

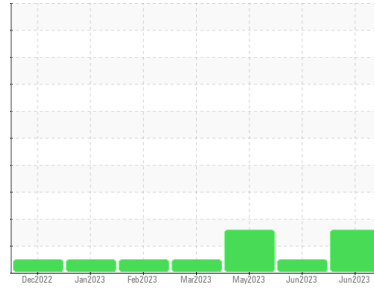


OIL ANALYSIS REPORT



Area
RIG 2
Machine Id
CATERPILLAR 3512 R2-G-04-NKL
Component
Diesel Engine
Fluid
CHEVRON 15W40 (--- GAL)

Sample Rating Trend



ISO



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	KL0012514	KL0004264	KL0012184	
Sample Date	Client Info	28 Jun 2023	01 Jun 2023	06 May 2023	
Machine Age	days	Client Info	45103	45076	45049
Oil Age	days	Client Info	0	0	0
Oil Changed	Client Info	N/A	N/A	N/A	
Sample Status		ATTENTION	NORMAL	ATTENTION	

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	7	2	5
Chromium	ppm ASTM D5185m >20	<1	0	<1
Nickel	ppm ASTM D5185m >2	0	0	<1
Titanium	ppm ASTM D5185m >2	0	0	0
Silver	ppm ASTM D5185m >2	0	0	0
Aluminum	ppm ASTM D5185m >25	3	<1	5
Lead	ppm ASTM D5185m >40	<1	0	1
Copper	ppm ASTM D5185m >330	51	32	35
Tin	ppm ASTM D5185m >15	<1	0	2
Vanadium	ppm ASTM D5185m	0	<1	<1
Cadmium	ppm ASTM D5185m	0	0	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m	422	374	368
Barium	ppm ASTM D5185m	0	0	0
Molybdenum	ppm ASTM D5185m	137	122	123
Manganese	ppm ASTM D5185m	<1	<1	<1
Magnesium	ppm ASTM D5185m	743	681	698
Calcium	ppm ASTM D5185m	1734	1589	1574
Phosphorus	ppm ASTM D5185m	777	701	754
Zinc	ppm ASTM D5185m	925	865	905
Sulfur	ppm ASTM D5185m	3224	3050	3151

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >25	7	5	7
Sodium	ppm ASTM D5185m >50	2	<1	2
Potassium	ppm ASTM D5185m >20	1	<1	2

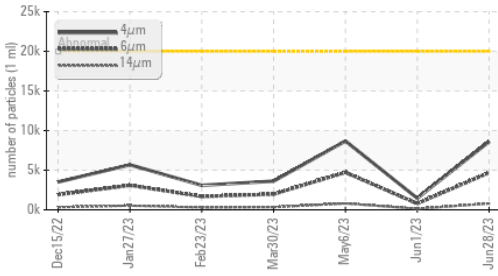
INFRA-RED

method	limit/base	current	history1	history2
Soot %	% *ASTM D7844 >3	0.1	0.1	0.2
Nitration	Abs/cm *ASTM D7624 >20	6.5	5.4	6.5
Sulfation	Abs./1mm *ASTM D7415 >30	23.8	23.2	24.0

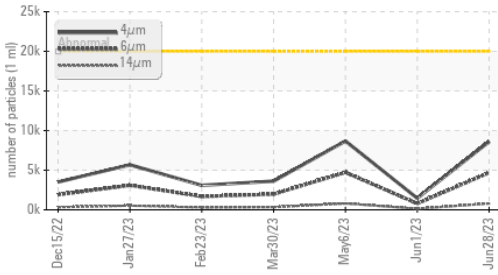


OIL ANALYSIS REPORT

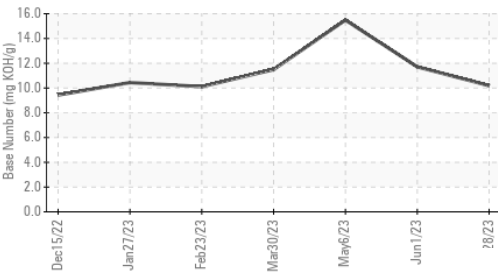
▲ Particle Trend



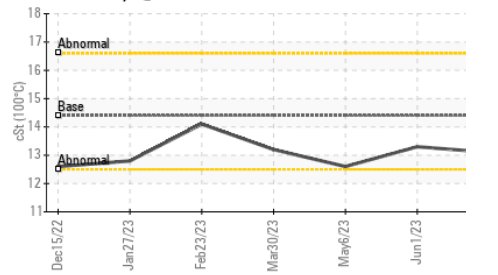
▲ Particle Trend



Base Number



Viscosity @ 100°C



FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	8604	1462	8682
Particles >6µm	ASTM D7647	>5000	4687	796	4730
Particles >14µm	ASTM D7647	>640	▲ 798	136	▲ 805
Particles >21µm	ASTM D7647	>160	▲ 269	46	▲ 271
Particles >38µm	ASTM D7647	>40	▲ 41	7	▲ 42
Particles >71µm	ASTM D7647	>10	4	1	4
Oil Cleanliness	ISO 4406 (c)	>21/19/16	▲ 20/19/17	17/14	▲ 19/17

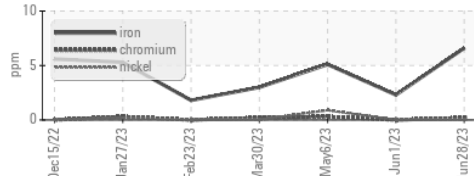
FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414	>25	16.6	15.8	16.8
Base Number (BN)	mg KOH/g ASTM D2896		10.19	11.71	15.49

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

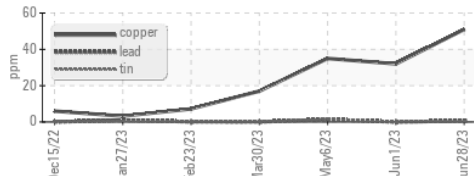
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt ASTM D445	14.4	13.1	13.3	12.6

GRAPHS

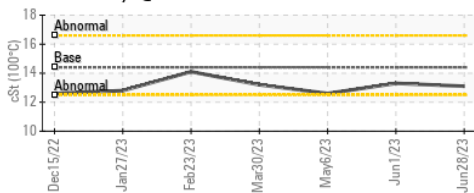
Ferrous Alloys



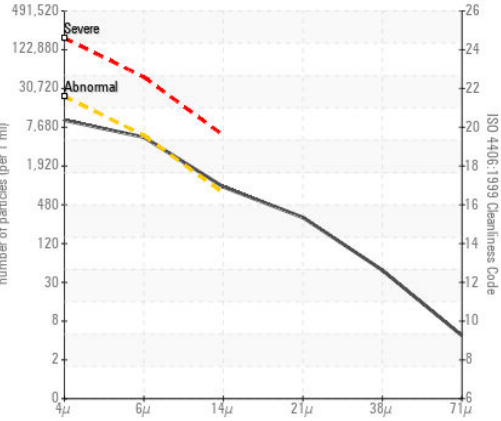
Non-ferrous Metals



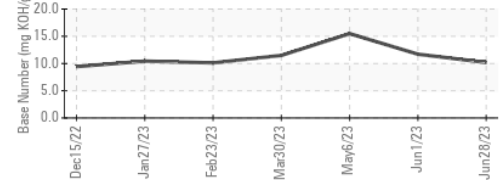
Viscosity @ 100°C



▲ Particle Count



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0012514 **Received** : 19 Jul 2023
Lab Number : 05902886 **Diagnosed** : 21 Jul 2023
Unique Number : 10564242 **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)