# OIL ANALYSIS REPORT

| | |
|---|---|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |

Machine Id
**HC2230**
Component
**Diesel Engine**
Fluid
**DIESEL ENGINE OIL SAE 15W40 (--- GAL)**

## RECOMMENDATION

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

## WEAR

All component wear rates are normal.

## CONTAMINATION

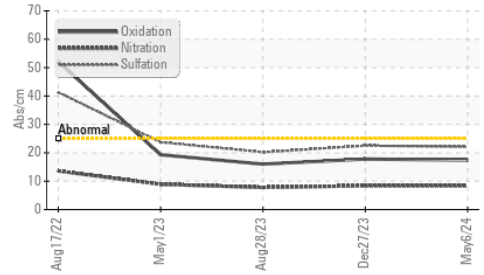
There is no indication of any contamination in the oil.

## FLUID CONDITION

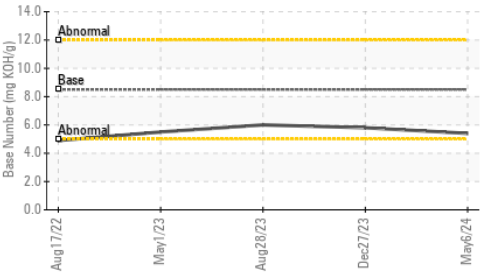
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0935919** | WC0867442 | WC0833294 |
| Sample Date | | Client Info | | **06 May 2024** | 27 Dec 2023 | 28 Aug 2023 |
| Machine Age | hrs | Client Info | | **3120** | 2557 | 2009 |
| Oil Age | hrs | Client Info | | **563** | 0 | 0 |
| Filter Age | hrs | Client Info | | **563** | 0 | 0 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Filter Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | ATTENTION |
| Iron | ppm | ASTM D5185m | >100 | **4** | 4 | 5 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | 0 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **<1** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | <1 | <1 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | <1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **17** | 15 | 44 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silicon | ppm | ASTM D5185m | >25 | **9** | 8 | 7 |
| Potassium | ppm | ASTM D5185m | >20 | **5** | 5 | 4 |
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | 0.7 |
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | **0.1** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **8.4** | 8.4 | 7.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **22.1** | 22.5 | 20.2 |
| 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 |
| Sodium | ppm | ASTM D5185m | >158 | **0** | 2 | 2 |
| Boron | ppm | ASTM D5185m | 250 | **147** | 96 | 103 |
| Barium | ppm | ASTM D5185m | 10 | **2** | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m | 100 | **4** | 3 | 18 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | **84** | 27 | 214 |
| Calcium | ppm | ASTM D5185m | 3000 | **2052** | 2183 | 2049 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **990** | 991 | 991 |
| Zinc | ppm | ASTM D5185m | 1350 | **1111** | 1176 | 1202 |
| Sulfur | ppm | ASTM D5185m | 4250 | **3457** | 3361 | 3931 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **17.4** | 17.8 | 16.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | **5.4** | 5.8 | 6.0 |
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | **13.7** | 13.5 | 11.7 |

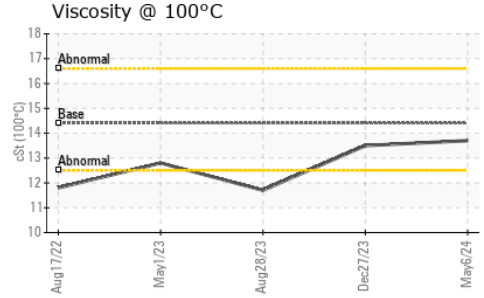
FT-IR (Direct Trend)



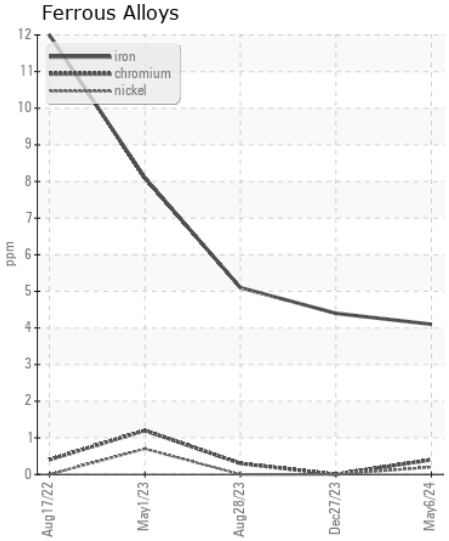

Base Number



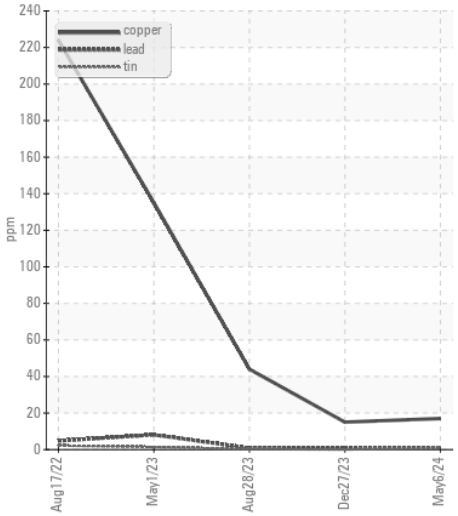

Viscosity @ 100°C



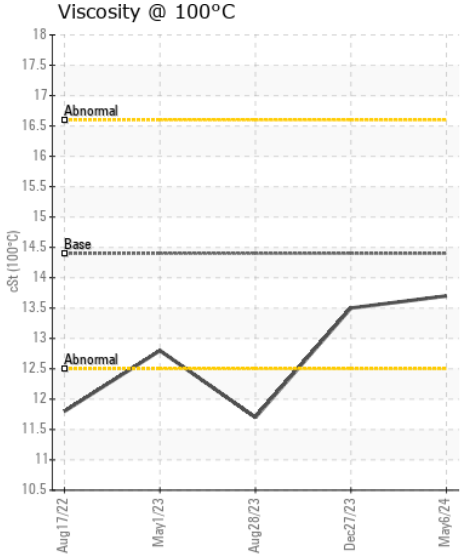

Ferrous Alloys




Non-ferrous Metals




Viscosity @ 100°C

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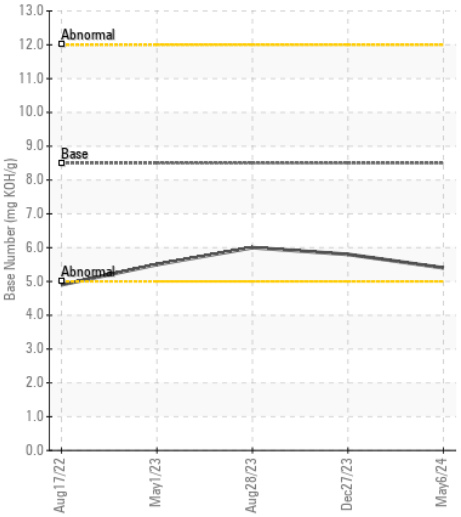


Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0935919
**Lab Number** : 06176564
**Unique Number** : 11022617
**Test Package** : CONST ( Additional Tests: TBN )

**Received** : 10 May 2024
**Tested** : 13 May 2024
**Diagnosed** : 13 May 2024 - Wes Davis

*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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