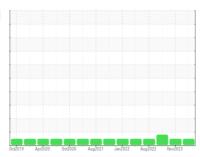


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id **9450** Component **Diesel Engine**

DIESEL ENGINE OIL SAE 10W30 (--- 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

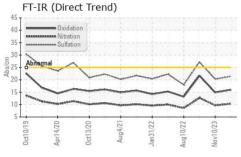
Fluid Condition

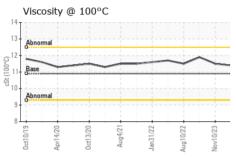
The condition of the oil is acceptable for the time in service.

Sample Number Client Info WC0924148 WC0853043 WC0799			Oct2019 A	pr2020 Oct2020 Aug	g2021 Jan2022 Aug2022	Nov2023	
Sample Date	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age kms Client Info 357068 337723 310155 Oil Age kms Client Info 0 0 0 0 Oil Changed Cha	Sample Number		Client Info		WC0924148	WC0853043	WC0796226
Oil Age kms Client Info Changed NEG <	Sample Date		Client Info		07 Apr 2024	10 Nov 2023	15 Jun 2023
Oil Changed Sample Status Client Info Changed NORMAL Changed ABNOR Change ABNOR Change ABNOR Change ABNOR Change ABNOR	Machine Age	kms	Client Info		357068	337723	310155
Sample Status	Oil Age	kms	Client Info		0	0	0
CONTAMINATION method limit/base current history1 hist Fuel WC Method >2.0 <1.0	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	ABNORMAL
Water Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 hist Iron ppm ASTM D5185(m) >127 16 20 36 Chromium ppm ASTM D5185(m) >3 <1	CONTAMINATION	J	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>2.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 hist Iron ppm ASTM D5185(m) >127 16 20 36 Chromium ppm ASTM D5185(m) >3 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185(m) >3 <1 ▲ 3 Nickel ppm ASTM D5185(m) >30 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185(m)	>127	16		36
Titanium ppm ASTM D5185(m) >2 0 0 0 Silver ppm ASTM D5185(m) >2 0 0 0 Aluminum ppm ASTM D5185(m) >59 4 4 7 Lead ppm ASTM D5185(m) >29 0 <1	Chromium	ppm	()	>3	<1	1	<u>^</u> 3
Silver	Nickel	ppm	ASTM D5185(m)	>30	<1	<1	<1
Aluminum ppm ASTM D5185(m) >59 4 4 7 Lead ppm ASTM D5185(m) >29 0 <1	Titanium	ppm	ASTM D5185(m)	>2	0	0	0
Lead ppm ASTM D5185(m) >29 0 <1 5 Copper ppm ASTM D5185(m) >1335 <1 1 3 Tin ppm ASTM D5185(m) >2 0 0 0 Antimony ppm ASTM D5185(m) 0 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 hist Boron ppm ASTM D5185(m) 250 33 38 18 Barium ppm ASTM D5185(m) 10 0 0 0 0 Molybdenum ppm ASTM D5185(m) 10 1 <1 <1 4 4 Magnesium ppm ASTM D5185(m)	Silver	ppm	ASTM D5185(m)	>2	0	0	0
Copper ppm ASTM D5185(m) >135 <1 1 3 Tin ppm ASTM D5185(m) >2 0 0 0 Antimony ppm ASTM D5185(m) 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 250 33 38 18 Boron ppm ASTM D5185(m) 10 0 0 0 Molybdenum ppm ASTM D5185(m) 100 1 <1	Aluminum	ppm	ASTM D5185(m)	>59	4	4	7
Tin ppm ASTM D5185(m) >2 0 0 0 Antimony ppm ASTM D5185(m) 0 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 hist Boron ppm ASTM D5185(m) 250 33 38 18 Barium ppm ASTM D5185(m) 10 0 0 0 Molybdenum ppm ASTM D5185(m) 100 1 <1 4 Manganese ppm ASTM D5185(m) 100 1 <1 4 Magnesium ppm ASTM D5185(m) 450 745 737 808 Calcium ppm ASTM D5185(m) 1150 697 <td>Lead</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td>>29</td> <th>0</th> <td><1</td> <td>5</td>	Lead	ppm	ASTM D5185(m)	>29	0	<1	5
Antimony ppm ASTM D5185(m) 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 hist Boron ppm ASTM D5185(m) 250 33 38 18 Barium ppm ASTM D5185(m) 10 0 0 0 Molybdenum ppm ASTM D5185(m) 100 1 <1	Copper	ppm	ASTM D5185(m)	>135	<1	1	3
Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 hist Boron ppm ASTM D5185(m) 250 33 38 18 Barium ppm ASTM D5185(m) 250 33 38 18 Barium ppm ASTM D5185(m) 10 0 0 0 Molybdenum ppm ASTM D5185(m) 100 1 <1 4 Manganese ppm ASTM D5185(m) 450 745 737 808 Calcium ppm ASTM D5185(m) 3000 1348 1348 1411 Phosphorus ppm ASTM D5185(m) 1350 778 771 831 Sulfur ppm ASTM D5185(m) 4250 2509 2700 <	Tin	ppm	ASTM D5185(m)	>2	0	0	0
Beryllium	Antimony	ppm	ASTM D5185(m)		0	0	0
Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 hist Boron ppm ASTM D5185(m) 250 33 38 18 Barium ppm ASTM D5185(m) 10 0 0 0 Molybdenum ppm ASTM D5185(m) 100 1 <1	Vanadium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES	Beryllium	ppm	ASTM D5185(m)		0	0	0
Boron ppm ASTM D5185(m) 250 33 38 18 Barium ppm ASTM D5185(m) 10 0 0 0 Molybdenum ppm ASTM D5185(m) 100 1 <1 4 Manganese ppm ASTM D5185(m) 450 745 737 808 Calcium ppm ASTM D5185(m) 3000 1348 1348 1411 Phosphorus ppm ASTM D5185(m) 3000 1348 1348 1411 Phosphorus ppm ASTM D5185(m) 1150 697 715 773 Zinc ppm ASTM D5185(m) 1350 778 771 831 Sulfur ppm ASTM D5185(m) 4250 2509 2700 2630 Lithium ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D	Cadmium	ppm	ASTM D5185(m)		0	0	0
Barium ppm ASTM D5185(m) 10 0 0 0 Molybdenum ppm ASTM D5185(m) 100 1 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 100 1 <1 4 Manganese ppm ASTM D5185(m) <1 0 <1 Magnesium ppm ASTM D5185(m) 450 745 737 808 Calcium ppm ASTM D5185(m) 3000 1348 1348 1411 Phosphorus ppm ASTM D5185(m) 1150 697 715 773 Zinc ppm ASTM D5185(m) 1350 778 771 831 Sulfur ppm ASTM D5185(m) 4250 2509 2700 2630 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base	Boron	ppm	ASTM D5185(m)	250	33		18
Manganese ppm ASTM D5185(m) <1 0 <1 Magnesium ppm ASTM D5185(m) 450 745 737 808 Calcium ppm ASTM D5185(m) 3000 1348 1348 1411 Phosphorus ppm ASTM D5185(m) 1150 697 715 773 Zinc ppm ASTM D5185(m) 1350 778 771 831 Sulfur ppm ASTM D5185(m) 4250 2509 2700 2630 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844* >3	Barium	ppm	ASTM D5185(m)	10	0		0
Magnesium ppm ASTM D5185(m) 450 745 737 808 Calcium ppm ASTM D5185(m) 3000 1348 1348 1411 Phosphorus ppm ASTM D5185(m) 1150 697 715 773 Zinc ppm ASTM D5185(m) 1350 778 771 831 Sulfur ppm ASTM D5185(m) 4250 2509 2700 2630 Lithium ppm ASTM D5185(m) < 1 <1 <1 <1 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D5185(m) >20 3 2 5 Potassium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844*	Molybdenum	ppm	ASTM D5185(m)	100	1		4
Calcium ppm ASTM D5185(m) 3000 1348 1348 1411 Phosphorus ppm ASTM D5185(m) 1150 697 715 773 Zinc ppm ASTM D5185(m) 1350 778 771 831 Sulfur ppm ASTM D5185(m) 4250 2509 2700 2630 Lithium ppm ASTM D5185(m) <1	Manganese	ppm	ASTM D5185(m)		<1		
Phosphorus ppm ASTM D5185(m) 1150 697 715 773 Zinc ppm ASTM D5185(m) 1350 778 771 831 Sulfur ppm ASTM D5185(m) 4250 2509 2700 2630 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844* >3 0.6 0.5 1.1	J	ppm	. ,				808
Zinc ppm ASTM D5185(m) 1350 778 771 831 Sulfur ppm ASTM D5185(m) 4250 2509 2700 2630 Lithium ppm ASTM D5185(m) <1		ppm	, ,	3000	1348		1411
Sulfur ppm ASTM D5185(m) 4250 2509 2700 2630 Lithium ppm ASTM D5185(m) 4250 2509 2700 2630 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D5185(m) 3 2 5 Potassium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844* >3 0.6 0.5 1.1							
Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D5185(m) 3 2 5 Potassium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844* >3 0.6 0.5 1.1		ppm					
CONTAMINANTS method limit/base current history1 hist Silicon ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D5185(m) 3 2 5 Potassium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844* >3 0.6 0.5 1.1			. ,	4250			
Silicon ppm ASTM D5185(m) >18 8 7 12 Sodium ppm ASTM D5185(m) 3 2 5 Potassium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844* >3 0.6 0.5 1.1		ppm	, ,		<1	<1	<1
Sodium ppm ASTM D5185(m) 3 2 5 Potassium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844* >3 0.6 0.5 1.1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185(m) >20 3 4 7 INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844* >3 0.6 0.5 1.1		ppm	. ,	>18			
INFRA-RED method limit/base current history1 hist Soot % % ASTM D7844* >3 0.6 0.5 1.1		ppm	()		3		
Soot % % ASTM D7844* >3 0.6 0.5 1.1	Potassium	ppm	ASTM D5185(m)	>20	3	4	7
	INFRA-RED		method	limit/base	current	history1	history2
and the second s	Soot %	%	ASTM D7844*	>3	0.6	0.5	1.1
Nitration Abs/cm ASTM D7624* >20 10.3 9.7 12.7	Nitration	Abs/cm	ASTM D7624*	>20	10.3	9.7	12.7
Sulfation Abs/.1mm ASTM D7415* >30 21.4 20.3 27.2	Sulfation	Abs/.1mm	ASTM D7415*	>30	21.4	20.3	27.2



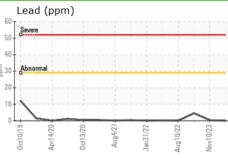
OIL ANALYSIS REPORT

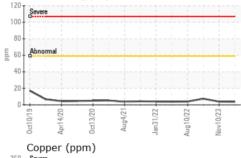


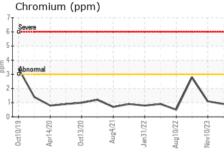


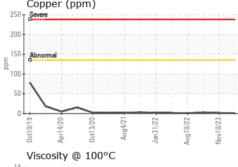
FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	16.0	14.9	21.7
VISUAL		method				history2
Emulsified Water Free Water	scalar	Visual* Visual*	>0.2	NEG NEG	NEG NEG	NEG NEG
FLUID PROPERT	ΓIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	10.9	11.4	11.5	11.9
GRAPHS						

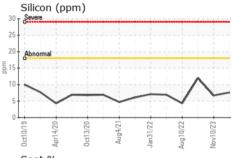
Severe		1			1	
0+						
Abnormal						
0						
0		1				
	_					
0	-					_
Oct10/19	N7/4	3/20	4/2	1/22	0/22	0/23
£ 1	Apr 14/2	Oct13,	Aug4,	Jan31	Aug1(Nov10
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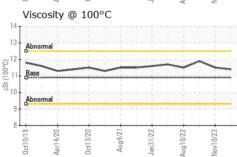


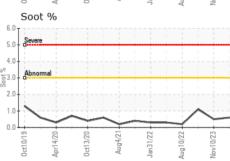














CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Unique Number : 5762611 Test Package : MOB 1

Lab Number : 02629479

: WC0924148

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Received : 17 Apr 2024 **Tested** : 17 Apr 2024

Diagnosed

: 17 Apr 2024 - Wes Davis

7450 Torbram Rd. Mississauga, ON CA L4T 1G9 Contact: Serdar Okur sokur@rushtruckcentres.ca T: (905)671-7600 F:

Rush Truck Centres

To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.

Validity of results and interpretation are based on the sample and information as supplied.