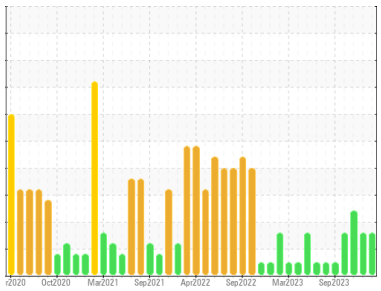
# OIL ANALYSIS REPORT

Sample Rating Trend



**WATER**

Area
## Direct Strip Mill/Finishing
Machine Id
## PL4-F5/F6 MORGOIL SYSTEM (DSC019) (S/N 1000017099)
Component
**Gear Lube System**
Fluid
**SHELL OMALA S2 G 320 (25000 LTR)**

## DIAGNOSIS

**Recommendation**

We advise that you check for the source of water entry. Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We advise that you use off-line filtration with water adsorbent filters to attempt to remove the water from this oil. We recommend an early resample to monitor this condition. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.

**Wear**

Component wear rates appear to be normal (unconfirmed).

**Contamination**

There is a moderate concentration of water present in the oil. The system cleanliness is acceptable for your target ISO 4406 cleanliness code.

**Fluid Condition**

The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0837486** | WC0837547 | WC0837578 |
| Sample Date | | Client Info | | **16 Apr 2024** | 28 Feb 2024 | 18 Jan 2024 |
| Machine Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Age | hrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | ABNORMAL | ABNORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >150 | **87** | 72 | 72 |
| Chromium | ppm | ASTM D5185(m) | >10 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185(m) | >10 | **0** | <1 | <1 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >25 | **<1** | 1 | <1 |
| Lead | ppm | ASTM D5185(m) | >100 | **0** | 0 | <1 |
| Copper | ppm | ASTM D5185(m) | >50 | **<1** | <1 | 1 |
| Tin | ppm | ASTM D5185(m) | >10 | **4** | 5 | 6 |
| Antimony | ppm | ASTM D5185(m) | >5 | **0** | 0 | <1 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

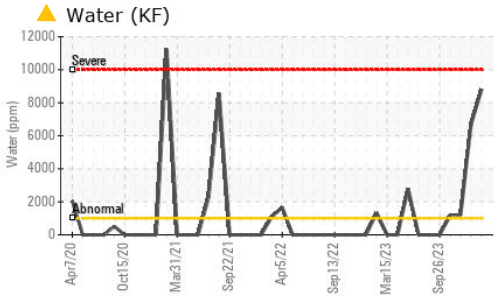
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 5.5 | **1** | 1 | <1 |
| Barium | ppm | ASTM D5185(m) | 0.4 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 0.5 | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185(m) | | **<1** | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | 23 | **<1** | <1 | <1 |
| Calcium | ppm | ASTM D5185(m) | 13 | **2** | 3 | 3 |
| Phosphorus | ppm | ASTM D5185(m) | 450 | **158** | 175 | 177 |
| Zinc | ppm | ASTM D5185(m) | 9.9 | **4** | 5 | 8 |
| Sulfur | ppm | ASTM D5185(m) | 8181 | **7710** | 8992 | 8477 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >50 | **<1** | 2 | 2 |
| Sodium | ppm | ASTM D5185(m) | | **3** | 3 | 4 |
| Potassium | ppm | ASTM D5185(m) | >20 | **1** | 1 | 2 |
| Water | % | ASTM D6304* | >0.1 | ▲ **0.880** | ▲ 0.669 | ▲ 0.121 |
| ppm Water | ppm | ASTM D6304* | >1000 | ▲ **8805** | ▲ 6693 | ▲ 1215 |

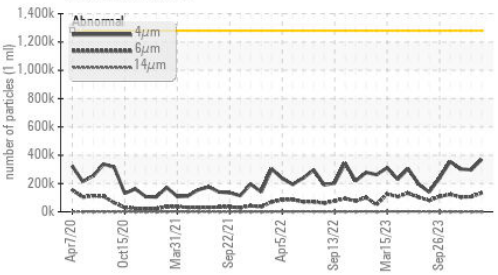
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >1280000 | **369711** | 295925 | 302874 |
| Particles >6µm | | ASTM D7647 | >640000 | **132765** | 106949 | 104467 |
| Particles >14µm | | ASTM D7647 | >20000 | **1067** | 1277 | 948 |
| Particles >21µm | | ASTM D7647 | >5000 | **88** | 172 | 90 |
| Particles >38µm | | ASTM D7647 | >1300 | **1** | 1 | 2 |
| Particles >71µm | | ASTM D7647 | >320 | **0** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >27/26/21 | **26/24/17** | 25/24/17 | 25/24/17 |

# OIL ANALYSIS REPORT

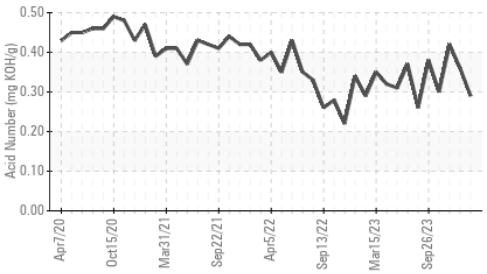
Water (KF)



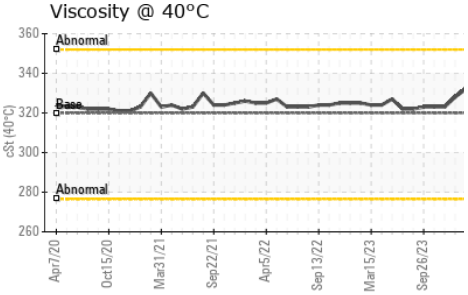

Particle Trend



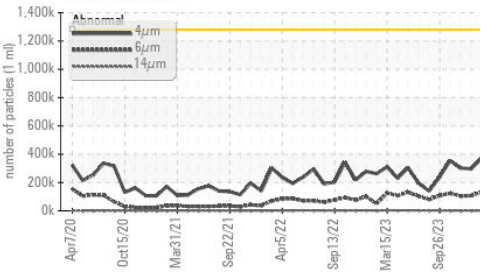

Acid Number




Viscosity @ 40°C




Particle Trend




| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | | **0.29** | 0.36 | 0.42 |

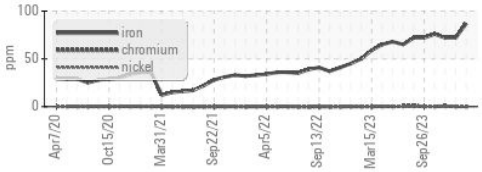
| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| 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 | ▲ HAZY |
| Odor | scalar | Visual* | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | Visual* | >0.1 | ▲ **.5%** | ▲ .2% | ▲ .2% |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 320 | **332** | 328 | 323 |

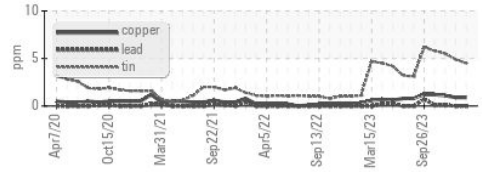
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | | | | |
| Bottom | | | | | |

## GRAPHS

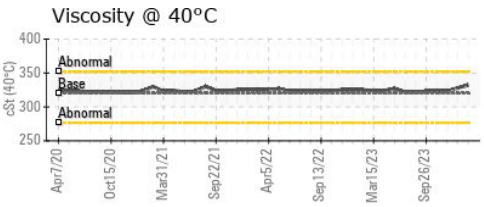
Ferrous Alloys



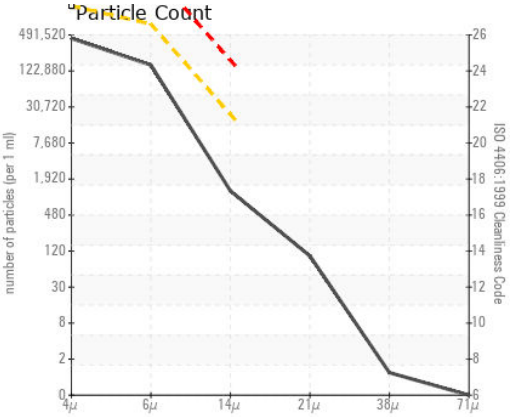

Non-ferrous Metals



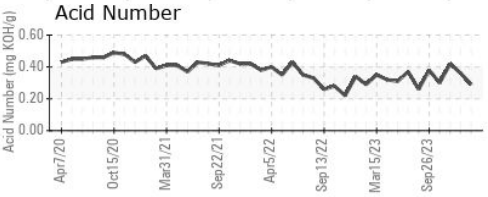

Viscosity @ 40°C




Particle Count




Acid Number




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0837486
**Lab Number** : 02630771
**Unique Number** : 5763903
**Test Package** : IND 2 ( Additional Tests: KF )

**Received** : 22 Apr 2024
**Tested** : 24 Apr 2024
**Diagnosed** : 24 Apr 2024 - Kevin Marson

*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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