



LIEBHERR

OIL ANALYSIS REPORT

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



Machine Id
LIEBHERR LH22M 137772-1525
Component
Hydraulic System
Fluid
IRVING HYDRAULIC OIL LP 32 (--- GAL)

RECOMMENDATION

We advise that you check for visible metal particles in the oil. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|----------|----------|
| Sample Number | | Client Info | | LH0232637 | --- | --- |
| Sample Date | | Client Info | | 29 May 2024 | --- | --- |
| Machine Age | hrs | Client Info | | 3213 | --- | --- |
| Oil Age | hrs | Client Info | | 0 | --- | --- |
| Filter Age | hrs | Client Info | | 0 | --- | --- |
| Oil Changed | | Client Info | | Not Changed | --- | --- |
| Filter Changed | | Client Info | | Changed | --- | --- |
| Sample Status | | | | ABNORMAL | --- | --- |

WEAR

a light concentration of ferrous cutting wear particles, was filtered from the sample. Cutting wear particles are caused by either hard protuberances (mis-aligned components, etc.), or abrasives entering the system and embedding themselves in softer materials (sand, etc.), and gouging out mating surfaces.

| | | | | | | |
|--------------|--------|---------------|------|----------------|-----|-----|
| Iron | ppm | ASTM D5185(m) | >60 | 10 | --- | --- |
| Chromium | ppm | ASTM D5185(m) | >40 | 5 | --- | --- |
| Nickel | ppm | ASTM D5185(m) | >10 | 0 | --- | --- |
| Titanium | ppm | ASTM D5185(m) | | 0 | --- | --- |
| Silver | ppm | ASTM D5185(m) | | 0 | --- | --- |
| Aluminum | ppm | ASTM D5185(m) | >5 | <1 | --- | --- |
| Lead | ppm | ASTM D5185(m) | >5 | <1 | --- | --- |
| Copper | ppm | ASTM D5185(m) | >15 | 6 | --- | --- |
| Tin | ppm | ASTM D5185(m) | >5 | 0 | --- | --- |
| Vanadium | ppm | ASTM D5185(m) | | 0 | --- | --- |
| White Metal | scalar | Visual* | NONE | ▲ VLITE | --- | --- |
| Yellow Metal | scalar | Visual* | NONE | NONE | --- | --- |

CONTAMINATION

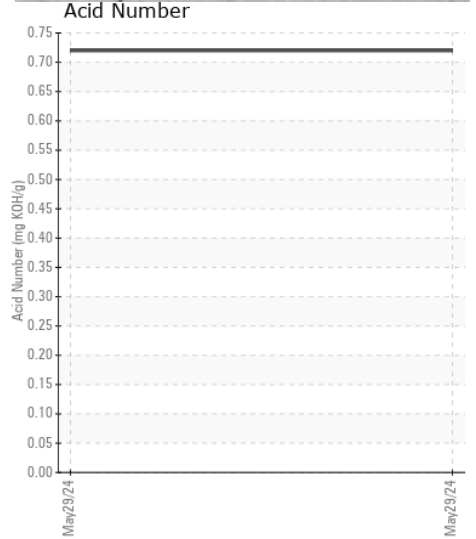
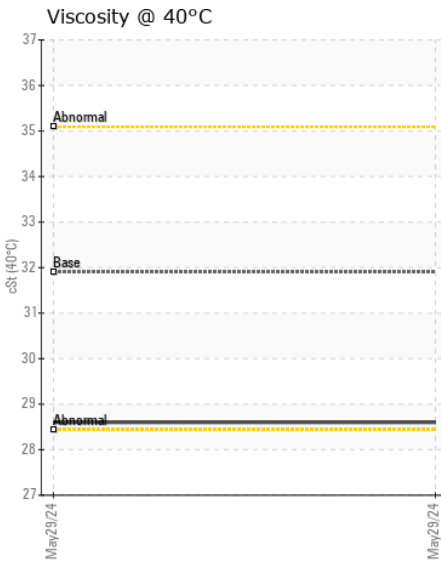
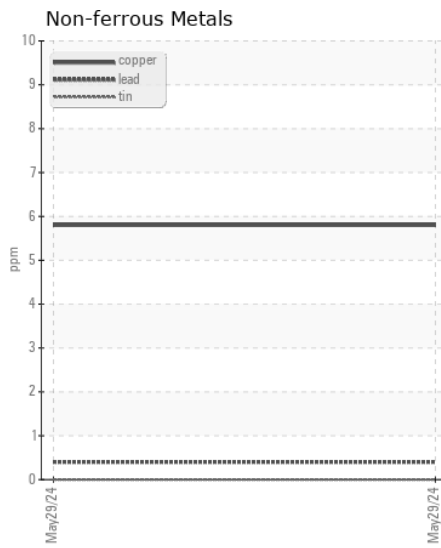
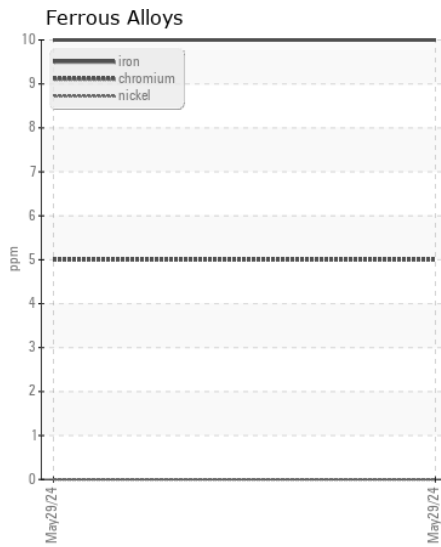
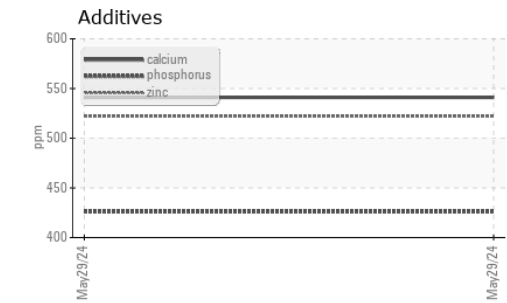
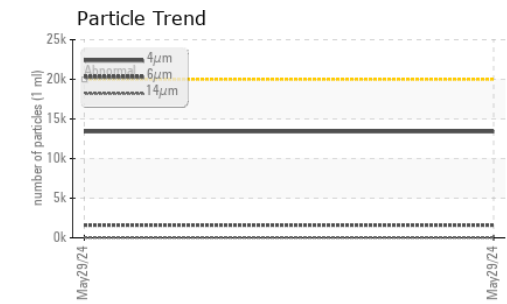
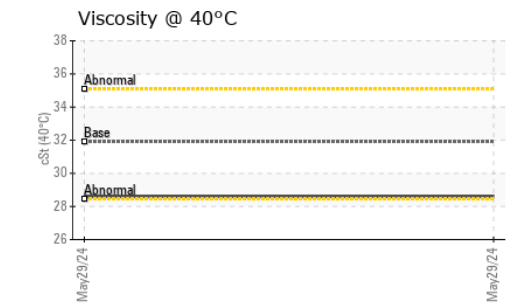
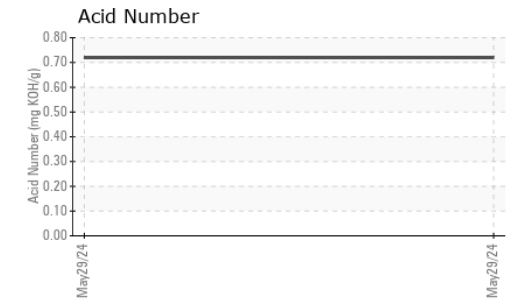
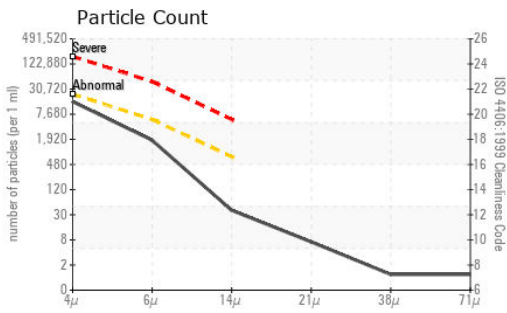
The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

| | | | | | | |
|------------------|--------|---------------|-----------|-----------------|-----|-----|
| Silicon | ppm | ASTM D5185(m) | >15 | 1 | --- | --- |
| Potassium | ppm | ASTM D5185(m) | >20 | <1 | --- | --- |
| Water | | WC Method | >0.1 | NEG | --- | --- |
| Particles >4µm | | ASTM D7647 | >20000 | 13402 | --- | --- |
| Particles >6µm | | ASTM D7647 | >5000 | 1598 | --- | --- |
| Particles >14µm | | ASTM D7647 | >640 | 34 | --- | --- |
| Particles >21µm | | ASTM D7647 | >160 | 6 | --- | --- |
| Particles >38µm | | ASTM D7647 | >40 | 1 | --- | --- |
| Particles >71µm | | ASTM D7647 | >10 | 1 | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | 21/18/12 | --- | --- |
| Silt | scalar | Visual* | NONE | NONE | --- | --- |
| Debris | scalar | Visual* | NONE | NONE | --- | --- |
| Sand/Dirt | scalar | Visual* | NONE | NONE | --- | --- |
| Appearance | scalar | Visual* | NORML | NORML | --- | --- |
| Odor | scalar | Visual* | NORML | NORML | --- | --- |
| Emulsified Water | scalar | Visual* | >0.1 | NEG | --- | --- |

FLUID CONDITION

Additive levels indicate the addition of a different brand, or type of oil. The AN level is acceptable for this fluid.

| | | | | | | |
|------------------|----------|---------------|------|-------------|-----|-----|
| Sodium | ppm | ASTM D5185(m) | | 1 | --- | --- |
| Boron | ppm | ASTM D5185(m) | | 3 | --- | --- |
| Barium | ppm | ASTM D5185(m) | | 0 | --- | --- |
| Molybdenum | ppm | ASTM D5185(m) | | 0 | --- | --- |
| Manganese | ppm | ASTM D5185(m) | | 0 | --- | --- |
| Magnesium | ppm | ASTM D5185(m) | | 8 | --- | --- |
| Calcium | ppm | ASTM D5185(m) | | 541 | --- | --- |
| Phosphorus | ppm | ASTM D5185(m) | | 426 | --- | --- |
| Zinc | ppm | ASTM D5185(m) | 400 | 522 | --- | --- |
| Sulfur | ppm | ASTM D5185(m) | | 2637 | --- | --- |
| Acid Number (AN) | mg KOH/g | ASTM D974* | | 0.72 | --- | --- |
| Visc @ 40°C | cSt | ASTM D7279(m) | 31.9 | 28.6 | --- | --- |



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0232637 **Received** : 03 Jun 2024
Lab Number : 02639430 **Tested** : 06 Jun 2024
Unique Number : 5788592 **Diagnosed** : 06 Jun 2024 - Kevin Marson
Test Package : MOBCE (Additional Tests: Bottom, BottomAnalysis, FilterPatch, PrtFilter)

Excavation Dolbeau Inc.
 493 - 2ieme Avenue
 Dolbeau-Mistassini, QC
 CA G8L 1V3
 Contact: Service Manager

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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