

## Indian Standard

# INSULATING LIQUIDS — SPECIFICATIONS FOR UNUSED SYNTHETIC ORGANIC ESTERS FOR ELECTRICAL PURPOSES

### 1 Scope

This International Standard covers the specification and test methods for unused synthetic organic esters.

It applies to synthetic organic esters, delivered to the agreed point and time of delivery intended, for use in transformers, switchgear and similar related equipment in which synthetic organic esters are required as an insulant and for heat transfer. These unused synthetic organic esters are obtained by chemical processing and physical treatments of fatty acids and polyols.

NOTE Maintenance of synthetic organic esters in equipment is covered in a separate standard (IEC 61203).

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60156, *Insulating liquids – Determination of the breakdown voltage at power frequency – Test method.*

IEC 60247, *Insulating liquids – Measurement of relative permittivity, dielectric dissipation factor ( $\tan \delta$ ) and d.c. resistivity*

IEC 60475, *Method of sampling liquid dielectrics*

IEC 60628:1985, *Gassing of insulating liquids under electrical stress and ionization*

IEC 60814, *Insulating liquids – Oil-impregnated paper and pressboard – Determination of water by automatic coulometric Karl Fischer titration*

IEC 61039, *Classification of insulating liquids*

IEC 61125:1992, *Unused hydrocarbon-based insulating liquids – Test methods for evaluating the oxidation stability*

IEC 61620, *Insulating liquids – Determination of the dielectric dissipation factor by measurement of the conductance and capacitance – Test method*

IEC 62021-1, *Insulating liquids – Determination of acidity – Part 1: Automatic potentiometric titration*

IEC 62021-2, *Insulating liquids – Determination of acidity – Part 2: Colourimetric titration*

ISO 2211, *Liquid chemical products – Measurement of colour in Hazen units (platinum-cobalt scale)*

# (PREVIEW)

IS 16081 : 2013  
IEC 61099 : 2010

ISO 2592, *Determination of flash and fire-points – Cleveland open cup method*

ISO 2719, *Determination of flash-point – Pensky Martens closed cup method*

ISO 3016, *Petroleum products – Determination of pour-point*

ISO 3104, *Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 3675, *Crude petroleum and liquid petroleum products – Laboratory determination of density – Hydrometer method*

ISO 12185, *Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method*

OECD 301:1992, *OECD guideline for testing of chemicals – Ready biodegradability*