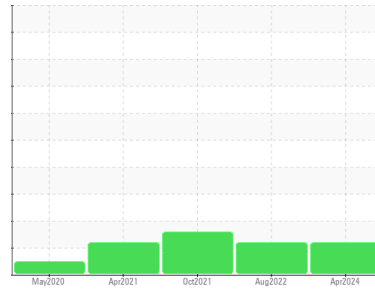




OIL ANALYSIS REPORT

Sample Rating Trend



FUEL



Machine Id

EX-020

Component

Diesel Engine

Fluid

CITGO CITGUARD 600 15W40 (--- GAL)

DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC0909357	WC0705338	WC0355589
Sample Date	Client Info		01 Apr 2024	24 Aug 2022	17 Oct 2021
Machine Age	hrs	Client Info	3210	2222	1682
Oil Age	hrs	Client Info	500	500	0
Oil Changed	Client Info		Changed	Changed	N/A
Sample Status			ABNORMAL	ATTENTION	ABNORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
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 >100	16	28	8
Chromium	ppm	ASTM D5185m >20	0	<1	<1
Nickel	ppm	ASTM D5185m >4	0	<1	0
Titanium	ppm	ASTM D5185m	0	0	0
Silver	ppm	ASTM D5185m >3	0	0	<1
Aluminum	ppm	ASTM D5185m >20	<1	2	0
Lead	ppm	ASTM D5185m >40	0	0	0
Copper	ppm	ASTM D5185m >330	<1	3	1
Tin	ppm	ASTM D5185m >15	0	<1	0
Antimony	ppm	ASTM D5185m	---	---	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 13	1	4	9
Barium	ppm	ASTM D5185m 0	0	0	0
Molybdenum	ppm	ASTM D5185m 57	59	57	56
Manganese	ppm	ASTM D5185m	0	<1	<1
Magnesium	ppm	ASTM D5185m 825	937	893	954
Calcium	ppm	ASTM D5185m 1100	1210	1156	1166
Phosphorus	ppm	ASTM D5185m 933	1067	988	1047
Zinc	ppm	ASTM D5185m 1089	1250	1262	1182
Sulfur	ppm	ASTM D5185m 2769	3559	3630	2701

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	3	4	3
Sodium	ppm	ASTM D5185m	2	0	2
Potassium	ppm	ASTM D5185m >20	<1	0	0
Fuel	%	ASTM D3524 >5	▲ 7.8	▲ 4.1	<1.0

INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	0.2	0.3	0.1
Nitration	Abs/cm	*ASTM D7624 >20	10.2	12.3	8.3
Sulfation	Abs/.1mm	*ASTM D7415 >30	19.2	21.7	19.2

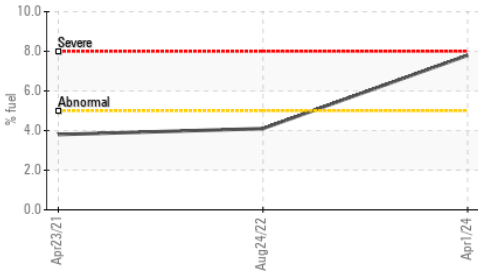
FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	19.0	21.2	16
Base Number (BN)	mg KOH/g	ASTM D2896 11.0	8.1	8.7	8.86

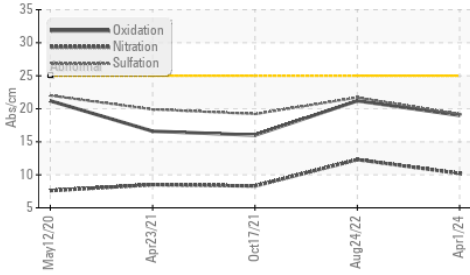


OIL ANALYSIS REPORT

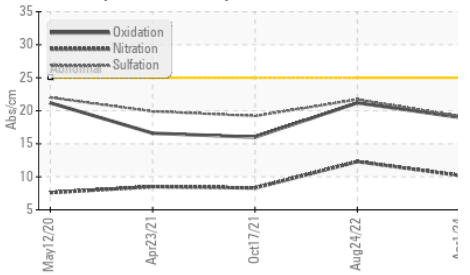
▲ Fuel Dilution



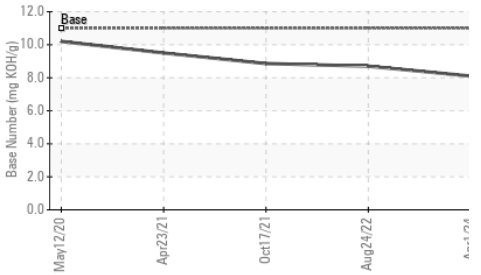
● FT-IR (Direct Trend)



● FT-IR (Direct Trend)



Base Number

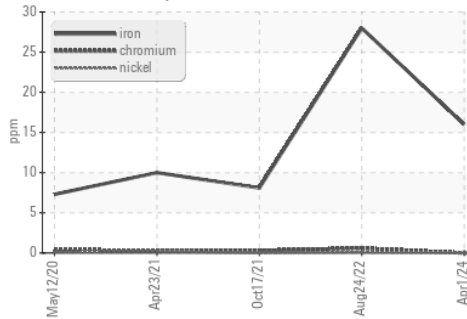


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

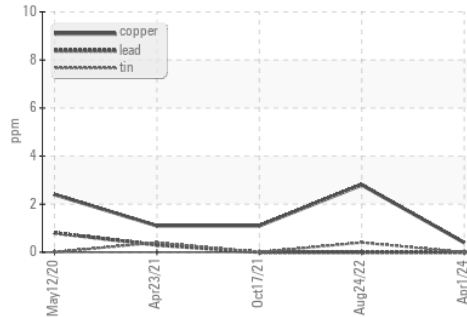
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4 ▲ 11.4	12.1 ●	13.2

GRAPHS

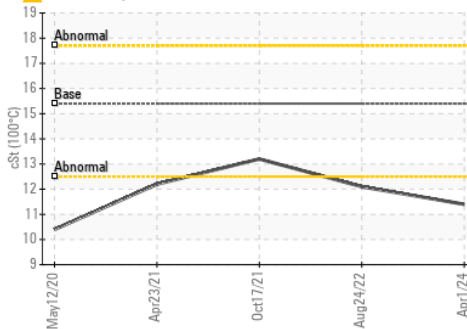
Ferrous Alloys



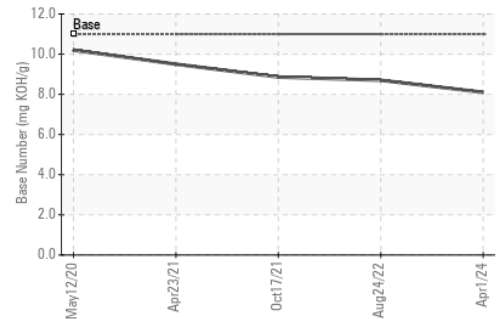
Non-ferrous Metals



▲ Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0909357

Lab Number : 06146967

Unique Number : 10977045

Test Package : FLEET (Additional Tests: FuelDilution, PercentFuel)

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)

Received : 12 Apr 2024

Tested : 17 Apr 2024

Diagnosed : 17 Apr 2024 - Wes Davis

E.C. PACE CO.

1811 HOLLINS RD.

ROANOKE, VA

US 24012

Contact: EDDIE SECO

ESECO@ECPACE.COM

T: (276)266-5849

F: (540)343-6909