IEC 61099

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Insulating liquids – Specifications for unused synthetic organic esters for electrical purposes

Liquides isolants – Spécifications relatives aux esters organiques de synthèse neufs destinés aux matériels électriques

Specification sheet 1 –

Transformer ester – Type T1

This type of ester is prepared from a polyhydric alcohol (polyol) and a mixture of monocarboxylic acids with suitable stabilizing additives as required to meet the properties specified below.

Property	Test method	Permissible values
Physical		
Colour	ISO 2211	Max. 200 Hazen
Appearance	Visual	Clear, free from water and suspended matter and sediment
Density at 20 °C (kg/dm^3)	ISO 3675 or ISO 12185	Max. 1 000
Kinematic viscosity at 40 °C (mm^2/s) at –20 °C (mm^2/s)	ISO 3104	Max. 35 Max. 3 000
Flash-point (°C)	ISO 2719闭闪	Min. 250
Fire-point (°C)	ISO 2592	Min. 300
Pour-point (°C)	ISO 3016	Max. –45
Chemical		
Water content (mg/kg)	IEC 60814	Max. 200[a]
Acidity (mg KOH/g)	IEC 62021-1 or IEC 62021- 2	Max. 0,03
Oxidation stability[b]	IEC 61125, Method C	
Test duration 164 h		
Total acidity (mg KOH/g)		Max. 0,3
Total sludge (% mass)		Max. 0,01
Electrical		
Breakdown voltage (kV)	IEC 60156	Min. 45[a] (See Clause 8)
Dielectric dissipation factor, tan δ at 90 °C and 50 Hz	IEC 60247 or IEC 61620	Max. 0,03[a, c]
DC resistivity at 90 °C (GΩ × m)	IEC 60247	Min. 2

[a] For untreated liquid, as received.

[b] Oxidation stability (IEC 61125, Method C) at 500 h is an optional extra test. No requirement in this standard.

[c] For frequencies (f (Hz)) in the range of 48 Hz to 62 Hz, convert values as follows:

$$\tan\delta\,[f(50\,\text{Hz})] = \frac{f(\text{Hz})}{50} \times \tan\delta\,[f(\text{Hz})]$$