



**PERFORMANCE
UNDER
PRESSURE**

OIL ANALYSIS REPORT

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

Area

No. 1 Paper Machine

Machine Id

1 PM Lump Breaker Dr. Str. #3 (S/N MO-27565-4)

Component

Gear Unit

Fluid

ROYAL PURPLE SYNERGY 90/220 (--- GAL)

RECOMMENDATION

We recommend you service the filters on this component if applicable.
We recommend an early resample to monitor this condition.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | RP0039744 | RP0038204 | RP0038231 |
| Sample Date | | Client Info | | 16 May 2024 | 29 Dec 2023 | 29 Sep 2023 |
| Machine Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| Filter Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Filter Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | ABNORMAL | ABNORMAL | ABNORMAL |

WEAR

Gear wear is indicated.

| | | | | | | |
|--------------|--------|-------------|------|--------------|-------|-------|
| Iron | ppm | ASTM D5185m | >150 | ▲ 368 | ▲ 275 | ▲ 350 |
| Chromium | ppm | ASTM D5185m | >10 | 2 | 1 | 2 |
| Nickel | ppm | ASTM D5185m | >10 | <1 | <1 | 1 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | <1 | 0 | <1 |
| Lead | ppm | ASTM D5185m | >100 | 0 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >50 | 7 | 6 | 9 |
| Tin | ppm | ASTM D5185m | >10 | <1 | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

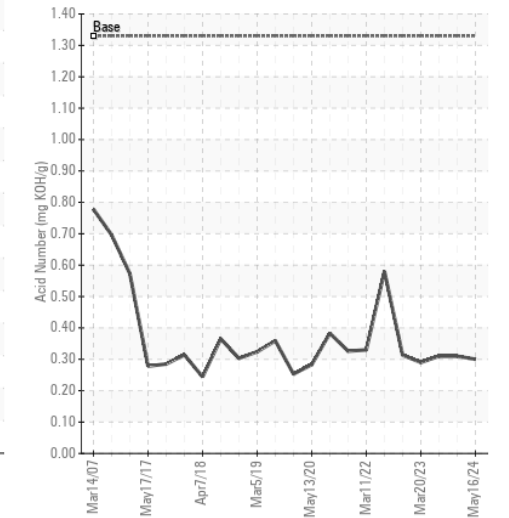
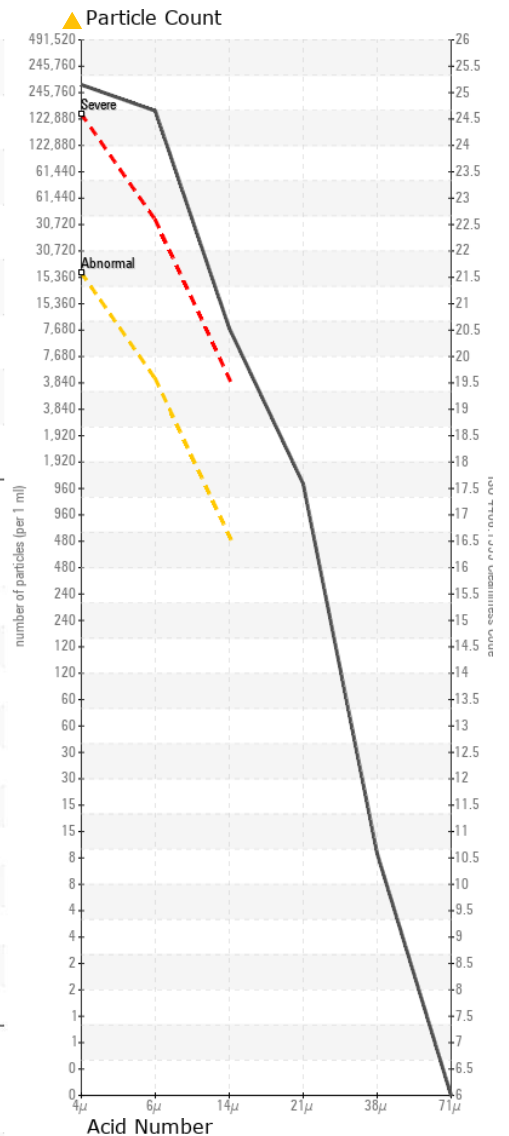
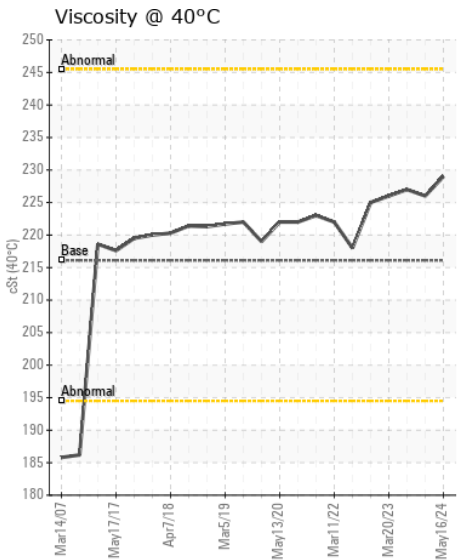
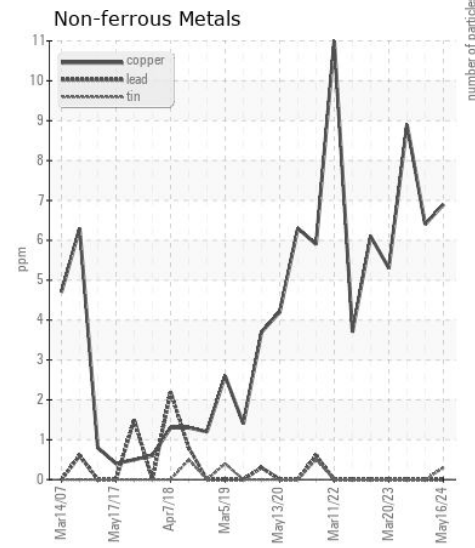
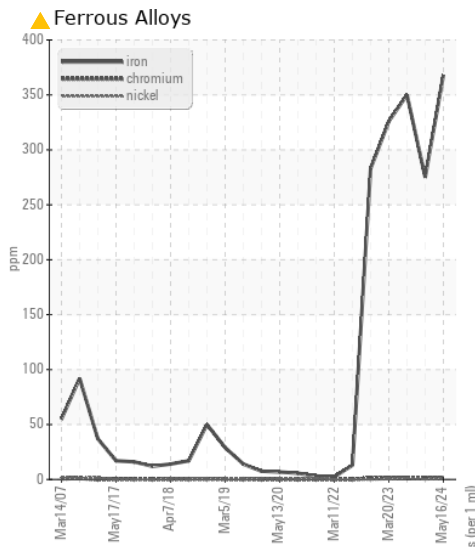
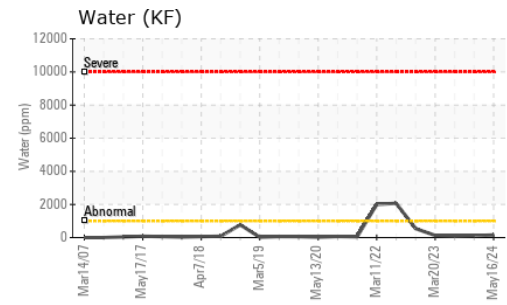
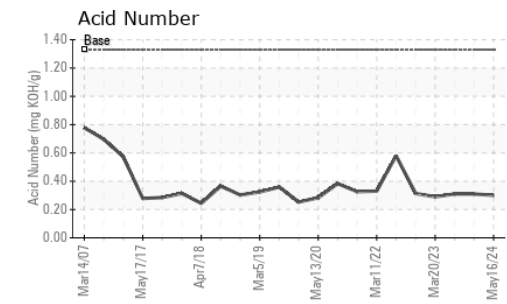
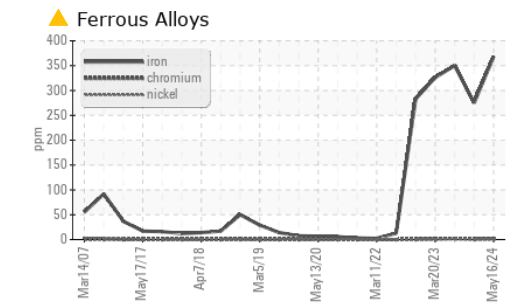
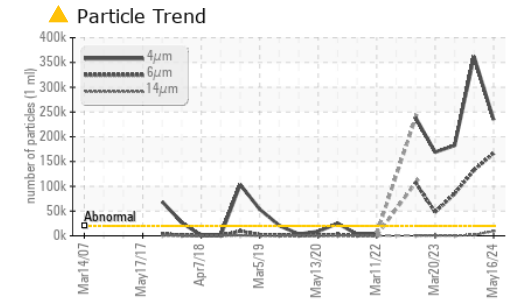
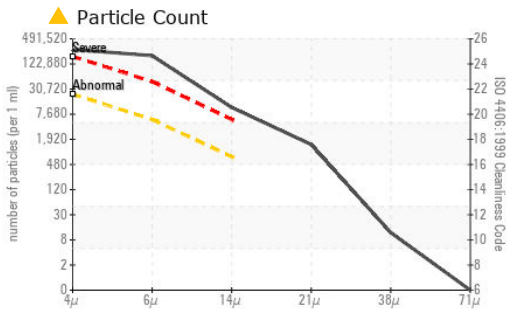
There is a high amount of particulates present in the oil.

| | | | | | | |
|------------------|--------|--------------|-----------|-------------------|------------|------------|
| Silicon | ppm | ASTM D5185m | >50 | 7 | 7 | 10 |
| Potassium | ppm | ASTM D5185m | >20 | 4 | 0 | 2 |
| Water | % | ASTM D6304 | >0.1 | 0.015 | 0.012 | 0.008 |
| ppm Water | ppm | ASTM D6304 | >1000 | 156 | 120 | 81.7 |
| Particles >4µm | | ASTM D7647 | >20000 | ▲ 234359 | ▲ 362023 | ▲ 182455 |
| Particles >6µm | | ASTM D7647 | >5000 | ▲ 166422 | ▲ 132870 | ▲ 84980 |
| Particles >14µm | | ASTM D7647 | >640 | ▲ 9689 | ▲ 1576 | ▲ 657 |
| Particles >21µm | | ASTM D7647 | >160 | ▲ 1264 | ▲ 199 | 60 |
| Particles >38µm | | ASTM D7647 | >40 | 10 | 3 | 1 |
| Particles >71µm | | ASTM D7647 | >10 | 0 | 1 | 1 |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | ▲ 25/25/20 | ▲ 26/24/18 | ▲ 25/24/17 |
| 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 | >0.1 | NEG | NEG | NEG |

FLUID CONDITION

The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

| | | | | | | |
|------------------|----------|-------------|-------|-------------|------|------|
| Sodium | ppm | ASTM D5185m | | 13 | 10 | 14 |
| Boron | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Manganese | ppm | ASTM D5185m | | 5 | 4 | 5 |
| Magnesium | ppm | ASTM D5185m | | 3 | 0 | 2 |
| Calcium | ppm | ASTM D5185m | | 8 | 0 | 8 |
| Phosphorus | ppm | ASTM D5185m | 370 | 62 | 44 | 81 |
| Zinc | ppm | ASTM D5185m | | 5 | 0 | 7 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 1.33 | 0.30 | 0.31 | 0.31 |
| Visc @ 40°C | cSt | ASTM D445 | 216.1 | 229 | 226 | 227 |



Certificate L2367

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

Sample No. : RP0039744

Lab Number : 06187654

Unique Number : 11044406

Test Package : IND 2 (Additional Tests: PrtCount)

Received : 22 May 2024

Tested : 23 May 2024

Diagnosed : 24 May 2024 - Don Baldrige

GRAPHIC PACKAGING INTERNATIONAL

9978 FM 3129

QUEEN CITY, TX

US 75572

Contact: DAVID COTHREN

david.cothren@graphicpkg.com

T: (903)796-1690

F: (903)796-1969

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)