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Dielectric Properties of Pure Silicone Fluids

Fluid type	Viscosity @ 25°C	Dielectric Strength volts/mil	Dielectric Constant 100Hz		Dissipation Factor, 100Hz		Volume Resistance ohm-cm	
			25°C	150°C	25°C	150°C	25°C	150°C
PSF- Low Viscosities	0.65cSt	300	2.18	----	0.00004	----	1×10^{14}	---
	1cSt	350	2.29	2.00	0.00004	0.0004	5×10^{14}	1×10^{13}
	1.5cSt	350	2.36	2.04	0.00004	0.0004	5×10^{14}	1×10^{13}
	2.0	350	2.44	2.12	0.00004	0.0004	5×10^{14}	1×10^{13}
	5.0	375	2.59	2.24	0.00004	0.0004	1×10^{15}	1×10^{13}
	10	375	2.64	2.28	0.00002	0.00016	1×10^{15}	5×10^{13}
	20	375	2.68	2.32	0.00002	0.00016	1×10^{15}	5×10^{13}
PSF- Standard Viscosities	50	400	2.71	2.35	0.00002	0.00016	1×10^{15}	5×10^{13}
	100	400	2.73	2.37	0.00002	0.00016	1×10^{15}	5×10^{13}
	200	400	2.74	2.38	0.00002	0.00016	1×10^{15}	5×10^{13}
	350	400	2.75	2.39	0.00002	0.00016	1×10^{15}	1×10^{14}
	500	400	2.75	2.39	0.00002	0.00016	1×10^{15}	1×10^{14}
	1000	400	2.75	2.39	0.00002	0.00016	1×10^{15}	1×10^{14}
PSF-High Viscosities	12,500	400	2.77	2.41	0.00002	0.00016	1×10^{15}	1×10^{14}
	30,000	400	2.77	2.41	0.00002	0.00016	1×10^{15}	1×10^{14}
	60,000	400	2.77	2.41	0.00002	0.00016	1×10^{15}	1×10^{14}
PM-125 Phenylmethyl	125	400	2.90	2.57	0.0005	0.007	1×10^{14}	3×10^{12}

*PSF Fluids are linear polydimethylsiloxane fluids

Polydimethylsiloxane Fluids and Phenyl Class fluids have excellent dielectric properties, which are only minimally affected by factors such as temperature and frequency variations. The dielectric strength of silicone fluids is particularly high compared to mineral oil-based oils. However, as with any oil, the dielectric performance of silicone fluids is greatly affected by the quantity of absorbed moisture. The quantity of moisture absorbed is determined by the relative humidity of the atmosphere. Generally, silicone fluids absorb between 100 to 200 ppm.

For high voltage transformer applications, we recommend the STO-50 Silicone Transformer Oil. This fluid is a 100% polydimethylsiloxane that is formulated to contain <50ppm water content and approved for use in electrical transformers.