

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Classification of insulating liquids

Classification des liquides isolants





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INTERNATIONAL ELECTROTECHNICAL COMMISSION

CLASSIFICATION OF INSULATING LIQUIDS

FOREWORD

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IEC 61039 has been prepared by IEC technical committee 10: Fluids for electrotechnical applications. This is an International Standard.

This third edition cancels and replaces the second edition published in 2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) updating of the classification of insulating liquids, taking into account the largest number possible of substances that have, or may have, a possible application in electrical components.

The text of this International Standard is based on the following documents:

Draft	Report on voting
10/1249/FDIS	10/1258/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

WARNING – Health and safety

This document does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to use.

The insulating liquids which are the subject of this document should be handled with due regard to personal hygiene. Direct contact with eyes can cause slight irritation. In the case of eye contact, irrigation with copious quantities of clean running water should be carried out and medical advice sought.

Some of the tests specified in this document involve the use of processes that could lead to a hazardous situation. Attention is drawn to the relevant standard for guidance.

WARNING – Environment

This document involves insulating liquids, chemicals and used sample containers. The disposal of these items can be subject to regulatory requirements with regard to their impact on the environment.

All insulating liquids that float on water are generally a water hazard, as they reduce oxygen ingress into the water. No liquid, regardless of its classification, can be freely spilled in the environment. The handling of insulating liquids can be subject to regulatory requirements with regard to their impact on the environment. Every precaution should be taken to prevent the release of insulating liquids into the environment.

CLASSIFICATION OF INSULATING LIQUIDS

1 Scope

This document establishes the detailed classification of the N family (insulating liquids) that belongs to class L (lubricants, industrial oils and related products) in accordance with ISO 8681 and ISO 6743-99, affecting product categories that include products derived from petroleum processing, synthetic chemical products and synthetic and natural esters.

This document applies to unused liquids. For liquids in service, additional testing may be required to ensure compliance with this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60296, *Fluids for electrotechnical applications – Mineral insulating oils for electrical equipment*

ISO 2592, *Petroleum and related products – Determination of flash and fire points – Cleveland open cup method*

ISO 8681, *Petroleum products and lubricants – Method of classification – Definition of classes*

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

ASTM D240, *Standard test method for heat of combustion of liquid hydrocarbon fuels by bomb calorimeter*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

4 ISO classification system

ISO 8681 sets out the main rules of the classification system that applies to petroleum products, lubricants and related products. This document sets out the classification method which can be used for electrical insulating liquids.

ISO 8681 suggests, as far as possible, to choose the application field as the main principle for the classification of petroleum products, lubricants, and related products. It also suggests classifying on the basis of the product typology, for example fuels are classified first of all on the basis of typology and secondly on the basis of end use.