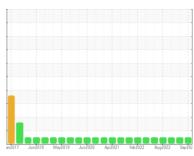


OIL ANALYSIS REPORT

Sample Rating Trend







FREIGHTLINER 2341

Component

Diesel Engine

DIESEL ENGINE OIL SAE 15W40 (19 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

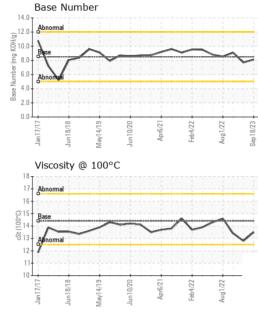
Fluid Condition

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

an 2017 - Jun 2018 May 2019 - Jun 2020 - Apr 2021 - Feb 2022 - Aug 2022 - Sep 202						
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		RW0004781	RW0003888	RW0003950
Sample Date		Client Info		18 Sep 2023	21 Mar 2023	18 Oct 2022
Machine Age	hrs	Client Info		8310	7888	7116
Oil Age	hrs	Client Info		422	772	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status			NORMAL	NORMAL	NORMAL	
CONTAMINATIO	V	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	>80	39	33	13
Chromium	ppm	ASTM D5185m	>5	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	8	5	4
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m	>150	<1	<1	<1
Tin	ppm	ASTM D5185m	>5	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	3	4	5
Boron Barium	ppm			3 0	4 0	5
		ASTM D5185m	250			
Barium	ppm	ASTM D5185m ASTM D5185m	250 10	0	0	0
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	0 64	0 66	0 66
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	0 64 0	0 66 <1	0 66 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	0 64 0 988 1091 1043	0 66 <1 939 1157 1011	0 66 <1 911 1111 1004
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	0 64 0 988 1091 1043 1286	0 66 <1 939 1157 1011 1241	0 66 <1 911 1111 1004 1224
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 64 0 988 1091 1043	0 66 <1 939 1157 1011	0 66 <1 911 1111 1004
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 ASTM D5185m	250 10 100 450 3000 1150 1350	0 64 0 988 1091 1043 1286	0 66 <1 939 1157 1011 1241	0 66 <1 911 1111 1004 1224
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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250	0 64 0 988 1091 1043 1286 3033	0 66 <1 939 1157 1011 1241 3025	0 66 <1 911 1111 1004 1224 3529
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 ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base	0 64 0 988 1091 1043 1286 3033	0 66 <1 939 1157 1011 1241 3025 history1	0 66 <1 911 1111 1004 1224 3529 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20	0 64 0 988 1091 1043 1286 3033 current	0 66 <1 939 1157 1011 1241 3025 history1	0 66 <1 911 1111 1004 1224 3529 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158	0 64 0 988 1091 1043 1286 3033 current 4	0 66 <1 939 1157 1011 1241 3025 history1 6 2	0 66 <1 911 1111 1004 1224 3529 history2 3
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20	0 64 0 988 1091 1043 1286 3033 current 4 2	0 66 <1 939 1157 1011 1241 3025 history1 6 2 8	0 66 <1 911 1111 1004 1224 3529 history2 3 0 4
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	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20 limit/base >3	0 64 0 988 1091 1043 1286 3033 current 4 2 4	0 66 <1 939 1157 1011 1241 3025 history1 6 2 8	0 66 <1 911 1111 1004 1224 3529 history2 3 0 4
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	ASTM D5185m Method *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20 limit/base >3	0 64 0 988 1091 1043 1286 3033 current 4 2 4 current	0 66 <1 939 1157 1011 1241 3025 history1 6 2 8 history1	0 66 <1 911 1111 1004 1224 3529 history2 3 0 4 history2
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 method *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20 limit/base >3 >20	0 64 0 988 1091 1043 1286 3033 current 4 2 4 current 0.7 9.3	0 66 <1 939 1157 1011 1241 3025 history1 6 2 8 history1 1.2	0 66 <1 911 1111 1004 1224 3529 history2 3 0 4 history2
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 Method *ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	250 10 100 450 3000 1150 1350 4250 limit/base >20 limit/base >3 >20 >30	0 64 0 988 1091 1043 1286 3033 current 4 2 4 current 0.7 9.3 19.1	0 66 <1 939 1157 1011 1241 3025 history1 6 2 8 history1 1.2 11.8 23.6	0 66 <1 911 1111 1004 1224 3529 history2 3 0 4 history2 0.7 9.7 21.3



OIL ANALYSIS REPORT

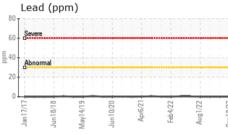


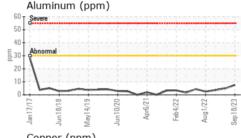
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
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 PROPERT	TIES	method	limit/base	current	historv1	historv2

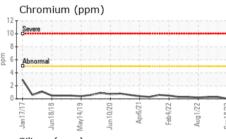
I LOID I HOI LIH						
Visc @ 100°C	cSt	ASTM D445	14.4	13.5	12.8	13.4

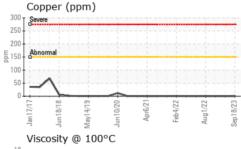
Iron (¡	opm)					
Severe						
Abnormal						
50						
0	\searrow		\sim	\sim	~	
2	Jun18/18 May14/19	Jun10/20	Apr6/21	Feb4/22	Aug 1/22	Sep18/23
,	ຸ					Ś

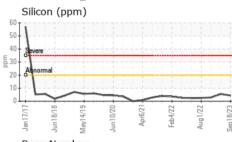
GRAPHS

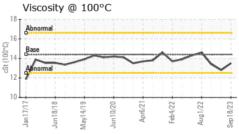


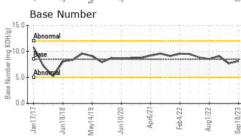
















Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : MOB 2

: RW0004781 : 05965554 : 10672105

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received Diagnosed

: 29 Sep 2023 : 03 Oct 2023 Diagnostician : Wes Davis

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)

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