



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



Machine Id
JOHN DEERE 310E 1DW310EXCNF716248

Component
Diesel Engine

Fluid
JOHN DEERE ENGINE OIL PLUS 50 II 15W40 (32 QTS)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | JR0214374 | JR0203329 | JR0182035 |
| Sample Date | | Client Info | | 09 May 2024 | 30 Jan 2024 | 14 Aug 2023 |
| Machine Age | hrs | Client Info | | 1958 | 1440 | 956 |
| Oil Age | hrs | Client Info | | 518 | 484 | 497 |
| Filter Age | hrs | Client Info | | 518 | 484 | 497 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | NORMAL | ABNORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >51 | 16 | 17 | 17 |
| Chromium | ppm | ASTM D5185m | >11 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | 10 | ▲ 26 | 15 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >31 | 5 | 5 | 3 |
| Lead | ppm | ASTM D5185m | >26 | 1 | 2 | 0 |
| Copper | ppm | ASTM D5185m | >26 | <1 | 12 | 41 |
| Tin | ppm | ASTM D5185m | >4 | <1 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| 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.

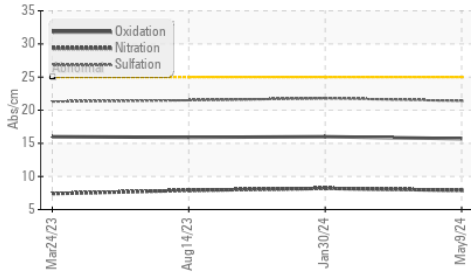
| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >22 | 6 | 6 | 5 |
| Potassium | ppm | ASTM D5185m | >20 | <1 | 3 | 0 |
| Fuel | | WC Method | >2.1 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.21 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.3 | 0.3 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 7.9 | 8.2 | 7.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 21.4 | 21.8 | 21.5 |
| 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 | >0.21 | NEG | NEG | NEG |

FLUID CONDITION

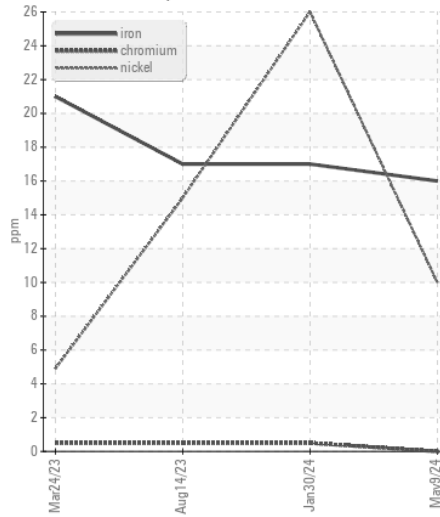
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185m | >31 | 2 | 2 | 0 |
| Boron | ppm | ASTM D5185m | | 218 | 217 | 256 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 235 | 241 | 245 |
| Manganese | ppm | ASTM D5185m | | <1 | 2 | 0 |
| Magnesium | ppm | ASTM D5185m | | 829 | 785 | 808 |
| Calcium | ppm | ASTM D5185m | | 1497 | 1352 | 1408 |
| Phosphorus | ppm | ASTM D5185m | | 932 | 925 | 874 |
| Zinc | ppm | ASTM D5185m | | 1069 | 1096 | 1101 |
| Sulfur | ppm | ASTM D5185m | | 3396 | 3058 | 3793 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 15.7 | 16.0 | 15.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 13.6 | 8.4 | 8.4 | 8.2 |
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 13.1 | 13.2 | 12.9 |

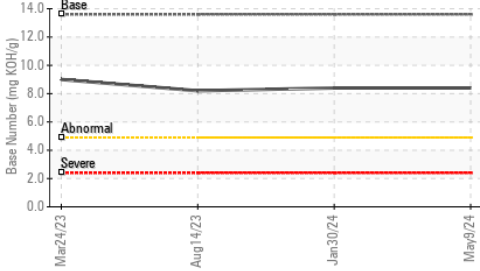
FT-IR (Direct Trend)



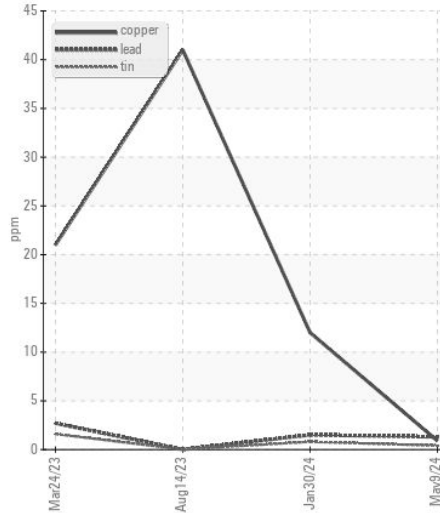
Ferrous Alloys



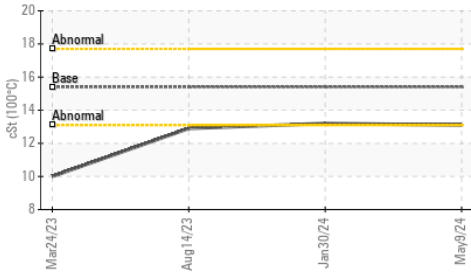
Base Number



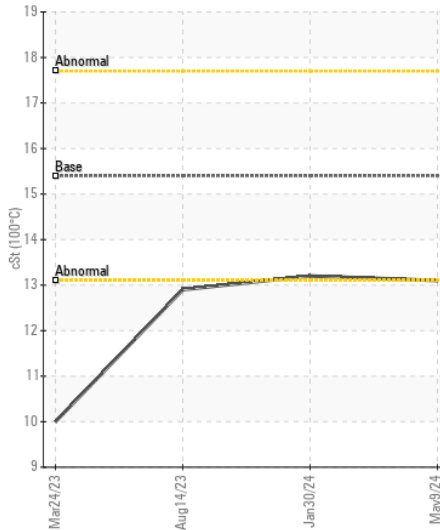
Non-ferrous Metals



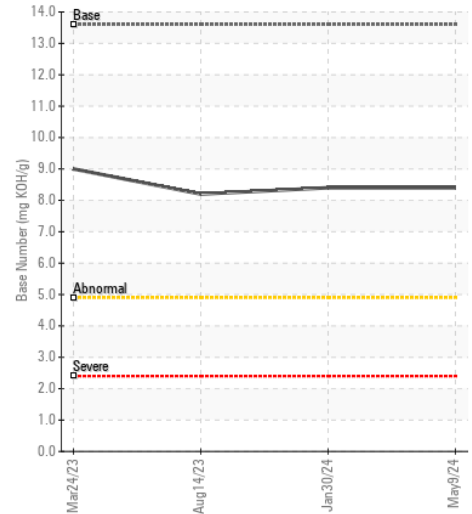
Viscosity @ 100°C



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : JR0214374 **Received** : 10 May 2024
Lab Number : 06175246 **Tested** : 13 May 2024
Unique Number : 11021299 **Diagnosed** : 13 May 2024 - Wes Davis
Test Package : CONST (Additional Tests: TBN)

B & S SITE DEVELOPMENT
 7800 PINEY BRANCH LANE
 BRISTOW, VA
 US 20136

Contact: DANNY HUFF
 dhuff@bandssite.com

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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