

OIL ANALYSIS REPORT

Sample Rating Trend

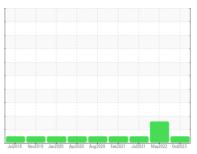




Chester MACK 2433

Component **Diesel Engine**

DIESEL ENGINE OIL SAE 15W40 (10 GAL)





Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

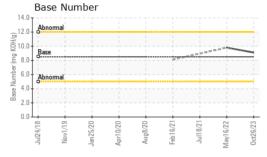
Fluid Condition

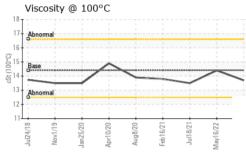
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info WC0831012 WC0650838 WC05 Sample Date Client Info 26 Oct 2023 16 May 2022 18 Jul Machine Age hrs Client Info 0 0 20000 Oil Age hrs Client Info 450 500 450 Oil Changed Client Info N/A Changed Changed Changed Goli Changed Client Info N/A Changed Changed Changed Golf Changed Client Info N/A Changed Changed Changed Golf Changed Client Info N/A Changed NEG NEG NEG NEG NEG NEG NEG NEG NEG NE	AE 15W40 (10 GAL)						
Sample Date Client Info Q6 Oct 2023 16 May 2022 18 Jul Machine Age hrs Client Info Q	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 450 500 450 Oil Age hrs Client Info 450 500 450 Oil Changed Client Info N/A Change	Sample Number		Client Info		WC0831012	WC0650838	WC0576821
Oil Age hrs Client Info 450 500 450 Oil Changed Client Info N/A Changed Changed <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <th>26 Oct 2023</th> <td>16 May 2022</td> <td>18 Jul 2021</td>	Sample Date		Client Info		26 Oct 2023	16 May 2022	18 Jul 2021
Containing Client Info N/A Changed	/lachine Age	hrs	Client Info		0	0	20000
CONTAMINATION	Dil Age	hrs	Client Info		450	500	450
CONTAMINATION	Oil Changed		Client Info		N/A	Changed	Changed
WC Method WC Method NEG NEG	Sample Status				NORMAL	ABNORMAL	NORMAL
WEAR METALS	CONTAMINATION		method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 hi ron ppm ASTM D5185m >120 19 39 21 Chromium ppm ASTM D5185m >20 0 1 <1	-uel		WC Method	>3.0	<1.0	<1.0	<1.0
Potential Pot	alycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 0 1 <1 Nickel ppm ASTM D5185m >5 <1 ▲ 15 <1 Titanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 <1 0 Aluminum ppm ASTM D5185m >2 0 <1 0 Aluminum ppm ASTM D5185m >2 0 <1 <1 Lead ppm ASTM D5185m >40 0 <1 <1 Copper ppm ASTM D5185m >330 0 7 <1 Tin ppm ASTM D5185m >15 0 1 <1 Antimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Caddmium ppm ASTM D5185m 10 0 0	WEAR METALS		method	limit/base	current	history1	history2
Silver	ron	ppm	ASTM D5185m	>120	19	39	21
Citanium ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 <1 0 Aluminum ppm ASTM D5185m >20 <1 15 0 Lead ppm ASTM D5185m >20 <1 15 0 Lead ppm ASTM D5185m >40 0 <1 <1 Copper ppm ASTM D5185m >330 0 7 <1 Copper ppm ASTM D5185m >15 0 1 <1 Antimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 hi Barium ppm ASTM D5185m 100 57 52 5	Chromium	ppm	ASTM D5185m	>20	0	1	<1
Salver	Nickel	ppm	ASTM D5185m	>5	<1	<u> </u>	<1
Alluminum	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >40 0 <1 <1 Copper ppm ASTM D5185m >330 0 7 <1 Cin ppm ASTM D5185m >15 0 1 <1 Antimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 hi Boron ppm ASTM D5185m 0 0 0 Boron ppm ASTM D5185m 10 0 0 0 Manganesium ppm ASTM D5185m 10 57 52 55 Manganesium ppm ASTM D5185m 450 863 814 826 Calcium ppm ASTM D5185m 3000 1083 1359 103	Silver	ppm	ASTM D5185m	>2	0	<1	0
Copper ppm ASTM D5185m >330 0 7 <1 Antimony ppm ASTM D5185m >15 0 1 <1	Aluminum	ppm	ASTM D5185m	>20	<1	15	0
Antimony	_ead	ppm	ASTM D5185m	>40	0	<1	<1
Antimony	Copper		ASTM D5185m	>330	0	7	<1
Antimony ppm ASTM D5185m 0 0 0 0 0 0 0 0					0	1	<1
Anadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 250 7 10 6 Barium ppm ASTM D5185m 10 0 0 0 Manganese ppm ASTM D5185m 100 57 52 55 Magnesium ppm ASTM D5185m 450 863 814 826 Calcium ppm ASTM D5185m 450 863 814 826 Phosphorus ppm ASTM D5185m 1150 993 1021 931 Phosphorus ppm ASTM D5185m 1350 1216 1226 108 Sulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1	Antimony	• •	ASTM D5185m				0
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 hi Boron ppm ASTM D5185m 250 7 10 6 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 57 52 55 Manganese ppm ASTM D5185m 0 2 <1	-				0	0	0
Boron ppm ASTM D5185m 250 7 10 6 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 57 52 55 Manganese ppm ASTM D5185m 0 2 <1 Magnesium ppm ASTM D5185m 450 863 814 826 Calcium ppm ASTM D5185m 3000 1083 1359 103 Phosphorus ppm ASTM D5185m 1150 993 1021 931 Zinc ppm ASTM D5185m 1350 1216 1226 108 Sulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1 hi Silicon ppm ASTM D5185m >25 5 11 4 Sodium ppm ASTM D5185m >20 3							0
Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 57 52 55 Manganese ppm ASTM D5185m 0 2 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 100 57 52 55 Manganese ppm ASTM D5185m 0 2 <1 Magnesium ppm ASTM D5185m 450 863 814 826 Calcium ppm ASTM D5185m 3000 1083 1359 103 Phosphorus ppm ASTM D5185m 1150 993 1021 931 Zinc ppm ASTM D5185m 1350 1216 1226 108 Sulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1 hi Silicon ppm ASTM D5185m >25 5 11 4 Sodium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1 INFRA-RED method limit/base current	3oron	ppm	ASTM D5185m	250	7	10	6
Manganese ppm ASTM D5185m 0 2 <1 Magnesium ppm ASTM D5185m 450 863 814 826 Calcium ppm ASTM D5185m 3000 1083 1359 103 Phosphorus ppm ASTM D5185m 1150 993 1021 931 Zinc ppm ASTM D5185m 1350 1216 1226 108 Sulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1 hi Silicon ppm ASTM D5185m >25 5 11 4 Sodium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1	Barium	ppm	ASTM D5185m	10	0	0	0
Manganese ppm ASTM D5185m 0 2 <1 Magnesium ppm ASTM D5185m 450 863 814 826 Calcium ppm ASTM D5185m 3000 1083 1359 103 Phosphorus ppm ASTM D5185m 1150 993 1021 931 Zinc ppm ASTM D5185m 1350 1216 1226 108 Gulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1 hi Golium ppm ASTM D5185m >25 5 11 4 Godium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1	Molybdenum	ppm	ASTM D5185m	100	57	52	55
Magnesium ppm ASTM D5185m 450 863 814 826 Calcium ppm ASTM D5185m 3000 1083 1359 103 Phosphorus ppm ASTM D5185m 1150 993 1021 931 Zinc ppm ASTM D5185m 1350 1216 1226 108 Sulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1 hi Silicon ppm ASTM D5185m >25 5 11 4 Sodium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1	-		ASTM D5185m		0	2	<1
Calcium ppm ASTM D5185m 3000 1083 1359 103 Phosphorus ppm ASTM D5185m 1150 993 1021 931 Zinc ppm ASTM D5185m 1350 1216 1226 108 Sulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1 hi Silicon ppm ASTM D5185m >25 5 11 4 Sodium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1	-		ASTM D5185m	450			826
Phosphorus ppm ASTM D5185m 1150 993 1021 931 Zinc ppm ASTM D5185m 1350 1216 1226 108 Sulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1 hi Silicon ppm ASTM D5185m >25 5 11 4 Sodium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1 INFRA-RED method limit/base current history1 hi Soot % % *ASTM D7844 >4 0.1 4.2 1.1 Nitration Abs/cm *ASTM D7624 >20 6.2 14.0 9.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.7 28.0 21.4	-		ASTM D5185m	3000		1359	1034
Zinc ppm ASTM D5185m 1350 1216 1226 108 Sulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1 hi Silicon ppm ASTM D5185m >25 5 11 4 Sodium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1 INFRA-RED method limit/base current history1 hi Soot % % *ASTM D7844 >4 0.1 ▲ 4.2 1.1 Nitration Abs/cm *ASTM D7624 >20 6.2 14.0 9.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.7 28.0 21.4	Phosphorus						931
Sulfur ppm ASTM D5185m 4250 3098 2862 246 CONTAMINANTS method limit/base current history1 hi Silicon ppm ASTM D5185m >25 5 11 4 Sodium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1							1082
Solition ppm ASTM D5185m >25 5 11 4	-						2464
Sodium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1 INFRA-RED method limit/base current history1 hi Soot % % *ASTM D7844 >4 0.1 ▲ 4.2 1.1 Nitration Abs/cm *ASTM D7624 >20 6.2 14.0 9.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.7 28.0 21.4	CONTAMINANTS		method	limit/base	current	history1	history2
Sodium ppm ASTM D5185m >158 4 2 3 Potassium ppm ASTM D5185m >20 3 6 <1 INFRA-RED method limit/base current history1 hi Soot % % *ASTM D7844 >4 0.1 ▲ 4.2 1.1 Nitration Abs/cm *ASTM D7624 >20 6.2 14.0 9.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.7 28.0 21.4	Silicon	ppm	ASTM D5185m	>25	5	11	4
INFRA-RED method limit/base current history1 hi Soot % % *ASTM D7844 >4 0.1 ▲ 4.2 1.1 Nitration Abs/cm *ASTM D7624 >20 6.2 14.0 9.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.7 28.0 21.4	Sodium	ppm	ASTM D5185m	>158	4	2	3
Soot % % *ASTM D7844 >4 0.1 ▲ 4.2 1.1 Nitration Abs/cm *ASTM D7624 >20 6.2 14.0 9.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.7 28.0 21.	otassium	ppm	ASTM D5185m	>20	3	6	<1
Nitration Abs/cm *ASTM D7624 >20 6.2 14.0 9.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.7 28.0 21.4	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 6.2 14.0 9.5 Sulfation Abs/.1mm *ASTM D7415 >30 17.7 28.0 21.	Soot %	%	*ASTM D7844	>4	0.1	4.2	1.1
Sulfation Abs/.1mm *ASTM D7415 >30 17.7 28.0 21.	Vitration	Abs/cm	*ASTM D7624	>20		14.0	9.5
FILLID DECORADATION with a Partie of the August 1997	Sulfation					28.0	21.4
FLUID DEGRADATION metnod limit/base current nistory i ni	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Oxidation	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.7	16.6	15.5
Base Number (BN) mg KOH/g ASTM D2896 8.5 9.1 9.8	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	9.1	9.8	



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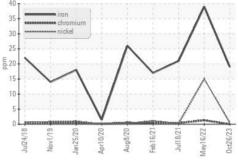


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

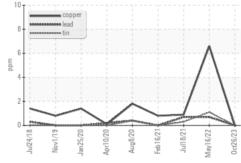
FLUID PROPERT	IES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.7	14.4	13.5

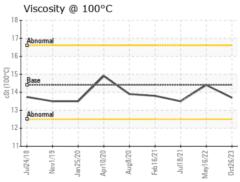
GRAPHS

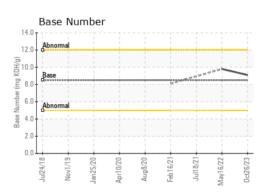
Ferrous Alloys



Non-ferrous Metals











Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10727043 Test Package : FLEET

: WC0831012 : 05998683

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 06 Nov 2023 : 06 Nov 2023 Diagnosed Diagnostician : Wes Davis

INTERSTATE WASTE-CHESTER

89 BLACK MEADOW RD CHESTER, NY US 10918

Contact: ROB CLARKE rclarke@interstatewaste.com T:

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Contact/Location: ROB CLARKE - INTCHE

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)