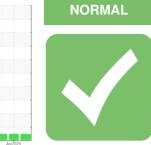


# **OIL ANALYSIS REPORT**

Sample Rating Trend



Area (YA163859) 020

810040 Component Diesel Engine Fluid

## **DIESEL ENGINE OIL SAE 40 (40 QTS)**

### 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.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0126042	GFL0117863	GFL0103788
Sample Date		Client Info		25 Jun 2024	03 Apr 2024	08 Feb 2024
Machine Age	hrs	Client Info		8489	7827	7377
Oil Age	hrs	Client Info		662	450	583
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	6	9	13
Chromium	ppm	ASTM D5185m		0	<1	0
Nickel	ppm	ASTM D5185m	>5	0	<1	0
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	2	<1
Lead	ppm	ASTM D5185m	>40	<1	<1	0
Copper	ppm	ASTM D5185m	>330	<1	2	6
Tin	ppm	ASTM D5185m	>15	<1	1	0
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 250	current 8	history1 3	history2 6
	ppm ppm					
Boron		ASTM D5185m	250	8	3	6
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	8 0	3 0	6 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	8 0 61	3 0 61	6 0 62
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	8 0 61 <1	3 0 61 <1	6 0 62 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	8 0 61 <1 966	3 0 61 <1 924	6 0 62 <1 953
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	8 0 61 <1 966 1119	3 0 61 <1 924 1094	6 0 62 <1 953 1155
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	8 0 61 <1 966 1119 857	3 0 61 <1 924 1094 951	6 0 62 <1 953 1155 993
Boron 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	250 10 100 450 3000 1150 1350	8 0 61 <1 966 1119 857 1268	3 0 61 <1 924 1094 951 1212	6 0 62 <1 953 1155 993 1304
Boron 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	250 10 100 450 3000 1150 1350 4250 limit/base	8 0 61 <1 966 1119 857 1268 3190	3 0 61 <1 924 1094 951 1212 2815	6 0 62 <1 953 1155 993 1304 2792
Boron 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	250 10 100 450 3000 1150 1350 4250 limit/base >25	8 0 61 <1 966 1119 857 1268 3190 current	3 0 61 <1 924 1094 951 1212 2815 history1	6 0 62 <1 953 1155 993 1304 2792 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216	8 0 61 <1 966 1119 857 1268 3190 current 4	3 0 61 <1 924 1094 951 1212 2815 history1 8	6 0 62 <1 953 1155 993 1304 2792 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216	8 0 61 <1 966 1119 857 1268 3190 current 4 4	3 0 61 <1 924 1094 951 1212 2815 history1 8 3	6 0 62 <1 953 1155 993 1304 2792 history2 3 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216 >20	8 0 61 <1 966 1119 857 1268 3190 current 4 4 4 4	3 0 61 <1 924 1094 951 1212 2815 history1 8 3 2	6 0 62 <1 953 1155 993 1304 2792 history2 3 4 4 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216 >216 >20 <b>limit/base</b>	8 0 61 <1 966 1119 857 1268 3190 current 4 4 4 <1 <1	3 0 61 <1 924 1094 951 1212 2815 history1 8 3 2 2 history1	6 0 62 <1 953 1155 993 1304 2792 history2 3 4 <1 kistory2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 216 >25 >216 >20 limit/base >20	8 0 61 <1 966 1119 857 1268 3190 current 4 4 4 <1 <1 current 0.5	3 0 61 <1 924 1094 951 1212 2815 history1 8 3 2 history1 0.5	6 0 62 <1 953 1155 993 1304 2792 history2 3 4 <1 ×1 history2 0.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 216 >25 >216 >20 limit/base >20	8 0 61 <1 966 1119 857 1268 3190 current 4 4 4 <1 current 0.5 8.1	3 0 61 <1 924 1094 951 1212 2815 history1 8 3 2 2 history1 0.5 7.8	6 0 62 <1 953 1155 993 1304 2792 history2 3 4 <1 ×1 history2 0.7 8.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>iimit/base</b> >25 >216 >20 <b>iimit/base</b> >4 >20 >30	8 0 61 <1 966 1119 857 1268 3190 <u>current</u> 4 4 4 <1 <1 <u>current</u> 0.5 8.1 19.8	3 0 61 <1 924 1094 951 1212 2815 history1 8 3 2 <u>history1</u> 0.5 7.8 19.3	6 0 62 <1 953 1155 993 1304 2792 history2 3 4 <1 kistory2 0.7 8.7 20.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 <b>imit/base</b> >25 >216 >20 <b>imit/base</b> >4 >20 >30 <b>imit/base</b>	8 0 61 <1 966 1119 857 1268 3190 current 4 4 4 5 1 current 0.5 8.1 19.8 current	3 0 61 <1 924 1094 951 1212 2815 history1 8 3 2 history1 0.5 7.8 19.3 history1	6 0 62 <1 953 1155 993 1304 2792 history2 3 4 <1 history2 0.7 8.7 20.1 history2

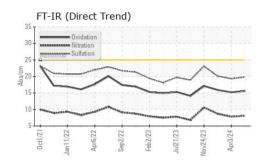


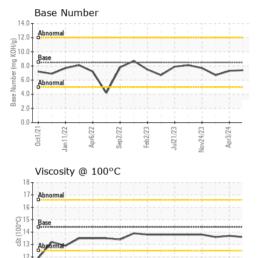
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Jan 11/22

## **OIL ANALYSIS REPORT**





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Feb2/23

Jul21/23

Apr3/24

Nov24/23

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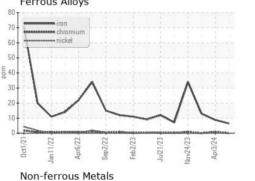
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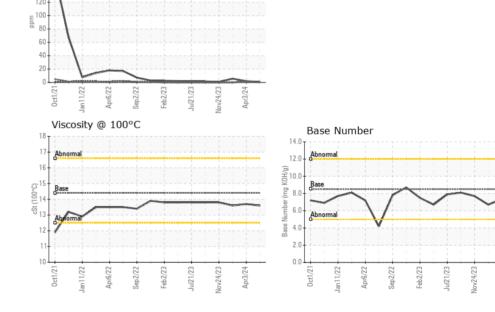
140 120

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	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.6	13.7	13.6
GRAPHS						

Ferrous Alloys

lead





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 020 - Alamance Sample No. : GFL0126042 Received : 27 Jun 2024 703 East Gilbreath St Lab Number : 06222078 Tested : 28 Jun 2024 Graham, NC Unique Number : 11100275 Diagnosed : 28 Jun 2024 - Wes Davis US 27253 Test Package : FLEET Contact: Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. richard.belcher@gflenv.com T: (800)207-6618 \* - 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) F: (336)229-0526

Report Id: GFL020 [WUSCAR] 06222078 (Generated: 06/28/2024 04:44:29) Rev: 1

Submitted By: JEREMY SHORES

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