



OIL REPORT

LAB NUMBER: S036614

UNIT ID: 76 2002

REPORT DATE: 3/26/2024

CLIENT ID: 198524

CODE: 63/88

PAYMENT: CC: Visa

| | | |
|------|------------------------------------|-------------------------------------|
| UNIT | MAKE/MODEL: BMW 2.0L (M10/M15) I-4 | OIL TYPE & GRADE: Liqui Moly 20W/50 |
| | FUEL TYPE: Gasoline (Unleaded) | OIL USE INTERVAL: |
| | ADDITIONAL INFO: | |

| | | |
|--------|--------------------------|---------------------------------|
| CLIENT | RAFAEL MOLINA | PHONE: (630) 890-2483 |
| | 434 E BERTEAU AVE, APT 1 | FAX: |
| | APT 1 | ALT PHONE: |
| | ELMHURST, IL 60126-2483 | EMAIL: molina.rafaelm@gmail.com |

| | |
|----------|---|
| COMMENTS | RAFAEL: About 0.2% of this sample was water, which kept us from testing for fuel. The high sodium level suggests water is probably from coolant. That may be the reason for the high wear metals here. Copper and lead may both be from bearings; they're high next to universal averages, which show typical wear after ~3,100 miles of oil use. Iron might be high too, depending how long this oil was run. Those three metals may show poor wear at a bearing/shaft interface. Silicon might be dirt or sealer. Check air filtration in case it's dirt. Inspect the cooling system carefully. |
|----------|---|

| ELEMENTS IN PARTS PER MILLION | MI/HR on Oil | | UNIT / LOCATION AVERAGES | | | | | | UNIVERSAL AVERAGES |
|-------------------------------|-------------------|----------|--------------------------------|------|--|--|--|--|-----------------------|
| | MI/HR on Unit | | | | | | | | |
| | Sample Date | 3/3/2024 | | | | | | | |
| | Make Up Oil Added | 1 qt | | | | | | | |
| | | | | | | | | | |
| | ALUMINUM | 3 | | 3 | | | | | 6 |
| | CHROMIUM | 1 | | 1 | | | | | 2 |
| | IRON | 32 | | 32 | | | | | 20 |
| | COPPER | 14 | | 14 | | | | | 6 |
| | LEAD | 21 | | 21 | | | | | 7 |
| | TIN | 0 | | 0 | | | | | 1 |
| | MOLYBDENUM | 16 | | 16 | | | | | 61 |
| | NICKEL | 0 | | 0 | | | | | 0 |
| | MANGANESE | 1 | | 1 | | | | | 1 |
| | SILVER | 0 | | 0 | | | | | 0 |
| | TITANIUM | 0 | | 0 | | | | | 4 |
| | POTASSIUM | 14 | | 14 | | | | | 1 |
| | BORON | 33 | | 33 | | | | | 86 |
| | SILICON | 20 | | 20 | | | | | 7 |
| | SODIUM | 176 | | 176 | | | | | 70 |
| | CALCIUM | 1504 | | 1504 | | | | | 2179 |
| | MAGNESIUM | 10 | | 10 | | | | | 203 |
| | PHOSPHORUS | 413 | | 413 | | | | | 882 |
| | ZINC | 548 | | 548 | | | | | 1051 |
| | BARIUM | 0 | | 0 | | | | | 0 |

Values
Should Be*

| | | | | | | | | |
|------------|-----------------------|-------|-----------|--|--|--|--|--|
| PROPERTIES | SUS Viscosity @ 210°F | 78.3 | 75-95 | | | | | |
| | cSt Viscosity @ 100°C | 15.10 | 14.3-19.4 | | | | | |
| | Flashpoint in °F | BOIL | >385 | | | | | |
| | Fuel % | - | <2.0 | | | | | |
| | Antifreeze % | POS | 0.0 | | | | | |
| | Water % | 0.2 | 0.0 | | | | | |
| | Insolubles % | 0.3 | <0.6 | | | | | |
| | TBN | | | | | | | |
| | TAN | | | | | | | |
| | ISO Code | | | | | | | |

* THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE

416 E. PETTIT AVE. FORT WAYNE, IN 46806 (260) 744-2380 www.blackstone-labs.com