



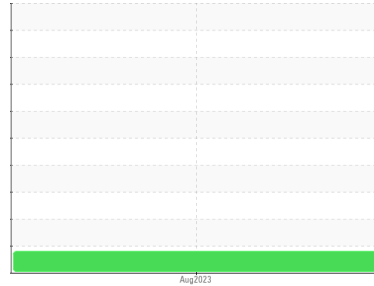
# OIL ANALYSIS REPORT

Sample Rating Trend

ISO



Area  
**LES ENTREPRISES FBDL INC [02575530]**  
 Machine Id  
**CATERPILLAR 336 RDL10162**  
 Component  
**Hydraulic System**  
 Fluid  
**PANOLIN HLP SYNTH 46 (373 LTR)**



## DIAGNOSIS

### Recommendation

Nous recommandons le remplacement des filtres de ce composant. Échantillonnez de nouveau l'équipement au prochain intervalle de vidange afin d'en surveiller la condition.

### Wear

Les taux d'usure de tous les composants sont normaux.

### Contamination

Il y a une légère quantité de limon (particules de 4 à 14 microns) dans l'huile. Il y a une faible concentration (<5.0%) d'huile minérale présente dans le fluide. La teneur en eau est négligeable.

### Fluid Condition

Le AN est acceptable pour ce fluide. L'état de l'huile permet d'en prolonger l'utilisation.

## SAMPLE INFORMATION

|               | method      | limit/base  | current            | history1 | history2 |
|---------------|-------------|-------------|--------------------|----------|----------|
| Sample Number | Client Info |             | <b>WC</b>          | ---      | ---      |
| Sample Date   | Client Info |             | <b>09 Aug 2023</b> | ---      | ---      |
| Machine Age   | hrs         | Client Info | <b>7</b>           | ---      | ---      |
| Oil Age       | hrs         | Client Info | <b>0</b>           | ---      | ---      |
| Oil Changed   | Client Info |             | <b>N/A</b>         | ---      | ---      |
| Sample Status |             |             | <b>ATTENTION</b>   | ---      | ---      |

## WEAR METALS

|           | method | limit/base    | current | history1 | history2 |
|-----------|--------|---------------|---------|----------|----------|
| Iron      | ppm    | ASTM D5185(m) | >20     | <1       | ---      |
| Chromium  | ppm    | ASTM D5185(m) | >10     | 0        | ---      |
| Nickel    | ppm    | ASTM D5185(m) | >10     | 0        | ---      |
| Titanium  | ppm    | ASTM D5185(m) |         | 0        | ---      |
| Silver    | ppm    | ASTM D5185(m) |         | <1       | ---      |
| Aluminum  | ppm    | ASTM D5185(m) | >10     | <1       | ---      |
| Lead      | ppm    | ASTM D5185(m) | >10     | 0        | ---      |
| Copper    | ppm    | ASTM D5185(m) | >75     | <1       | ---      |
| Tin       | ppm    | ASTM D5185(m) | >10     | 0        | ---      |
| Antimony  | ppm    | ASTM D5185(m) |         | 0        | ---      |
| Vanadium  | ppm    | ASTM D5185(m) |         | 0        | ---      |
| Beryllium | ppm    | ASTM D5185(m) |         | 0        | ---      |
| Cadmium   | ppm    | ASTM D5185(m) |         | 0        | ---      |

## ADDITIVES

|            | method | limit/base    | current | history1 | history2 |
|------------|--------|---------------|---------|----------|----------|
| Boron      | ppm    | ASTM D5185(m) | 0       | <1       | ---      |
| Barium     | ppm    | ASTM D5185(m) | 0       | 0        | ---      |
| Molybdenum | ppm    | ASTM D5185(m) | 0       | 0        | ---      |
| Manganese  | ppm    | ASTM D5185(m) | 0       | 0        | ---      |
| Magnesium  | ppm    | ASTM D5185(m) | 0       | <1       | ---      |
| Calcium    | ppm    | ASTM D5185(m) | 0       | 14       | ---      |
| Phosphorus | ppm    | ASTM D5185(m) | 1700    | 1484     | ---      |
| Zinc       | ppm    | ASTM D5185(m) | 0       | 64       | ---      |
| Sulfur     | ppm    | ASTM D5185(m) | 1350    | 1177     | ---      |
| Lithium    | ppm    | ASTM D5185(m) |         | <1       | ---      |

## CONTAMINANTS

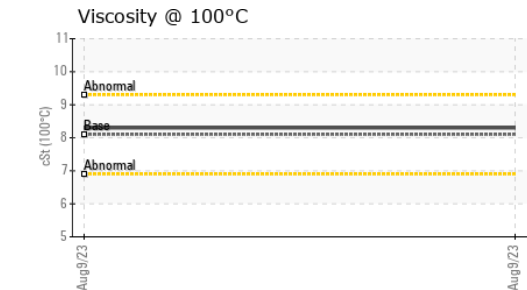
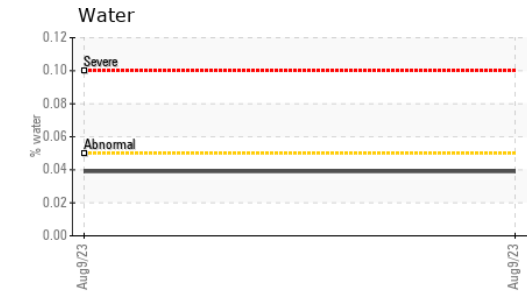
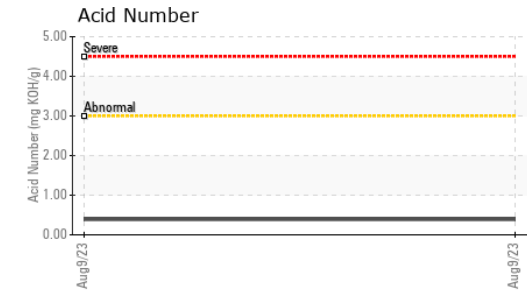
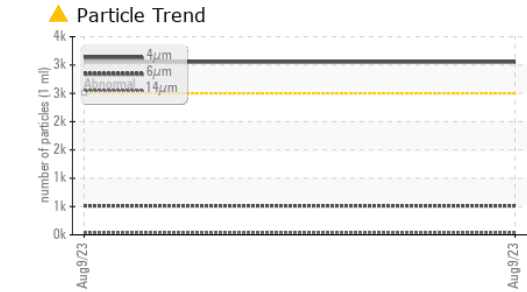
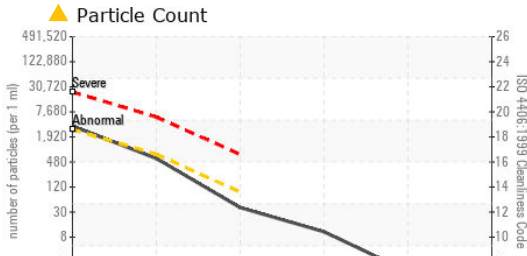
|           | method | limit/base    | current | history1 | history2 |
|-----------|--------|---------------|---------|----------|----------|
| Silicon   | ppm    | ASTM D5185(m) | >20     | <1       | ---      |
| Sodium    | ppm    | ASTM D5185(m) |         | 0        | ---      |
| Potassium | ppm    | ASTM D5185(m) | >20     | 0        | ---      |
| Water     | %      | ASTM D6304*   | >0.05   | 0.039    | ---      |
| ppm Water | ppm    | ASTM D6304*   | >500    | 395.7    | ---      |

## INFRA-RED

|                     | method   | limit/base  | current | history1 | history2 |
|---------------------|----------|-------------|---------|----------|----------|
| Soot %              | %        | ASTM D7844* |         | 0        | ---      |
| Nitration           | Abs/cm   | ASTM D7624* |         | 3.9      | ---      |
| Sulfation           | Abs/.1mm | ASTM D7415* |         | 155.2    | ---      |
| Mineral Oil Content | %        | ASTM D7418* | <5.0%   | <5.0     | ---      |



# OIL ANALYSIS REPORT



| FLUID CLEANLINESS | method       | limit/base | current           | history1 | history2 |
|-------------------|--------------|------------|-------------------|----------|----------|
| Particles >4µm    | ASTM D7647   | >2500      | ▲ <b>3054</b>     | ---      | ---      |
| Particles >6µm    | ASTM D7647   | >640       | <b>512</b>        | ---      | ---      |
| Particles >14µm   | ASTM D7647   | >80        | <b>34</b>         | ---      | ---      |
| Particles >21µm   | ASTM D7647   | >20        | <b>9</b>          | ---      | ---      |
| Particles >38µm   | ASTM D7647   | >4         | <b>1</b>          | ---      | ---      |
| Particles >71µm   | ASTM D7647   | >3         | <b>1</b>          | ---      | ---      |
| Oil Cleanliness   | ISO 4406 (c) | >18/16/13  | ▲ <b>19/16/12</b> | ---      | ---      |

| FLUID DEGRADATION | method   | limit/base  | current      | history1 | history2 |
|-------------------|----------|-------------|--------------|----------|----------|
| Oxidation         | Abs/.1mm | ASTM D7414* | <b>146.3</b> | ---      | ---      |
| Acid Number (AN)  | mg KOH/g | ASTM D974*  | <b>0.39</b>  | ---      | ---      |

| VISUAL           | method | limit/base | current      | history1 | history2 |
|------------------|--------|------------|--------------|----------|----------|
| White Metal      | scalar | Visual*    | <b>NONE</b>  | ---      | ---      |
| Yellow Metal     | scalar | Visual*    | <b>NONE</b>  | ---      | ---      |
| Precipitate      | scalar | Visual*    | <b>NONE</b>  | ---      | ---      |
| Silt             | scalar | Visual*    | <b>NONE</b>  | ---      | ---      |
| Debris           | scalar | Visual*    | <b>NONE</b>  | ---      | ---      |
| Sand/Dirt        | scalar | Visual*    | <b>NONE</b>  | ---      | ---      |
| Appearance       | scalar | Visual*    | <b>NORML</b> | ---      | ---      |
| Odor             | scalar | Visual*    | <b>NORML</b> | ---      | ---      |
| Emulsified Water | scalar | Visual*    | <b>NEG</b>   | ---      | ---      |
| Free Water       | scalar | Visual*    | <b>NEG</b>   | ---      | ---      |

| FLUID PROPERTIES     | method | limit/base    | current | history1    | history2 |
|----------------------|--------|---------------|---------|-------------|----------|
| Visc @ 40°C          | cSt    | ASTM D7279(m) | 47.0    | <b>45.2</b> | ---      |
| Visc @ 100°C         | cSt    | ASTM D7279(m) | 8.1     | <b>8.3</b>  | ---      |
| Viscosity Index (VI) | Scale  | ASTM D2270*   | 146     | <b>160</b>  | ---      |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---------------|--------|------------|---------|----------|----------|
| Color         |        |            |         |          |          |
| Bottom        |        |            |         |          |          |



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC  
**Lab Number** : **02575531**  
**Unique Number** : 5620582  
**Test Package** : MOB 2 ( Additional Tests: TAN Man )

To discuss this sample report, contact Customer Service at 1-800-268-2131.  
 Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab.  
 Validity of results and interpretation are based on the sample and information as supplied.

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 patrick.levesque@envirolin.com  
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# MINERAL OIL CONTENT REPORT

PASS



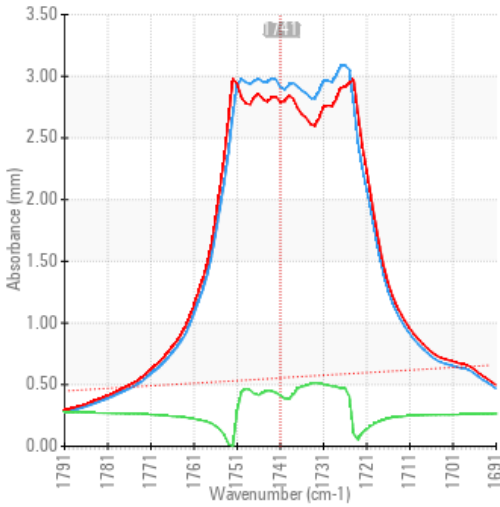
Area  
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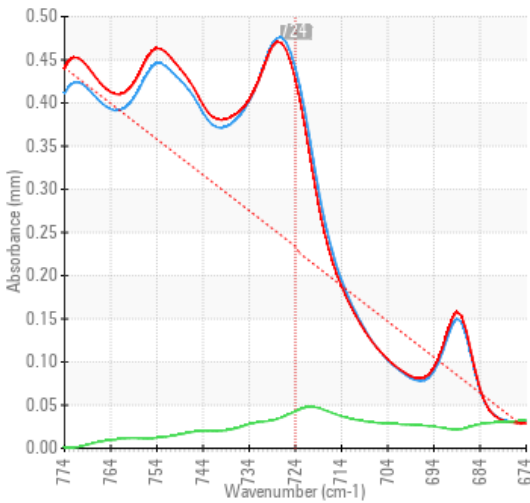
## SPECTRAL ANALYSIS

|                     |     | method        | limit/base | current        | history1 | history2 |
|---------------------|-----|---------------|------------|----------------|----------|----------|
| Zinc                | ppm | ASTM D5185(m) | 0          | <b>64</b>      | ---      | ---      |
| Mineral Oil Content | %   | ASTM D7418*   | <5.0%      | <b>&lt;5.0</b> | ---      | ---      |

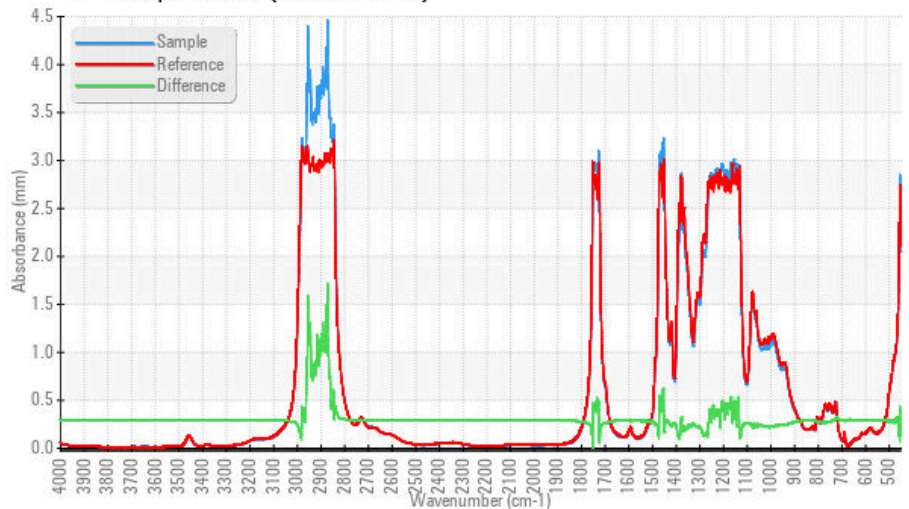
### FT-IR - Esters I



### FT-IR - Esters II



### FT-IR Spectrum (Absorbance)



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9  
**Sample No.** : WC  
**Lab Number** : 02575531  
**Unique Number** : 5620582  
**Test Package** : MOB 2 ( Additional Tests: TAN Man )

**Received** : 11 Aug 2023  
**Diagnosed** : 17 Aug 2023  
**Diagnostician** : Bill Quesnel

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