

## **OIL ANALYSIS REPORT**

Sample Rating Trend







Fluid

**Diesel Engine** DIESEL ENGINE OIL SAE 15W40 (--- GAL)

### 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 INFORM	1ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0841492	WC0758964	WC0758952
Sample Date		Client Info		08 Sep 2023	01 Jun 2023	21 Dec 2022
Machine Age	hrs	Client Info		13948	13364	12352
Oil Age	hrs	Client Info		584	579	418
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	١	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	6	8	8
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	<1	3	2
Lead	ppm	ASTM D5185m	>40	1	0	<1
Copper	ppm	ASTM D5185m	>330	<1	4	3
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 250	current 21	history1 37	history2 49
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 250 10	current 21 0	history1 37 0	history2 49 2
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100	current 21 0 63	history1 37 0 74	history2 49 2 89
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100	21 0 63 0	history1 37 0 74 <1	history2 49 2 89 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450	current 21 0 63 0 87	history1 37 0 74 <1 82	history2 49 2 89 <1 53
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000	current 21 0 63 0 87 2197	history1 37 0 74 <1 82 2207	history2 49 2 89 <1 53 2036
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150	Current 21 0 63 0 87 2197 934	history1 37 0 74 <1 82 2207 961	history2 49 2 89 <1 53 2036 917
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350	Current 21 0 63 0 87 2197 934 1199	history1 37 0 74 <1 82 2207 961 1202	history2 49 2 89 <1 53 2036 917 1086
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250	Current 21 0 63 0 87 2197 934 1199 4450	history1   37   0   74   <1   82   2207   961   1202   4228	history2 49 2 89 <1 53 2036 917 1086 3047
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base	Current 21 0 63 0 87 2197 934 1199 4450 Current	history1 37 0 74 <1 82 2207 961 1202 4228 history1	history2 49 2 89 <1 53 2036 917 1086 3047 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25	current     21     0     63     0     87     2197     934     1199     4450     current     4	history1   37   0   74   <1   82   2207   961   1202   4228   history1   4	history2 49 2 89 <1 53 2036 917 1086 3047 history2 6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm 1 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 3 ppm 3 ppm 4 ppm 4	method     ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	current     21     0     63     0     87     2197     934     1199     4450     current     4     6	history1   37   0   74   <1   82   2207   961   1202   4228   history1   4   5	history2   49   2   89   <1   53   2036   917   1086   3047   history2   6   2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm	method     ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	current     21     0     63     0     87     2197     934     1199     4450     current     4     6     4	history1   37   0   74   <1   82   2207   961   1202   4228   history1   4   5   2	history2   49   2   89   <1   53   2036   917   1086   3047   history2   6   2   3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	current   21   0   63   0   87   2197   934   1199   4450   current   4   6   4   6   4   6   4   Current	history1   37   0   74   <1   82   2207   961   1202   4228   history1   4   5   2   history1	history2   49   2   89   <1   53   2036   917   1086   3047   history2   6   2   3   history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm 1 ppm 2 ppm 2 ppm 4 ppm 4	method     ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4	current     21     0     63     0     87     2197     934     1199     4450     current     4     6     4     0     0.2	history1   37   0   74   <1   82   2207   961   1202   4228   history1   4   5   2   history1   0.3	history2   49   2   89   <1   53   2036   917   1086   3047   history2   6   2   3   history2   0.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ррт ррт ррт ррт ррт ррт ррт ррт	method     ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20	current     21     0     63     0     87     2197     934     1199     4450     current     4     6     4     0     0.2     8.5	history1   37   0   74   <1   82   2207   961   1202   4228   history1   4   5   2   history1   0.3   9.8	history2   49   2   89   <1   53   2036   917   1086   3047   history2   6   2   3   history2   0.2   10.0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20	current     21     0     63     0     87     2197     934     1199     4450     current     4     6     4     0     0.2     8.5     19.3	history1   37   0   74   <1   82   2207   961   1202   4228   history1   4   5   2   history1   0.3   9.8   20.6	history2   49   2   89   <1   53   2036   917   1086   3047   history2   6   2   3   history2   0.2   10.0   18.9
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m     ASTM D7844     *ASTM D7624     *ASTM D7415     method	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20 s30	current   21   0   63   0   87   2197   934   1199   4450   current   4   6   4   0.2   8.5   19.3	history1   37   0   74   <1   82   2207   961   1202   4228   history1   4   5   2   history1   0.3   9.8   20.6   history1	history2   49   2   89   <1   53   2036   917   1086   3047   history2   6   2   3   history2   0.2   10.0   18.9   history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method     ASTM D5185m     ASTM D7844     *ASTM D7844     *ASTM D7415     method     *ASTM D7414	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >4 >20 >30 limit/base >25	current   21   0   63   0   87   2197   934   1199   4450   current   4   6   4   0.2   8.5   19.3   current   13.3	history1   37   0   74   <1   82   2207   961   1202   4228   history1   4   5   2   history1   0.3   9.8   20.6   history1   14.5	history2   49   2   89   <1   53   2036   917   1086   3047   history2   6   2   3   history2   0.2   10.0   18.9   history2   14.1



Dec21/22

# **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
1/23	08/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
J	Sep	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
C		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
1		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPERT	IES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	14.4	12.7	12.7	13.1
		GRAPHS						
Jun123	1 uudd	Ferrous Alloys	2 C2/Inul		Sep 8/23			
		。 Viscosity @ 100°C				Base Number		
	1	17		14.0				
	1	Abnormal			12.0			1
	0 .				H0.0	Base		
	100-1	Base			ຍິ 8.0 ອ	) -		
	55	4			quinn 6.0	Abnormal		
	1	Abnormal	_		88 4.0	)+		
	1	2-			2.0	)-		
	1	14	23		0.0		53	5
		lec21/,	/lml/		Sep 8/2	lec21/.	Jun1/	Sep 8/2
Laborator Sample N Lab Numl Unique Num Certificate 12367 To discuss this sample rep	ry : lo. : ber : mber : xage : cort, col	WearCheck USA - 5 WC0841492 F 05960433 E 10661646 E CONST (Additional ntact Customer Service	01 Madis Received Diagnost Diagnost Tests: T ce at 1-8	son Ave., Ca d : 25 % ed : 26 % tician : We BN ) 200-237-1365	ry, NC 27513 Sep 2023 Sep 2023 s Davis 0.	3 Apple Va	alley Waste - Si 309 Contact: Ser	EW Location Salina Road Sewell, NJ US 08080 <i>v</i> ice Manager
* - Denotes test methods t	hat are	outside of the ISO 17	7025 sco	pe of accred	itation.			T:
Statements of conformity to	specific	ations are based on th	ne simple	acceptance of	lecision rule (	JCGM 106:2012)		F:

Contact/Location: Service Manager - AVWSEW