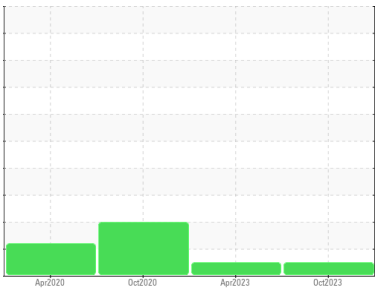
OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Machine Id
109565
Component
Diesel Engine
Fluid
SHELL ROTELLA T 15W40 (--- QTS)

DIAGNOSIS

Recommendation
Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear
All component wear rates are normal.

Contamination
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. No other contaminants were detected in the oil.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**IL0032764**	IL0027556	IL0016445
Sample Date		Client Info		**27 Oct 2023**	28 Apr 2023	13 Oct 2020
Machine Age	mls	Client Info		**94693**	91082	25521
Oil Age	mls	Client Info		**3611**	13686	14339
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**NORMAL**	NORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	**<1.0**	<1.0	<1.0
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>90	**19**	41	43
Chromium	ppm	ASTM D5185m	>20	**<1**	2	1
Nickel	ppm	ASTM D5185m	>2	**<1**	1	<1
Titanium	ppm	ASTM D5185m	>2	**<1**	<1	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	0
Aluminum	ppm	ASTM D5185m	>20	**27**	64	▲ 70
Lead	ppm	ASTM D5185m	>40	**<1**	<1	0
Copper	ppm	ASTM D5185m	>330	**1**	1	5
Tin	ppm	ASTM D5185m	>15	**0**	1	0
Antimony	ppm	ASTM D5185m		**---**	---	<1
Vanadium	ppm	ASTM D5185m		**0**	<1	0
Cadmium	ppm	ASTM D5185m		**<1**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	316	**135**	105	117
Barium	ppm	ASTM D5185m	0.0	**5**	0	0
Molybdenum	ppm	ASTM D5185m	1.2	**25**	18	7
Manganese	ppm	ASTM D5185m		**<1**	<1	1
Magnesium	ppm	ASTM D5185m	24	**149**	103	77
Calcium	ppm	ASTM D5185m	2292	**1932**	2126	2138
Phosphorus	ppm	ASTM D5185m	1064	**963**	1019	858
Zinc	ppm	ASTM D5185m	1160	**1131**	1267	1070
Sulfur	ppm	ASTM D5185m	4996	**3231**	4196	2637

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**6**	8	10
Sodium	ppm	ASTM D5185m		**0**	4	3
Potassium	ppm	ASTM D5185m	>20	**81**	171	▲ 182

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>6	**0.3**	0.5	0.3
Nitration	Abs/cm	*ASTM D7624	>20	**8.2**	10.2	9
Sulfation	Abs/.1mm	*ASTM D7415	>30	**20.5**	21.4	22.6

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**16.9**	18.6	18.6
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	**8.1**	5.4	7.9

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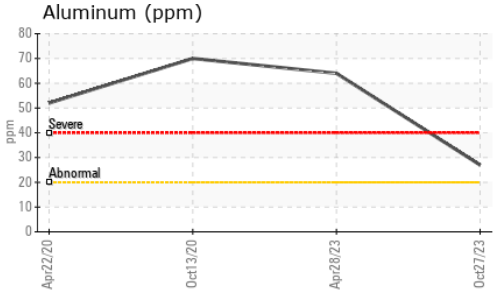
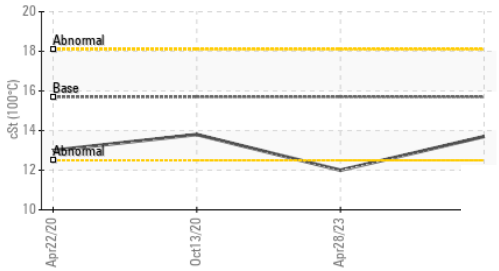
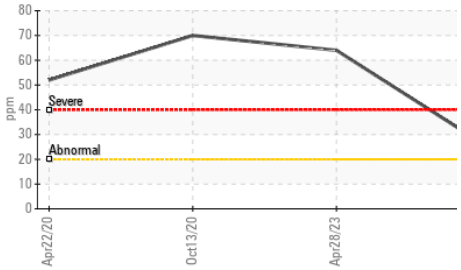
Aluminum (ppm)



Viscosity @ 100°C



Aluminum (ppm)

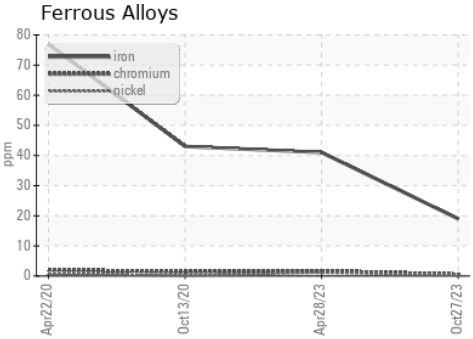


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

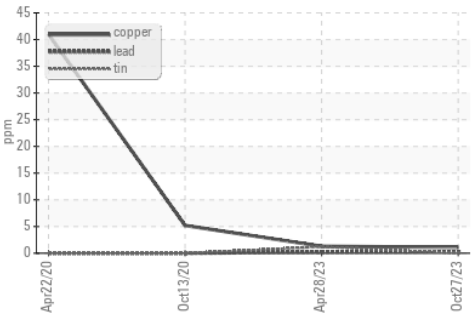
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.7	**13.7**	12.0	13.8

GRAPHS

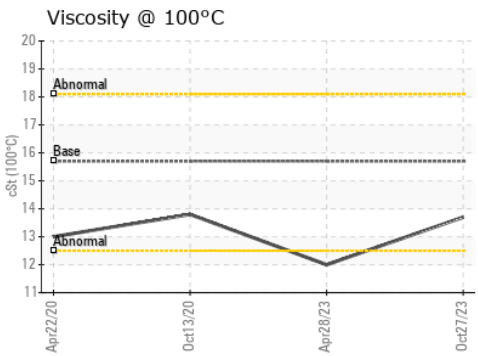
Ferrous Alloys



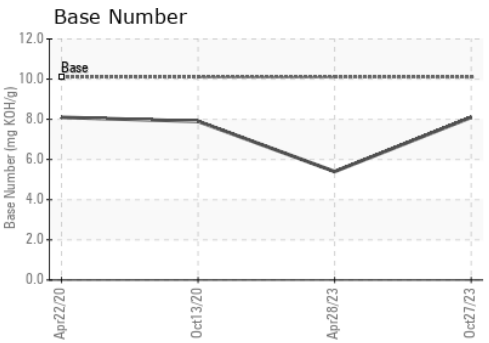
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : IL0032764
Lab Number : 06000311
Unique Number : 10728671
Test Package : FLEET

Received : 07 Nov 2023
Diagnosed : 08 Nov 2023
Diagnostician : Don Baldridge

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)

IDEALEASE OF NORTHWEST WI
611 HANSEN ROAD
GREEN BAY, WI
US 54304
Contact: GARY KOLTZ
gkoltz@pcitrucks.com
T: (920)499-6200
F: (920)499-5332