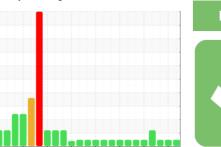


OIL ANALYSIS REPORT

Sample Rating Trend









MACK 812099 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (9 GAL)

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

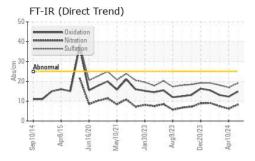
Fluid Condition

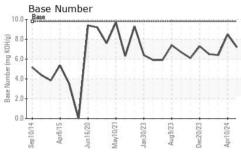
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

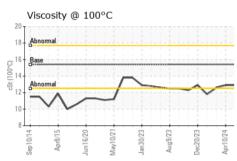
Sample Number Sample Date Machine Age hrs Oil Age hrs Oil Changed Sample Status CONTAMINATION Fuel Water Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Vanadium ppm Sarium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Calcium ppm Sulfur ppm Sulfur ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Sulfur ppm Sulfur ppm Sodium ppm Sodium ppm Sodium ppm	Client Info WC Method WC Method WC Method WC Method ASTM D5185m	limit/base >3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >10 >10 >10 >10 >10 >10 >10 >10 >10 >10	GFL0116820 17 May 2024 6930 0 N/A NORMAL	GFL0116801 10 Apr 2024 34434 0 N/A NORMAL history1 <1.0 NEG NEG 0 0 0 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <0	GFL0109034 05 Mar 2024 6559 0 N/A NORMAL history2 <1.0 NEG NEG history2 8 <1 0 <1 0 2 0 3 0 <1 0 <1 0
Machine Age hrs Oil Age hrs Oil Age hrs Oil Changed Sample Status CONTAMINATION Fuel Water Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Calcium ppm Sulfur ppm Sulfur ppm CONTAMINANTS Silicon ppm	Client Info Client Info Client Info Client Info Client Info WC Method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330 >15	6930 0 N/A NORMAL current <1.0 NEG NEG current 15 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	34434 0 N/A NORMAL history1 <1.0 NEG NEG history1 4 0 0 0 0 0 <1 <1 <1 <1 <1	6559 0 N/A NORMAL history2 <1.0 NEG NEG history2 8 <1 0 <1 0 2 0 3 0 <1
Oil Age	Client Info Client Info Client Info Client Info Method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330 >15	0 N/A NORMAL current <1.0 NEG NEG current 15 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	0 N/A NORMAL history1 <1.0 NEG NEG 0 0 0 0 1 <1 <1 <1 <1 <1 <1 <1 <1	0 N/A NORMAL history2 <1.0 NEG NEG NEG
Oil Changed Sample Status CONTAMINATION Fuel Water Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium 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 Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	Client Info method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330 >15	N/A NORMAL current <1.0 NEG NEG Current 15 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	N/A NORMAL history1 <1.0 NEG NEG 0 0 0 1 <1 <1 <1 <1 <1 <1 <1 <1 <1	N/A NORMAL history2 <1.0 NEG NEG history2 8 <1 0 <1 0 2 0 3 0 <1
Oil Changed Sample Status CONTAMINATION Fuel Water Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium 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 Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	method WC Method WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330 >15	Current	NORMAL history1 <1.0 NEG NEG history1 4 0 0 0 <1 <1 21 <1 <1	NORMAL history2 <1.0 NEG NEG history2 8 <1 0 <1 0 2 0 3 0 <1
CONTAMINATION Fuel Water 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 Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330 >15	current <1.0 NEG NEG current 15 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	history1 <1.0 NEG NEG history1 4 0 0 0 <1 <1 <1 <1 <1 <1 <1 <1	history2 <1.0 NEG NEG NEG history2 8 <1 0 <1 0 2 0 3 0 <1
Fuel Water 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 Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	WC Method WC Method WC Method ASTM D5185m	>3.0 >0.2 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330 >15	<1.0 NEG NEG Current 15 <1 <1 <1 <1 <1 14 <1 11 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	<1.0 NEG NEG NEG history1 4 0 0 0 <1 <1 <1 21 <1 <1 <1	<1.0 NEG NEG NES history2 8 <1 0 <1 0 2 0 3 0 <1
Water 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 Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	WC Method WC Method ASTM D5185m	>0.2 limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330 >15	NEG NEG current 15 <1 <1 <1 <1 14 <1 1 1 <1 <1	NEG NEG history1 4 0 0 0 0 0 <1 <1 <1 <1 <1	NEG NEG history2 8 <10 0 <10 2 0 3 0 <1
Glycol WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum 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 Sulfur ppm CONTAMINANTS Silicon ppm	WC Method method ASTM D5185m	limit/base >120 >20 >5 >2 >2 >2 >2 >20 >40 >330 >15	NEG current 15 <1 <1 <1 <1 <1 14 <1 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	NEG history1 4 0 0 0 0 <-1 <-1 21 <-1 <-1 <-1	NEG history2 8 <1 0 <1 0 2 0 3 0 <1
WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	Method ASTM D5185m	>120 >20 >5 >2 >2 >2 >20 >40 >330 >15	current 15 <1 <1 <1 <1 14 <1 1 <1 <1 <1 <1 <1 <1 <1 <1 <1	history1 4 0 0 0 0 0 <1 <1 <1 <1 <1 <1 <1	history2 8 <1 0 <1 0 2 0 3 0 <1
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 Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	>120 >20 >5 >2 >2 >2 >20 >40 >330 >15	15 <1 <1 <1 <1 14 <1 1 <1 <1 <1 <1 <1 <1 <1	4 0 0 0 0 0 <1 <1 <1 <1 <1 <1 <1	8 <1 0 <1 0 <2 0 3 0 <1
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 Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	>20 >5 >2 >2 >2 >20 >40 >330 >15	<1 <1 <1 <1 <1 14 <1 1 <1 <1 <1 <1 <1 <1 <1 <1	0 0 0 0 <1 <1 <1 21 <1 <1	<1 0 <1 0 2 0 3 0 <1
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 Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	>5 >2 >2 >20 >40 >330 >15	<1 <1 <1 <1 14 <1 1 <1 <1 <1 <1 <1	0 0 0 <1 <1 <1 <1 <1	0 <1 0 2 0 3 0 <1
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 Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	>2 >2 >20 >40 >330 >15	<1 <1 14 <1 1 <1 <1 <1	0 0 <1 <1 <1 21 <1	<1 0 2 0 3 0 <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 Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	>2 >20 >40 >330 >15	<1 14 <1 1 <1 <1 <1	0 <1 <1 <1 <1 <1 <1 <1	0 2 0 3 0 <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 Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >40 >330 >15	14 <1 1 <1 <1 <1	<1 <1 21 <1 <1	2 0 3 0 <1
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 Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>40 >330 >15	<1 1 <1 <1 <1	<1 21 <1 <1	0 3 0 <1
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 Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>330 >15	1 <1 <1 <1	21 <1 <1	3 0 <1
Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>15	<1 <1 <1	<1 <1	0 <1
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	ASTM D5185m ASTM D5185m ASTM D5185m	>15	<1 <1	<1	0 <1
Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	limit/base	<1 <1		
Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm		limit/base			
Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	method	limit/base	current		U
Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm				history1	history2
Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	0	9	6	10
Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	0	0	0	0
Manganese ppm Magnesium ppm Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	60	81	57	57
Calcium ppm Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	0	<1	<1	0
Phosphorus ppm Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	1010	1147	838	736
Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	1070	1462	1125	1117
Zinc ppm Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	1150	1269	970	883
Sulfur ppm CONTAMINANTS Silicon ppm	ASTM D5185m	1270	1622	1128	1111
Silicon ppm	ASTM D5185m	2060	4063	3451	2820
	method	limit/base	current	history1	history2
Sodium nom	ASTM D5185m	>25	5	2	3
ppiii	ASTM D5185m		6	0	2
Potassium ppm	ASTM D5185m	>20	31	0	2
INFRA-RED	method	limit/base	current	history1	history2
Soot % %		>4	0.4	0.2	0.4
Nitration Abs/d	*ASTM D7844		8.3	6.2	7.5
Sulfation Abs/.1r		>20	0.0		
FLUID DEGRADATION	m *ASTM D7624		19.1	16.9	18.1
Oxidation Abs/.1r	*ASTM D7624 nm *ASTM D7415			16.9 history1	18.1 history2
Base Number (BN) mg KO	*ASTM D7624 *ASTM D7415 ON method	>30	19.1		



OIL ANALYSIS REPORT



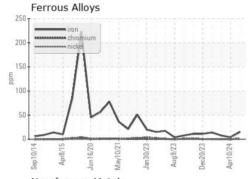




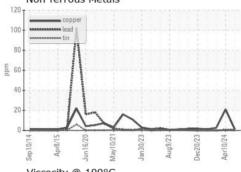
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	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

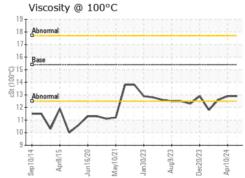
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.9	12.9	12.6

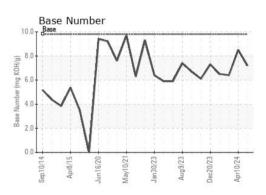
GRAPHS















Certificate 12367

Laboratory Sample No. Test Package : FLEET

: GFL0116820 Lab Number : 06188730 Unique Number : 11045482

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 23 May 2024 **Tested**

: 24 May 2024 Diagnosed : 28 May 2024 - Sean Felton

GFL Environmental - 009 - Fairburn

6905 Roosevelt Hwy Fairburn, GA US 30213

Contact: Eric Jones erjones@gflenv.com T: (678)630-9927

* - 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)