

## XCELTHERM EIO TY: II



700 Kingsland Drive  
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### MILITARY FLUIDS

## ASTM D3487-09 FED SPEC# VV-I-530

# XCELTHERM® ELECTRICAL INSULATING OIL, TYPE II

**XCELTHERM® Electrical Insulating Oil (Type II)** meets military standard specifications for electrical oil applications. XCELTHERM® EIO-II has high electrical resistance and is both thermally and oxidatively stable. XCELTHERM® EIO-II is intended for use in most common electrical insulating oil applications where normal oxidation resistance is required. It is compatible with other electrical insulating oils, including Shell Diala® A.

Qualification Number: Not Applicable

Qualification Date: Not Applicable

NATO CODE: Not Applicable

ISO 9001:2015 Certification Number: C2018-00035

#### National Stock Numbers Available From Radco

9160-01-419-0888      Gallon  
9160-00-926-2124      5-Gallon Pail  
9150-00-075-9816      55-Gallon Drum

| Characteristics                 | Test Method | Limit       | Typical Results |
|---------------------------------|-------------|-------------|-----------------|
| <b>Physical:</b>                |             |             |                 |
| Aniline Point °C                | ASTM-D611   | 63-84       | 70.4            |
| Color                           | ASTM-1500   | 0.5 max     | <0.5            |
| Flash Point, Minimum °C         | ASTM-D92    | 146         | 154             |
| Interfacial Tension (@25°C) MIN | ASTM-D971   | 40 dynes/cm | 50 dynes/cm     |

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|  |            |                  |        |
|--|------------|------------------|--------|
| Pour Point °C Maximum  | ASTM-D97   | -40°C            | -61°C  |
| Specific Gravity, 15/15°C, Max   | ASTM-D1298 | 0.91             | 0.8850 |
| Viscosity, max, cSt (SUS) at:  |            |                  |        |
| 100°C  | ASTM-D455  | 3.0 max          | 2.3    |
| 40°C   | ASTM-D455  | 11.0 max         | 9.6    |
| 0°C  | ASTM-D455  | 76.0 max         | 67     |
| Visual Examination   | ASTM-D1524 | Clear and Bright | PASS   |
| <b>Electrical:</b>   |            |                  |        |
| Dielectric Breakdown Voltage @ 60 HZ:  |            |                  |        |
| Disk Electrodes, min kV  | ASTM-D877  | 30               | 47     |
| VDE Electrodes, min, kV<br>0.040-in (1.02-mm) gap  | ASTM-D1816 | 28               | 42     |
| 0.080-in (2.03-mm) gap   | ASTM-D1816 | 56               | 63     |
| Dielectric breakdown voltage,<br>impulse, conditions,<br>@ 25°C, needle-to-sphere<br>grounded, 1 inch (25.4mm) gap | ASTM-D3300 | 145 kV           | 274 kV |
| Gassing Tendency, max, uL/min  | ASTM-D2300 | +30              | +12    |
| Power Factor, 60 HZ  |            |                  |        |

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|   |            |                |                |
|---|------------|----------------|----------------|
| @ 25°C, %                                   | ASTM-D924  | 0.05           | 0.009          |
| @ 100°C, %                                  | ASTM-D924  | 0.030          | 0.06           |
| <b>Chemical:</b>                            |            |                |                |
| Oxidation Stability @ 72 hrs:               |            |                |                |
| % sludge, max, by mass                      | ASTM-D2440 | 0.1 max        | 0.004          |
| TAN, max, mg KOH/g                          | ASTM-D2440 | 0.3 max        | 0.02           |
| Oxidation Stability @ 164 hrs:              |            |                |                |
| % sludge, max, by mass                      | ASTM-D2440 | 0.2            | 0.03           |
| TAN, max, mg KOH/g                          | ASTM-D2440 | 0.4            | 0.04           |
| Oxidation Stability (RBOT), min             | ASTM-D2112 | 195            | 243            |
| Oxidation Inhibitor content, max, % by mass | ASTM-D2668 | 0.3            | 0.27           |
| Corrosive Sulfur                            | ASTM-D1275 | Non-corrosive  | Non-corrosive  |
| Water, max, ppm                             | ASTM-D1533 | 35             | 15             |
| Neutralization No, TAN, mg KOH/g            | ASTM-D974  | 0.03           | <0.01          |
| PCB Content, ppm                            | ASTM-D4059 | Not Detectable | Not Detectable |

**Manufacturing Location: Batavia IL, 60510**