

OIL ANALYSIS REPORT

Sample Rating Trend



Area (TLR3801) 414122 Component Diesel Engine Fluid DIESEL ENGINE OIL SAE 40 (--- GAL)

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

Metal levels are typical for a new component breaking in.

Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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		GFL0128703	GFL0112109	GFL0112063
Sample Date		Client Info		12 Jul 2024	22 May 2024	12 Mar 2024
Machine Age	mls	Client Info		29736	22168	10428
Oil Age	mls	Client Info		29736	22168	10428
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	1.9
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	>100	39	67	59
Chromium	ppm	ASTM D5185m	>20	<1	2	<1
Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	6	14	23
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	2	4	14
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 250	current 0	history1 <1	history2 31
	ppm ppm					
Boron		ASTM D5185m	250	0	<1	31
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	0 0	<1 2	31 3
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	0 0 48	<1 2 50	31 3 19
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	0 0 48 <1	<1 2 50 1	31 3 19 4
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	0 0 48 <1 15	<1 2 50 1 80	31 3 19 4 704 1491 750
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	0 0 48 <1 15 2457	<1 2 50 1 80 2311	31 3 19 4 704 1491
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	0 0 48 <1 15 2457 1031	<1 2 50 1 80 2311 1133	31 3 19 4 704 1491 750
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	0 0 48 <1 15 2457 1031 1208	<1 2 50 1 80 2311 1133 1224	31 3 19 4 704 1491 750 920
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	0 0 48 <1 15 2457 1031 1208 2905	<1 2 50 1 80 2311 1133 1224 3102	31 3 19 4 704 1491 750 920 3268
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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250	0 0 48 <1 15 2457 1031 1208 2905 current	<1 2 50 1 80 2311 1133 1224 3102 history1	31 3 19 4 704 1491 750 920 3268 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 method	250 10 100 450 3000 1150 1350 4250 limit/base >25	0 0 48 <1 15 2457 1031 1208 2905 current 4	<1 2 50 1 80 2311 1133 1224 3102 history1 10	31 3 19 4 704 1491 750 920 3268 history2 20
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 ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216	0 0 48 <1 15 2457 1031 1208 2905 <u>current</u> 4 <1	<1 2 50 1 80 2311 1133 1224 3102 history1 10 4	31 3 19 4 704 1491 750 920 3268 history2 20 3
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 limit/base >25 >216 >20	0 0 48 <1 15 2457 1031 1208 2905 current 4 <1 20	<1 2 50 1 80 2311 1133 1224 3102 history1 10 4 53	31 3 19 4 704 1491 750 920 3268 history2 20 3 75
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 216 >216 >216 >20	0 0 48 <1 15 2457 1031 1208 2905 current 4 <1 20 current	<1 2 50 1 80 2311 1133 1224 3102 history1 10 4 53 history1	31 3 19 4 704 1491 750 920 3268 history2 20 3 75 history2
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	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >3	0 0 48 <1 15 2457 1031 1208 2905 current 4 <1 20 current 0.5	<1 2 50 1 80 2311 1133 1224 3102 history1 10 4 53 history1 0.6	31 3 19 4 704 1491 750 920 3268 history2 20 3 75 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 ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 20 imit/base >25 >216 >20 imit/base >3 >20	0 0 48 <1 15 2457 1031 1208 2905 <i>current</i> 4 <1 20 <i>current</i> 0.5 9.1	<1 2 50 1 80 2311 1133 1224 3102 history1 10 4 53 history1 0.6 10.0	31 3 19 4 704 1491 750 920 3268 history2 20 3 20 3 75 history2 0.7 10.9
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 ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 imit/base >216 >216 >20 imit/base >3 >20 >30	0 0 48 <1 15 2457 1031 1208 2905 <u>current</u> 4 <1 20 <u>current</u> 0.5 9.1 18.7	<1 2 50 1 80 2311 1133 1224 3102 history1 10 4 53 history1 0.6 10.0 20.6	31 3 19 4 704 1491 750 920 3268 history2 20 3 75 history2 0.7 10.9 22.1
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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20 limit/base >3 >20 >30 >30	0 0 48 <1 15 2457 1031 1208 2905 current 4 <1 20 current 0.5 9.1 18.7 current	<1 2 50 1 80 2311 1133 1224 3102 history1 10 4 53 history1 0.6 10.0 20.6 history1	31 3 19 4 704 1491 750 920 3268 history2 20 3 268 history2 20 3 75 history2 0.7 10.9 22.1 history2



OIL ANALYSIS REPORT

FT-IR (Direct Tr		1	VISUAL		method	limit/base	current	history1	history2	
Nitration			White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
Annorman Sulfation			Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
		a a a a a a a a a a a a a a a a a a a	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
			Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
-			Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
; L;			Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
Mar12/24	May22/24	Jul12/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
2	W	~	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
Base Number			Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
Abnormal	1		Free Water	scalar	*Visual		NEG	NEG	NEG	
0 - Base			FLUID PROPE	RTIES	method	limit/base	current	history1	history2	
0 - Base			Visc @ 100°C	cSt	ASTM D445	14.4	13.1	12.8	11.4	
O Abnormal			GRAPHS							
			Ferrous Alloys							
0			⁷⁰ T	\sim						
Mar12/24	May22/24	10 C E	60 - chromium							
Mar	May	1	50							
Viscosity @ 100)°C		e 40							
¹⁸ T			40 30	1						
17 Abnormal			20							
			10-							
14		*******		: ***						
Abnormal			Mar12/24	May22/24		Jul12/24				
11						٦u				
10		5	Non-ferrous Meta	ls						
Mar12/24	May22/24	V C C 11.1	copper							
M	Ma	-	12 - management lead							
			10							
			6							
			4 -	-						
			2							
			54 - 10	24		24				
			lar1 2/2 4	ay22/24		Jul12/24				
			≥ Viscosity @ 100°0	\geq						
			¹⁸ T			14.0	Base Number			
			17- Abnormal				Abnormal			
			16			12.0				
			C ¹⁵ Base			5 10.0 B	Base			
			() 15 Base 14 13 14			8.0 لق له				
			Abnormal			(10,100) 8.0 0.0 Konther 8.0 8.0 8.0 8.0 8.0 4.0	Abnormal			
			12-			器 4.0				
			11-			2.0				
			10	-		0.0	4	4		
			Mar12/24	May22/24		Jul12/24	Mar1 2/24	May22/24	Jul12/24	
			Ma	Ma		J.	M	Ma	'n	
SAN SALES	4		: WearCheck USA - 50				GFL Envir		ugar Land Hauling	
2	ANAB		: GFL0128703	ived : 18 Jul 2024 d : 18 Jul 2024			16011 West Belfort Street			
	TESTING LABORATORY	Lab Number Unique Number		Teste Diagr		3 Jul 2024 5 Jul 2024 - We	es Davis	Sugar Land, TX US 77498		
		Sundae Maninel						S Davis US 7749 Contact: Adrian Martine		
	Certificate L2367	Test Package	: FLEET					Contact: Adrian Martinez adrianmartinez@gflenv.com		
			: FLEET contact Customer Serv are outside of the ISO :							

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