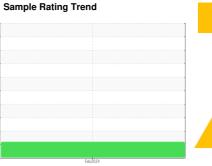


OIL ANALYSIS REPORT



GLYCOL



Machine Id **428022**

Component **Diesel Engine**

PETRO CANADA DURON SHP 15W40 (--- 0

DIAGNOSIS

Recommendation

We advise that you check for possible coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

All component wear rates are normal.

Contamination

Sodium and/or potassium levels are high.

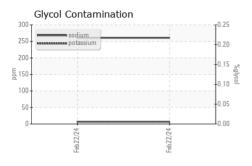
▲ Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil.

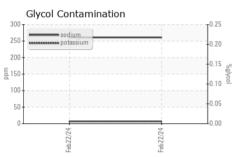
SAMPLE INFORMATION Sample Number Sample Date Machine Age hrs Oil Age hrs Oil Changed Sample Status CONTAMINATION Fuel Water WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm Barium ppm Molybdenum ppm Manganese ppm Manganese ppm Manganese ppm Calcium ppm Phosphorus ppm Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm Sodium ppm Sodium ppm Contradium ppm Contradium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Contradium ppm C	Client Info Client Info Client Info Client Info Client Info WC Method WC Method WC Method MC Method MC Method MC Method	limit/base	current GFL0110130 22 Feb 2024 12832 12832 Not Changd ABNORMAL current	history1	history2
Sample Number Sample Date Machine Age hrs Oil Age hrs Oil Changed Sample Status CONTAMINATION Fuel Water WEAR METALS Iron ppm Chromium ppm Nickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Silver ppm Magnesium ppm Calcium ppm Calcium ppm Calcium ppm CONTAMINANTS Silicon ppm Sodium ppm Sodium ppm CONTAMINANTS Silicon ppm Sodium ppm Glycol % INFRA-RED	Client Info Client Info Client Info Client Info Client Info WC Method WC Method WC Method MC Method MC Method MC Method	limit/base >5	22 Feb 2024 12832 12832 Not Changd ABNORMAL		
Sample Date Machine Age hrs Dil Age hrs Dil Age hrs Dil Changed Sample Status CONTAMINATION Fuel Water WEAR METALS ron ppm Chromium ppm Nickel ppm Fitanium ppm Lead ppm Copper ppm Fin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Manganese ppm Calcium ppm Calcium ppm Chosphorus ppm Silicon ppm Contassium ppm	Client Info Client Info Client Info Client Info Method WC Method WC Method MC Method MC Method MC Method	limit/base >5	22 Feb 2024 12832 12832 Not Changd ABNORMAL		
Machine Age hrs Dil Age hrs Dil Age hrs Dil Changed Gample Status CONTAMINATION Fuel Water WEAR METALS ron ppm Chromium ppm Nickel ppm Gitanium ppm Lead ppm Copper ppm Fin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Manganese ppm Manganese ppm Calcium ppm Calcium ppm Calcium ppm Chosphorus ppm CONTAMINANTS Silicon ppm Sodium ppm Sodium ppm CONTAMINANTS Silicon ppm Sodium ppm Sodium ppm Contassium ppm Con	Client Info Client Info method WC Method WC Method method ASTM D5185m	limit/base >5	12832 12832 Not Changd ABNORMAL	 	
Dil Age hrs Dil Changed Gample Status CONTAMINATION Fuel Water WEAR METALS ron ppm Chromium ppm Silver ppm Silver ppm Chuminum ppm Lead ppm Cadmium ppm Cadmium ppm Cadmium ppm Cadmium ppm Cadmium ppm Calcium ppm Manganese ppm Manganese ppm Calcium ppm Contaminants Cont	Client Info Client Info method WC Method WC Method method ASTM D5185m	limit/base >5	12832 Not Changd ABNORMAL		
CONTAMINATION Fuel Vater WEAR METALS ron ppm Chromium ppm Silver ppm Silver ppm Chuminum ppm Chadaium ppm Cadmium ppm Cadmium ppm Cadmium ppm Cadmium ppm Cadmium ppm Calcium ppm Manganese ppm Manganese ppm Calcium ppm Contaminants Cont	method WC Method WC Method method ASTM D5185m	limit/base >5	ABNORMAL		
CONTAMINATION Fuel Water WEAR METALS ron ppm Chromium ppm Sickel ppm Fitanium ppm Aluminum ppm Lead ppm Copper ppm Fin ppm Cadmium ppm Cadmium ppm Cadmium ppm Cadmium ppm Cadmium ppm Calcium ppm Manganese ppm Manganese ppm Calcium ppm Contaminants Contaminan	WC Method WC Method method ASTM D5185m	limit/base >5	ABNORMAL		
Fuel Water WEAR METALS ron ppm Chromium ppm Nickel ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Manganese ppm Manganese ppm Calcium ppm Contassium ppm Contassium ppm Contassium ppm Cotassium ppm	WC Method WC Method method ASTM D5185m	>5	current		
WEAR METALS ron ppm Chromium ppm Silver ppm Silver ppm Chopper ppm Chadium ppm Cadmium ppm Cadmium ppm Cadmium ppm Cadmium ppm Cadmium ppm Calcium ppm Chosphorus ppm Calcium ppm Chosphorus ppm Contaminants Contam	WC Method method ASTM D5185m			history1	history2
WEAR METALS ron ppm Chromium ppm Glickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Malganese ppm Magnesium ppm Calcium ppm Chosphorus ppm Contaminum ppm Contaminum ppm Contaminum ppm Manganese ppm Manganese ppm Contaminum	method ASTM D5185m	>0.2	<1.0		
ron ppm Chromium ppm Sickel ppm Titanium ppm Silver ppm Aluminum ppm Lead ppm Copper ppm Tin ppm Cadmium ppm Cadmium ppm Cadmium ppm Cadmium ppm Calcium ppm Manganese ppm Magnesium ppm Calcium ppm Contaminants Contaminants Contaminants Contaminants Contaminants Contaminants Contaminants Contaminants	ASTM D5185m		NEG		
Chromium ppm Jickel ppm Jickel ppm Jitanium ppm Jitani		limit/base	current	history1	history2
chromium ppm lickel ppm lickel ppm lickel ppm litanium ppm silver ppm lidurinum ppm ead ppm copper ppm lin	ACTM DE40E	>100	11		
lickel ppm itanium ppm itanium ppm itanium ppm lilver ppm lluminum ppm ead ppm copper ppm in ppm ranadium ppm ranadium ppm radmium ppm radmium ppm radium ppm	ASTM D5185m	>20	<1		
itanium ppm isilver ppm ppm ppm isilver ppm ppm isilver ppm ppm isilver ppm ppm ppm ppm ppm isilves ppm	ASTM D5185m	>4	<1		
Silver ppm Aluminum ppm Lead ppm Copper ppm Vanadium ppm Cadmium ppm Calcium p	ASTM D5185m		<1		
Aluminum ppm Lead ppm Lead ppm Copper ppm Tin ppm Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Manganese ppm Calcium ppm Chosphorus ppm Contaminants Silicon ppm Contaminants Silicon ppm Cotassium ppm	ASTM D5185m	>3	0		
cead ppm Copper ppm Copper ppm Canadium ppm Cadmium ppm Cadmium ppm Cadmium ppm Carium ppm Carium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Calcium ppm Consphorus ppm Contaminants Contaminants Contaminants Contaminants Contaminants Contaminants Contaminants Colinc ppm Cotassium ppm	ASTM D5185m	>20	5		
Copper ppm Canadium ppm Cadmium ppm Calcium ppm Contaminants Contaminants Collicon ppm Cotassium ppm Cotassium ppm Cotassium ppm Calcium ppm Cotassium ppm Calcium ppm Cotassium ppm Calcium ppm Cotassium ppm Calcium ppm Calcium ppm Cotassium ppm Calcium p	ASTM D5185m	>40	<1		
in ppm //anadium ppm //anaganese ppm //anadium		>330	2		
Vanadium ppm Cadmium ppm ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Chosphorus ppm Contaminants Sulfur ppm CONTAMINANTS Silicon ppm Sodium ppm Cotassium ppm	ASTM D5185m	>15	- <1		
ADDITIVES Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Chosphorus ppm Contaminants Bulfur ppm Contassium ppm Cotassium ppm	ASTM D5185m		<1		
Boron ppm Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Chosphorus ppm Contaminants Bulfur ppm Contassium ppm Cotassium ppm	ASTM D5185m		<1		
Barium ppm Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Chosphorus ppm Zinc ppm CONTAMINANTS Silicon ppm Sodium ppm Potassium ppm Glycol %	method	limit/base	current	history1	history2
Molybdenum ppm Manganese ppm Magnesium ppm Calcium ppm Chosphorus ppm Cinc ppm Coulfur ppm CONTAMINANTS Contaminant ppm Codium ppm C	ASTM D5185m	0	9		
Manganese ppm Magnesium ppm Placitium ppm Phosphorus ppm Placitium ppm P	ASTM D5185m	0	34		
Manganese ppm Magnesium ppm Calcium ppm Chosphorus ppm Cinc ppm Contaminants Contaminants Contaminants Colicon ppm Cotassium ppm Cotassium ppm Citycol %	ASTM D5185m	60	64		
Magnesium ppm Calcium ppm Chosphorus ppm Cinc ppm Culfur ppm CONTAMINANTS Contaminants Contaminants Column ppm Codium ppm Cotassium ppm Cotass	ASTM D5185m	0	<1		
Calcium ppm Phosphorus ppm Cinc ppm Culfur ppm CONTAMINANTS Contaminan	ASTM D5185m	1010	793		
chosphorus ppm cine ppm ciline ppm culfur ppm contaminants contaminants colium ppm codium ppm cotassium ppm cilycol % INFRA-RED	ASTM D5185m	1070	898		
CONTAMINANTS Silicon ppm Sodium ppm Sodium ppm Solycol % INFRA-RED	ASTM D5185m	1150	888		
CONTAMINANTS Silicon ppm Sodium ppm Potassium ppm Glycol % INFRA-RED	ASTM D5185m	1270	1085		
Silicon ppm Sodium ppm Potassium ppm Glycol % INFRA-RED	ASTM D5185m	2060	3115		
Sodium ppm Potassium ppm Glycol % INFRA-RED	method	limit/base	current	history1	history2
Potassium ppm Glycol % INFRA-RED	ASTM D5185m	>25	10		
Glycol % INFRA-RED	ASTM D5185m		<u>^</u> 261		
INFRA-RED	ASTM D5185m	>20	7		
			NEG		
Coat 9/	*ASTM D2982	limit/base	current	history1	history2
Soot % %	*ASTM D2982 method	>3	0.2		
litration Abs/cm		>20	7.3		
Gulfation Abs/.1mm	method	>30	18.7		
FLUID DEGRADATION	method *ASTM D7844			history1	history2
Oxidation Abs/.1mm	method *ASTM D7844 *ASTM D7624 *ASTM D7415	limit/base	current		
Base Number (BN) mg KOH/g	method *ASTM D7844 *ASTM D7624 *ASTM D7415	limit/base	current 15.5		



OIL ANALYSIS REPORT



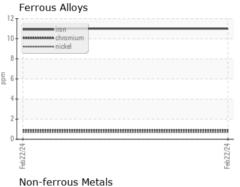
Viscosity @ 100°C		
18 - Abnormal		
10 - Abitolitai	 	
17		
Base		
© 16 - Base 0 15 - 15 - 14 - 14 - 15 - 16 - 16 - 16 - 16 - 16 - 16 - 16	 	
5.0		
314		
13 Abnormal	 	
12 +	 	
11		
11-4-		5
Feb 22/24		5
9		-1
_		_



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	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
Odor	scalar	*Visual	NORML	NORML		
Emulsified Water	scalar	*Visual	>0.2	NEG		
Free Water	scalar	*Visual		NEG		
FLUID PROPE	RTIES	method	limit/hase	current	history1	history2

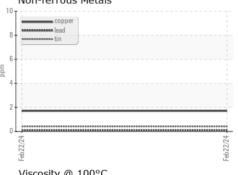
13.3

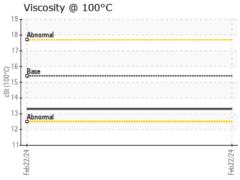
Visc @	100°C
GRA	PHS

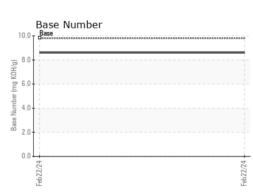


cSt

ASTM D445 15.4











Laboratory Sample No. Lab Number : 06099880 Unique Number : 10898110

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

: GFL0110130

Received **Tested** Diagnosed

: 26 Feb 2024

: 28 Feb 2024 : 28 Feb 2024 - Jonathan Hester

GFL Environmental - 410 - Michigan West 39000 Van Born Rd

Wayne, MI US 48184

Contact: Belal Dgheish bdgheish@gflenv.com T: (734)714-2340

Test Package: FLEET (Additional Tests: Glycol) To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - 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)

Report Id: GFL410 [WUSCAR] 06099880 (Generated: 02/28/2024 19:54:33) Rev: 1