

Product Data

Silicone Dielectric Fluid TSF451-50E

TSF451-50E silicone dielectric fluid is a 50 mm²/s viscosity grade of polydimethylsiloxane fluid, which has been processed and controlled to meet certain electrical specifications. Although dimethyl silicone fluid are available in a wide range of viscosities, the 50 mm²/ fluid provides an optimum combination of relative flammability and heat transfer properties. TSF451-50E fluid exhibits excellent dielectric, thermal and chemical properties, which make it high performance as the dielectric coolant for liquid-filled transformers.

KEY FEATURES

- ◆ Excellent dielectric properties
- ◆ Low viscosity-temperature change
- ◆ Low volatility
- ◆ Thermal oxidation resistance
- ◆ Chemically inert
- ◆ Self-extinguishing

APPLICATIONS

All types of transformer applications;

- ◆ Power distribution transformers, indoor or in close proximity to buildings
- ◆ Railroad and electrostatic precipitator transformers
- ◆ Pulse transformers
- ◆ TV fly-back transformers
- ◆ Capacitors and many other high-reliability TV and radar circuit components

TYPICAL PROPERTY DATA

PROPERTIES		
Appearance		Clear, colorless
Viscosity (25°C)	mm ² /s {cSt}	50 {50}
VTC*		0.59
Specific gravity (25°C)		0.96
Refractive index (n _D ²⁵)		1.402
Pour point	°C	-50 max
Flash point	°C	310
Weight loss (150°C, 24h)	%	0.3
Water content	ppm	40
Specific heat (100°C)	J/(kg·K)	1.6x10 ³

Heat of combustion	kJ/g {kcal/g}	26.8 {6.4}
Thermal conductivity	W/(m·K)	0.16
Volume expansion (25-150°C)	1/K	1.05×10^{-3}

*VTC (Viscosity Temperature Coefficient) = $1 - \text{Viscosity at } 98.9^\circ\text{C} / \text{Viscosity at } 37.8^\circ\text{C}$

Typical property data should not be used as specifications.

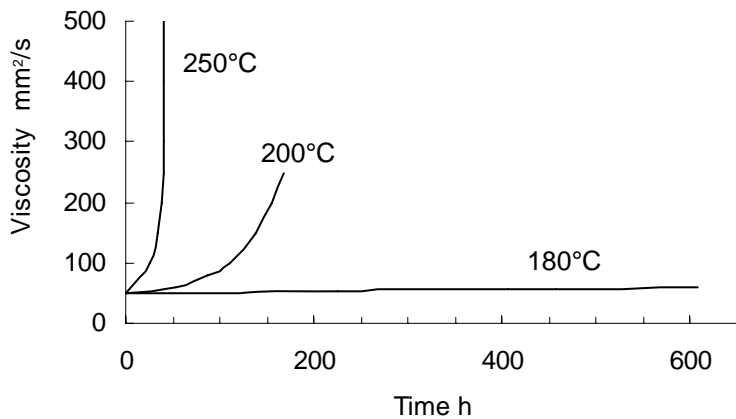
ELECTRICAL PROPERTIES

PROPERTIES		
Dielectric strength* (20°C)	kV (2.5mm)	70*
Volume resistivity (80°C)	$\Omega \cdot \text{cm}$	1×10^{15}
Dissipation factor (50Hz, 80°C)		1×10^{-4}
Dielectric constant (50Hz)	50°C	2.6
	80°C	2.5

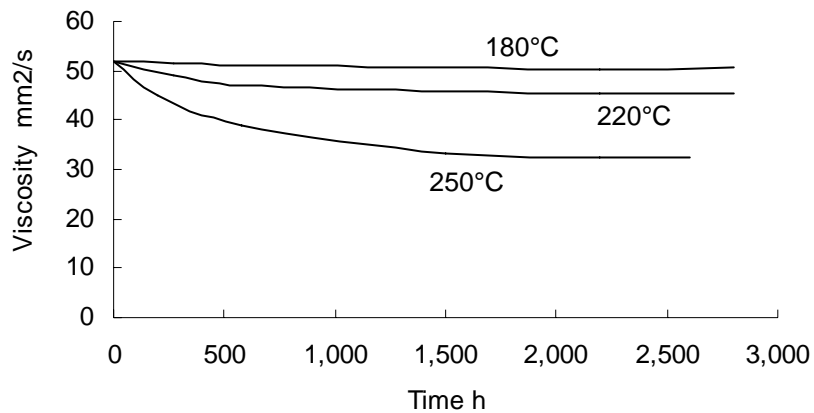
* Water content: 30ppm

THERMAL STABILITY

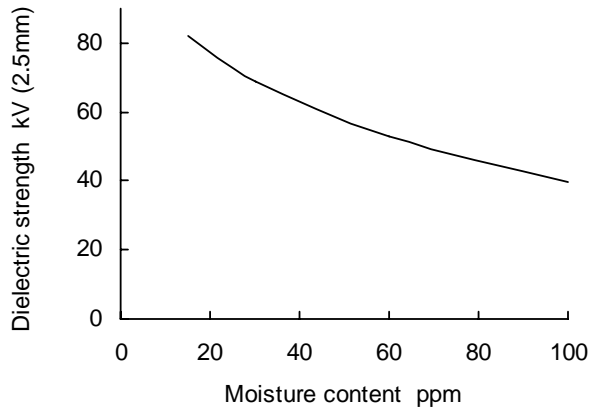
In the presence of air



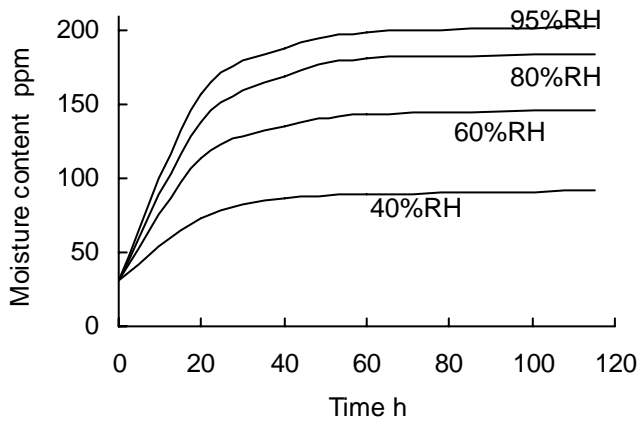
In the absence of air (in N₂ atmosphere)



DIELECTRIC STRENGTH vs. MOISTURE CONTENT

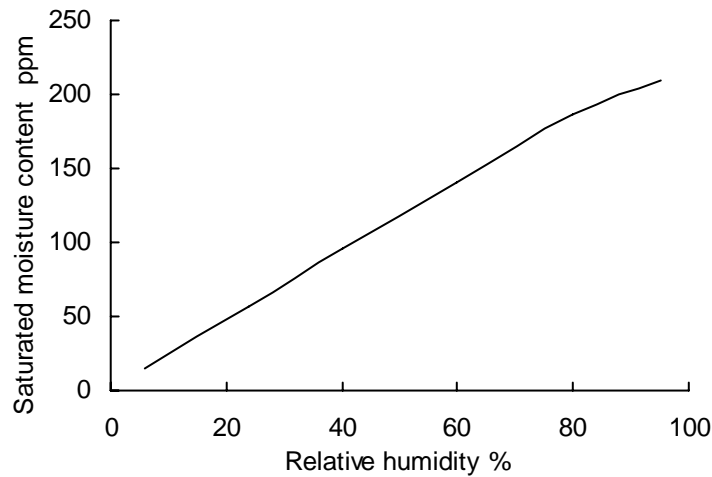


MOISTURE ABSORPTION RATE



Test method: Weigh 300g of sample into a 1,000ml beaker and leave it in a temperature and humidity controlled oven at 25°C and each humidity.

SATURATED MOISTURE CONTENT



HANDLING AND SAFETY

- ◆ Wear eye protection and protective gloves as required while handling the product.
- ◆ Use the product in a well ventilated area.

STORAGE

- ◆ Store in a cool and dry place out of direct sunlight.
- ◆ Keep out of the reach of the children.

PACKAGING

200kg drum available

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FOR INDUSTRIAL USE ONLY

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