

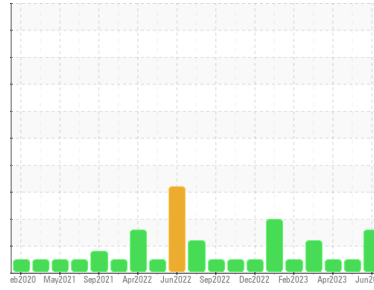


OIL ANALYSIS REPORT



Area
RIG 4
 Machine Id
CATERPILLAR 3512 R4-G-02 NKL
 Component
Diesel Engine
 Fluid
CHEVRON 15W40 (--- GAL)

Sample Rating Trend



DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of particulates present 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 INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	KL0012496	KL0012464	KL0011897
Sample Date	Client Info	24 Jun 2023	19 May 2023	14 Apr 2023
Machine Age	days	45099	45063	45025
Oil Age	days	0	0	0
Oil Changed	Client Info	N/A	N/A	N/A
Sample Status		ATTENTION	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	5	6	5
Chromium	ppm ASTM D5185m >20	<1	<1	0
Nickel	ppm ASTM D5185m >2	0	0	0
Titanium	ppm ASTM D5185m >2	0	0	0
Silver	ppm ASTM D5185m >2	0	0	0
Aluminum	ppm ASTM D5185m >25	3	1	2
Lead	ppm ASTM D5185m >40	<1	0	0
Copper	ppm ASTM D5185m >330	6	6	8
Tin	ppm ASTM D5185m >15	<1	1	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	406	351	354
Barium	ppm ASTM D5185m	0	0	0
Molybdenum	ppm ASTM D5185m	141	131	131
Manganese	ppm ASTM D5185m	<1	<1	<1
Magnesium	ppm ASTM D5185m	778	713	689
Calcium	ppm ASTM D5185m	1783	1610	1495
Phosphorus	ppm ASTM D5185m	779	749	689
Zinc	ppm ASTM D5185m	939	889	823
Sulfur	ppm ASTM D5185m	3162	3100	2530

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >25	8	7	6
Sodium	ppm ASTM D5185m >50	2	2	2
Potassium	ppm ASTM D5185m >20	2	<1	0

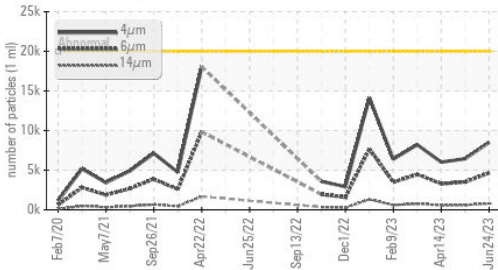
INFRA-RED

method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	0.2	0.2	0.2
Nitration	Abs/cm *ASTM D7624 >20	7.8	7.3	8.0
Sulfation	Abs./1mm *ASTM D7415 >30	24.7	24.8	24.9

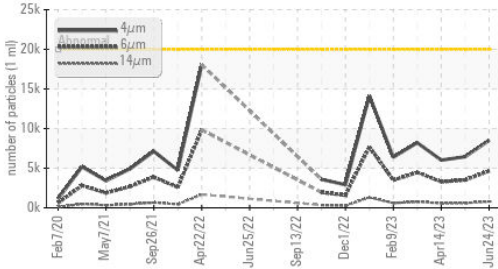


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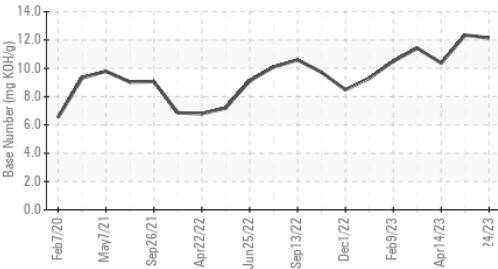
▲ Particle Trend



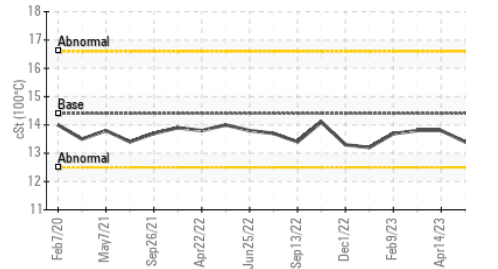
▲ Particle Trend



Base Number



Viscosity @ 100°C



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	8517	6446	6020
Particles >6µm	ASTM D7647	>5000	4640	3512	3280
Particles >14µm	ASTM D7647	>640	▲ 790	598	558
Particles >21µm	ASTM D7647	>160	▲ 266	201	188
Particles >38µm	ASTM D7647	>40	▲ 41	31	29
Particles >71µm	ASTM D7647	>10	4	3	3
Oil Cleanliness	ISO 4406 (c)	>21/19/16	▲ 20/19/17	19/16	19/16

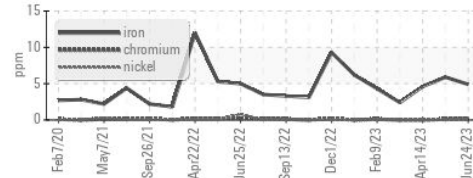
FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm *ASTM D7414	>25	18.9	18.1	19.2
Base Number (BN)	mg KOH/g ASTM D2896		12.14	12.35	10.37

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

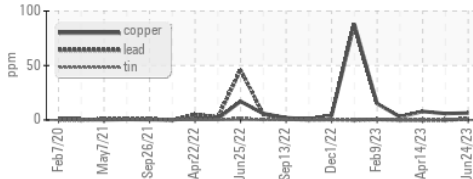
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt ASTM D445	14.4	13.8	13.4	13.8

GRAPHS

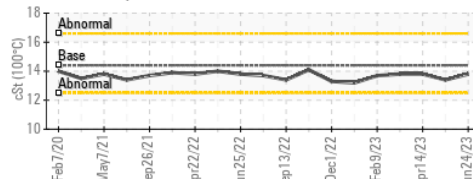
Ferrous Alloys



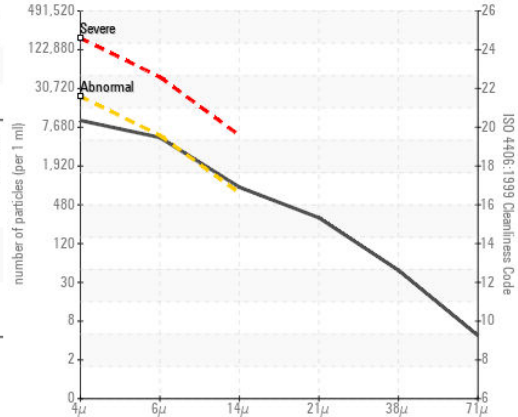
Non-ferrous Metals



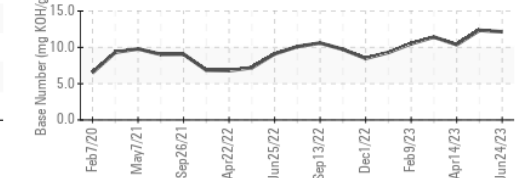
Viscosity @ 100°C



▲ Particle Count



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : KL0012496 Received : 19 Jul 2023
 Lab Number : 05902896 Diagnosed : 21 Jul 2023
 Unique Number : 10564252 Diagnostician : Don Baldrige
 Test Package : MOB 2 (Additional Tests: PrtCount)

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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)