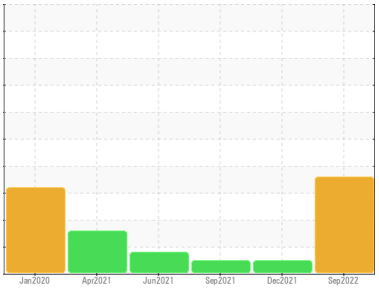
OIL ANALYSIS REPORT

Area
Chester
Machine Id
MACK 2415
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

Sample Rating Trend



SOOT

DIAGNOSIS

Recommendation
We advise that you check for faulty combustion, plugged air filters, or aftercoolers. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.

Wear
All component wear rates are normal.

Contamination
There is an abnormal amount of solids and carbon present in the oil.

Fluid Condition
The oil viscosity is higher than normal. The BN level is low.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0694187**	WC0620274	WC0620321
Sample Date		Client Info		**12 Sep 2022**	16 Dec 2021	28 Sep 2021
Machine Age	mls	Client Info		**0**	0	24834
Oil Age	mls	Client Info		**0**	500	450
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**SEVERE**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**46**	28	31
Chromium	ppm	ASTM D5185m	>20	**1**	<1	<1
Nickel	ppm	ASTM D5185m	>4	**0**	0	<1
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m	>3	**0**	<1	0
Aluminum	ppm	ASTM D5185m	>20	**2**	<1	2
Lead	ppm	ASTM D5185m	>40	**5**	<1	<1
Copper	ppm	ASTM D5185m	>330	**5**	4	5
Tin	ppm	ASTM D5185m	>15	**<1**	<1	0
Antimony	ppm	ASTM D5185m		**---**	0	0
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	**7**	10	8
Barium	ppm	ASTM D5185m	10	**0**	1	0
Molybdenum	ppm	ASTM D5185m	100	**57**	56	51
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m	450	**842**	800	878
Calcium	ppm	ASTM D5185m	3000	**1185**	1031	1053
Phosphorus	ppm	ASTM D5185m	1150	**947**	894	887
Zinc	ppm	ASTM D5185m	1350	**1148**	1138	1018
Sulfur	ppm	ASTM D5185m	4250	**3266**	2692	4228

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**3**	2	3
Sodium	ppm	ASTM D5185m	>158	**0**	<1	2
Potassium	ppm	ASTM D5185m	>20	**2**	0	2

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**7.4**	2.8	2.4
Nitration	Abs/cm	*ASTM D7624	>20	**18.8**	8.4	8.1
Sulfation	Abs/.1mm	*ASTM D7415	>30	**37.1**	23	22.3

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**25.7**	13.9	13.7
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	**0.0**	9.8	---

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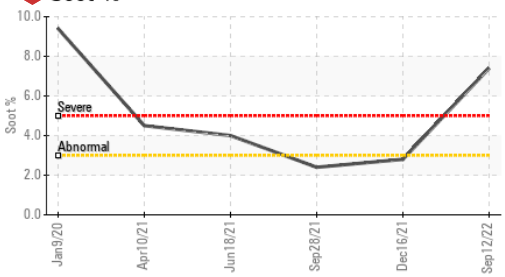
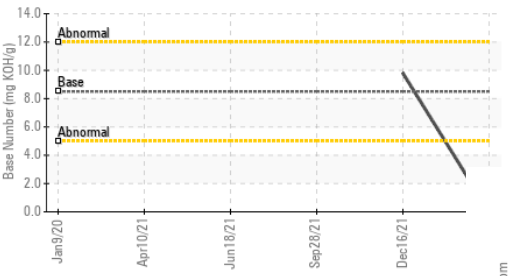
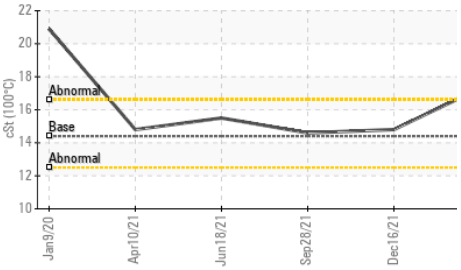
Soot %



Base Number



Viscosity @ 100°C

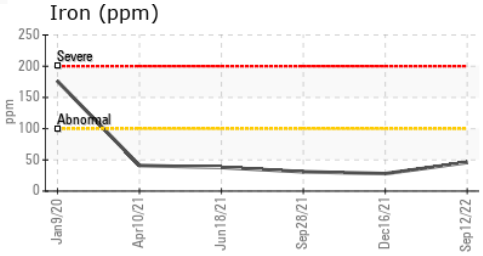


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

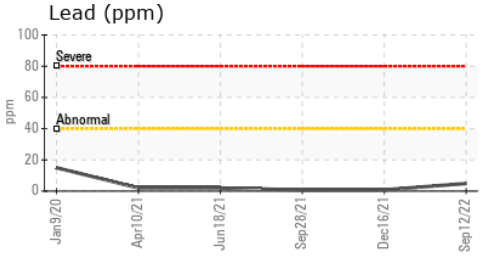
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	▲ **17.3**	14.8	14.6

GRAPHS

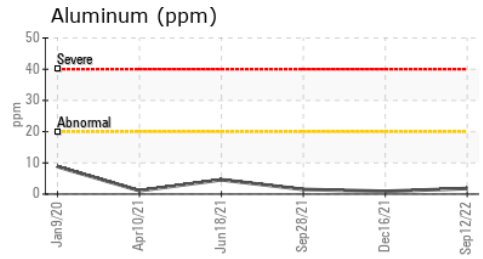
Iron (ppm)



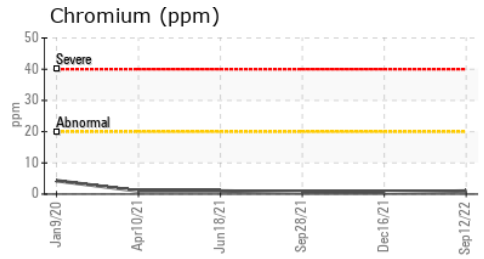
Lead (ppm)



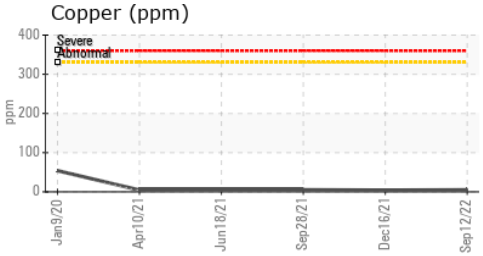
Aluminum (ppm)



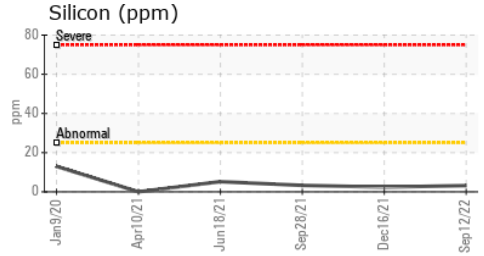
Chromium (ppm)



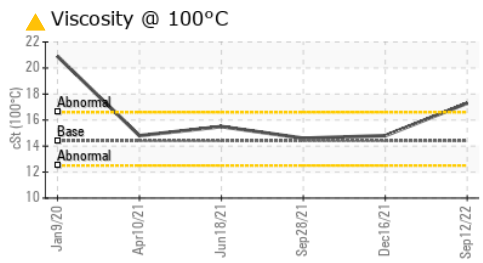
Copper (ppm)



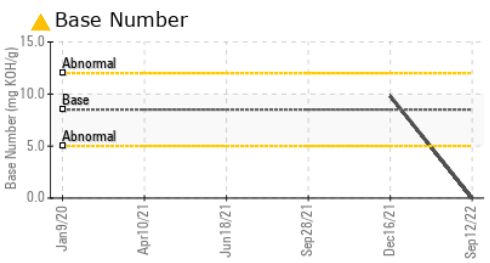
Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0694187 **Received** : 03 Oct 2022
Lab Number : 05656709 **Diagnosed** : 05 Oct 2022
Unique Number : 10156261 **Diagnostician** : Don Baldridge
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)

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