



### Clearco STO-50 Silicone Transformer Oil



Clearco Silicone Transformer Oil is a 50cSt polydimethylsiloxane dielectric fluid, which has been processed and controlled to meet certain electrical specifications. Although dimethyl silicones are available in a wide range of viscosities, the 50cSt fluid provides an optimum combination of relative flammability\* and heat transfer.

Clearco STO-50 exhibits excellent dielectric, thermal and chemical properties, which makes it a high performance, environmentally safe replacement for PCB containing askarels as the dielectric coolant for liquid-filled transformers.

\*STO-50 fluid has an oxygen index of 21.4 and when tested, has self-extinguishing in air when the flame source was removed. The oxygen index is the minimum amount of oxygen required to sustain burning of a material after it has been ignited.

#### Applications

Clearco STO-50 may be considered for use in all types of transformer applications, where safety, toxicity, and environmental hazards are of primary concern. Applications include power distribution transformers installed indoors or in close proximity to buildings, railroad and electrostatic precipitator transformers, pulse transformer, TV fly-back transformers, capacitors and many other high-reliability TV and radar circuit components. STO-50 fluid may also be considered for use in systems where heat transfer properties are as necessary as good dielectric behavior.

#### Electrical Properties

<b>Dielectric Breakdown, voltage KV @ 25C</b>	35 minimum
<b>Volume Resistivity ohm-cm @ 25C</b>	1 x 10 <sup>14</sup> minimum
<b>Power factor @ 60 Hz @ 25C</b>	.0001
<b>@ 100C</b>	.0005
<b>Dielectric Constant, 60 Hz @ 25C</b>	2.7

#### Physical Properties

<b>Appearance</b>	Clear, no suspended matter
<b>Color APHA</b>	15
<b>Viscosity @ 25°C</b>	50cSt
<b>Specific Gravity</b>	0.96
<b>Refractive Index</b>	1.40
<b>Volatility @ 150°C 24 hour (weight loss)</b>	0.5
<b>Water content, ppm</b>	100
<b>Pour Point, °C</b>	-55°C
<b>Flashpoint (COC)</b>	300°C
<b>Fire Point (COC)</b>	340°C
<b>Oxygen Index, TDLOI</b>	21.4
<b>Thermal Capacity Gm-cal/sec/cm<sup>2</sup>/C/cm</b>	3.7 x 10 <sup>-4</sup>
<b>Coefficient of Expansion</b>	10.55 x 10 <sup>-4</sup>

Product Features	Potential Benefits
<ul style="list-style-type: none"> <li>Dielectric Properties</li> <li>Low Viscosity change, low volatility, thermal oxidation resistance</li> <li>Self-extinguishing</li> <li>Chemically inert</li> <li>Low toxicity and bioaccumulation</li> </ul>	<ul style="list-style-type: none"> <li>Good insulating capabilities</li> <li>High Temperature Stability</li> <li>Minimal flammability</li> <li>Compatible with most existing transformer insulation systems</li> <li>Environmentally superior alternative to PCB's as transformer fluid</li> </ul>

#### Chemical Properties

Clearco STO-50 transformer oil is chemically non-reactive to most common materials of construction used in electrical apparatus. It contains no acid producing chemicals to cause staining or corrosion and is compatible with insulation systems. The oxidative and thermal stability of STO-50 fluid is outstanding; even when exposed to air, it has operated almost indefinitely at 150°C. The oxidation threshold, the temperature at which a significant amount of oxidation by-products start to appear, is about 200°C. Clearco STO-50 shows excellent thermal stability when exposed to high temperatures. Under thermal conditions, where oxidation is not a factor, the activation temperature (temperature where the bonds linking silicone and oxygen are broken forming lower molecular weight volatile silicones) is about 300°C. In hermetically sealed systems, preferably with an inert atmosphere such as nitrogen, it has remained serviceable for over 500 hours, even at 300°C. However, at high temperatures, 200°C or over, and in contact with air, oxidation will cause the viscosity to increase until gelation occurs. The chemical stability of STO-50 fluid enables electrical apparatus to perform reliably for long periods of time at high temperatures and under adverse conditions

#### Handling & Safety

Before handling, all bungs and spouts on the fluid containers should be cleaned and dried. The container should be allowed to stand until the liquid is at least as warm as the surrounding air. All spigots, transfer lines, funnels or other equipment should be clean and dry.

#### Storage

Containers should be stored indoors in an area especially selected for this purpose. If outside, protect the container from weather and direct contact with water.

**For More Information or To Request a Sample, Contact:**

**Clearco Products Co., Inc.**

3430 G. Progress Drive  
Bensalem, PA 19020

Tel: 215 639-2640

Fax: 215 639-2919

Email: [info@clearcoproducts.com](mailto:info@clearcoproducts.com)

Web: [www.clearcoproducts.com](http://www.clearcoproducts.com)