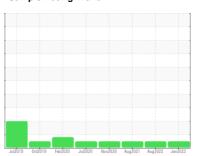


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



FREIGHTLINER 2-237

Component

Diesel Engine

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil

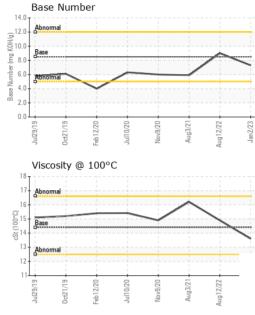
Fluid Condition

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

Judio 15 Octio 15 Feb. 2020 Judio 20 New 2020 August 21 August 22 Jan 2023						
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0337173	WC0723824	WC0606580
Sample Date		Client Info		02 Jan 2023	12 Aug 2022	03 Aug 2021
Machine Age	hrs	Client Info		3251	0	0
Oil Age	hrs	Client Info		544	0	0
Oil Changed		Client Info		Changed	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
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	40	18	42
Chromium	ppm	ASTM D5185m	>5	2	<1	2
Nickel	ppm	ASTM D5185m	>2	1	<1	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	<1	<1	0
Aluminum	ppm	ASTM D5185m	>30	16	5	7
Lead	ppm	ASTM D5185m	>30	1	0	<1
Copper	ppm	ASTM D5185m	>150	3	2	4
Tin	ppm	ASTM D5185m	>5	<1	<1	<1
Antimony	ppm	ASTM D5185m				0
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	70	60	25
Barium	ppm	ASTM D5185m	10	0	0	0
Molybdenum				_		
	ppm	ASTM D5185m	100	7	6	3
Manganese	ppm	ASTM D5185m ASTM D5185m	100	7 <1	6 <1	3 <1
Manganese Magnesium			100 450	-		
0	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m ASTM D5185m	450	<1 733	<1 713	<1 811
Magnesium Calcium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	450 3000	<1 733 1389	<1 713 1411	<1 811 1654
Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350	<1 733 1389 734	<1 713 1411 695	<1 811 1654 849
Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350	<1 733 1389 734 892	<1 713 1411 695 847	<1 811 1654 849 937
Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 limit/base	<1 733 1389 734 892 3789	<1 713 1411 695 847 2807	<1 811 1654 849 937 2857
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 limit/base >20	<1 733 1389 734 892 3789	<1 713 1411 695 847 2807 history1	<1 811 1654 849 937 2857 history2
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	450 3000 1150 1350 4250 limit/base >20 >158	<1 733 1389 734 892 3789 current	<1 713 1411 695 847 2807 history1 5	<1 811 1654 849 937 2857 history2
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 limit/base >20 >158	<1 733 1389 734 892 3789 current 7	<1 713 1411 695 847 2807 history1 5	<1 811 1654 849 937 2857 history2 5
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m MEthod ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 limit/base >20 >158 >20	<1 733 1389 734 892 3789 current 7 2 17	<1 713 1411 695 847 2807 history1 5 0 0	<1 811 1654 849 937 2857 history2 5 4
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	450 3000 1150 1350 4250 limit/base >20 >158 >20 limit/base >3	<1 733 1389 734 892 3789 current 7 2 17 current	<1 713 1411 695 847 2807 history1 5 0 history1	<1 811 1654 849 937 2857 history2 5 4 5
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method *ASTM D7844	450 3000 1150 1350 4250 limit/base >20 >158 >20 limit/base >3 >20	<1 733 1389 734 892 3789 current 7 2 17 current 0.3	<1 713 1411 695 847 2807 history1 5 0 0 history1 0.7	<1 811 1654 849 937 2857 history2 5 4 5
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	450 3000 1150 1350 4250 limit/base >20 >158 >20 limit/base >3 >20	<1 733 1389 734 892 3789 current 7 2 17 current 0.3 10.2	<1 713 1411 695 847 2807 history1 5 0 0 history1 0.7 11.0	<1 811 1654 849 937 2857 history2 5 4 5 history2 1.3 13.6
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 D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method *ASTM D7844 *ASTM D7624 *ASTM D7415	450 3000 1150 1350 4250 limit/base >20 >158 >20 limit/base >3 >20 >30 limit/base	<1 733 1389 734 892 3789 current 7 2 17 current 0.3 10.2 19.6	<1 713 1411 695 847 2807 history1 5 0 0 history1 0.7 11.0 21.7	<1 811 1654 849 937 2857 history2 5 4 5 history2 1.3 13.6 35.4
Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm	ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D78185m Method	450 3000 1150 1350 4250 limit/base >20 >158 >20 limit/base >3 >20 >30 limit/base >25	<1 733 1389 734 892 3789 current 7 2 17 current 0.3 10.2 19.6 current	<1 713 1411 695 847 2807 history1 5 0 0 history1 0.7 11.0 21.7 history1	<1 811 1654 849 937 2857 history2 5 4 5 history2 1.3 13.6 35.4 history2



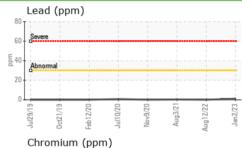
OIL ANALYSIS REPORT

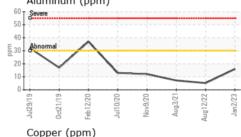


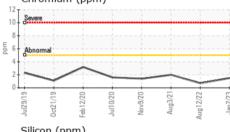
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

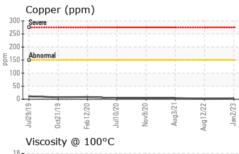
I LOID I HOI LI	TILO					
Visc @ 100°C	cSt	ASTM D445	14.4	13.6	14.9	16.2

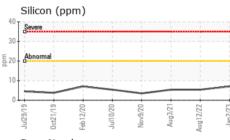
Iron 50 T	(ppn	1)					
Sever	е				******		
Abno	rmal						
50							
50	\		/		_		_
0	-6	-	-			2	
Jul29/19	ct21/1	Feb12/2	Jul10/2	Nov9/20	Aug3/2	Aug12/22	Jan2/23
,	minum	ı (ppn	-			A	
Alui	minum	ı (ppii	'/				

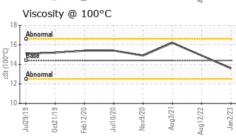


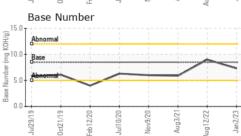














Laboratory Sample No. Lab Number **Unique Number**

: WC0337173 : 05745996 : 10305600

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

: 23 Jan 2023 Diagnosed Diagnostician : Wes Davis

: 24 Jan 2023

Test Package : MOB 1 (Additional Tests: TBN)

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) **ALASKA WEST EXPRESS**

1095 SANDURI STREET FAIRBANKS, AK US 99701

Contact: TOM DOUTHIT tdouthit@lynden.com T: (907)452-4355

F: (907)328-1956