

OIL ANALYSIS REPORT

Sample Rating Trend



Area Closter Machine Id FREIGHTLINER 2450

Component Diesel Engine Fluid

GIBRALTAR 15W/40 SUPER S-3 LX (11)

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.

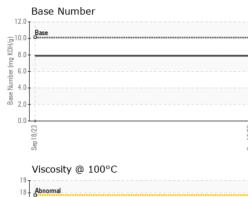
SAMPLE INFORM	ΛΑΤΙΟΝ	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0830965		
Sample Date		Client Info		18 Sep 2023		
Machine Age	hrs	Client Info		0		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		Changed		
Sample Status				NORMAL		
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0		
Glycol		WC Method		NEG		
						_
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	4		
Chromium	ppm	ASTM D5185m	>5	<1		
Nickel	ppm	ASTM D5185m	>2	0		
Titanium	ppm	ASTM D5185m		0		
Silver	ppm	ASTM D5185m	>3	0		
Aluminum	ppm	ASTM D5185m	>30	2		
Lead	ppm	ASTM D5185m	>30	0		
Copper	ppm	ASTM D5185m	>150	<1		
Tin	ppm	ASTM D5185m	>5	<1		
Vanadium	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 8	history1	history2
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	8		
Boron Barium	ppm	ASTM D5185m ASTM D5185m		8 0		
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		8 0 55		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66	8 0 55 0		
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000	8 0 55 0 666		
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	66 1000 1050	8 0 55 0 666 1259	 	
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	66 1000 1050 1150	8 0 55 0 666 1259 958	 	
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	66 1000 1050 1150	8 0 55 0 666 1259 958 1148	 	
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	66 1000 1050 1150 1270 limit/base	8 0 555 0 666 1259 958 1148 3234 current	 history1	 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 ASTM D5185m	66 1000 1050 1150 1270	8 0 555 0 666 1259 958 1148 3234 current 3	 history1 	 history2
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 method ASTM D5185m	66 1000 1050 1150 1270 limit/base >20	8 0 555 0 666 1259 958 1148 3234 current 3 <	 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 limit/base >20	8 0 555 0 666 1259 958 1148 3234 current 3 <1 3	 history1 	 history2
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	66 1000 1050 1150 1270 limit/base >20 limit/base	8 0 55 0 666 1259 958 1148 3234 current 3 <1 3 current	 history1 history1	 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	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 limit/base >20 limit/base >3	8 0 55 0 666 1259 958 1148 3234 current 3 < 1148 3234 current 0.2	 history1 history1	 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	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 limit/base >20 limit/base >20 limit/base	8 0 55 0 666 1259 958 1148 3234 current 3 3 <1 3 current 0.2 6.5	 history1 history1	 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	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 limit/base >20 limit/base >3	8 0 55 0 666 1259 958 1148 3234 current 3 < 1148 3234 current 0.2	 history1 history1	 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	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 limit/base >20 limit/base >20 limit/base	8 0 55 0 666 1259 958 1148 3234 current 3 3 <1 3 current 0.2 6.5	 history1 history1 history1	 history2 history2 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	ASTM D5185m ASTM D5185m	66 1000 1050 1150 1270 iimit/base >20 iimit/base >3 >20 >3 >20	8 0 55 0 666 1259 958 1148 3234 <u>current</u> 3 <1 3 <1 3 <u>current</u> 0.2 6.5 17.4	 history1 history1 history1	 history2 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	ASTM D5185m ASTM D7844 *ASTM D7844	66 1000 1050 1150 1270 20 20 20 20 1imit/base >3 >20 >30 >30	8 0 55 0 666 1259 958 1148 3234 current 3 	history1	 history2 history2 history2 history2



17 () 10.00 15. 14. Base

OIL ANALYSIS REPORT

VISUAL



	VISUAL		method	limit/base	current	history1	history2
	White Metal	scalar	*Visual	NONE	NONE		
	Yellow Metal	scalar	*Visual	NONE	NONE		
	Precipitate	scalar	*Visual	NONE	NONE		
	Silt	scalar		NONE	NONE		
	Debris	scalar	*Visual	NONE	NONE		
	_ Sand/Dirt			NONE	NONE		
		scalar					
Sep 18/23	Appearance	scalar	*Visual	NORML	NORML		
ő	0001	scalar	*Visual	NORML	NORML		
	Emulsified Water	scalar	*Visual	>0.2	NEG		
	Free Water	scalar	*Visual		NEG		
	FLUID PROPERT	TIES	method	limit/base	current	history1	history
	Visc @ 100°C	cSt	ASTM D445	15.5	12.9		
		COL	AOTIN D443	10.0	12.5		
	GRAPHS						
	Ferrous Alloys						
	iron						
	8 - nickel						
	6						
	4						
	2						
	0						
	3ep 18/23			Sep 18/23			
	Non-ferrous Metal	le.		07			
	¹⁰ T						
	copper						
	8 -						
	6						
	u dd						
	4						
	2						
	0						
	Sep 18/23			Sep 18/23			
	2eb			Sep			
	Viscosity @ 100°C				Base Number	-	
	Viscosity @ 100°C	2		12.0			
	Viscosity @ 100°C	2		12.0	Bace	-	
	Viscosity @ 100°C	2		10.0	Base		
	Viscosity @ 100°C			10.0	Base		
	Viscosity @ 100°C			10.0	Base	-	
	Viscosity @ 100°C			10.0	0 0 - Base 0 -	-	
	Viscosity @ 100°C			10.1 (6)(HO X 00) (6)(HO X 00)	0 - Base 0 - Control - Con	-	
	Viscosity @ 100°C			10.0	0 - Base 0 - Control - Con	-	
	Viscosity @ 100°C			10.1 8.8 .0 6.6 (mB KOH(0) 93898 Winupet 2.0 0.0	Base Base - Base 	-	
	Viscosity @ 100°C			10.1 8.8 .0 6.6 (mB KOH(0) 93898 Winupet 2.0 0.0	Base Base - Base 	-	
	Viscosity @ 100°C			10.1 (0/HO X) Bul) Jack Market (0/HO X) Bul) Jack Market (0/HO X) Bul) Jack Market (0/HO X) Bull (0/HO X) Bull (0/	0 - Base 0 - 0	-	
	Viscosity @ 100°C			(D)HOX (U) (D)HOX (U) (U)HOX (U) (U)HOX (U) (U)HOX (U) (U)HOX (U) (U)HOX (U) (U)HOX (U) (U)HOX (U)HOX (U)HO	Base Base Comparison Compar		
Laboratory	Viscosity @ 100°C	501 Madis		(0)HOX Bull Jaquinki 44.1 E2001 deg ry, NC 27513	Base Base Comparison Compar	ERSTATE WAS	
Sample No.	Viscosity @ 100°C	501 Madis Received	: 29 \$	10.1 10.1	Base Base Comparison Compar	ERSTATE WAS	OAD AVEN
Sample No. Lab Number	Viscosity @ 100°C	501 Madis Received Diagnose	: 29 S ed : 29 S	10.1 10.1	Base Base Comparison Compar	ERSTATE WAS	OAD AVEN CLOSTER,
Sample No. Lab Number Unique Number	Viscosity @ 100°C	501 Madis Received	: 29 S ed : 29 S	10.1 10.1	Base Base Comparison Compar	ERSTATE WAS	OAD AVEN CLOSTER, US 076
Sample No. Lab Number	Viscosity @ 100°C	501 Madis Received Diagnose Diagnosti	: 29 S ed : 29 S ician : Wes	ry, NC 27511 Sep 2023 Sep 2023 s Davis	Base Base C28 Base C28 Base C28 Base C28 Base C28 Base C28 Base C28 Base C28 Base C28 Base C28 Base C28 C C C28 C C C28 C C C C	ERSTATE WAS	OAD AVEN CLOSTER, US 076 Tony Gaglia

Submitted By: Tony Gagliano Page 2 of 2