

CALTRAN[®]

ELECTRICAL INSULATING OILS (ASTM D3487)

Calumet has more than 25 years of experience producing highly refined, clean and stable electrical insulating fluids. The CALTRAN[®] line of naphthenic transformer oils is a portfolio of customized products, formulated to fully meet specific global specifications – thus providing customers flexibility in choosing the transformer oils that meet their specific requirements. Calumet is a long-standing participant in the Annual DOBLE Survey on transformer oil.

Developed in-house by Calumet's R&D group, CALTRAN transformer oils have excellent dielectric properties, high thermal stability and good resistance to oxidation. CALTRAN transformer oils fully meet ASTM D3487 specifications for Type I and Type II mineral insulating oil in electrical apparatus.

PRODUCTS

| NAPHTHENIC TYPE I | NAPHTHENIC TYPE II |
|-------------------|--------------------|
| CALTRAN 60-08 | CALTRAN 60-15 |
| CALTRAN N60-08 | CALTRAN 60-30 |
| | CALTRAN N60-15 |
| | CALTRAN N60-30 |

PRODUCT FEATURES

- Excellent physical, chemical and electrical properties
- Good oxidation resistance
- Rapid heat transfer properties
- Outstanding low temperature properties without the need for pour point depressants
- Miscible with all comparable hydrocarbon-based transformer oils
- Meets ASTM D3487 Type I and Type II application specifications

PACKING & SHIPPING

Available in:

- Tank Truck
- Rail Car

Please inquire for drums

HANDLING & SAFETY

This product should be stored in sealed containers at ambient temperature. Read and understand the Safety Data Sheet (SDS) before using this product.

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CALTRAN® TYPICAL PROPERTIES

| PROPERTIES | METHOD | 60-08 | 60-15 | 60-30 | N60-08 | N60-15 | N60-30 |
|--|-------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Type | | Type I | Type II | Type II | Type I | Type II | Type II |
| Viscosity @ 0 °C (cSt) | D445 | 48.12 | 46.86 | 49.61 | 47.59 | 48.43 | 48.61 |
| Viscosity @ 40 °C (cSt) | D445 | 8.21 | 8.33 | 8.35 | 8.85 | 8.08 | 8.19 |
| Viscosity @ 100 °C (cSt) | D445 | 2.21 | 2.21 | 2.23 | 2.31 | 2.19 | 2.19 |
| API Gravity @ 60 °F | D4052 | 29.9 | 29.4 | 30.0 | 29.7 | 29.8 | 29.6 |
| Density @ 15 °C Kg/dm3 | D4052 | 0.8762 | 0.8791 | 0.8759 | 0.8775 | 0.8770 | 0.8777 |
| Flash Point, COC (°C) | D92 | 151 | 152 | 153 | 149 | 152 | 149 |
| Pour Point (°C) | D97 | -62 | -64 | -66 | -61 | -62 | -75 |
| Color, ASTM | D1500 | L0.5 | L0.5 | L0.5 | L0.5 | L0.5 | L0.5 |
| Aniline Point (°C) | D611 | 80.0 | 76.0 | 78.0 | 77.8 | 77.1 | 79.6 |
| Neutralization Number (mg KOH/g) | D974 | 0.0002 | 0.002 | 0.003 | 0.007 | 0.002 | 0.003 |
| Water Content (ppm) | D1533 | 10 | 15 | 5 | 11 | 10 | 11 |
| Dielectric Breakdown Voltage @ 60 Hz | | | | | | | |
| Disk Electrodes, Min, kV | D877 | 40 | 42 | 40 | 39 | 40 | 39 |
| VDE Electrodes, Min, kV 0.040-in. (1.02-mm) gap | D1816 | 50 | 31 | 30 | 49 | 30 | 31 |
| VDE Electrodes, Min, kV 0.080-in. (2.03-mm) gap | D1816 | 60 | 60 | 60 | 60 | 60 | 59 |
| Dielectric Breakdown Voltage, Impulse Conditions | D3300 | 397 | 300 | 298 | 300 | 300 | 299 |
| Corrosive Sulfur | ASTM D1275B | Non-corrosive | Non-corrosive | Non-corrosive | Non-corrosive | Non-corrosive | Non-corrosive |
| Interfacial Tension (dyne/cm) | D971 | 47.9 | 48.7 | 47.0 | 48.0 | 47.8 | 50.6 |
| Oxidation Stability | | | | | | | |
| 72 HR Sludge, Mass% | D2440 | 0 | 0.01 | 0.04 | 0.00 | 0.01 | 0.02 |
| 72 HR Acid No., mg KOH/g | D2440 | 0 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 |
| 164 HR Sludge, Mass% | D2440 | 0 | 0.02 | 0.05 | 0.06 | 0.02 | 0.03 |
| 164 HR Acid No., mg KOH/g | D2440 | 0 | 0.01 | 0.02 | 0.00 | 0.01 | 0.01 |
| Oxidation Inhibitor Content (Mass %) | D2668 | 0.06 | 0.18 | 0.26 | 0.06 | 0.17 | 0.26 |
| Oxidation Stability, RPVOT (min) | D2112 | - | 258 | 265 | - | 265 | 258 |
| Gassing Tendency (µL/min) | D2300 | 16 | 18 | 15 | -13 | -19 | -21 |
| Power Factor @ 25 °C (%) | D924 | 0.002 | 0.008 | 0.001 | 0.001 | 0.003 | 0.001 |
| Power Factor @ 100 °C (%) | D924 | 0.05 | 0.05 | 0.03 | 0.03 | 0.04 | 0.04 |
| PCB Content (ppm) | D4059 | <1 | <1 | <1 | <1 | <1 | <1 |
| ASTM D3487 Standards | | PASS | PASS | PASS | PASS | PASS | PASS |

TECHNICAL ASSISTANCE

For product or technical questions, contact your Sales Representative or Calumet Product Support at (800) 437-3188 or email technical@calumet.com.

Calumet's sampling and testing procedures in effect at the time of production will be used for certification testing. Results may be based on tank certification, manufacturing data, periodic testing and/or most recent product restock. Typical values only represent the values one would expect if the property were tested in our laboratories with our test methods on the specified date. Some product properties are not frequently measured, and accordingly typical values are not based on a statistically relevant number of tests. The information in this document relates only to the named product. The user is solely responsible for all determination regarding any use and any process.



CORPORATE HEADQUARTERS

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