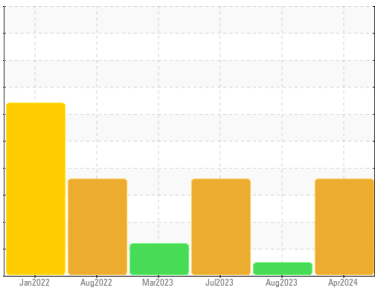
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
1982
Component
Diesel Engine
Fluid
SAE 0W20 (--- GAL)

DIAGNOSIS

Recommendation
We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. 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
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Fluid Condition
The BN level is low.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**HRE0000133**	WC0827105	WC0827088
Sample Date		Client Info		**10 Apr 2024**	09 Aug 2023	21 Jul 2023
Machine Age	mls	Client Info		**0**	26418	0
Oil Age	mls	Client Info		**0**	6000	0
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**ABNORMAL**	NORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	<1.0
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	**48**	14	56
Chromium	ppm	ASTM D5185m	>20	**1**	<1	2
Nickel	ppm	ASTM D5185m	>4	**<1**	0	0
Titanium	ppm	ASTM D5185m		**0**	<1	0
Silver	ppm	ASTM D5185m	>3	**4**	7	15
Aluminum	ppm	ASTM D5185m	>20	**6**	2	6
Lead	ppm	ASTM D5185m	>40	**0**	0	0
Copper	ppm	ASTM D5185m	>330	**3**	2	6
Tin	ppm	ASTM D5185m	>15	**0**	<1	<1
Vanadium	ppm	ASTM D5185m		**6**	2	7
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**14**	61	18
Barium	ppm	ASTM D5185m		**1**	0	2
Molybdenum	ppm	ASTM D5185m		**289**	275	288
Manganese	ppm	ASTM D5185m		**5**	<1	1
Magnesium	ppm	ASTM D5185m		**482**	517	604
Calcium	ppm	ASTM D5185m		**1378**	1425	1595
Phosphorus	ppm	ASTM D5185m		**695**	664	772
Zinc	ppm	ASTM D5185m		**823**	884	999
Sulfur	ppm	ASTM D5185m		**2047**	2455	2708

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**35**	15	34
Sodium	ppm	ASTM D5185m		**<1**	0	2
Potassium	ppm	ASTM D5185m	>20	**1**	2	<1

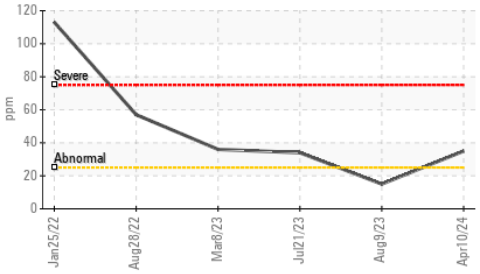
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**0.1**	0	0.1
Nitration	Abs/cm	*ASTM D7624	>20	**14.8**	7.7	14.0
Sulfation	Abs/.1mm	*ASTM D7415	>30	**26.7**	16.5	26.4

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**26.7**	12.0	25.8
Base Number (BN)	mg KOH/g	ASTM D2896		**1.7**	5.6	2.7

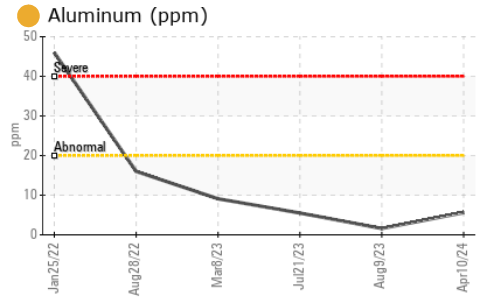
HUTCHENS RENTZ-EDEN

OIL ANALYSIS REPORT

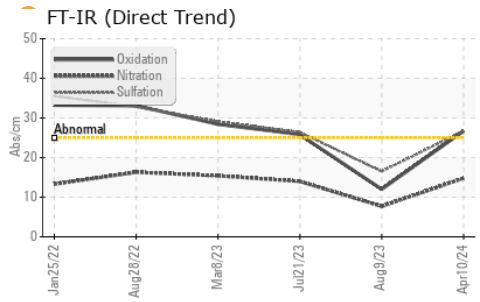
Silicon (ppm)



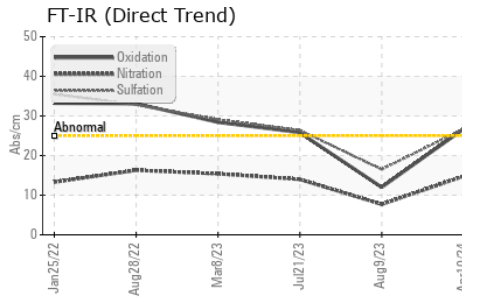
Aluminum (ppm)



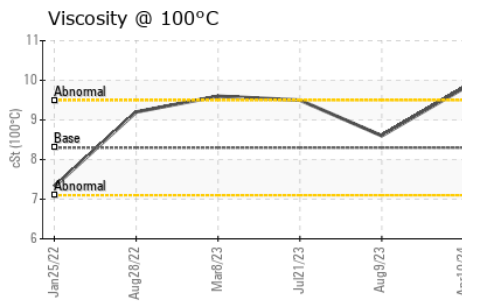
FT-IR (Direct Trend)



FT-IR (Direct Trend)



Viscosity @ 100°C

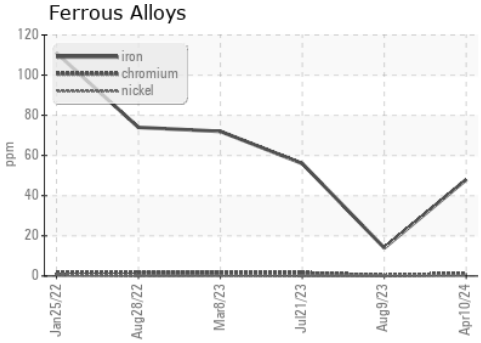


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt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

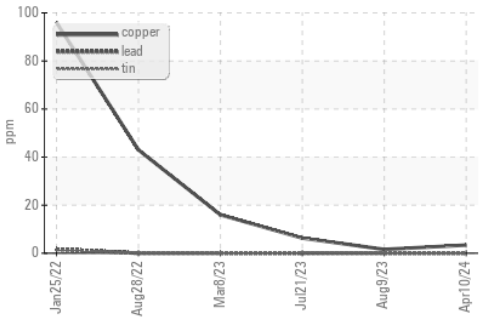
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	8.3	**9.8**	8.6	9.5

GRAPHS

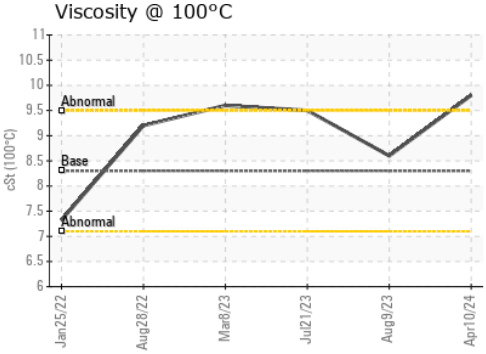
Ferrous Alloys



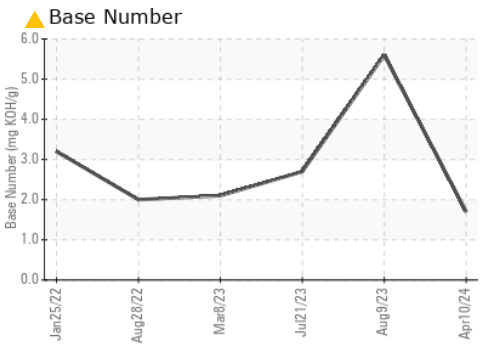
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : HRE0000133
Lab Number : 06148472
Unique Number : 10978550
Test Package : FLEET

Received : 15 Apr 2024
Tested : 16 Apr 2024
Diagnosed : 17 Apr 2024 - Jonathan Hester

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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