

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

FREIGHTLINER 1236

Component Diesel Engine Fluid

DIESEL ENGINE OIL SAE 15W40 (--- 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

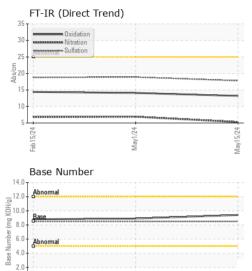
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

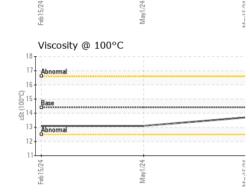
SAMPLE INFORM	NATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0917071	WC0917204	WC0906268
Sample Date		Client Info		15 May 2024	01 May 2024	15 Feb 2024
Machine Age	mls	Client Info		93402	91624	80095
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	3	5	11
Chromium	ppm	ASTM D5185m		<1	<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		2	3	5
Lead	ppm	ASTM D5185m	>30	0	0	0
Copper	ppm	ASTM D5185m		2	6	11
Tin	ppm	ASTM D5185m	>5	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 250	current 9	history1 0	history2 2
	ppm ppm					
Boron		ASTM D5185m	250	9	0	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	9 0	0	2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	9 0 56	0 0 60	2 0 57
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	9 0 56 0	0 0 60 <1	2 0 57 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	9 0 56 0 877	0 0 60 <1 980	2 0 57 <1 910
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	9 0 56 0 877 1096	0 0 60 <1 980 1124	2 0 57 <1 910 1066
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	250 10 100 450 3000 1150 1350	9 0 56 0 877 1096 1104	0 0 60 <1 980 1124 1084	2 0 57 <1 910 1066 946
Boron 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	250 10 100 450 3000 1150 1350	9 0 56 0 877 1096 1104 1240	0 0 60 <1 980 1124 1084 1268	2 0 57 <1 910 1066 946 1138
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	250 10 100 450 3000 1150 1350 4250	9 0 56 0 877 1096 1104 1240 3110	0 0 60 <1 980 1124 1084 1268 3512	2 0 57 <1 910 1066 946 1138 3251
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	9 0 56 0 877 1096 1104 1240 3110 current	0 0 60 <1 980 1124 1084 1268 3512 history1	2 0 57 <1 910 1066 946 1138 3251 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	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	250 10 100 450 3000 1150 1350 4250 limit/base >20	9 0 56 0 877 1096 1104 1240 3110 current 3	0 0 60 <1 980 1124 1084 1268 3512 history1 0	2 0 57 <1 910 1066 946 1138 3251 history2 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	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	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158	9 0 56 0 877 1096 1104 1240 3110 current 3 <	0 0 60 <1 980 1124 1084 1268 3512 history1 0 2	2 0 57 <1 910 1066 946 1138 3251 history2 3 3 3
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	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20	9 0 56 0 877 1096 1104 1240 3110 current 3 - 1 4	0 0 60 <1 980 1124 1084 1268 3512 history1 0 2 5	2 0 57 <1 910 1066 946 1138 3251 history2 3 3 3 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Imit/base >20 >158 >20 Imit/base	9 0 56 0 877 1096 1104 1240 3110 current 3 <1 4	0 0 60 <1 980 1124 1084 1268 3512 history1 0 2 5 5	2 0 57 <1 910 1066 946 1138 3251 history2 3 3 7 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20 limit/base >3	9 0 56 0 877 1096 1104 1240 3110 current 3 -1 4 current 0.2	0 0 60 <1 980 1124 1084 1268 3512 history1 0 2 5 <u>history1</u> 0.5	2 0 57 <1 910 1066 946 1138 3251 history2 3 3 7 history2 0.5
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 >20 >158 >20 Iimit/base >3 >20	9 0 56 0 877 1096 1104 1240 3110 current 3 <1 4 current 0.2 5.3	0 0 60 <1 980 1124 1084 1268 3512 history1 0 2 5 history1 0.5 6.9	2 0 57 <1 910 1066 946 1138 3251 history2 3 3 3 7 history2 0.5 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 >20 binit/base >3 >20 >3	9 0 56 0 877 1096 1104 1240 3110 <u>current</u> 3 <1 4 <u>current</u> 0.2 5.3 17.8	0 0 60 <1 980 1124 1084 1268 3512 history1 0 2 5 <u>history1</u> 0.5 6.9 18.9	2 0 57 <1 910 1066 946 1138 3251 history2 3 3 3 7 history2 0.5 6.8 18.8
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 D7844 *ASTM D7624	250 10 100 450 3000 1150 1350 4250 binit/base >20 >158 >20 >158 >20 >158 >20 >3 3 >20 >3 >20 >30	9 0 56 0 877 1096 1104 1240 3110 current 3 <1 4 current 0.2 5.3 17.8 current	0 0 60 <1 980 1124 1084 1268 3512 history1 0 2 5 history1 0.5 6.9 18.9 history1	2 0 57 <1 910 1066 946 1138 3251 history2 3 3 3 7 history2 0.5 6.8 18.8 history2



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OIL ANALYSIS REPORT





White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance	scalar scalar					history2
Precipitate Silt Debris Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Silt Debris Sand/Dirt		*Visual	NONE	NONE	NONE	NONE
Debris Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
	scalar	*Visual	NONE	NONE	NONE	NONE
Annearance	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	13.7	13.1	13.1
GRAPHS						
Iron (ppm)			80	Lead (ppm)		
Severe						
100 Abnormal						
dd T			<u>특</u> 40	Abnormal		
50+			20			
0			0			
15/24	y1/24		15/24	15/24	y1/24	
Feb	Ma		May	Feb	Ma	:
Aluminum (ppm)			10	Chromium (p	pm)	
0				Severe		
40			8			
E 30 - Abnormal	-		Ed 6	Abnormal	·	
20-			4	+		
5/24	1/24		5/24	5/24	1/24	
Fe1	May		Mayl	Feb1	May	
Copper (ppm)				Silicon (ppm)		
				Silicon (ppin)		
300 Severe			40	Sincon (ppin)	1	
300 250			30	Severe	· · · · · · · · · · · · · · · · · · ·	
300 250 200			30	Severe		
300 250 200			30 톨 20	Abnormal		
300 T Severe 250 - 200 - E 150 - 100 - 50 -			30	Abnormal		
300 T Severe 250 200 E 150 100 50 0	24		30 틀 20 10 0	Abnormal	-74 	
300 T Severe 250 - 200 - E 150 - 100 - 50 -	May1/24		30 틀 20 10 0	Abnormal	May1/24	
300 250 200 4bnormal 100 50 50 50 50 50 50 50 50 50 50 50 50 5			30 Ed 20 10 +72/SIVeW	Abnormal		
300 250 200 Abnormal 100 50 Viscosity @ 100°C			30 <u>E</u> 20 10 7 7 2/S1/AEW 15.0	Abnormal 470 St 1993		
300 250 200 Abnormal 100 50 Viscosity @ 100°C			30 <u>E</u> 20 10 7 7 2/S1/AEW 15.0	Abnormal 		
300 250 200 Abnormal 100 50 Viscosity @ 100°C			30 <u>E</u> 20 10 7 7 2/S1/AEW 15.0	Abnormal Base Number		
300 250 200 4 Abnomal 100 50 50 50 50 50 50 50 50 50 50 50 50 5			30 <u>E</u> 20 10 7 7 2/S1/AEW 15.0	Abnormal Base Number		
300 250 200 4 Anomal 100 50 50 50 50 50 50 50 50 50 50 50 50 5			30 Ed 20 10 +72/51/keW (0)(HOI) 10.0 (0)(HOI) 10.0 (0) 15.0	Abnormal Base Number		
	Free Water FLUID PROPERT Visc @ 100°C GRAPHS Iron (ppm) 150 Abnomal 50 50 50 50 50 50 50 50 50 50	Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Iron (ppm) 50 60 60 60 60 60 60 60 60 60 6	Free Water scalar *Visual FLUID PROPERTIES method Visc @ 100°C cSt ASTM D445 GRAPHS Iron (ppm)	Free Water scalar *Visual FLUID PROPERTIES method limit/base Visc @ 100°C cSt ASTM D445 14.4 GRAPHS Iron (ppm) 60 0	Free Water scalar *Visual NEG FLUID PROPERTIES method limit/base current Visc @ 100°C cSt ASTM D445 14.4 13.7 GRAPHS Iron (ppm) Lead (ppm) Joint of the second of the	Free Water scalar *Visual NEG NEG FLUID PROPERTIES method limit/base current history1 Visc @ 100°C cSt ASTM D445 14.4 13.7 13.1 GRAPHS Iron (ppm) Lead (ppm) Job or of the property of the

* - 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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