

## **OIL ANALYSIS REPORT**

Sample Rating Trend





### Machine Id MACK 813005

Component Diesel Engine Fluid

DIESEL ENGINE OIL SAE 40 (--- GAL)

וט	AGI	NO	SIS	

#### Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

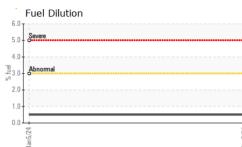
#### Fluid Condition

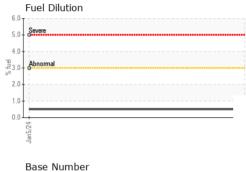
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

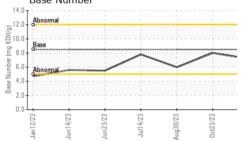
	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0109067	GFL0086195	GFL0086261
Sample Date		Client Info		05 Jan 2024	23 Oct 2023	30 Aug 2023
Machine Age	hrs	Client Info		3250	2865	2585
Oil Age	hrs	Client Info		3251	2865	2585
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				ATTENTION	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
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	10	17
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	3
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	2	1	<1
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	<1	1	5
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	20	19	10
Barium	ppm	ASTM D5185m	10	0	0	0
Molybdenum	ppm	ASTM D5185m	100	60	60	65
Manganese	ppm	ASTM D5185m		0	<1	<1
Manganese Magnesium		ASTM D5185m ASTM D5185m	450	0 714	<1 794	<1 877
0	ppm		450 3000	-		
Magnesium	ppm ppm	ASTM D5185m		714	794	877
Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m	3000	714 1105	794 1079	877 1124
Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	3000 1150	714 1105 926	794 1079 931	877 1124 960
Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	3000 1150 1350	714 1105 926 1092	794 1079 931 1203	877 1124 960 1210
Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	3000 1150 1350 4250 limit/base	714 1105 926 1092 2951	794 1079 931 1203 2871	877 1124 960 1210 3373
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	3000 1150 1350 4250 limit/base	714 1105 926 1092 2951 current	794 1079 931 1203 2871 history1	877 1124 960 1210 3373 history2
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	3000 1150 1350 4250 limit/base >25	714 1105 926 1092 2951 current 3	794 1079 931 1203 2871 history1 3 <1 2	877 1124 960 1210 3373 history2 5
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	3000 1150 1350 4250 <b>limit/base</b> >25 >216	714 1105 926 1092 2951 current 3 3 3	794 1079 931 1203 2871 history1 3 <1	877 1124 960 1210 3373 history2 5 2
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	3000 1150 1350 4250 <b>limit/base</b> >25 >216 >20	714 1105 926 1092 2951 <u>current</u> 3 3 3 3	794 1079 931 1203 2871 history1 3 <1 2	877 1124 960 1210 3373 history2 5 2 2 3
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524	3000 1150 1350 4250 <b>limit/base</b> >25 >216 >20 >3.0	714 1105 926 1092 2951 current 3 3 3 3 0.5	794 1079 931 1203 2871 history1 3 <1 2 <1.0 history1 0.3	877 1124 960 1210 3373 history2 5 2 3 <1.0
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm 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	3000 1150 1350 4250 <b>limit/base</b> >25 >216 >20 >3.0 <b>limit/base</b>	714 1105 926 1092 2951 current 3 3 3 3 0.5 current	794 1079 931 1203 2871 history1 3 <1 2 <1.0 history1	877 1124 960 1210 3373 history2 5 2 3 <1.0 history2
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	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 D3524 <b>method</b> *ASTM D7844	3000 1150 1350 4250 <i>limit/base</i> >25 >216 >20 >3.0 <i>limit/base</i> >4	714 1105 926 1092 2951 current 3 3 3 0.5 current 0.3	794 1079 931 1203 2871 history1 3 <1 2 <1.0 history1 0.3	877 1124 960 1210 3373 history2 5 2 3 <1.0 history2 0.6
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm 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 D3524 ASTM D3524 *ASTM D7844 *ASTM D7844	3000 1150 1350 4250 <b>limit/base</b> >25 >216 >20 >3.0 <b>limit/base</b> >4 >20	714 1105 926 1092 2951 current 3 3 3 3 0.5 current 0.3 7.4	794 1079 931 1203 2871 history1 3 <1 2 <1.0 history1 0.3 5.8	877 1124 960 1210 3373 history2 5 2 3 <1.0 history2 0.6 7.5
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm 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 D3524 ASTM D3524 *ASTM D7844 *ASTM D7844	3000 1150 1350 4250 <b>limit/base</b> >25 >216 >20 >3.0 <b>limit/base</b> >4 >20 >3.0	714 1105 926 1092 2951 <i>current</i> 3 3 3 3 0.5 <i>current</i> 0.3 7.4 17.7	794 1079 931 1203 2871 history1 3 <1 2 <1.0 history1 0.3 5.8 17.2	877 1124 960 1210 3373 <b>history2</b> 5 2 3 <1.0 <b>history2</b> 0.6 7.5 18.3



# **OIL ANALYSIS REPORT**







	VISUAL		method	limit/base		current	history1	history2
	White Metal	scalar	*Visual	NONE	ľ	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	I	NONE	NONE	NONE
Jan 5/24	Appearance	scalar	*Visual	NORML		NORML	NORML	NORML
Jan	Odor	scalar	*Visual	NORML	I	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	<b>A</b> 1	12.1	12.8	12.4
	GRAPHS							
	Ferrous Alloys							
	80 iron chromium							
	70 60							
E	50 40							
	30	<hr/>						
	10	1	~					
	0							
	Jan 12/23 Jun 14/23 Jun 23/23	Jul14/23	Aug30/23 0ct23/23	Jan5/24				
	Jan Jun Jun	Jul	Aug	ha				
	Non-ferrous Metal	s						
0ct23/23	copper							
_	200 - management lead							
	150							
udd								
	100							
	50-							
	3/23 4/23 0 0	4/23	0/23 -	Jan5/24				
	Jan12/23 Jun14/23 Jun23/23	Jul14/23	Aug30/23 0ct23/23	Jan				
	🔺 Viscosity @ 100°C				Ba	ase Number		
	18			14.	0т :: -			
	17- Abnormal			12.	0 - At	bnormal		
	16			( <sup>B</sup> /H0				
	(3) 15 <b>Base</b>			(b)H01 H03 Bu) as Mump as 8 8 8 8 8 8 8 8	0 - Ba	ase	~	
11	314				0		$\sim$	
	12			N asg 4.	- A	bnormal		
	12 -			2.				
	11							
	Jan12/23	Jul14/23 -	Aug30/23 - Oct23/23 -	Jan5/24	Jan 12/23	Jun14/23 -	Jul14/23 -	0ct23/23 - Jan5/24 -
	Jan1 Jun1 Jun2	Jul	Aug3 Oct2	Jan	Jan1	Jun1 Jun2	Jul1 Aug3	0ct2 Jan
Laboratory	·WearChark LIGA F			NC 9751	3		vironmontal	009 - Fairburn
Laboratory Sample No.	: WearCheck USA - 5 : GFL0109067	Recieved		ry, NC 2751; Jan 2024	3	GFL EN		Roosevelt Hwy
Lab Number		Diagnos		Jan 2024			0000	Fairburn, GA
Unique Number	: 10821707	Diagnost	i <b>cian</b> : Jon	athan Heste				US 30213
Test Package	: FLEET ( Additional	Tests: Fu	elDilution, P	ercentFuel)			Cont	act: Eric Jones

