

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 2308

Component Diesel Engine

CHEVRON DELO 400 SDE SAE 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Elevated aluminum (AI) 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.

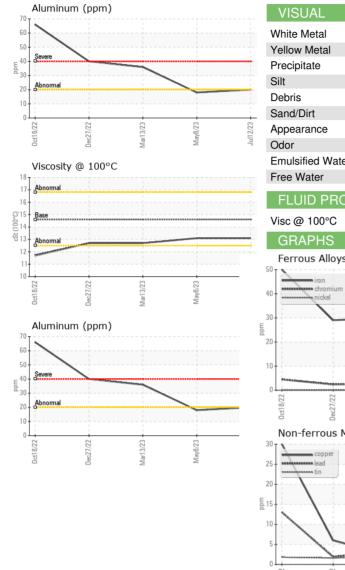
Fluid Condition

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

GAL)		0ct2022	Dec2022	Mar2023 May2023	Jul2023	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0085459	PCA0085435	PCA0085468
Sample Date		Client Info		12 Jul 2023	08 May 2023	13 Mar 2023
Machine Age	mls	Client Info		99570	81430	60866
Oil Age	mls	Client Info		0	0	39063
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
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	.S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	18	21	30
Chromium	ppm	ASTM D5185m		2	2	3
Nickel	ppm	ASTM D5185m	>2	1	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m		20	18	36
Lead	ppm	ASTM D5185m	>40	3	3	3
Copper	ppm	ASTM D5185m		<1	2	2
Tin	ppm	ASTM D5185m	>15	1	1	2
Vanadium	ppm	ASTM D5185m	210	<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		205	171	169
Barium						
	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m		0 132	0 122	0 119
		ASTM D5185m		-		
Manganese	ppm			132	122	119
Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m		132 1	122 <1	119 2
Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	760	132 1 723	122 <1 654	119 2 624
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	760 800	132 1 723 1711	122 <1 654 1560	119 2 624 1508
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		132 1 723 1711 792	122 <1 654 1560 690	119 2 624 1508 637
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	800	132 1 723 1711 792 948	122 <1 654 1560 690 844	119 2 624 1508 637 779
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	800 3000 limit/base	132 1 723 1711 792 948 3247	122 <1 654 1560 690 844 2655	119 2 624 1508 637 779 2339
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	800 3000 limit/base	132 1 723 1711 792 948 3247 current	122 <1 654 1560 690 844 2655 history1	119 2 624 1508 637 779 2339 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	800 3000 limit/base >25	132 1 723 1711 792 948 3247 current 9	122 <1 654 1560 690 844 2655 history1 8	119 2 624 1508 637 779 2339 history2 11
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	800 3000 limit/base >25	132 1 723 1711 792 948 3247 current 9 3	122 <1 654 1560 690 844 2655 history1 8 2	119 2 624 1508 637 779 2339 history2 11 3
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	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 ASTM D5185m	800 3000 limit/base >25 >20	132 1 723 1711 792 948 3247 current 9 3 44	122 <1 654 1560 690 844 2655 history1 8 2 47	119 2 624 1508 637 779 2339 history2 11 3 87
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	800 3000 limit/base >25 >20 limit/base >6	132 1 723 1711 792 948 3247 current 9 3 44 current	122 <1 654 1560 690 844 2655 history1 8 2 47 history1	119 2 624 1508 637 779 2339 history2 11 3 87 history2
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	800 3000 limit/base >25 >20 limit/base >6 >20	132 1 723 1711 792 948 3247 <u>current</u> 9 3 44 current 0.3	122 <1 654 1560 690 844 2655 history1 8 2 47 history1 0.3	119 2 624 1508 637 779 2339 history2 11 3 87 history2 0.5
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ypm ppm p	ASTM D5185m ASTM D7844 *ASTM D7624	800 3000 limit/base >25 >20 limit/base >6 >20	132 1 723 1711 792 948 3247 <u>current</u> 9 3 44 <u>current</u> 0.3 9.6	122 <1 654 1560 690 844 2655 history1 8 2 47 kistory1 0.3 9.2	119 2 624 1508 637 779 2339 history2 11 3 87 history2 0.5 9.8
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ypm ppm p	ASTM D5185m ASTM D7844 *ASTM D7624	800 3000 limit/base >25 >20 limit/base >20 >30 limit/base	132 1 723 1711 792 948 3247 <u>current</u> 9 3 44 <u>current</u> 0.3 9.6 25.1	122 <1 654 1560 690 844 2655 history1 8 2 47 history1 0.3 9.2 24.6	119 2 624 1508 637 779 2339 history2 11 3 87 history2 0.5 9.8 24.4



OIL ANALYSIS REPORT



	White Metal Yellow Metal Precipitate	scalar scalar	*Visual *Visual	NONE NONE	NONE NONE	NONE NONE	NONE	
	Precipitate		*Visual	NONE	NONE	NONE		
				NONL	NONE	NONE	NONE	
		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	
May8/23 Jul12/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Ma	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	history	
	Visc @ 100°C	cSt	ASTM D445	14.6	13.1	13.1	12.7	
	GRAPHS							
	Ferrous Alloys							
/23 -	iron							
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May6	25 - copper lead							
	management tin							
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		And Descentioned						
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	0ct18	Mar13	May8	Jul12				
					Base Number			
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	75 13 Abaa							
	Abnormal 12			V 4	.0			
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	10							
	18/22	13/23	y8/23	12/23	18/22	13/23	May8/23	
	Deci	Mar	Mai	Jul	Dec2	Mari	Ma	
Laboratory	· WearChark USA	501 Madi		NC 0751	а г			
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Lab Number						11007 0	Magnolia,	
Unique Number	: 10560918						US 44	
Test Package							act: Eddy Sr	
						eddy.sm	ith@ergon.c	
5	Laboratory Sample No. Lab Number Unique Number Test Package sample report, at methods that a	FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys Mon-ferrous Meta Viscosity @ 100°C Viscosity @ 100°C Viscosity @ 100°C Viscosity @ 100°C Viscosity @ 100°C Viscosity @ 100°C Uscosity @ 100°C Company Sample No. Lab Number Unique Number Test Package Sample report, contact Customer Server of methods that are outside of the ISO 1	FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys Mon-ferrous Metals Viscosity @ 100°C Viscosity @ 100°C Viscosity @ 100°C Uscosity @ 100°C Usco	FLUID PROPERTIES method Visc @ 100°C cSt ASTM D445 GRAPHS Ferrous Alloys On-ferrous Metals Non-ferrous Metals Viscosity @ 100°C Viscosity @ 100°C Viscosity @ 100°C One-ferrous Metals Viscosity @ 100°C One-ferrous Metals Figure 100°C Viscosity @ 100°C One-ferrous Metals Viscosity @ 100°C One-ferrous Metals Figure 100°C One-ferrous Metals Viscosity @ 100°C One-ferrous Metals Figure 100°C One-ferrous Metals One-fe	FLUID PROPERTIES method imit/base Visc @ 100°C cSt ASTM D445 14.6 GRAPHS Ferrous Alloys On-ferrous Metals On-ferrous Metals Visc @ 100°C Viscosity @ 100°C On-ferrous Metals On-ferrous Metals On-ferrous Metals One-ferrous Metals <td colspa<="" td=""><td>FULUD PROPERTIES method imit/base current Visc @ 100°C CSL ASTM D445 14.6 13.1 GRAPHS Ferrous Alloys Imit/base Imit/base Imit/base Mon-ferrous Metals Imit/base Imit/base Imit/base Imit/base Mon-ferrous Metals Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Mon-ferrous Metals Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Sample No. Imit/base Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Imit/base Sample No. Imit/base Imit/base Imit/base Imit/base Imit/base Imit/base Unique Number Imit/base Imit/base I</td><td>Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. Lab Number: : 10560918 Diagnosetical : 17 Jul 2023 Lab Number: : 10560918 Diagnosetical : 17 Jul 2023 Test Package : FILEET : Contra</td></td>	<td>FULUD PROPERTIES method imit/base current Visc @ 100°C CSL ASTM D445 14.6 13.1 GRAPHS Ferrous Alloys Imit/base Imit/base Imit/base Mon-ferrous Metals Imit/base Imit/base Imit/base Imit/base Mon-ferrous Metals Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Mon-ferrous Metals Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Sample No. Imit/base Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Imit/base Sample No. Imit/base Imit/base Imit/base Imit/base Imit/base Imit/base Unique Number Imit/base Imit/base I</td> <td>Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. Lab Number: : 10560918 Diagnosetical : 17 Jul 2023 Lab Number: : 10560918 Diagnosetical : 17 Jul 2023 Test Package : FILEET : Contra</td>	FULUD PROPERTIES method imit/base current Visc @ 100°C CSL ASTM D445 14.6 13.1 GRAPHS Ferrous Alloys Imit/base Imit/base Imit/base Mon-ferrous Metals Imit/base Imit/base Imit/base Imit/base Mon-ferrous Metals Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Mon-ferrous Metals Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Sample No. Imit/base Imit/base Imit/base Imit/base Imit/base Viscosity @ 100°C Imit/base Imit/base Imit/base Imit/base Imit/base Sample No. Imit/base Imit/base Imit/base Imit/base Imit/base Imit/base Unique Number Imit/base Imit/base I	Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. Lab Number: : 10560918 Diagnosetical : 17 Jul 2023 Lab Number: : 10560918 Diagnosetical : 17 Jul 2023 Test Package : FILEET : Contra