

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 812039

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

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

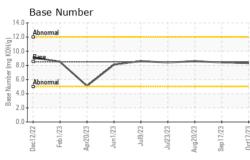
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

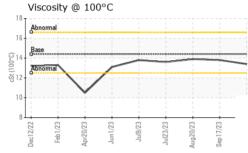
SAMPLE INFOR	VATION	method	limit/base	Jui2023 Jui2023 Aug2023 Sep20	history1	history2
Sample Number		Client Info		GFL0086388	GFL0086375	GFL0074785
Sample Date		Client Info		17 Oct 2023	17 Sep 2023	20 Aug 2023
Machine Age	hrs	Client Info		3874	3735	3578
Oil Age	hrs	Client Info		0	0	0
Oil Changed	1110	Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT		method	limit/base	current	history1	history2
Fuel		WC Method		<1.0	<1.0	<1.0
		WC Method	>0	<1.0 NEG	<1.0 NEG	<1.0 NEG
Glycol		WC Welling		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	6	6	3
Chromium	ppm	ASTM D5185m	>4	<1	<1	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	3	2	1
Lead	ppm	ASTM D5185m	>45	<1	0	0
Copper	ppm	ASTM D5185m	>85	1	<1	<1
Tin	ppm	ASTM D5185m	>4	<1	0	0
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 250	current 12	history1 11	history2 9
	ppm ppm					
Boron		ASTM D5185m	250	12	11	9
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	12 0	11 <1	9 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	12 0 65	11 <1 68	9 0 63
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	12 0 65 <1	11 <1 68 <1	9 0 63 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	12 0 65 <1 932	11 <1 68 <1 945	9 0 63 <1 913
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	12 0 65 <1 932 1169	11 <1 68 <1 945 1209	9 0 63 <1 913 1172
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	12 0 65 <1 932 1169 1048	11 <1 68 <1 945 1209 1079	9 0 63 <1 913 1172 988
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	12 0 65 <1 932 1169 1048 1286	11 <1 68 <1 945 1209 1079 1288	9 0 63 <1 913 1172 988 1224
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	12 0 65 <1 932 1169 1048 1286 3178	11 <1 68 <1 945 1209 1079 1288 3805	9 0 63 <1 913 1172 988 1224 3619
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 limit/base >30	12 0 65 <1 932 1169 1048 1286 3178 current	11 <1 68 <1 945 1209 1079 1288 3805 history1	9 0 63 <1 913 1172 988 1224 3619 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 >30 >216	12 0 65 <1 932 1169 1048 1286 3178 current 4	11 <1 68 <1 945 1209 1079 1288 3805 history1 4	9 0 63 <1 913 1172 988 1224 3619 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 ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >30 >216	12 0 65 <1 932 1169 1048 1286 3178 current 4 1	11 <1 68 <1 945 1209 1079 1288 3805 history1 4 2	9 0 63 <1 913 1172 988 1224 3619 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 limit/base >30 >216 >20	12 0 65 <1 932 1169 1048 1286 3178 current 4 1 5	11 <1 68 <1 945 1209 1079 1288 3805 history1 4 2 3	9 0 63 <1 913 1172 988 1224 3619 history2 3 4 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iinit/base >216 >216 >20 Iinit/base >30	12 0 65 <1 932 1169 1048 1286 3178 current 4 1 5 S	111 <1 68 <1 945 1209 1079 1288 3805 history1 4 2 3 history1 0.2	9 0 63 <1 913 1172 988 1224 3619 history2 3 4 2 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 ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >30 >216 >20 limit/base >3 >216	12 0 65 <1 932 1169 1048 1286 3178 <u>current</u> 4 1 5 <u>current</u> 0.2	11 <1 68 <1 945 1209 1079 1288 3805 history1 4 2 3 3	9 0 63 <1 913 1172 988 1224 3619 history2 3 4 2 2 history2 0.1
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 limit/base >30 >216 >20 limit/base >3 >216	12 0 65 <1 932 1169 1048 1286 3178 <i>current</i> 4 1 5 <i>current</i> 0.2 7.2	111 <1 68 <1 945 1209 1079 1288 3805 history1 4 2 3 history1 0.2 6.2	9 0 63 <1 913 1172 988 1224 3619 history2 3 4 2 history2 0.1 5.3
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 D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 limit/base >30 >216 >20 limit/base >3 >20 >30 >30	12 0 65 <1 932 1169 1048 1286 3178 <i>current</i> 4 1 5 <i>current</i> 0.2 7.2 18.5	111 <168 <1 945 1209 1079 1288 3805 history1 4 2 3 history1 0.2 6.2 17.8 history1	9 0 63 <1 913 1172 988 1224 3619 history2 3 4 2 5.3 17.3 history2
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 >30 >216 >20 imit/base >3 >20 30 imit/base	12 0 65 <1 932 1169 1048 1286 3178 <u>current</u> 4 1 5 <u>current</u> 0.2 7.2 18.5	111 <1 68 <1 945 1209 1079 1288 3805 history1 4 2 3 3 history1 0.2 6.2 17.8	9 0 63 <1 913 1172 988 1224 3619 history2 3 4 2 2 history2 0.1 5.3 17.3



OIL ANALYSIS REPORT

VISUAL





	· · · ·	Wł	nite Metal	scalar	*Visual	NONE	NONE	NONE	Ν	IONE
		Ye	llow Metal	scalar	*Visual	NONE	NONE	NONE	Ν	IONE
		Pre	ecipitate	scalar	*Visual	NONE	NONE	NONE	Ν	IONE
		Silt		scalar	*Visual	NONE	NONE	NONE	Ν	IONE
		De	bris	scalar	*Visual	NONE	NONE	NONE	Ν	IONE
		Sa	nd/Dirt	scalar	*Visual	NONE	NONE	NONE	Ν	IONE
Jul9/23 - Jul23/23 -	Aug20/23 · Sep17/23 ·	Ap Oct17/23	pearance	scalar	*Visual	NORML	NORML	NORM	L N	IORML
Jul Jul2	Aug20/23 Sep17/23	bO ^{oct}	or	scalar	*Visual	NORML	NORML	NORM	L N	IORML
			ulsified Wate		*Visual	>0.2	NEG	NEG		IEG
		Fre	e Water	scalar	*Visual		NEG	NEG		IEG
			LUID PRC			limit/base	current	history		history2
			c @ 100°C	cSt	ASTM D445		13.4	13.8		3.9
			RAPHS				-			
		F	errous Alloys	;						
	_			1						
Jul9/23 Jul23/23	Aug20/23 Sep17/23	50-	iron chromium							
յու Հայ	Aug	40 -	nickel							
		<u>특</u> 30 -	/							
		20 -	/							
		10-		1						
		0								
		Dec12/22	Feb1/23 - Apr20/23 -	Jun1/23 - Jul9/23 -	Jul23/23 Aug20/23 Sep17/23	0ct17/23 -				
	ec	Feb Apr2	ոսէ Նու	Jul2 ug2 ep1	Det1					
				' A S	0					
			on-ferrous M	1etals	, A N	0				
			on-ferrous M	1etals	A O	-				
		N	copper lead	1etals	- 4 S					
		N 300 250	on-ferrous M	1etals						
		N 300 - 250 - 200 -	copper lead	1etals	S P					
		N 300 250	copper lead	letals						
		N 300 - 250 - 200 -	copper lead	1etals						
		N 250 - 200 - 馬 150 - 100 -	copper lead	1etals						
		300 250 - 200 - 토 150 -	copper lead	letals						
		N 250 - 200 - <u>5</u> 150 - 100 - 50 -	copper lead							
		N 250 - 200 - <u>5</u> 150 - 100 - 50 -	copper lead			0et17/23				
			copper lead	Ez/lmf			Page Number			
		N 300 250 200 <u>E</u> 150 50 0 0 8 18 7	con-ferrous M lead tin E2002 dy Scosity @ 10	Ez/lmf			Base Numbe	2 r		
		N 300 250 200 <u>E</u> 150 0 100 100 100 100 100 100 100 100 1	ead tin Phi20123 Phi2012 Phi20123 Phi20123 Phi20123 Phi20123 Phi20123 Phi20123 Phi20	Ez/lmf		0et17/23		21.		
		N 250 - 200 - 50 - 100 - 50 - 0 - 100 - 100 - 50 - 100	copper lead fin E271 rpg Viscosity @ 100	Ez/lmf		EZ(L100	Abnormal	9 1 .		
		N 300 250 200 50 100 50 100 50 100 50 50 100 50 50 50 50 50 50 50 50 50 50 50 50 5	con-ferrous M lead tin E2002 dy Scosity @ 10	Ez/lmf		EZ(L100	Abnormal	9 r		
		N 300 250 200 50 100 50 100 50 100 50 50 100 50 50 50 50 50 50 50 50 50 50 50 50 5	con-ferrous M lead tin E2007 PH Viscosity @ 100 Nonormal	Ez/lmf		EZ(L100	Abnormal	217		
		N 300 250 200 50 100 50 100 100 100 100 100 100 100	copper lead fin E271 rpg Viscosity @ 100	Ez/lmf		EZ(L100	Abnormal	21		
		N 300 250 200 E 150 100 50 0 200 100 100 100 100 100 100	con-ferrous M lead tin E2007 PH Viscosity @ 100 Nonormal	Ez/lmf		14. 12. (b) MOH (b) 888 889 899 899 899 899 899 899 899 89	Abnormal	21		
		N 300 250 200 E 150 100 50 0 200 100 100 100 100 100 115 15 100 100	con-ferrous M lead tin E2007 PH Viscosity @ 100 Nonormal	Ez/lmf		14.) 12.) (b)(HOX) Bull Bull Bull Bull Bull Bull Bull Bull	Abnormal	21		
		N 300 250 200 Ed 150 100 50 100 100 100 100 100 1	Con-ferrous M	Jun1/23	Jur23/23 Aug20/23 Sep11/23	14.1 12.1 10.1 10.1 10.1 10.1 10.1 10.1 10	Abnormal	/	23	23
		N 300 250 200 Ed 150 100 50 100 100 100 100 100 1	Con-ferrous M	Jun1/23	Jur23/23 Aug20/23 Sep117/23	14.1 12.1 10.1 10.1 10.1 10.1 10.1 10.1 10	Abnormal	/	lui23/23	ep 17/23
		N 300 250 200 100 50 100 100 100 100 100 100 100 10	Con-ferrous M	Jun1/23		14.) 12.) (b)(HOX) Bull Bull Bull Bull Bull Bull Bull Bull	Abnormal	/	Juli23/23	Sep17/23
4	Laborato	N 300 250 200 E 150 100 50 100 100 100 100 100	con-ferrous M copper lead tin EZU194 EZU194 CECU194 EZU	EZ/Imr 62/Imr 00°C EZ/Imr A - 501 Madi	ez/c2nr son Ave., Ca	EZZ(L100 14. 12. (b)HOX Bui and 6. 14. 12. (b)HOX Bui and 6. 14. 12. (b)HOX Bui and 6. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 10. 10. 10. 10. 10. 10. 10. 10	Percent and the second and the secon	EZUIUN FEZUIUN vironmental - 816	6 - WCA of So	outh Arkans
	Sample I	N 300 250 200 100 50 0 100 100 100 100 100	con-ferrous M copper lead tin EZU19 EZU	EZ/Jun EZ/Jun A - 501 Madii Received		EZZ(L1P0) 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 10. 10. 10. 10. 10. 10. 10. 10	Percent and the second and the secon	EZUIUN FEZUIUN vironmental - 816	6 - WCA of So 083 Smac	outh Arkans kover Hy
	Sample I Lab Nurr	N 300 250 200 W 150 100 50 0 200 100 50 0 200 100 100 100 100 100 100	con-ferrous M copper lead tin EZU19 EZU	EZUIUM EZUIUM A - 501 Madii Received Diagnos	ez/c2/ln son Ave., Ca d : 18 e ed : 19 e	EZZLIPPO 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 10. 10. 10. 10. 10. 10. 10. 10	Percent and the second and the secon	EZUIUN FEZUIUN vironmental - 816	6 - WCA of So 083 Smac El D	outh Arkan kover Hu orado, <i>A</i>
tificate 12367	Sample I	N 300 250 200 100 50 0 100 100 50 0 100 10	con-ferrous M copper lead tin EZU19 EZU	EZ/Jun EZ/Jun A - 501 Madii Received	ez/c2/ln son Ave., Ca d : 18 e ed : 19 e	EZZ(L1P0) 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 12. 14. 10. 10. 10. 10. 10. 10. 10. 10	Percent and the second and the secon	EZ/Jung vironmental - 816 30	6 - WCA of So 083 Smac El D	b uth Arkan kover Hy orado, <i>F</i> US 717

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)