

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR R938 057011-1650 - Diesel Engine

Sample No: LH0268280

Oil Type: LIEBHERR MOTOROIL 10W-40



ATLANTIC CONTRACTING AND MATERIAL CO INC
44784 CABIN RD
CHANTILLY, VA
US 20151
Contact: SERVICE MANAGER



SAMPLE INFORMATION

| | | | | |
|---------------|-------------|-----|-----|-----|
| Sample Number | LH0268280 | --- | --- | --- |
| Sample Date | 20 Nov 2023 | --- | --- | --- |
| Machine Hours | 748 | --- | --- | --- |
| Oil Hours | 748 | --- | --- | --- |
| Oil Changed | Changed | --- | --- | --- |
| Sample Status | ATTENTION | --- | --- | --- |



OIL CONDITION

| | | | | | |
|------------------|----------|------|-----|-----|-----|
| Visc @ 100°C | cSt | 11.7 | --- | --- | --- |
| Base Number (BN) | mg KOH/g | 3.9 | --- | --- | --- |
| Oxidation (PA) | % | 197 | --- | --- | --- |

T:
F:



CONTAMINATION

| | | | | | |
|----------------|-----|-----|-----|-----|-----|
| Water | % | NEG | --- | --- | --- |
| Soot % | % | 0.1 | --- | --- | --- |
| Nitration (PA) | % | 106 | --- | --- | --- |
| Sulfation (PA) | % | 104 | --- | --- | --- |
| Glycol | % | NEG | --- | --- | --- |
| Fuel | % | 1.2 | --- | --- | --- |
| Silicon | ppm | 16 | --- | --- | --- |
| Sodium | ppm | 1 | --- | --- | --- |
| Potassium | ppm | 6 | --- | --- | --- |

Diagnosis

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). All other metal levels are typical for a new component breaking in. Fuel content negligible. There is no indication of any contamination in the oil. The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



WEAR METALS

| | | | | | |
|------------|-----|-----|-----|-----|-----|
| Iron | ppm | 22 | --- | --- | --- |
| Copper | ppm | 231 | --- | --- | --- |
| Lead | ppm | 8 | --- | --- | --- |
| Tin | ppm | 1 | --- | --- | --- |
| Aluminum | ppm | 4 | --- | --- | --- |
| Chromium | ppm | <1 | --- | --- | --- |
| Molybdenum | ppm | 46 | --- | --- | --- |
| Nickel | ppm | 0 | --- | --- | --- |
| Titanium | ppm | <1 | --- | --- | --- |
| Silver | ppm | 0 | --- | --- | --- |
| Manganese | ppm | <1 | --- | --- | --- |
| Vanadium | ppm | 0 | --- | --- | --- |



ADDITIVES

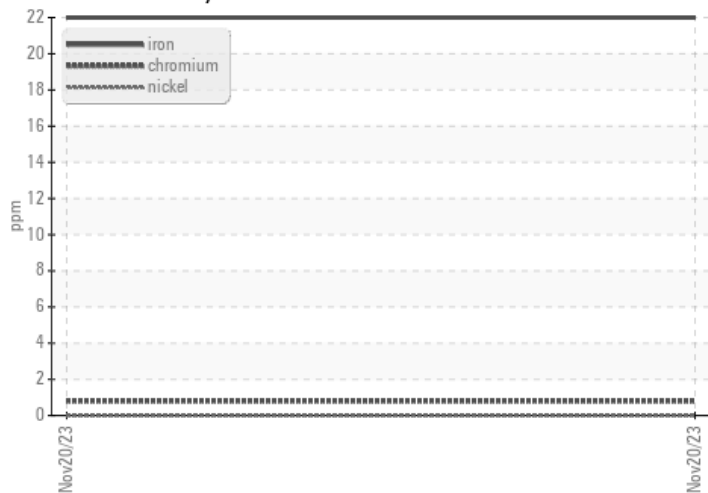
| | | | | | |
|------------|-----|------|-----|-----|-----|
| Calcium | ppm | 1761 | --- | --- | --- |
| Magnesium | ppm | 931 | --- | --- | --- |
| Zinc | ppm | 1009 | --- | --- | --- |
| Phosphorus | ppm | 818 | --- | --- | --- |
| Barium | ppm | 35 | --- | --- | --- |
| Boron | ppm | 100 | --- | --- | --- |

Depot: ATLCHAVA
Unique No: 10778277
Signed: Doug Bogart
Report Date: 02 Jan 2024

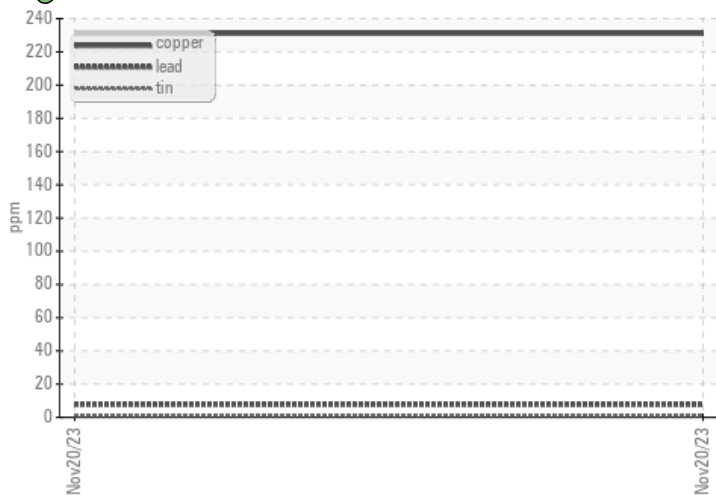


GRAPHS

Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

