185m		<1		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 18	history1	history2
	ppm ppm					
Boron		ASTM D5185m	2	18		
Boron Barium	ppm	ASTM D5185m ASTM D5185m	2 0	18 0		
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	18 0 2		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	18 0 2 3		
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	18 0 2 3 839		
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	18 0 2 3 839 1548	 	
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	2 0 50 0 950 1050 995	18 0 2 3 839 1548 744	 	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180	18 0 2 3 839 1548 744 902	 	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	2 0 50 950 1050 995 1180 2600	18 0 2 3 839 1548 744 902 3777		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	2 0 50 950 1050 995 1180 2600	18 0 2 3 839 1548 744 902 3777 current	 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	2 0 50 950 1050 995 1180 2600	18 0 2 3 839 1548 744 902 3777 current 14	 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 method ASTM D5185m	2 0 50 950 1050 995 1180 2600 Limit/base >25	18 0 2 3 839 1548 744 902 3777 current 14 6	 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25	18 0 2 3 839 1548 744 902 3777 current 14 6 284	 history1 	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 -20 limit/base	18 0 2 3 839 1548 744 902 3777 current 14 6 284 current	 history1 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 TS	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >3	18 0 2 3 839 1548 744 902 3777 current 14 6 284 current 0.3	 history1 history1 history1	 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	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	18 0 2 3 839 1548 744 902 3777 current 14 6 284 current 0.3 11.2	 history1 history1 history1	 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	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 imit/base >25 imit/base >3 >20	18 0 2 3 839 1548 744 902 3777 current 14 6 284 current 0.3 11.2 24.4	 history1 history1 history1	 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	ASTM D5185m ASTM D7844 *ASTM D7844	2 0 50 0 950 1050 995 1180 2600 imit/base >25 >20 imit/base >3 >20 >30	18 0 2 3 839 1548 744 902 3777 current 14 6 284 current 0.3 11.2 24.4 current	 history1 history1 history1	 history2 history2 history2 history2

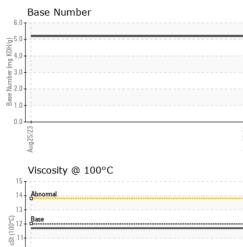


Bas

10 Abnormal

8. Aug25/23

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		*Visual	NONE	NONE		
/23		scalar	*Visual	NORML	NORML		
Aug 25/23	Odor	scalar	*Visual	NORML	NORML		
4	Emulsified Water	scalar	*Visual	>0.2	NEG		
	Free Water	scalar	*Visual	20.L	NEG		
	FLUID PROP		method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445		11.7		
	GRAPHS						
	Ferrous Alloys						
	80 70						
	60 - nickel						
	50						
	Ē 40						
	30 -						
	20 -						
	10						
	0						
	4ug25/23			Aug25/23			
	Augi			Augi			
	Non-ferrous Met	als					
	12 copper						
	10						
	8						
	۳. 6-						
	4						
	2						
	0						
	Aug25/23			Aug 25/23			
		°C		A	D 1		
	VISCOSILV (0) THE	-			Base Number		
	Viscosity @ 100 ⁴			6.0) _T		
	15			5.0			
	15 14 Abnormal 13			5.0			
	15 14 Abnormal 13			5.0			
	15 14 Abnormal 13			5.0			
	15 14 Abnormal 13 13 13 13 13 13 13 13 13 13			5.0			
	15 14 Abnormal 13 (2) 12 8 ase 20 11				-		
	15 14 Abnormal 13 5 12 Base 3 11 4 Abnormal 13 5 12 4 Abnormal 13 4 5 12 4 4 4 5 12 4 4 5 12 4 4 5 12 4 5 12 4 5 12 4 5 12 4 5 12 4 5 12 4 5 12 12 12 12 12 12 12 12 12 12			5.0. (b)HQ4.0 Jaquinity asee 1.0 0.0			
	15 14 Abnormal 13 5 12 Base 3 11 4 Abnormal 13 5 12 4 Abnormal 13 4 5 12 4 4 4 5 12 4 4 5 12 4 4 5 12 4 5 12 4 5 12 4 5 12 4 5 12 4 5 12 4 5 12 12 12 12 12 12 12 12 12 12			5.0. (b)HQ4.0 Jaquinity asee 1.0 0.0			
	15 14 Abnormal 13 50012 - Base 11 13 13 13 13 13 13 13 13 13			5.0 (6)HQ 4.0 (9)HQ 4.0 (9)HQ 4.0 (1.0 (1.0) (1.0) (5.0) (1.0) (5.	-		
	15 14 Abnormal 13 12 12 10 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	E01 M		5.0 (0)HOX 6u) 3.0 Base Winney 2.0 Base 1.0 0.0	Aug25/23		
aboratory	15 14 Abnormal 13 14 Base CUSCIONY 11 10 4 CUSCIONY 11 10 10 10 10 10 10 10 10 10			5.0 (0)HOX 4.0 Buy aremany 2.0 1.0 	Aug25/23		
mple No.	Base Base Base CUSS Base CUSS Base CUSS Base CUSS Base CUSS Base CUSS CUBH CUSS CUSS CUBH CUSS CUSS CUSS CUBH CUSS CUBH CUSS	Received	i : 15 §	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Aug25/23	5 E. WESTING	HOUSE BLV
ample No. ab Number	15 14 Abnormal 13 10 Abnormal 9 4 Euse	Received Diagnose	l : 15 S ed : 20 S	5.0 (0)HOX 4.0 Buy aremany 2.0 1.0 	E2552 B 101	5 E. WESTING	
ample No. Ib Number lique Numbe	Base 14 Abnormal 13 14 Base 13 10 Abnormal 9 8 EUSS 2000 4 EUSS 2000	Received	l : 15 S ed : 20 S	(0,1) (0	E2552 B 101	5 E. WESTING CH	HOUSE BLV IARLOTTE, N US 282
Sample No. Lab Number Inique Numbe Sest Package Ample report,	Base 14 Abnormal 13 14 Base 13 10 Abnormal 9 8 EUSS 2000 4 EUSS 2000	Received Diagnose Diagnost	l : 15 § ed : 20 § ician : Jon	ry, NC 27513 Sep 2023 athan Hester	E2552 B 101	5 E. WESTING CH	HOUSE BLV IARLOTTE, N US 282 act: Jody Gre