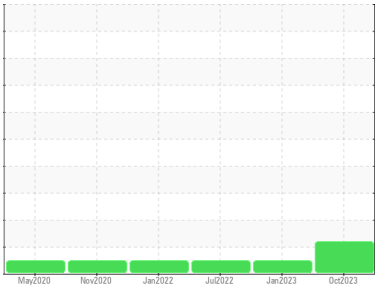
# PROBLEM SUMMARY

Sample Rating Trend




**DEGRADATION**

Machine Id
## INTERNATIONAL 9016101
Component
**Diesel Engine**
Fluid
**VALVOLINE 15W40 (--- GAL)**

## COMPONENT CONDITION SUMMARY

No relevant graphs to display

## RECOMMENDATION

The oil change at the time of sampling has been noted. Resample at the next service interval to monitor.

## PROBLEMATIC TEST RESULTS

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample Status | | | | **ABNORMAL** | NORMAL | NORMAL |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 6.9 | ▲ **2.2** | 5.6 | 6.4 |

**Customer Id:** IDETAMFL
**Sample No.:** IL0034224
**Lab Number:** 06013039
**Test Package:** FLEET

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Jonathan Hester +1 919-379-4092 x4092
jhester@wearcheckusa.com

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

*There are no recommended actions for this sample.*

## HISTORICAL DIAGNOSIS

**26 Jan 2023 Diag: Wes Davis**

NORMAL

Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

**20 Jul 2022 Diag: Jonathan Hester**

NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

**07 Jan 2022 Diag: Wes Davis**

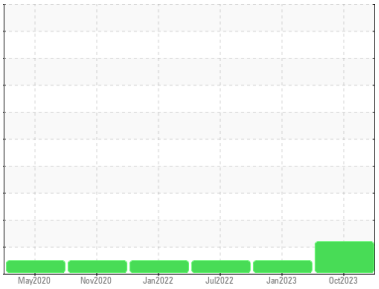
NORMAL

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend




**DEGRADATION**

Machine Id
## INTERNATIONAL 9016101
Component
**Diesel Engine**
Fluid
**VALVOLINE 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
The oil change at the time of sampling has been noted. Resample at the next service interval to monitor.

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

**Contamination**
There is no indication of any contamination in the oil.

**Fluid Condition**
The BN level is low. The condition of the oil is acceptable for the time in service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **IL0034224** | IL05758659 | IL05601324 |
| Sample Date | | Client Info | | **28 Oct 2023** | 26 Jan 2023 | 20 Jul 2022 |
| Machine Age | mls | Client Info | | **236077** | 194973 | 168520 |
| Oil Age | mls | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **Changed** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | NORMAL | NORMAL |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **23** | 15 | 18 |
| Chromium | ppm | ASTM D5185m | >20 | **2** | 1 | 2 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **6** | 5 | 5 |
| Lead | ppm | ASTM D5185m | >40 | **11** | 3 | 5 |
| Copper | ppm | ASTM D5185m | >330 | **2** | 1 | 1 |
| Tin | ppm | ASTM D5185m | >15 | **1** | <1 | 1 |
| Antimony | ppm | ASTM D5185m | | **---** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

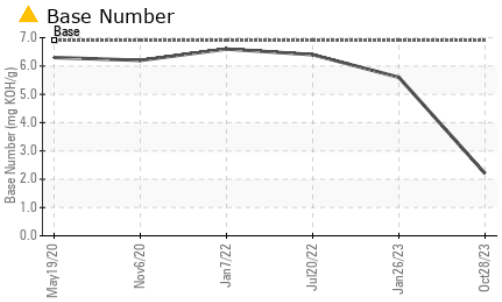
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 39 | **16** | 102 | 17 |
| Barium | ppm | ASTM D5185m | 1 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 49 | **58** | 76 | 60 |
| Manganese | ppm | ASTM D5185m | 1 | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 616 | **677** | 486 | 762 |
| Calcium | ppm | ASTM D5185m | 1554 | **1220** | 1290 | 1284 |
| Phosphorus | ppm | ASTM D5185m | 899 | **706** | 861 | 682 |
| Zinc | ppm | ASTM D5185m | 1069 | **951** | 1059 | 898 |
| Sulfur | ppm | ASTM D5185m | 2624 | **2369** | 3179 | 2836 |

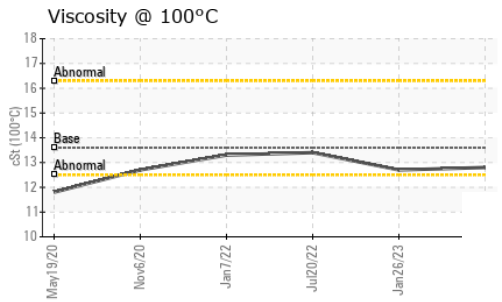
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **6** | 6 | 5 |
| Sodium | ppm | ASTM D5185m | | **2** | 2 | 2 |
| Potassium | ppm | ASTM D5185m | >20 | **6** | 7 | 7 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.5** | 0.4 | 0.4 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **11.3** | 9.1 | 13.3 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **25.5** | 23.0 | 27.1 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **25.6** | 18.1 | 25.3 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 6.9 | **2.2** | 5.6 | 6.4 |

# OIL ANALYSIS REPORT

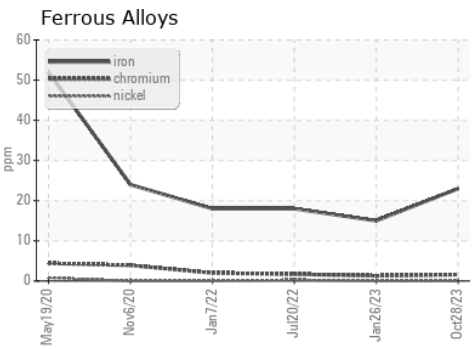


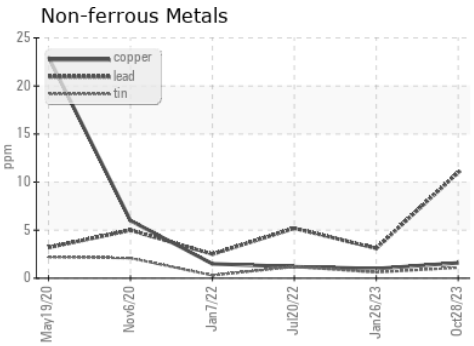



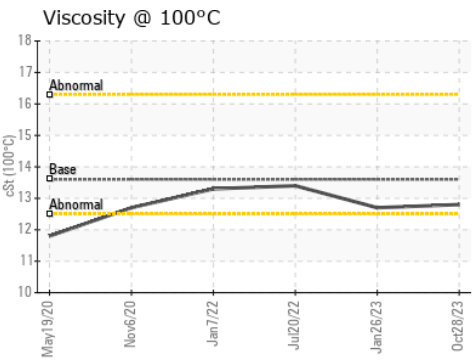

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

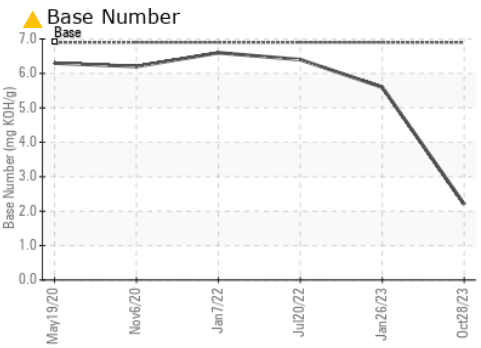
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 13.6 | **12.8** | 12.7 | 13.4 |

## GRAPHS




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : IL0034224
**Lab Number** : 06013039
**Unique Number** : 10752183
**Test Package** : FLEET

**Received** : 20 Nov 2023
**Diagnosed** : 22 Nov 2023
**Diagnostician** : Jonathan Hester

*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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