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MINERAL INSULATING OIL

PURPOSE AND SCOPE

This Specification defines National Grid's technical requirements for mineral insulating oil. This Specification is part of a hierarchical structure of documentation comprising three levels of Technical Specification. This Document is a Level Three Specification.

This is a Specification for oil supplied as a dielectric and coolant fluid for use in electrical plant. It specifies requirements for inhibited mineral insulating oils, as delivered for power transformers and other electrical equipment. This specification does not cover synthetic and special oils for cables, instrument transformers, bushings etc. The specification details only those requirements over and above the general specification of transformer oil in the latest version of IEC60296

PART 1 – PROCEDURAL

1 GENERAL REQUIREMENTS

Insulating oil must comply with the general requirements for an inhibited transformer oil given in the latest version of IEC60296 and the additional requirements given in Table 1 when tested in accordance with the methods given in the appropriate references and clauses.

The requirements of Table 2 apply in addition as a minimum at the point when the oil is used to fill electrical plant. This would usually be following drying and degassing on-site. The figures relate to transformer main tanks; there are exceptions for diverters and circuit breakers – refer to TGN (E) 158 for more information.

National Grid does not purchase reclaimed transformer oil.

Health and Safety data information in line with current legislation shall be made available to National Grid.

Property	Test Method	Permissible Value
Interfacial tension	ISO 6295	>40mN/m
Naphthenic carbon content, %	ASTM D2140	≥40
Particle count and size	IEC 60970	(see note below)

Table 1 - Requirements Over and Above IEC 60296 for Insulating Oil

It is normal to filter oil on site before use. However this site processing is easier if particles larger than 15 µm are less than 8500 per 100 ml oil. The count and size should be recorded for information purposes.

Property	Test Method	Permissible Value
Moisture content	IEC 60814	<5 ppm
Gas content	IEC 60567	<1%
Breakdown Voltage	IEC 60156	>60 kV

Table 2 - Minimum Requirements at the Point of Filling Electrical Plant