



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

Machine Id
HITACHI 345LC-6 HCMDD560T00010281
 Component
Diesel Engine
 Fluid
JOHN DEERE ENGINE OIL PLUS 50 II 15W40 (50 QTS)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | JR0218294 | JR0199852 | JR0200767 |
| Sample Date | | Client Info | | 14 Jun 2024 | 07 Mar 2024 | 17 Jan 2024 |
| Machine Age | hrs | Client Info | | 1967 | 1583 | 1458 |
| Oil Age | hrs | Client Info | | 1967 | 617 | 492 |
| Filter Age | hrs | Client Info | | 1967 | 617 | 0 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >100 | 6 | 2 | 7 |
| Chromium | ppm | ASTM D5185m | >20 | 0 | 0 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | <1 | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 7 | 5 | 5 |
| Lead | ppm | ASTM D5185m | >40 | 0 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | 1 | 0 | 2 |
| Tin | ppm | ASTM D5185m | >15 | <1 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | <1 | <1 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

There is no indication of any contamination in the oil.

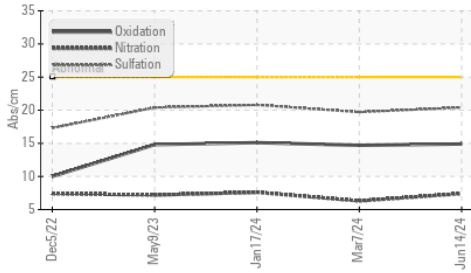
| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >25 | 7 | 5 | 8 |
| Potassium | ppm | ASTM D5185m | >20 | 4 | 2 | <1 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.2 | 0.1 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 7.4 | 6.3 | 7.6 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 20.4 | 19.7 | 20.8 |
| 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 |

FLUID CONDITION

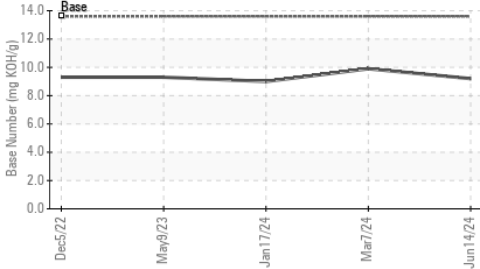
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185m | | 2 | 1 | <1 |
| Boron | ppm | ASTM D5185m | | 240 | 271 | 245 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m | | 234 | 239 | 259 |
| Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 811 | 814 | 865 |
| Calcium | ppm | ASTM D5185m | | 1411 | 1286 | 1517 |
| Phosphorus | ppm | ASTM D5185m | | 972 | 886 | 979 |
| Zinc | ppm | ASTM D5185m | | 1074 | 1056 | 1193 |
| Sulfur | ppm | ASTM D5185m | | 3704 | 3037 | 3484 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 14.9 | 14.7 | 15.1 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 13.6 | 9.2 | 9.9 | 9.0 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 13.6 | 13.8 | 13.8 |

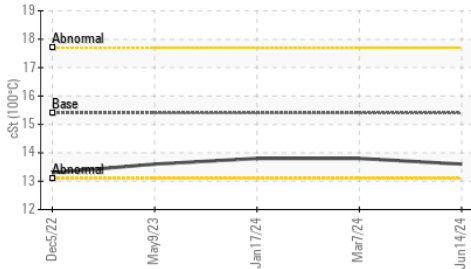
FT-IR (Direct Trend)



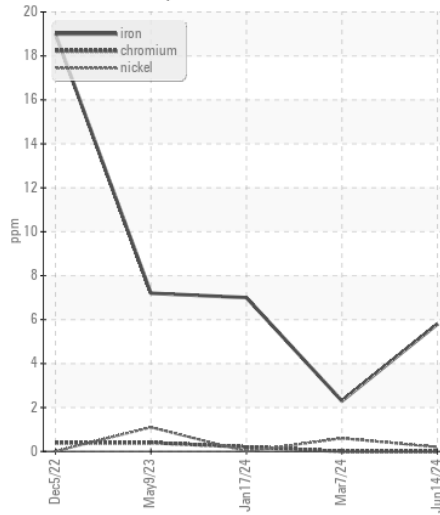
Base Number



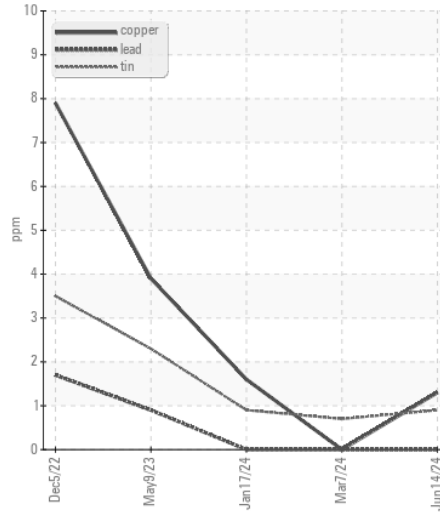
Viscosity @ 100°C



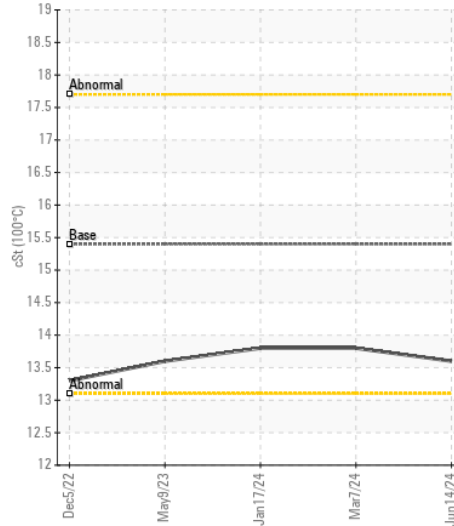
Ferrous Alloys



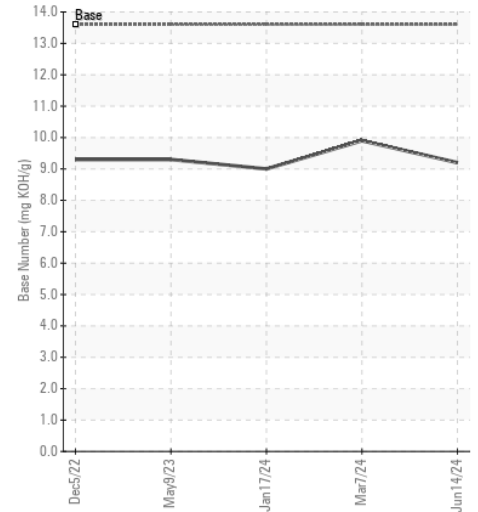
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : JR0218294 **Received** : 18 Jun 2024
Lab Number : 06213298 **Tested** : 19 Jun 2024
Unique Number : 11086162 **Diagnosed** : 19 Jun 2024 - Wes Davis
Test Package : CONST (Additional Tests: TBN)

JRE - MANASSAS PARK
 9107 OWENS DRIVE
 MANASSAS PARK, VA
 US 20111
 Contact: DON VEST
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 T: (703)631-8500
 F: (703)631-4715

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)