

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Component

Diesel Engine

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

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

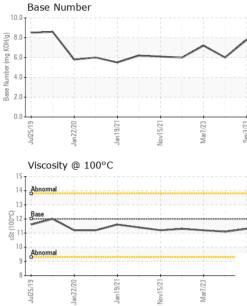
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		Jul2019		HOREDEN HIBLOLD			
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		PCA0105501	PCA0099751	PCA0094423	
Sample Date		Client Info		03 Sep 2023	30 May 2023	07 Mar 2023	
Machine Age	mls	Client Info		0	0	320152	
Oil Age	mls	Client Info		20000	40000	19329	
Oil Changed		Client Info		Not Changd	Changed	Not Changd	
Sample Status				NORMAL	NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2	
Fuel		WC Method	>6.0	<1.0	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	NEG	
Glycol		WC Method		NEG	NEG	NEG	
WEAR METAL	۹	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>100	18	40	27	
Chromium	ppm	ASTM D5185m	>20	<1	<1	0	
Nickel	ppm	ASTM D5185m	>2	<1	<1	0	
Titanium	ppm	ASTM D5185m	0	1	10	10	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm		>25	5	4	3	
Lead	ppm	ASTM D5185m	>40	<1	1	0	
Copper	ppm		>330	4	8	5	
Tin	ppm	ASTM D5185m	>15	<1	1	<1	
Vanadium	ppm	ASTM D5185m		0	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
				•	0		
ADDITIVES		method	limit/base	current	history1	history2	
	ppm		limit/base 2			history2 4	
ADDITIVES		method ASTM D5185m		current	history1		
ADDITIVES Boron	ppm	method ASTM D5185m	2	current <1	history1 1	4	
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	2 0	current <1 0	history1 1 0	4	
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	current <1 0 59	history1 1 0 55	4 0 49	
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	current <1 0 59 <1	history1 1 0 55 <1	4 0 49 <1	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	current <1 0 59 <1 920	history1 1 0 55 <1 840	4 0 49 <1 837	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	current <1 0 59 <1 920 1088	history1 1 0 55 <1 840 1262	4 0 49 <1 837 1245	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995	current <1 0 59 <1 920 1088 1035	history1 1 0 55 <1 840 1262 976	4 0 49 <1 837 1245 961	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	2 0 50 950 1050 995 1180	<1 0 59 <1 920 1088 1035 1255	history1 1 0 55 <1 840 1262 976 1212	4 0 49 <1 837 1245 961 1229	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	2 0 50 950 1050 995 1180 2600	Current <1 0 59 <1 920 1088 1035 1255 3099	history1 1 0 55 <1 840 1262 976 1212 2963	4 0 49 <1 837 1245 961 1229 3256	
ADDITIVES 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	2 0 50 950 1050 995 1180 2600	current <1 0 59 <1 920 1088 1035 1255 3099 current	history1 1 0 55 <1 840 1262 976 1212 2963 history1	4 0 49 <1 837 1245 961 1229 3256 history2	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25	current <1 0 59 <1 920 1088 1035 1255 3099 current 4	history1 1 0 55 <1 840 1262 976 1212 2963 history1 5	4 0 49 <1 837 1245 961 1229 3256 history2 4	
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	2 0 50 950 1050 995 1180 2600 limit/base >25	current <1 0 59 <1 920 1088 1035 1255 3099 current 4 10	history1 1 0 55 <1 840 1262 976 1212 2963 history1 5 14	4 0 49 <1 837 1245 961 1229 3256 history2 4 8	
ADDITIVES 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	2 0 50 0 950 1050 995 1180 2600 imit/base >25 >20	<1 0 59 <1 920 1088 1035 1255 3099 current 4 10 4 10 4	history1 1 0 55 <1 840 1262 976 1212 2963 history1 5 14 3	4 0 49 <1 837 1245 961 1229 3256 history2 4 8 1	
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 TS	method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 Imit/base >25 -20 Imit/base	<1 0 59 <1 920 1088 1035 1255 3099 current 4 10 4 10 4 current	history1 1 0 55 <1 840 1262 976 1212 2963 history1 5 14 3 history1	4 0 49 <1 837 1245 961 1229 3256 history2 4 8 1 1 <i>history2</i>	
ADDITIVES 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 TS ppm ppm	method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 Imit/base >25 >20 Imit/base >3	current <1 0 59 <1 920 1088 1035 1255 3099 current 4 10 4 0 0 4 0.4	history1 1 0 55 <1 840 1262 976 1212 2963 history1 5 14 3 history1 0.7	4 0 49 <1 837 1245 961 1229 3256 history2 4 8 1 1 history2 0.5	
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 ppm	method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	current <1 0 59 <1 920 1088 1035 1255 3099 current 4 10 4 0 0 4 0.4 8.7	history1 1 0 55 <1 840 1262 976 1212 2963 history1 5 14 3 history1 0.7 10.5	4 0 49 <1 837 1245 961 1229 3256 history2 4 8 1 1 <u>history2</u> 0.5 9.6	
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	2 0 50 0 950 1050 995 1180 2600 imit/base >25 >20 imit/base >3 >20 >30	<1 0 59 <1 920 1088 1035 1255 3099 current 4 10 4 00 0.4 8.7 19.5	history1 1 0 55 <1 840 1262 976 1212 2963 history1 5 14 3 history1 0.7 10.5 22.1	4 0 49 <1 837 1245 961 1229 3256 history2 4 8 1 1 history2 0.5 9.6 20.6	
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	method ASTM D5185m ASTM D7185M *ASTM D7624 *ASTM D7624 *ASTM D7415	2 0 50 0 950 1050 995 1180 2600 imit/base >25 >20 imit/base >3 >20 >30	current <1 920 1088 1035 1255 3099 current 4 10 4 00 4 00 4 10 4 10 5 6 10 4 10 4 10 5 current 0.4 8.7 19.5 current	history1 1 0 55 <1 840 1262 976 1212 2963 history1 5 14 3 history1 0.7 10.5 22.1 history1	4 0 49 <1 837 1245 961 1229 3256 history2 4 8 1 1 history2 0.5 9.6 20.6 history2	



OIL ANALYSIS REPORT

VISUAL



Certificate L2367	Laboratory Sample No. Lab Number Unique Number Test Package	: PCA0105501 : <mark>06031190</mark> : 10780981	06031190 Diagnosed : 13 Dec 2023					PERDUE FARMS - GEORGETOWN 20621 SAVANAH RD GEORGETOWN, DE US 19947 Contact: ROBERT LOCKWOOD Robert.Lockwood@Perdue.com			
		8	Jan 19/21	Mar7/23 +	1.0 Seb3/23		Jan19/21	Mar7/23			
		Donot 12 Base			(B) HOX (B) HO		<u> </u>				
		15 14 - <mark>Abnomal</mark> 13			9. 8. (B) 7.1 H			\sim			
		Viscosity @ 100°	Nov15/21	Mar7/23	Sep3/23	Base Number					
			21	23	23						
		특 300									
		600 500 - copper lead 400 - tin									
		Non-ferrous Meta	In 19/21	Mar7/23	Sep3/23						
No Ja		60 <u><u><u></u></u> <u><u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u> <u></u></u></u>	$\langle \rangle$								
Jan 19/21	Mar7/23 -	Ferrous Alloys	Λ								
		Visc @ 100°C GRAPHS	cSt	ASTM D445	12.00	11.3	11.1	11.2			
		FLUID PROPE		method	limit/base	current	history1	history2			
		Emulsified Water Free Water	scalar scalar	*Visual *Visual	>0.2	NEG	NEG	NEG			
Jan 19/21	Mar7/23 -	Appearance Odor	scalar scalar	*Visual *Visual	NORML NORML	NORML	NORML	NORML			
	Debris Sand/Dirt	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE NONE	NONE NONE				
	Precipitate Silt	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE NONE	NONE NONE				
	\sim	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE			