

OIL ANALYSIS REPORT

Sample Rating Trend



FSP137682

Component Diesel Engine Fluid

DIESEL ENGINE OIL SAE 15W40 (--- QTS)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

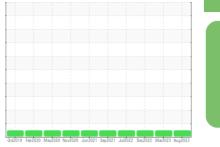
All component wear rates are normal.

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		WC0787767	WC0787653	WC0717705
Sample Date		Client Info		22 Aug 2023	03 Mar 2023	08 Dec 2022
Machine Age	mls	Client Info		184985	167368	163276
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		N/A	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	51	10	10
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	6	2	<1
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	1	<1	0
Tin	ppm	ASTM D5185m	>15	0	0	0
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 0	history1 3	history2 4
	ppm ppm					
Boron		ASTM D5185m	250	0	3	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10 100	0 0	3 0	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	0 0 72	3 0 61	4 0 65
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	0 0 72 <1 1166 1390	3 0 61 <1	4 0 65 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	0 0 72 <1 1166 1390 1150	3 0 61 <1 941 1054 1012	4 0 65 0 940 1137 1076
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	0 0 72 <1 1166 1390 1150 1563	3 0 61 <1 941 1054 1012 1258	4 0 65 0 940 1137 1076 1239
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 ASTM D5185m	250 10 100 450 3000 1150	0 0 72 <1 1166 1390 1150	3 0 61 <1 941 1054 1012	4 0 65 0 940 1137 1076
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	0 0 72 <1 1166 1390 1150 1563	3 0 61 <1 941 1054 1012 1258 3787 history1	4 0 65 0 940 1137 1076 1239 3958 history2
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 method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	0 0 72 <1 1166 1390 1150 1563 4121	3 0 61 <1 941 1054 1012 1258 3787	4 0 65 0 940 1137 1076 1239 3958
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	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 >25	0 0 72 <1 1166 1390 1150 1563 4121 current	3 0 61 <1 941 1054 1012 1258 3787 history1	4 0 65 0 940 1137 1076 1239 3958 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 kimit/base >25 >158	0 0 72 <1 1166 1390 1150 1563 4121 current 8	3 0 61 <1 941 1054 1012 1258 3787 history1 3	4 0 65 0 940 1137 1076 1239 3958 history2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iinit/base >25 >158 >20 Iinit/base	0 0 72 <1 1166 1390 1150 1563 4121 current 8 3 11 current	3 0 61 <1 941 1054 1012 1258 3787 history1 3 <1 <1 <1 <1 history1	4 0 65 0 940 1137 1076 1239 3958 history2 2 0 1 1 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	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20 Iimit/base >3	0 0 72 <1 1166 1390 1150 1563 4121 <i>current</i> 8 3 11 <i>current</i> 0.9	3 0 61 <1 941 1054 1012 1258 3787 history1 3 <1 <1 <1 <1 0.4	4 0 65 0 940 1137 1076 1239 3958 history2 2 0 1 1 history2 0.2
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	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20 Iimit/base >3 >20	0 0 72 <1 1166 1390 1150 1563 4121 current 8 3 11 current 0.9 13.6	3 0 61 <1 941 1054 1012 1258 3787 history1 3 <1 <1 <1 history1 0.4 7.7	4 0 65 0 940 1137 1076 1239 3958 history2 2 0 1 1 history2 0.2 6.8
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	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20 Iimit/base >3	0 0 72 <1 1166 1390 1150 1563 4121 <i>current</i> 8 3 11 <i>current</i> 0.9	3 0 61 <1 941 1054 1012 1258 3787 history1 3 <1 <1 <1 <1 0.4	4 0 65 0 940 1137 1076 1239 3958 history2 2 0 1 1 history2 0.2
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	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20 Iimit/base >3 >20	0 0 72 <1 1166 1390 1150 1563 4121 current 8 3 11 current 0.9 13.6	3 0 61 <1 941 1054 1012 1258 3787 history1 3 <1 <1 <1 history1 0.4 7.7	4 0 65 0 940 1137 1076 1239 3958 history2 2 0 1 1 history2 0.2 6.8
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	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 binit/base >25 >158 >20 binit/base >3 >20	0 0 72 <1 1166 1390 1150 1563 4121 <i>current</i> 8 3 11 <i>current</i> 0.9 13.6 26.7	3 0 61 <1 941 1054 1012 1258 3787 history1 3 <1 <1 <1 <1 0.4 7.7 19.7	4 0 65 0 940 1137 1076 1239 3958 history2 2 0 1 1 history2 0.2 6.8 20.2

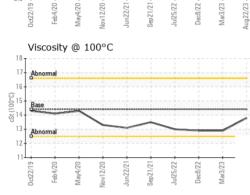


eb4

0.0

OIL ANALYSIS REPORT

Base Number 14.0 (I) 12.0 (I) 10.0 (I) Abnorma Bas A 2.0



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
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPER	ΓIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.8	12.9	12.9
GRAPHS						

Ferrous Alloys 60 40 튭 30 20 10 n 0ct22/19 Feb4/20 Mav4/20 Vov12/20 Sep21/21 lec8/22 Aar2/73 ua22/23 Non-ferrous Metals 10 14 e lead 12 10 ppm 8 6 4 2 0 Feb4/20 0ct22/19 12/21 vol 01000 ar3/7 And4 Viscosity @ 100°C Base Number 18 14.0 17 12.0 (B/HOX Bu). 16 cSt (100°C) Base umber (6.0 Ab 13 Base 4 (Abnorma 12 2.0 11-0.0 Mar3/23 -Aug22/23 -0ct22/19 Sep21/21 Feb4/20 un22/21 Jul25/22 Dec8/22 Mar3/23 ug22/23 Feb4/20 Dec8/22 0ct22/19 /lav/4/20 Mav4/20 Nov12/20 Jov12/20 Sep21/21 FRESHPOINT Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : WC0787767 Received : 29 Aug 2023 8801 EXCHANGE DRVIE Lab Number Diagnosed : 30 Aug 2023 ORLANDO, FL : 05937735 Unique Number : 10628347 Diagnostician : Don Baldridge US 32809 Test Package : FLEET Contact: CRAIG EVANS evans_craig@sbcglobal.net

Certificate L2367 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.

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

Contact/Location: CRAIG EVANS - FREORL

T:

F: