

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

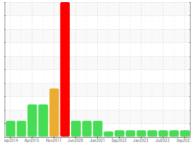


MACK 812099

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

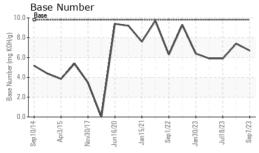
Fluid Condition

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

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0086209	GFL0086269	GFL0086238
Sample Date		Client Info		07 Sep 2023	09 Aug 2023	18 Jul 2023
Machine Age	hrs	Client Info		5342	5164	95312
Oil Age	hrs	Client Info		5342	5164	5004
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	_S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	8	4	17
Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Nickel	ppm	ASTM D5185m	>5	<1	0	1
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	<1	0	1
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	1	<1	2
Tin	ppm	ASTM D5185m	>15	1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	12	20	10
Boron Barium	ppm ppm		0	12 0	20	10
Barium	ppm	ASTM D5185m	0 60	0	2	0
Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60	0 61	2 66	0 65
Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 61 <1	2 66 0	0 65 <1
Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010	0 61 <1 801	2 66 0 751	0 65 <1 797
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 61 <1 801 1147	2 66 0 751 1169	0 65 <1 797 1075 895 1138
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150	0 61 <1 801 1147 909	2 66 0 751 1169 929	0 65 <1 797 1075 895
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	0 60 0 1010 1070 1150 1270	0 61 <1 801 1147 909 1139	2 66 0 751 1169 929 1133	0 65 <1 797 1075 895 1138
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	0 60 0 1010 1070 1150 1270 2060	0 61 <1 801 1147 909 1139 3159	2 66 0 751 1169 929 1133 3074	0 65 <1 797 1075 895 1138 2523
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	0 60 0 1010 1070 1150 1270 2060	0 61 <1 801 1147 909 1139 3159	2 66 0 751 1169 929 1133 3074 history1	0 65 <1 797 1075 895 1138 2523
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 61 <1 801 1147 909 1139 3159 current	2 66 0 751 1169 929 1133 3074 history1	0 65 <1 797 1075 895 1138 2523 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 61 <1 801 1147 909 1139 3159 current 4	2 66 0 751 1169 929 1133 3074 history1 2	0 65 <1 797 1075 895 1138 2523 history2 4 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 61 <1 801 1147 909 1139 3159 current 4 2	2 66 0 751 1169 929 1133 3074 history1 2 0 2	0 65 <1 797 1075 895 1138 2523 history2 4 <1 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	0 61 <1 801 1147 909 1139 3159 current 4 2 4	2 66 0 751 1169 929 1133 3074 history1 2 0 2	0 65 <1 797 1075 895 1138 2523 history2 4 <1 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	0 61 <1 801 1147 909 1139 3159 current 4 2 4	2 66 0 751 1169 929 1133 3074 history1 2 0 2 history1 0.2	0 65 <1 797 1075 895 1138 2523 history2 4 <1 <1 0.6
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm	ASTM D5185m Method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	0 61 <1 801 1147 909 1139 3159 current 4 2 4 current 0.4 6.7	2 66 0 751 1169 929 1133 3074 history1 2 0 2 history1 0.2 5.7	0 65 <1 797 1075 895 1138 2523 history2 4 <1 <1 0.6 8.5
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m Method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	0 61 <1 801 1147 909 1139 3159 current 4 2 4 current 0.4 6.7 18.0	2 66 0 751 1169 929 1133 3074 history1 2 0 2 history1 0.2 5.7 17.3	0 65 <1 797 1075 895 1138 2523 history2 4 <1 <1 0.6 8.5 20.2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRA	ppm	ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30 limit/base >25	0 61 <1 801 1147 909 1139 3159 current 4 2 4 current 0.4 6.7 18.0	2 66 0 751 1169 929 1133 3074 history1 2 0 2 history1 0.2 5.7 17.3	0 65 <1 797 1075 895 1138 2523 history2 4 <1 <1 <1 history2 0.6 8.5 20.2



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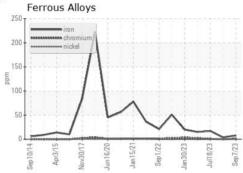


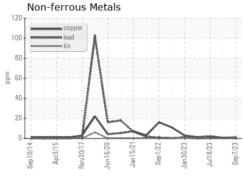
Sep10/	Apr3/	Nov30	Jun16/	Jan15	Sep1,	Jan30)	Jul18,	Sep7
Vi	scosity	@ 100	0°C					
18 - A	onormal							
⊙ 16 - B	ise							-
().001 14 Al	onormal				/	\		
10-	~	\	_		.			
8 +1/01	pr3/15		6/20	15/21	1/22	30/23	18/23	+

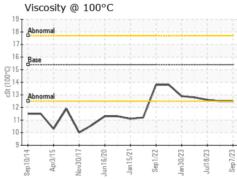
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

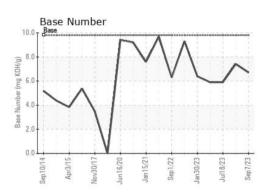
FLUID PROPE	RHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.5	12.5	12.6

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10647900 Test Package : FLEET

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0086209 : 05951941

Received : 14 Sep 2023 Diagnosed : 18 Sep 2023 Diagnostician : Wes Davis

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)