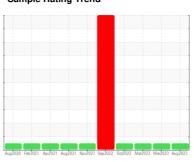


# **OIL ANALYSIS REPORT**

Sample Rating Trend







# 727016-596

Component

**Diesel Engine** 

**DIESEL ENGINE OIL SAE 15W40 (--- LTR)** 

## DIAGNOSIS

## Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

#### Wear

All component wear rates are normal.

## Contamination

There is no indication of any contamination in the oil.

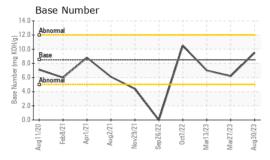
## **Fluid Condition**

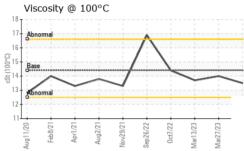
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		Aug2020 Feb2	021 Apr2021 Aug2021 Nov	2021 Sep2022 Oct2022 Mar2023 Mar2	023 Aug2023	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0065072	GFL0077824	GFL0077795
Sample Date		Client Info		30 Aug 2023	27 Mar 2023	13 Mar 2023
Machine Age	mls	Client Info		227826	220879	218468
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>100	7	9	30
Chromium	ppm	ASTM D5185m	>20	0	<1	1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	6	2	13
Lead	ppm	ASTM D5185m	>40	1	<1	3
Copper	ppm	ASTM D5185m	>330	1	1	4
Tin	ppm	ASTM D5185m	>15	<1	<1	2
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	<1	10	5
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	250 10	<1 0	10	5
Barium						
Barium Molybdenum	ppm	ASTM D5185m	10	0	0	0
Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m	10	0 59	0 61	0 60
Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	100	0 59 <1	0 61 <1	0 60 1
Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	10 100 450	0 59 <1 985	0 61 <1 870	0 60 1 867
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	10 100 450 3000	0 59 <1 985 1117	0 61 <1 870 1106	0 60 1 867 1084
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	10 100 450 3000 1150	0 59 <1 985 1117 1030	0 61 <1 870 1106 1007	0 60 1 867 1084 948
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	10 100 450 3000 1150 1350	0 59 <1 985 1117 1030 1274 3617	0 61 <1 870 1106 1007 1221	0 60 1 867 1084 948 1184
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 ASTM D5185m	10 100 450 3000 1150 1350 4250	0 59 <1 985 1117 1030 1274 3617	0 61 <1 870 1106 1007 1221 3398	0 60 1 867 1084 948 1184 3164
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	10 100 450 3000 1150 1350 4250	0 59 <1 985 1117 1030 1274 3617	0 61 <1 870 1106 1007 1221 3398 history1	0 60 1 867 1084 948 1184 3164 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	10 100 450 3000 1150 1350 4250 limit/base	0 59 <1 985 1117 1030 1274 3617 current	0 61 <1 870 1106 1007 1221 3398 history1	0 60 1 867 1084 948 1184 3164 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m	10 100 450 3000 1150 1350 4250 limit/base >25 >158	0 59 <1 985 1117 1030 1274 3617 current 4 2	0 61 <1 870 1106 1007 1221 3398 history1	0 60 1 867 1084 948 1184 3164 history2 8
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	0 59 <1 985 1117 1030 1274 3617 current 4 2	0 61 <1 870 1106 1007 1221 3398 history1 4 1	0 60 1 867 1084 948 1184 3164 history2 8 2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm	ASTM D5185m  method ASTM D5185m ASTM D5185m ASTM D5185m	10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	0 59 <1 985 1117 1030 1274 3617  current 4 2 2 current 1.1	0 61 <1 870 1106 1007 1221 3398 history1 4 1 2	0 60 1 867 1084 948 1184 3164 history2 8 2 3
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	10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	0 59 <1 985 1117 1030 1274 3617 current 4 2 2	0 61 <1 870 1106 1007 1221 3398 history1 4 1 2	0 60 1 867 1084 948 1184 3164 history2 8 2 3 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm	ASTM D5185m  MEthod  ASTM D5185m ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D76185m  ASTM D76185m  ASTM D76185m  ASTM D76185m	10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	0 59 <1 985 1117 1030 1274 3617  current 4 2 2  current 1.1 10.5 20.2	0 61 <1 870 1106 1007 1221 3398 history1 4 1 2 history1 1 10.2	0 60 1 867 1084 948 1184 3164 history2 8 2 3 history2 2.7 19.0
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m  MEthod  ASTM D5185m ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D5185m  ASTM D76185m  ASTM D76185m  ASTM D76185m  ASTM D76185m	10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20 >30	0 59 <1 985 1117 1030 1274 3617  current 4 2 2  current 1.1 10.5 20.2	0 61 <1 870 1106 1007 1221 3398 history1 4 1 2 history1 1 10.2 22.4	0 60 1 867 1084 948 1184 3164 history2 8 2 3 history2 2.7 19.0 31.1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	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	10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >3 >20 >30 limit/base	0 59 <1 985 1117 1030 1274 3617  current 4 2 2  current 1.1 10.5 20.2  current	0 61 <1 870 1106 1007 1221 3398 history1 4 1 2 history1 1 10.2 22.4 history1	0 60 1 867 1084 948 1184 3164 history2 8 2 3 history2 2.7 19.0 31.1



## **OIL ANALYSIS REPORT**

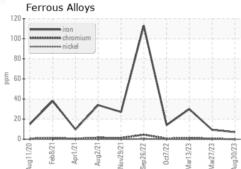


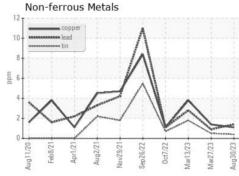


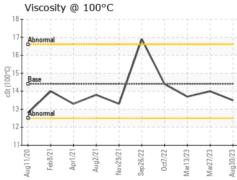
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

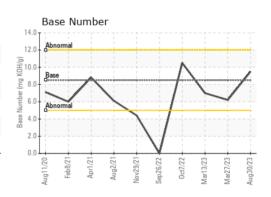
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	14.4	13.5	14.0	13.7	

## **GRAPHS**













Certificate L2367

Laboratory

Sample No. Lab Number Unique Number : 10634729 Test Package : FLEET

: GFL0065072 : 05944117

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

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 06 Sep 2023 Diagnosed : 07 Sep 2023 Diagnostician : Wes Davis

GFL Environmental - 650 - West Point Hauling 7825 Parham Landing Road

West Point, VA US 23181 Contact: Jason Smith

jasonsmith@gflenv.com T:

\* - 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)

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