



# OIL ANALYSIS REPORT

|                 |                 |
|-----------------|-----------------|
| WEAR            | <b>ABNORMAL</b> |
| CONTAMINATION   | <b>NORMAL</b>   |
| FLUID CONDITION | <b>NORMAL</b>   |

Area

[W/O 10640]

Machine Id

**VOLVO ECR355E 314592**

Component

**Diesel Engine**

Fluid

**VOLVO ULTRA DIESEL ENGINE OIL 15W40 VDS-3 (8 GAL)**

## RECOMMENDATION

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

| Test           | UOM | Method      | Limit/Abn | Current            | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|----------|----------|
| Sample Number  |     | Client Info |           | <b>ML0001221</b>   | ---      | ---      |
| Sample Date    |     | Client Info |           | <b>16 Apr 2024</b> | ---      | ---      |
| Machine Age    | hrs | Client Info |           | <b>491</b>         | ---      | ---      |
| Oil Age        | hrs | Client Info |           | <b>491</b>         | ---      | ---      |
| Filter Age     | hrs | Client Info |           | <b>491</b>         | ---      | ---      |
| Oil Changed    |     | Client Info |           | <b>Changed</b>     | ---      | ---      |
| Filter Changed |     | Client Info |           | <b>Changed</b>     | ---      | ---      |
| Sample Status  |     |             |           | <b>ABNORMAL</b>    | ---      | ---      |

## WEAR

The nickel level is abnormal. All other metal levels are typical for a new component breaking in.

|              |        |             |      |              |     |     |
|--------------|--------|-------------|------|--------------|-----|-----|
| Iron         | ppm    | ASTM D5185m | >100 | <b>16</b>    | --- | --- |
| Chromium     | ppm    | ASTM D5185m | >20  | <b>1</b>     | --- | --- |
| Nickel       | ppm    | ASTM D5185m | >2   | <b>▲ 8</b>   | --- | --- |
| Titanium     | ppm    | ASTM D5185m |      | <b>&lt;1</b> | --- | --- |
| Silver       | ppm    | ASTM D5185m | >2   | <b>1</b>     | --- | --- |
| Aluminum     | ppm    | ASTM D5185m | >25  | <b>13</b>    | --- | --- |
| Lead         | ppm    | ASTM D5185m | >40  | <b>3</b>     | --- | --- |
| Copper       | ppm    | ASTM D5185m | >330 | <b>23</b>    | --- | --- |
| Tin          | ppm    | ASTM D5185m | >15  | <b>3</b>     | --- | --- |
| Vanadium     | ppm    | ASTM D5185m |      | <b>&lt;1</b> | --- | --- |
| White Metal  | scalar | *Visual     | NONE | <b>NONE</b>  | --- | --- |
| Yellow Metal | scalar | *Visual     | NONE | <b>NONE</b>  | --- | --- |

## CONTAMINATION

There is no indication of any contamination in the oil.

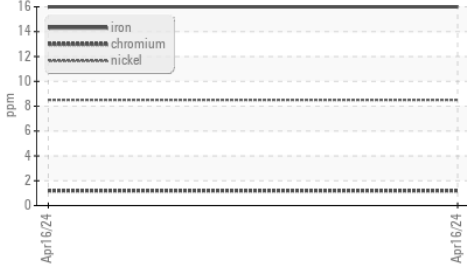
|                  |          |             |       |                |     |     |
|------------------|----------|-------------|-------|----------------|-----|-----|
| Silicon          | ppm      | ASTM D5185m | >25   | <b>16</b>      | --- | --- |
| Potassium        | ppm      | ASTM D5185m | >20   | <b>4</b>       | --- | --- |
| Fuel             |          | WC Method   | >6.0  | <b>&lt;1.0</b> | --- | --- |
| Water            |          | WC Method   | >0.2  | <b>NEG</b>     | --- | --- |
| Glycol           |          | WC Method   |       | <b>NEG</b>     | --- | --- |
| Soot %           | %        | *ASTM D7844 | >3    | <b>0.1</b>     | --- | --- |
| Nitration        | Abs/cm   | *ASTM D7624 | >20   | <b>6.7</b>     | --- | --- |
| Sulfation        | Abs/.1mm | *ASTM D7415 | >30   | <b>17.2</b>    | --- | --- |
| Silt             | scalar   | *Visual     | NONE  | <b>NONE</b>    | --- | --- |
| Debris           | scalar   | *Visual     | NONE  | <b>NONE</b>    | --- | --- |
| Sand/Dirt        | scalar   | *Visual     | NONE  | <b>NONE</b>    | --- | --- |
| Appearance       | scalar   | *Visual     | NORML | <b>NORML</b>   | --- | --- |
| Odor             | scalar   | *Visual     | NORML | <b>NORML</b>   | --- | --- |
| Emulsified Water | scalar   | *Visual     | >0.2  | <b>NEG</b>     | --- | --- |

## FLUID CONDITION

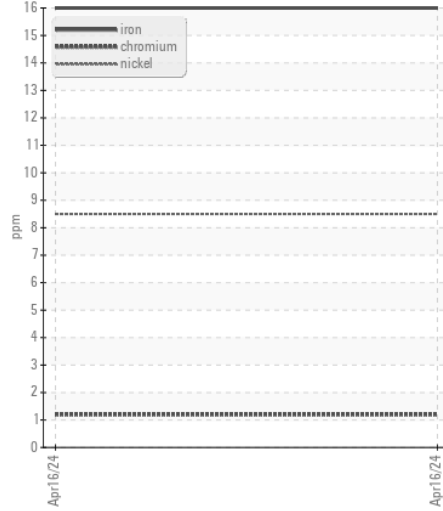
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

|                  |          |             |      |             |     |     |
|------------------|----------|-------------|------|-------------|-----|-----|
| Sodium           | ppm      | ASTM D5185m |      | <b>3</b>    | --- | --- |
| Boron            | ppm      | ASTM D5185m | 2.5  | <b>25</b>   | --- | --- |
| Barium           | ppm      | ASTM D5185m | 0.0  | <b>14</b>   | --- | --- |
| Molybdenum       | ppm      | ASTM D5185m | 0.7  | <b>5</b>    | --- | --- |
| Manganese        | ppm      | ASTM D5185m | 0.0  | <b>3</b>    | --- | --- |
| Magnesium        | ppm      | ASTM D5185m | 256  | <b>228</b>  | --- | --- |
| Calcium          | ppm      | ASTM D5185m | 2057 | <b>1982</b> | --- | --- |
| Phosphorus       | ppm      | ASTM D5185m | 935  | <b>942</b>  | --- | --- |
| Zinc             | ppm      | ASTM D5185m | 1223 | <b>1064</b> | --- | --- |
| Sulfur           | ppm      | ASTM D5185m | 4079 | <b>4610</b> | --- | --- |
| Oxidation        | Abs/.1mm | *ASTM D7414 | >25  | <b>10.2</b> | --- | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896  | 10   | <b>6.9</b>  | --- | --- |
| Visc @ 100°C     | cSt      | ASTM D445   | 15.0 | <b>12.6</b> | --- | --- |

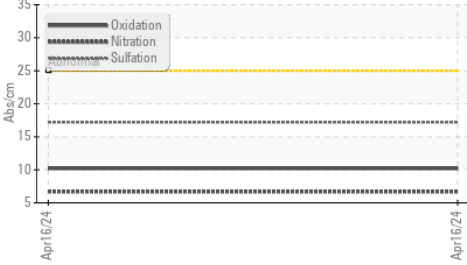
▲ Ferrous Alloys



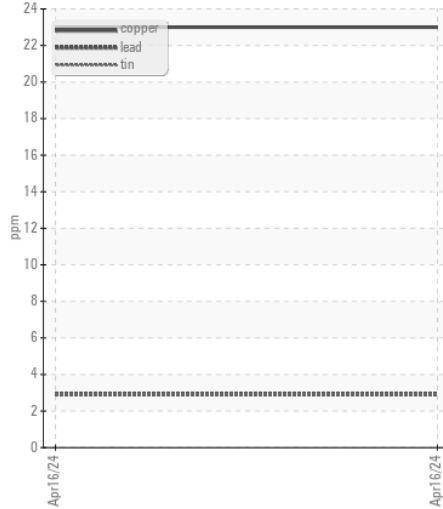
▲ Ferrous Alloys



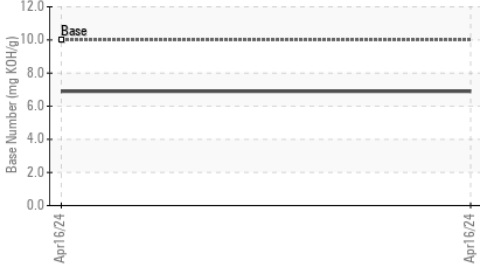
FT-IR (Direct Trend)



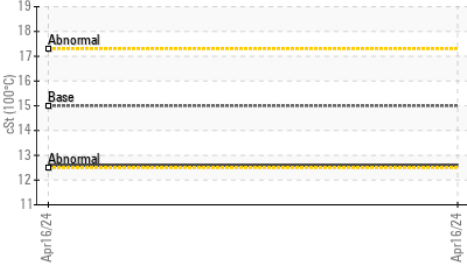
Non-ferrous Metals



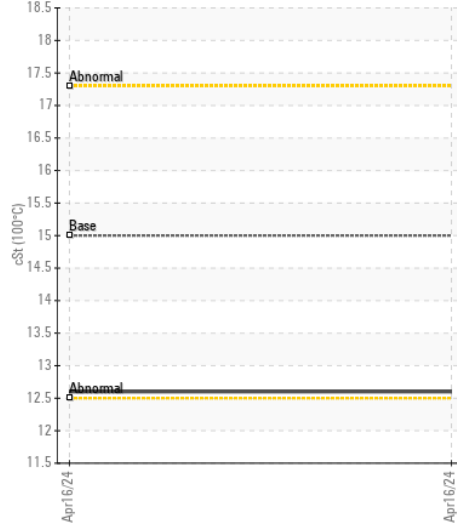
Base Number



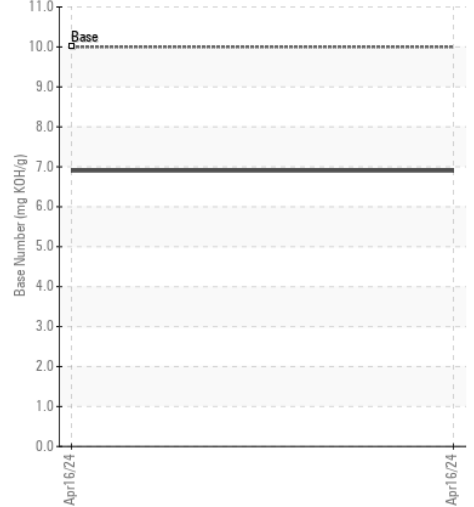
Viscosity @ 100°C



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : ML0001221

Lab Number : 06155042

Unique Number : 10990465

Test Package : CONST ( Additional Tests: TBN )

Received : 19 Apr 2024

Tested : 24 Apr 2024

Diagnosed : 24 Apr 2024 - Jonathan Hester

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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)