DOC NO	REV	ISSUED	CLASS
TDS-STX-50	01	11/2026	Silicone Liquid · T-1

TECHNICAL DATA SHEET

STX-50 Silicone Transformer Liquid

VISCOSITY @ 25°C	FIRE POINT, OPEN CUP	BREAKDOWN VOLTAGE	POUR POINT
50 mm^2/s	370 °C	50 kV	−50 °C max

DESCRIPTION

STX-50 is a polydimethylsiloxane (PDMS) silicone liquid that meets the requirements of IEC 60836 (Silicone Type T-1), ASTM D4652-92 and IEC 61100 (Class K3).

STX-50 has a fire point exceeding the requirements of these documents and is within the IEC 61100 class with the lowest net calorific value (heat of combustion). It complies with all the requirements of IEC 60836 Silicone Type T-1, and its typical values exceed the minimum requirements.

With excellent electrical insulation properties over a wide temperature range, combined with high thermal stability, STX-50 is suitable for transformers and other electrical equipment designed to operate at high temperatures or at very low temperatures.

HANDLING PRECAUTIONS

STX-50 is handled in the same manner, and with the same type of equipment, as other insulating liquids. Wherever possible, equipment used for handling STX-50 should be reserved for that purpose only. Thorough cleaning of equipment is essential when changing from one insulating liquid to another.

Care must be taken when selecting pumping equipment and other items in which sliding movement is involved. Although satisfactory equipment is available for use with polydimethylsiloxanes, this liquid does not adequately lubricate certain pump designs. Improperly designed pumps may fail early and contaminate the liquid with metal particles.

APPLICATIONS

- Cooling and insulating liquid for transformers and other electrical equipment
- Not tested or represented as suitable for medical or pharmaceutical uses

USABLE LIFE AND STORAGE

Store in airtight containers to protect the liquid from moisture and contamination. Stored at or below 60 °C in the original unopened containers, the usable life is 36 months from the date of production.

RECYCLING AND DISPOSAL

Reprocessing procedures for silicone transformer liquid are described in IEC 60944 (also available as BS 7713).

Fuel blending is another form of recycling: the spent liquid, mixed with compatible solvents or other fuels, is used as a feedstock in industrial furnaces such as cement kilns, where it is converted to energy and to a silica residue that may be incorporated into the end product.

Incineration is a viable alternative for direct disposal; landfilling is not recommended. Dispose of the product and its container in accordance with local and national regulations.

STX-50 offers:

- Meets the requirements of both IEC 60836 and ASTM D4652-92.
- Non-halogenated; contains no additives.
- Compatible with a wide range of solid electrical insulating materials.
- High thermal stability and oxidation resistance.
- Higher fire point and lower heat release rate than other types of class K insulating liquids.
- Good electrical properties and operating capabilities over a wide temperature range.
- Non-sludging.

PROPERTY	UNIT	TEST METHOD	SPECIFICATION LIMITS		TYPICAL DATA
			MIN	MAX	
1 - Physical					
Colour	Hazen	IEC 60836		35	–
Appearance	–	IEC 60836	Clear, free from suspended matter and sediment		Crystal clear
Density at 20 °C	kg/dm^3	IEC 60836	0.955	0.970	–
Density at 25 °C	kg/dm^3				0.96
Kinematic viscosity at 40 °C	mm^2/s	IEC 60836	40 ± 4		–
Kinematic viscosity at 25 °C	mm^2/s				50
Flash point, closed cup	°C	IEC 60836	240		260
Flash point, open cup	°C				> 300
Fire point, open cup	°C	IEC 60836	330		370
Refractive index at 20 °C	–	IEC 60836	1.404 ± 0.002		–
Refractive index at 25 °C	–				1.404
Pour point	°C	IEC 60836		−50	–
Specific heat	kJ/(kg·K)				1.51
Thermal conductivity	W/(m·K)				0.151
2 - Chemical					
Water content	mg/kg	IEC 60836		50	30
Neutralization value	mg KOH/g	IEC 60836		0.02	0.008
3 - Electrical					
Breakdown voltage, as received [1]	kV	IEC 60156	40		50
DDF (tan δ) at 90 °C, 50 Hz [1]	–	IEC 60836		0.001	0.0005
DDF (tan δ) at 25 °C, 50 Hz	–				0.0001
Permittivity at 90 °C [2]	–	IEC 60836	2.55 ± 0.05		–
Permittivity at 25 °C, 50 Hz	–				2.7
DC resistivity at 90 °C	GΩ·m	IEC 60836	100		1000
Volume resistivity at 25 °C	Ω·cm				1.0×10^{14}

Specification limits: IEC 60836, Silicone Type T-1; test methods as described in IEC 60836. Typical data tested to ASTM D4652-92; breakdown voltage measured as in IEC 60156:1995, section 3.4.2. [1] For untreated liquid, as received. [2] Needed as a specification value only when the liquid is used in capacitors. Typical data are not intended for use in preparing specifications.

Product safety information required for safe use is not included in this document. Before handling, read the Safety Data Sheet and the container labels.

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