

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 254001-1213

Component Gasoline Engine Fluid GASOLINE ENGINE OIL SAE 5W20 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

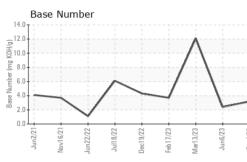
Fluid Condition

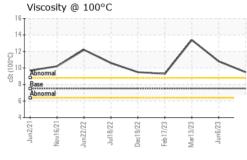
The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0100034	GFL0062224	GFL0062240
Sample Date		Client Info		04 Dec 2023	06 Jun 2023	13 Mar 2023
Machine Age	mls	Client Info		216953	204321	195321
Oil Age	mls	Client Info		2244	10000	2664
Oil Changed		Client Info		Not Changd	Changed	Not Changd
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	0.0
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm		>150	33	33	32
Chromium	ppm		>20	2	2	2
Nickel	ppm		>5	<1	<1	<1
Titanium	ppm	ASTM D5185m	20	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m		7	4	2
Lead	ppm		>50	0	0	5
Copper	ppm	ASTM D5185m		11	9	44
Tin	ppm	ASTM D5185m	>100	0	0	<1
Vanadium	ppm	ASTM D5185m	210	0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	le le			•	-	-
ADDITIVES		method	limit/base	current	historv1	historv2
ADDITIVES	nnm	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	75	20	35	28
Boron Barium	ppm	ASTM D5185m ASTM D5185m	75 5	20 0	35 0	28 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	75	20 0 300	35 0 163	28 0 71
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	75 5 100	20 0 300 0	35 0 163 <1	28 0 71 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	75 5 100 12	20 0 300 0 553	35 0 163 <1 625	28 0 71 <1 831
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	75 5 100 12 2100	20 0 300 0 553 1363	35 0 163 <1 625 991	28 0 71 <1 831 1108
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	75 5 100 12 2100 650	20 0 300 0 553 1363 697	35 0 163 <1 625	28 0 71 <1 831
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	75 5 100 12 2100	20 0 300 0 553 1363	35 0 163 <1 625 991 666	28 0 71 <1 831 1108 978
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	75 5 100 12 2100 650 850	20 0 300 0 553 1363 697 902	35 0 163 <1 625 991 666 842	28 0 71 <1 831 1108 978 1135
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	75 5 100 12 2100 650 850 2500	20 0 300 553 1363 697 902 1908	35 0 163 <1 625 991 666 842 2375	28 0 71 <1 831 1108 978 1135 2861
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	75 5 100 12 2100 650 850 2500	20 0 300 553 1363 697 902 1908 current	35 0 163 <1 625 991 666 842 2375 history1	28 0 71 <1 831 1108 978 1135 2861 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	75 5 100 12 2100 650 850 2500 limit/base >30	20 0 300 553 1363 697 902 1908 current 18	35 0 163 <1 625 991 666 842 2375 history1 15	28 0 71 <1 831 1108 978 1135 2861 history2 10
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	75 5 100 12 2100 650 850 2500 limit/base >30 >50	20 0 300 553 1363 697 902 1908 current 18 4	35 0 163 <1 625 991 666 842 2375 history1 15 3	28 0 71 <1 831 1108 978 1135 2861 history2 10 ▲ 256
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	75 5 100 12 2100 650 850 2500 limit/base >30 >50 >20	20 0 300 0 553 1363 697 902 1908 current 18 4 1	35 0 163 <1 625 991 666 842 2375 history1 15 3 1	28 0 71 <1 831 1108 978 1135 2861 history2 10 ▲ 256 3
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	75 5 100 12 2100 650 850 2500 Imit/base >30 >50 >20	20 0 300 553 1363 697 902 1908 current 18 4 1 1 current	35 0 163 <1 625 991 666 842 2375 history1 15 3 1 15 3 1 history1	28 0 71 <1 831 1108 978 1135 2861 history2 10 ↓ 256 3
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	75 5 100 12 2100 650 850 2500 Imit/base >30 >50 >20	20 0 300 553 1363 697 902 1908 current 18 4 1 1 current 0.1	35 0 163 <1 625 991 666 842 2375 history1 15 3 1 15 3 1 history1 0.1	28 0 71 <1 831 1108 978 1135 2861 history2 10 ▲ 256 3 history2 0.3
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	75 5 100 12 2100 650 850 2500 imit/base >30 >50 >20 imit/base	20 0 300 0 553 1363 697 902 1908 current 18 4 1 1 current 0.1 16.8	35 0 163 <1 625 991 666 842 2375 history1 15 3 1 15 3 1 history1 0.1 0.1	28 0 71 <1 831 1108 978 1135 2861 history2 10 ▲ 256 3 history2 0.3 6.6
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	75 5 100 12 2100 650 850 2500 Imit/base >30 >50 >20 Imit/base	20 0 300 0 553 1363 697 902 1908 current 18 4 1 1 current 0.1 16.8 27.8	35 0 163 <1 625 991 666 842 2375 history1 15 3 1 15 3 1 0.1 14.6 28.1	28 0 71 <1 831 1108 978 1135 2861 history2 10 ▲ 256 3 bistory2 0.3 6.6 17.5
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 D7844 *ASTM D7844 *ASTM D7844	75 5 100 12 2100 650 850 2500 2500 >30 >50 220 imit/base >20 >30 >30	20 0 300 553 1363 697 902 1908 current 18 4 1 1 current 0.1 16.8 27.8 current	35 0 163 <1 625 991 666 842 2375 history1 15 3 1 15 3 1 0.1 14.6 28.1 history1	28 0 71 <1 831 1108 978 1135 2861 history2 10 ▲ 256 3 history2 0.3 6.6 17.5 history2



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					
Jun6/23 Dec4/23	Appearance	scalar *Visual	NORML	NORML	NORML	NORML					
Ju De	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 D44	5 7.5	9.5	10.8	1 3.4					
	GRAPHS										
	Ferrous Alloys										
	120 iron										
Jun6/23	100 - chromium										
Jun	www.www.nickel										
	80										
1											
1	60										
	40										
	20										
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		53 53	53 53								
	Jun2/21 Nov16/21 Jul18/22	Dec19/22 Feb17/23 Mar13/23	Jun6/23 Dec4/23								
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	Non-ferrous Metal	S									
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	40 - copper	A									
	35 tin	/\\									
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	Jun2/21 Nov16/21 Jun22/22 Jul18/22	Dec19/22 Feb17/23 Mar13/23	Jun6/23 Dec4/23								
	Jun, Nov Jun,	Peb Mar	De								
	Viscosity @ 100°C Base Number										
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	7- Abnormal										
	6		2.0								
	5		0.0								
	Jun2/21 Vov16/21 Jun22/22	9/22 3/23	Jun6/23 Dec4/23	Jun2/21 Nov16/21 Jun22/22	Jul18/22 Dec19/22 Feb17/23	/lar13/23					
	Jun2/21 Nov16/21 Jun22/22	Dec19/22 Feb17/23 Mar13/23	Dec	Jun2/21 Nov16/21 Jun22/22	Jul18/22 Dec19/22 Feb17/23	Mar13/23 Jun6/23					
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oratory	: WearCheck USA - 5	01 Madison Ave. (Cary, NC 27513	GFL Env	vironmental - 62F	6 - Cadillac Haulii					
nple No.			B Dec 2023			1 Ron Wilson					
Number			2 Dec 2023			Cadillac, N					
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que Number	: 10779661	Diagnostician : D	on Baldridge			US 4960					



 Certificate L2367
 Test Package
 : FLEET

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