



Dielectric Properties of Chlorinated Solvents

A dielectric is a material having a relatively low electrical conductivity; an insulator. The principal properties of a dielectric are its dielectric constant and its dielectric strength.

Dielectric constant is a value that serves as an index of the ability of a substance to resist the transmission of an electrostatic force from one charged body to another. It represents the factor by which the electric field strength in a vacuum exceeds that in the dielectric for the same distribution of charge. The lower the value the greater the resistance. The dielectric constant is a unitless number.

Dielectric strength, sometimes called breakdown potential, is the maximum electric field that an insulator or dielectric can withstand without breakdown. At breakdown, a considerable current passes as an arc, usually with decomposition of the material along the path of the current.

Dielectric Constants of Chlorinated Solvents	
Chlorinated Solvent	Dielectric Constant*
1,1,1-Trichloroethane	7.68
Perchloroethylene	2.30
Methylene Chloride	9.08
Trichloroethylene	3.42
* Dean, J. A.: "Lange's Handbook of Chemistry," 13th Ed., McGraw Hill (1985)	

Dielectric Strength of OxyChem Chlorinated Solvents				
OxyChem Solvent	Product Grade	Dielectric Strength (Volts/0.1 in.)	Standard Deviation	Temp (°C)
1,1,1-Trichloroethane	General Purpose	24,500	2000	23.8
Perchloroethylene	Technical	>39,500		26.0
	Vapor Degreasing	37,500	600	26.5
	Industrial	>39,500		23.2
Methylene Chloride	Technical	Approx. 4,000		25.0
Trichloroethylene	Vapor Degreasing	36,700	800	22.2
Dielectric strengths were determined with a GE Portable Oil Tester, Model 9T11Y6454, Volts 50/60 Cycle according to ASTM D877-84a. The tester has limitations above 39,500 volts.				

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