

CONTROLS FOR KEYSTONE DIESTER-BASED SYNTHETIC COMPRESSOR LUBRICANTS

| | Signals Caution | Recommend Oil Change | Note |
|---------------------------------------|--------------------|-------------------------|------|
| VISCOSITY @ 40°C or 100°F, cSt: | +/- 10% | +/- 20% | 1 |
| VISCOSITY @ 100°C or 210°F, cSt: | +/- 5% | +/- 10% | 1 |
| ACID NUMBER (NEUT # OR TAN): | + 2.5 | + 5.0 | 2 |
| SAPONIFICATION NUMBER: | - 15% | - 30% | 3 |
| SOLIDS (SEDIMENT), %: | 0.25 | 0.5 | 4 |
| WATER, %: | 0.5 | 1.0 | 5 |
| WEAR METALS, PPM: | | | |
| Iron: | 50 | 200 | 6 |
| Copper: | 20 | 60 | 7 |
| Tin: | 5 | 15 | 8 |
| Lead: | 10 | 25 | 8 |
| (Aluminum, Chromium, Nickel): | 5 | 10 | 9 |
| CONTAMINANTS-ABRASIVE: Silicon: | 10 | 25 | 10 |
| ADDITIVES & CONTAMINANTS: Zinc: | 100 | -- | 11 |
| Phosphorus: | 100 | -- | 12 |
| (Sodium, Calcium, Magnesium, Barium): | 100 | -- | 13 |

NOTES:

1. Recommend change if out of AGMA, ISO, or SAE grade.
2. This test is useful in indicating relative changes that occur in an oil under oxidizing conditions. Change if above base lines.
3. Should be determined by lubricant manufacturer.
4. Oil and/or air filter change might be sufficient.
5. Eliminating source of water might be sufficient.
6. Indicates wear from gears and shafts, case, valves, from cylinder liners, crossheads, rings and screws or turbines, hearings, some oil cooler tubing.
7. Copper alone indicates corrosion or wear from bearings, bushings, thrust washers and retainers, oil cooler tubing in reciprocating and rotary compressors.
8. Indicates wear from bearings when babbitt overlays are used, some pistons, bushings and thrust washers in reciprocating and rotary compressors.
9. Aluminum oxides present in the environment, typically associated with silicon (dirt) contamination. Also indicates wear form case, impellers, some pistons and crossheads, retainers in reciprocating and rotary compressors. Chromium indicates wear from liners and rings, shafts, and valve trains in reciprocating engines. Nickel indicates wear from gears and shafts, valve trains and bearings in reciprocating engines.
10. A measure of airborne dust and dirt contamination, usually indicating improper air cleaner service. Excessive dirt and abrasives can greatly accelerate component wear.
11. Zinc can come form galvanized parts, anti-wear additives, antioxidants, corrosion inhibitors.
12. Phosphorus is used as an anti-wear additive.
13. Sodium is used as corrosion inhibitor in oils and coolant. Calcium, Magnesium, and Barium are usually detergent/dispersant additives; they usually indicate contaminant oil.