



OIL REPORT

LAB NUMBER: K31882

UNIT ID: 08 Z4M

REPORT DATE: 6/28/2018

CLIENT ID: 127325

CODE: 20/32

PAYMENT: CC: Visa

UNIT

MAKE/MODEL: BMW 3.2L (S54B32) I-6
FUEL TYPE: Gasoline (Unleaded)
ADDITIONAL INFO:

OIL TYPE & GRADE: Liqui Moly 10W/60
OIL USE INTERVAL: 3,000 Miles

CLIENT

ALLEN GRIEBEL
6188 OAK HOLLOW DR
OREGONW, WI 53575

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COMMENTS

ALLEN: These aren't quite the results you were probably hoping for. There is some excess bearing wear here - lead is the dominant bearing metal and it's 4 times universal averages. Iron is from steel parts likely rotating shafts like the crank since we have the bearing wear. Iron is the metal that tracks most directly with miles on the oil and it's high on a ppm/mile basis. Universal averages show typical wear levels for this type of engine after about 4,800 miles on the oil. The fuel is harmless. Change this oil and check back in 3,000 miles for comparison.

| ELEMENTS IN PARTS PER MILLION | MI/HR on Oil | 3,000 | UNIT / LOCATION AVERAGES | | | | | | | UNIVERSAL AVERAGES |
|-------------------------------|-------------------|-----------|--------------------------------|------|--|--|--|--|--|-----------------------|
| | MI/HR on Unit | 61,800 | | | | | | | | |
| | Sample Date | 6/16/2018 | | | | | | | | |
| | Make Up Oil Added | | | | | | | | | |
| | | | | | | | | | | |
| | ALUMINUM | 4 | | 4 | | | | | | 4 |
| | CHROMIUM | 0 | | 0 | | | | | | 0 |
| | IRON | 14 | | 14 | | | | | | 10 |
| | COPPER | 2 | | 2 | | | | | | 8 |
| | LEAD | 22 | | 22 | | | | | | 5 |
| | TIN | 0 | | 0 | | | | | | 0 |
| | MOLYBDENUM | 97 | | 97 | | | | | | 83 |
| | NICKEL | 0 | | 0 | | | | | | 1 |
| | MANGANESE | 1 | | 1 | | | | | | 1 |
| | SILVER | 0 | | 0 | | | | | | 0 |
| | TITANIUM | 12 | | 12 | | | | | | 12 |
| | POTASSIUM | 0 | | 0 | | | | | | 2 |
| | BORON | 29 | | 29 | | | | | | 64 |
| | SILICON | 8 | | 8 | | | | | | 5 |
| | SODIUM | 4 | | 4 | | | | | | 7 |
| | CALCIUM | 2810 | | 2810 | | | | | | 2196 |
| | MAGNESIUM | 14 | | 14 | | | | | | 226 |
| | PHOSPHORUS | 921 | | 921 | | | | | | 838 |
| | ZINC | 1031 | | 1031 | | | | | | 990 |
| | BARIUM | 0 | | 0 | | | | | | 0 |

Values
Should Be*

| PROPERTIES | SUS Viscosity @ 210°F | 81.0 | 80-100 | | | | | |
|------------|-----------------------|-------|-----------|--|--|--|--|--|
| | cSt Viscosity @ 100°C | 15.77 | 15.5-20.6 | | | | | |
| | Flashpoint in °F | 375 | >385 | | | | | |
| | Fuel % | 0.5 | <2.0 | | | | | |
| | Antifreeze % | 0.0 | 0.0 | | | | | |
| | Water % | 0.0 | 0.0 | | | | | |
| | Insolubles % | TR | <0.6 | | | | | |
| | TBN | | | | | | | |
| | TAN | | | | | | | |
| | ISO Code | | | | | | | |

* THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE

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