

OIL ANALYSIS REPORT

Sample Rating Trend





Area [19813] Machine Id 52-158 Component Diesel Engine

Fluid DIESEL ENGINE OIL SAE 40 (--- 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. The condition of the oil is suitable for further service.

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0818785	WC0709391	
Sample Date		Client Info		16 Oct 2023	02 Dec 2022	
Machine Age	hrs	Client Info		1003	0	
Oil Age	hrs	Client Info		471	0	
Oil Changed		Client Info		Changed	N/A	
Sample Status				NORMAL	NORMAL	
CONTAMINATION	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	6	10	
Chromium	ppm	ASTM D5185m	>20	0	<1	
Nickel	ppm	ASTM D5185m	>2	0	<1	
Titanium	ppm	ASTM D5185m	>2	<1	<1	
Silver	ppm	ASTM D5185m	>2	0	0	
Aluminum	ppm	ASTM D5185m	>25	2	2	
Lead	ppm	ASTM D5185m	>40	0	<1	
Copper	ppm	ASTM D5185m	>330	0	2	
Tin	ppm	ASTM D5185m	>15	0	<1	
Vanadium	ppm	ASTM D5185m		0	0	
Cadmium	ppm	ASTM D5185m		0	0	
				U	0	
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm		limit/base 250	-	-	
		method		current	history1	history2
Boron	ppm	method ASTM D5185m	250	current	history1 56	history2
Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	250 10	current 52 0	history1 56 0	history2
Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	250 10	current 52 0 28	history1 56 0 13	history2
Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	current 52 0 28 <1	history1 56 0 13 <1	history2
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	current 52 0 28 <1 534	history1 56 0 13 <1 759	history2
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	Current 52 0 28 <1 534 1571	history1 56 0 13 <1 759 1329	history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	Current 52 0 28 <1 534 1571 1072	history1 56 0 13 <1 759 1329 1055	history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	Current 52 0 28 <1 534 1571 1072 1243	history1 56 0 13 <1 759 1329 1055 1236	history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm 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	250 10 100 450 3000 1150 1350 4250	Current 52 0 28 <1 534 1571 1072 1243 3521	history1 56 0 13 <1 759 1329 1055 1236 4329	history2
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	250 10 100 450 3000 1150 1350 4250	Current 52 0 28 <1 534 1571 1072 1243 3521 Current	history1 56 0 13 <1 759 1329 1055 1236 4329 history1	history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm 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	250 10 100 450 3000 1150 1350 4250 limit/base >25	Current 52 0 28 <1 534 1571 1072 1243 3521 Current 6	history1 56 0 13 <1 759 1329 1055 1236 4329 history1 7	history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216	Current 52 0 28 <1 534 1571 1072 1243 3521 Current 6 0	history1 56 0 13 <1 759 1329 1055 1236 4329 history1 7 2	history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216 >20	current 52 0 28 <1 534 1571 1072 1243 3521 current 6 0 <1	history1 56 0 13 <1 759 1329 1055 1236 4329 history1 7 2 3	history2 history2
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	250 10 100 450 3000 1150 1350 4250 Imit/base >25 >216 >20 Imit/base	current 52 0 28 <1 534 1571 1072 1243 3521 current 6 0 <1 current corrent current	history1 56 0 13 <1 759 1329 1055 1236 4329 history1 7 2 3 history1	history2 history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >216 >20 Iimit/base >3	current 52 0 28 <1 534 1571 1072 1243 3521 current 6 0 <1 current 0 <1 current 0.2	history1 56 0 13 <1 759 1329 1055 1236 4329 history1 7 2 3 history1 0.2	history2 history2 history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 imit/base >25 >216 >20 imit/base >3 >20	current 52 0 28 <1 534 1571 1072 1243 3521 current 6 0 <1 0 <1 0.2 8.9	history1 56 0 13 <1 759 1329 1055 1236 4329 history1 7 2 3 history1 0.2 8.4	history2
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 D5185m	250 10 100 450 3000 1150 1350 4250 imit/base >216 >216 >20 imit/base >3 >20 >30	current 52 0 28 <1 534 1571 1072 1243 3521 current 6 0 <1 current 0 <1 0.2 8.9 19.9	history1 56 0 13 <1 759 1329 1055 1236 4329 history1 7 2 3 history1 0.2 8.4 19.7	history2 history2 history2



OIL ANALYSIS REPORT

Viscosity @ 40°C 200 NONE *Visual NONE NONE White Metal scalar 15 Yellow Metal *Visual NONE NONE NONE scalar () 100 55 50 50 Precipitate scalar *Visual NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris *Visual NONE NONE scalar NONE Sand/Dirt scalar *Visual NONE NONE -50 Dec2/22 NORML Appearance scalar *Visual NORML NORML Odor *Visual NORML NORML scalar NORML **Emulsified Water** scalar *Visual >0.2 NEG NEG Viscosity @ 100°C Free Water scalar *Visual NEG NEG 18 1 FLUID PROPERTIES 16 cSt (100°C) Visc @ 100°C cSt ASTM D445 14.4 13.9 13.6 Ba GRAPHS 13 Abnorma Ferrous Alloys 12 Viscosity @ 40°C maa 200 15 (40°C) n cSt (50 Dec2/22 Non-ferrous Metals -50 Dec2/22 lead mac 0ct16/23 loc)/ Viscosity @ 100°C Base Number 18 14.0 12.0 (B/HOX Bul). 16 (200-0) St (100-0) B 6.0 13 Base 4 (Abnorma 12 2.0 0.0 0ct16/23 -Dec2/22 CC/Cool MANHATTAN ROAD AND BRIDGE Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : WC0818785 Received : 16 Nov 2023 5601 S 122ND E AVE Lab Number TULSA, OK :06010100 Diagnosed : 20 Nov 2023 Diagnostician : Don Baldridge US 74146 Unique Number : 10749244 Test Package : CONST (Additional Tests: KV40, TBN) Contact: BEN CALDWELL Certificate L2367 kevin.marson@wearcheck.com To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (918)728-5749 F:

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

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