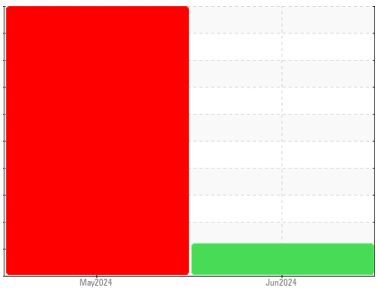
# OIL ANALYSIS REPORT

Sample Rating Trend




GLYCOL

Area
**MINING [WC0934828]**
Machine Id
**ME-021 KOMATSU WA500-8 KMTWA134ALNA97209**
Component
**Diesel Engine**
Fluid
**SHELL RIMULA SUPER SAE 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
No corrective action is recommended at this time. ( Customer Sample Comment: Normal 250-hour engine sample, that`s over due. )

**Wear**
All component wear rates are normal.

**Contamination**
Sodium and/or potassium levels remain high. Test for glycol is negative.

**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 | | **WC0934828** | WC0929536 | --- |
| Sample Date | | Client Info | | **24 Jun 2024** | 20 May 2024 | --- |
| Machine Age | hrs | Client Info | | **10555** | 10216 | --- |
| Oil Age | hrs | Client Info | | **339** | 638 | --- |
| Oil Changed | | Client Info | | **Not Changd** | Not Changd | --- |
| Sample Status | | | | **ATTENTION** | SEVERE | --- |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | --- |
| Water | | WC Method | >0.2 | **NEG** | NEG | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **8** | 67 | --- |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | 2 | --- |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 3 | --- |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | --- |
| Silver | ppm | ASTM D5185m | >3 | **0** | <1 | --- |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | 6 | --- |
| Lead | ppm | ASTM D5185m | >40 | **8** | ▲ 167 | --- |
| Copper | ppm | ASTM D5185m | >330 | **60** | ▲ 67 | --- |
| Tin | ppm | ASTM D5185m | >15 | **<1** | 6 | --- |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | --- |
| Cadmium | ppm | ASTM D5185m | | **0** | <1 | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **18** | 120 | --- |
| Barium | ppm | ASTM D5185m | | **0** | 0 | --- |
| Molybdenum | ppm | ASTM D5185m | | **69** | 144 | --- |
| Manganese | ppm | ASTM D5185m | | **0** | 2 | --- |
| Magnesium | ppm | ASTM D5185m | | **400** | 411 | --- |
| Calcium | ppm | ASTM D5185m | 2840 | **1720** | 1702 | --- |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1016** | 1087 | --- |
| Zinc | ppm | ASTM D5185m | 1270 | **1371** | 1377 | --- |
| Sulfur | ppm | ASTM D5185m | 2829 | **3128** | 3488 | --- |

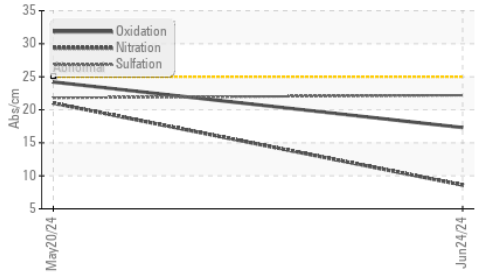
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **5** | 13 | --- |
| Sodium | ppm | ASTM D5185m | | **53** | ▲ 1697 | --- |
| Potassium | ppm | ASTM D5185m | >20 | **58** | ▲ 1966 | --- |
| Glycol | % | *ASTM D2982 | | **NEG** | ▲ 0.20 | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **1** | 1.9 | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **8.6** | 21.0 | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **22.2** | 21.8 | --- |

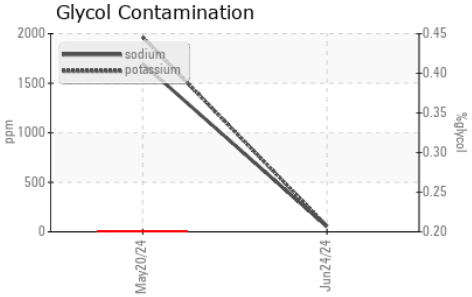
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **17.3** | 24.2 | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.6 | **8.8** | 38.0 | --- |

# OIL ANALYSIS REPORT

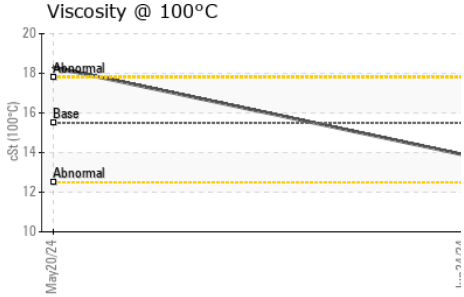
FT-IR (Direct Trend)



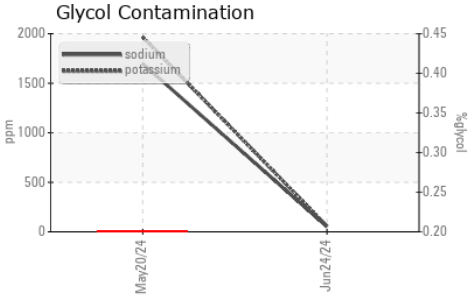

Glycol Contamination




Viscosity @ 100°C




Glycol Contamination

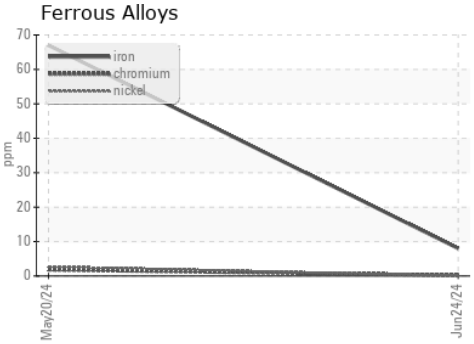



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Silt | 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 | --- |

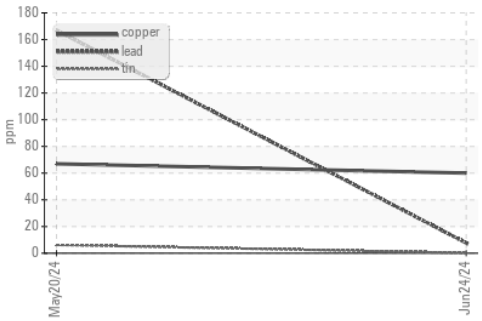
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.5 | **13.9** | ▲ 18.3 | --- |

GRAPHS

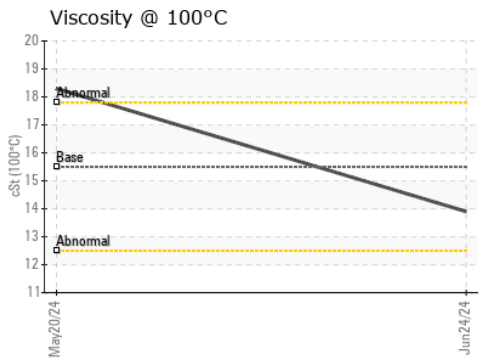
Ferrous Alloys



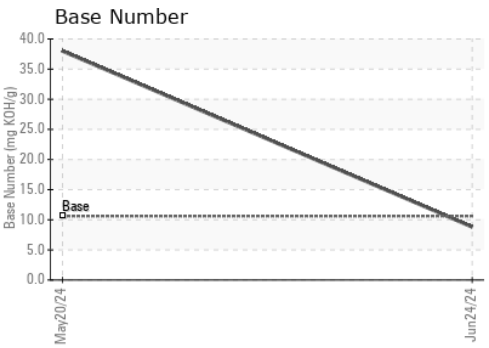

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0934828 **Received** : 26 Jun 2024
**Lab Number** : 06220735 **Tested** : 01 Jul 2024
**Unique Number** : 11098932 **Diagnosed** : 01 Jul 2024 - Jonathan Hester
**Test Package** : CONST ( Additional Tests: TBN )

*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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