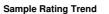


OIL ANALYSIS REPORT





PETRO CANADA DURON UHP 5W40 (18 LTR)

DIAGNOSIS

Machine Id **TB537** Component **Diesel Engine**

Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

🔺 Wear

Aluminum ppm levels are abnormal. Piston wear is indicated.

Contamination

There is no indication of any contamination in the oil.

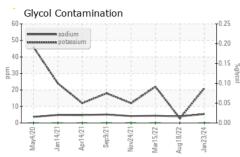
Fluid Condition

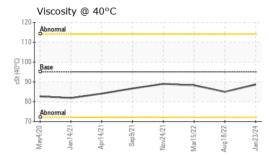
The oil is no longer serviceable as a result of the abnormal and/or severe wear.

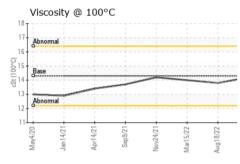
SAMPLE INFOR		method	limit/base	current	history1	history2
			mmbase		PC0064790	PC0060991
Sample Number		Client Info		PC0078386 23 Jan 2024		
Sample Date	bro	Client Info			18 Aug 2022	15 Mar 2022
Machine Age	hrs	Client Info		5205	4741 0	4645
Oil Age	hrs	Client Info		500 Observed		700 Observed
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>100	20	6	35
Chromium	ppm	ASTM D5185(m)	>20	2	<1	2
Nickel	ppm	ASTM D5185(m)	>4	<1	0	<1
Titanium	ppm	ASTM D5185(m)		0	<1	0
Silver	ppm	ASTM D5185(m)	>3	0	<1	0
Aluminum	ppm	ASTM D5185(m)	>20	<u> </u>	5	4 34
Lead	ppm	ASTM D5185(m)	>40	<1	0	<1
Copper	ppm	ASTM D5185(m)	>330	5	3	9
Tin	ppm	ASTM D5185(m)	>15	<1	<1	1
Antimony	ppm	ASTM D5185(m)		0	0	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185(m)	limit/base	current 31	51	38
	ppm ppm		65			
Boron		ASTM D5185(m)	65	31	51	38
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	65 0 65	31 0	51 0	38 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	65 0 65	31 0 58	51 0 53	38 0 57
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160	31 0 58 0	51 0 53 <1	38 0 57 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160	31 0 58 0 1071	51 0 53 <1 1045	38 0 57 <1 1074
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820	31 0 58 0 1071 807	51 0 53 <1 1045 835	38 0 57 <1 1074 817
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820 1160	31 0 58 0 1071 807 971	51 0 53 <1 1045 835 981	38 0 57 <1 1074 817 1005
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820 1160 1260	31 0 58 0 1071 807 971 1134	51 0 53 <1 1045 835 981 1142	38 0 57 <1 1074 817 1005 1196
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820 1160 1260	31 0 58 0 1071 807 971 1134 2746	51 0 53 <1 1045 835 981 1142 2786	38 0 57 <1 1074 817 1005 1196 2591
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820 1160 1260 3000	31 0 58 0 1071 807 971 1134 2746 <1	51 0 53 <1 1045 835 981 1142 2786 <1	38 0 57 <1 1074 817 1005 1196 2591 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	65 0 65 1160 820 1160 1260 3000	31 0 58 0 1071 807 971 1134 2746 <1 current	51 0 53 <1 1045 835 981 1142 2786 <1 history1	38 0 57 <1 1074 817 1005 1196 2591 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185(m) ASTM D5185(m)	65 0 65 1160 820 1160 1260 3000	31 0 58 0 1071 807 971 1134 2746 <1 current 15	51 0 53 <1 1045 835 981 1142 2786 <1 2786 <1 history1 7	38 0 57 <1 1074 817 1005 1196 2591 0 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820 1160 1260 3000 ilimit/base >25	31 0 58 0 1071 807 971 1134 2746 <1 current 15 5	51 0 53 <1 1045 835 981 1142 2786 <1 2786 <1 history1 7 4	38 0 57 <1 1074 817 1005 1196 2591 0 history2 7 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820 1160 1260 3000 ilimit/base >25	31 0 58 0 1071 807 971 1134 2746 <1 current 15 5 21	51 0 53 <1 1045 835 981 1142 2786 <1 2786 <1 history1 7 4 3	38 0 57 <1 1074 817 1005 1196 2591 0 0 history2 7 4 22
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820 1160 1260 3000 Imit/base >25 >20	31 0 58 0 1071 807 971 1134 2746 <1 2746 <1 <u>current</u> 15 5 21 0.0	51 0 53 <1 1045 835 981 1142 2786 <1 2786 <1 history1 7 4 3 NEG	38 0 57 <1 1074 817 1005 1196 2591 0 history2 7 4 22 0.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Solicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820 1160 1260 3000 iiiii/base >25 >20 iiiii/base >3	31 0 58 0 1071 807 971 1134 2746 <1 current 15 5 21 0.0 current 0.1	51 0 53 <1 1045 835 981 1142 2786 <1 history1 7 4 3 NEG history1 0	38 0 57 <1 1074 817 1005 1196 2591 0 history2 7 4 22 0.0 history2 0.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	65 0 65 0 1160 820 1160 1260 3000 Iimit/base >25 >20	31 0 58 0 1071 807 971 1134 2746 <1 current 15 5 21 0.0 current	51 0 53 <1 1045 835 981 1142 2786 <1 history1 7 4 3 NEG history1	38 0 57 <1 1074 817 1005 1196 2591 0 history2 7 4 22 0.0 history2



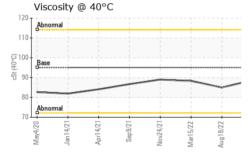
OIL ANALYSIS REPORT







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FLUID DEGRAD	DATION	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	ASTM D7414*	>25	20.6	17.6	24.9	
VISUAL		method	limit/base	current	history1	history2	
White Metal	scalar	Visual*	NONE	VLITE			
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	NORML	NORML	
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG	
Free Water	scalar	Visual*		NEG	NEG	NEG	
FLUID PROPE	RTIES	method	limit/base	current	history1	history2	
Visc @ 40°C	cSt	ASTM D7279(m)	95.1	88.7	85.0	88.3	
Visc @ 100°C	cSt	ASTM D7279(m)	14.3	14.2	13.8	14.0	
Viscosity Index (VI)	Scale	ASTM D2270*	169	165	166	163	
GRAPHS							
Iron (ppm)	Lead (ppm)						
Severe	100 Severe						
0 - Severe	톺 50 + Abnormal						

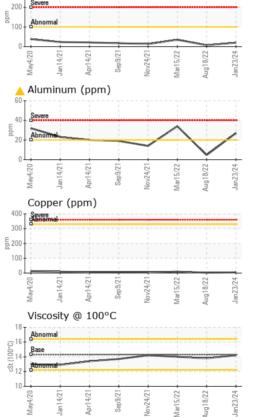
0.0

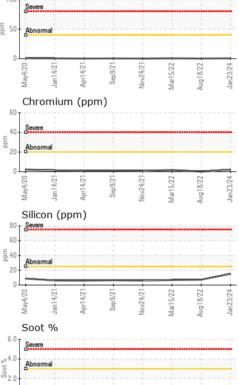
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Apr14/21

ep 9/21

Jan 14/21





: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Green Infrastructure and Partners Inc (GIPI) - 286 - Shoring & Foundations Laboratory CALA Sample No. : PC0078386 Recieved :01 Feb 2024 151 Ram Forest Rd, E Lab Number : 02612719 Diagnosed Stouffville, ON : 05 Feb 2024 ISO 17025:2017 Accredited Laboratory Unique Number : 5721814 Diagnostician : Bill Quesnel CA L4A 2G8 Test Package : MOB 1 (Additional Tests: Glycol, KV40, VI, Visual) Contact: Shannon Abbott To discuss this sample report, contact Customer Service at 1-800-268-2131. sabbott@gipi.com Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. T: (905)750-5900 Validity of results and interpretation are based on the sample and information as supplied. F:

Contact/Location: Shannon Abbott - GFL286

Aug18/22

an23/2

Aar15/22

lov24/21