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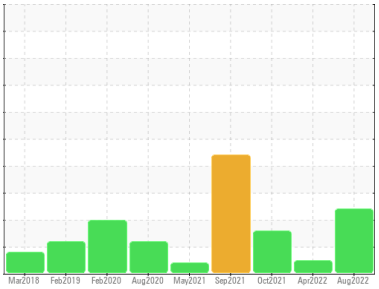
# PROBLEM SUMMARY

**Sample Rating Trend**

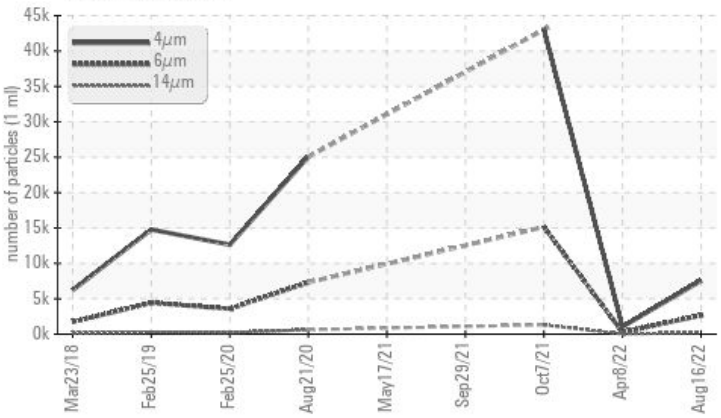



**WEAR**

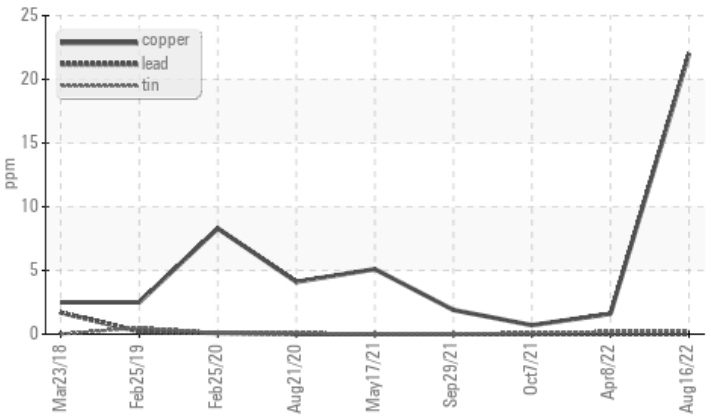
Machine Id
## KAESER SM 10 5399168 (S/N 1752)
Component
**Compressor**
Fluid
**KAESER SIGMA (OEM) S-460 (--- QTS)**

## COMPONENT CONDITION SUMMARY

▲ Particle Trend




▲ Non-ferrous Metals




## RECOMMENDATION

No corrective action is recommended at this time. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | **ABNORMAL** | NORMAL | ABNORMAL |
|---|---|---|---|---|---|---|
| Copper | ppm | ASTM D5185m | >50 | ▲ **22** | 2 | <1 |
| Particles >6µm | | ASTM D7647 | >1300 | ▲ **2660** | 279 | ▲ 15147 |
| Particles >14µm | | ASTM D7647 | >80 | ▲ **220** | 22 | ▲ 1300 |
| Particles >21µm | | ASTM D7647 | >20 | ▲ **34** | 8 | ▲ 227 |
| Oil Cleanliness | | ISO 4406 (c) | >--/17/13 | ▲ **20/19/15** | 15/12 | ▲ 21/17 |

**Customer Id:** FEDTWI
**Sample No.:** KC104902
**Lab Number:** 05622447
**Test Package:** IND 2

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Don Baldridge +1
don.b505@comcast.net

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Change Fluid | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |
| Change Filter | --- | --- | ? | Oil and filter change at the time of sampling has been noted. |

## HISTORICAL DIAGNOSIS

**08 Apr 2022 Diag: Don Baldridge**

NORMAL

Resample at the next service interval to monitor.All component wear rates are normal. The amount and size of particulates present in the system are acceptable. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

**07 Oct 2021 Diag: Don Baldridge**

ISO

We recommend you service the filters on this component. Resample at the next service interval to monitor.All component wear rates are normal. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

**29 Sep 2021 Diag: Jonathan Hester**

WATER

We advise that you stop the unit and follow the water drain-off procedure for this component. The filter change at the time of sampling has been noted. We recommend an early resample in 500 hours to monitor this condition. We were unable to perform a particle count due to a high concentration of particles present in this sample.All component wear rates are normal. Appearance is hazy. There is a high concentration of water present in the oil. Moderate concentration of visible dirt/debris present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

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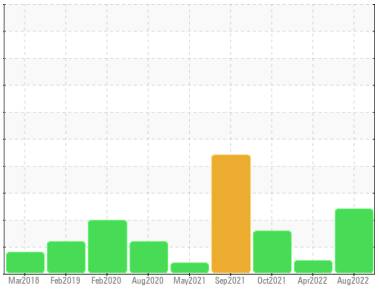
# OIL ANALYSIS REPORT

Sample Rating Trend




**WEAR**

Machine Id
## KAESER SM 10 5399168 (S/N 1752)
Component
**Compressor**
Fluid
**KAESER SIGMA (OEM) S-460 (--- QTS)**

## DIAGNOSIS

**▲ Recommendation**
No corrective action is recommended at this time. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

**▲ Wear**
An increase in the copper level is noted. All other component wear rates are normal.

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

**Fluid Condition**
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|
| Sample Number | | | **KC104902** | KC96272 | KC100467 |
| Sample Date | | | **16 Aug 2022** | 08 Apr 2022 | 07 Oct 2021 |
| Machine Age hrs | | | **21325** | 18301 | 16097 |
| Oil Age hrs | | | **5328** | 2400 | 0 |
| Oil Changed | | | **Changed** | Not Changd | Not Changd |
| Sample Status | | | **ABNORMAL** | NORMAL | ABNORMAL |

| WEAR METALS | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >50 | **0** | <1 | <1 |
| Chromium | ppm | ASTM D5185m | >10 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >10 | **0** | <1 | <1 |
| Lead | ppm | ASTM D5185m | >10 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >50 | ▲ **22** | 2 | <1 |
| Tin | ppm | ASTM D5185m | >10 | **<1** | <1 | <1 |
| Antimony | ppm | ASTM D5185m | | **---** | --- | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **<1** | <1 | 13 |
| Barium | ppm | ASTM D5185m | 90 | **0** | 0 | 20 |
| Molybdenum | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185m | | **0** | 0 | <1 |
| Magnesium | ppm | ASTM D5185m | 90 | **9** | 58 | 79 |
| Calcium | ppm | ASTM D5185m | 2 | **0** | 1 | 3 |
| Phosphorus | ppm | ASTM D5185m | | **0** | 0 | 1 |
| Zinc | ppm | ASTM D5185m | | **12** | 2 | 3 |

| CONTAMINANTS | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **4** | 6 | 2 |
| Sodium | ppm | ASTM D5185m | | **2** | 21 | 12 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | 4 | 1 |
| Water | % | ASTM D6304 | >0.05 | **0.008** | 0.020 | 0.025 |
| ppm Water | ppm | ASTM D6304 | >500 | **88.6** | 205.3 | 259.5 |

| FLUID CLEANLINESS | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|
| Particles >4µm | ASTM D7647 | | **7553** | 1035 | 43026 |
| Particles >6µm | ASTM D7647 | >1300 | ▲ **2660** | 279 | ▲ 15147 |
| Particles >14µm | ASTM D7647 | >80 | ▲ **220** | 22 | ▲ 1300 |
| Particles >21µm | ASTM D7647 | >20 | ▲ **34** | 8 | ▲ 227 |
| Particles >38µm | ASTM D7647 | >4 | **2** | 0 | ▲ 13 |
| Particles >71µm | ASTM D7647 | >3 | **0** | 0 | 0 |
| Oil Cleanliness | ISO 4406 (c) | >--/17/13 | ▲ **20/19/15** | 15/12 | ▲ 21/17 |

| FLUID DEGRADATION | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.4 | **0.28** | 0.35 | 0.337 |

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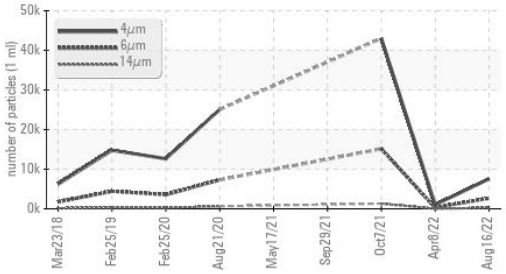
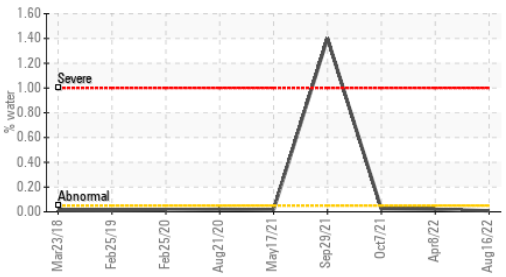
# OIL ANALYSIS REPORT

Particle Trend

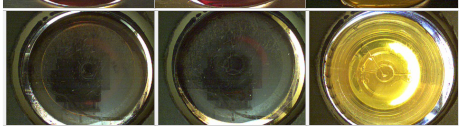



Water



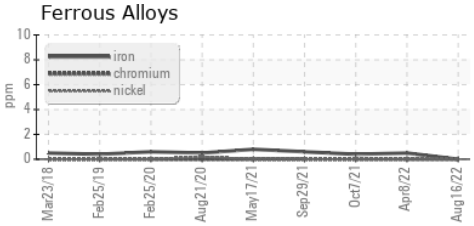

| VISUAL | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 | NORML |
| Odor | scalar | *Visual | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.05 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | 46 | **44.2** | 44.3 | 44.2 |

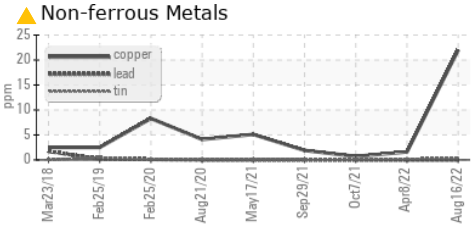
| SAMPLE IMAGES | method | limit/base | current | history 1 | history 2 |
|---|---|---|---|---|---|
| Color | | |  | | |
| Bottom | | |  | | |

## GRAPHS

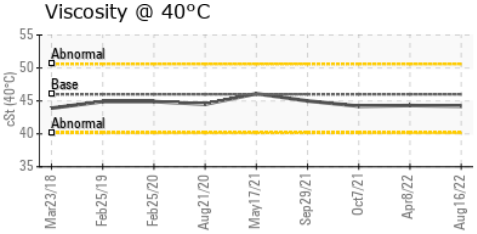
Ferrous Alloys



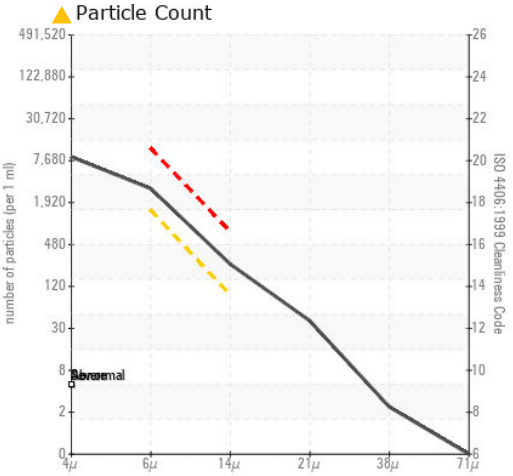

Non-ferrous Metals



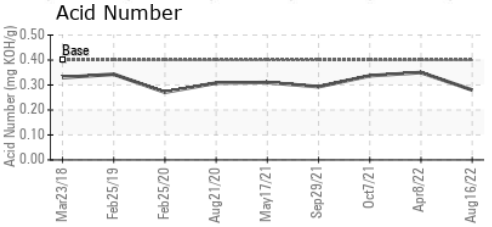

Viscosity @ 40°C




Particle Count




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : KC104902
**Lab Number** : 05622447
**Unique Number** : 10101954
**Test Package** : IND 2

**Received** : 19 Aug 2022
**Diagnosed** : 23 Aug 2022
**Diagnostician** : Don Baldridge

**FEDEX**
2050 E AURORA RD
TWINSBURG, OH
USA 44087
Contact: Service Manager

T:
F:

*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)*