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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 21221-2022

**Insulating liquids - Specifications for unused liquids based on
synthetic aromatic hydrocarbons**

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents"

drafted.

This document replaces GB/T 21221-2007 "Insulating liquids based on synthetic aromatic hydrocarbons, unused insulating liquids", and

Compared with GB/T 21221-2007, in addition to structural adjustment and editorial changes, the main technical changes are as follows.

a) The normative reference document GB/T 18612-2011 is added, and the chlorine content test method is modified from the biphenyl sodium reduction potentiometric titration method

It is the combustion oxidation microcoulometer method in GB/T 18612-2011 (see Chapter 2 and 11.8, 6.8 of the.2007 edition);

b) Changed normative references (see Chapter 2, Chapter 2 of the.2007 edition);

c) Adjust the required value of pour point in Table 4 from $\leq -60^{\circ}\text{C}$ to $\leq -55^{\circ}\text{C}$ (see Table 4, Table 4 of the.2007 edition);

d) Adjust the required value of volume resistivity in Table 4 from $\geq 1 \times 10^{12} \Omega \cdot \text{m}$ to $\geq 0.25 \times 10^{12} \Omega \cdot \text{m}$ (see Table 4, .2007 edition).

of table 4);

e) The titles of Chapter 8, Chapter 9, Chapter 10, Chapter 11 have been revised to correspond with Chapter 1 "Scope" (see Chapter 8, Chapter 9,

Chapter 10, Chapter 11, Chapter 8, Chapter 9, Chapter 10, Chapter 11 of the.2007 edition);

f) Deleted "Stability under electric field and ionization (gas evolution)" using GB/T 11142-1989 method and

The required value of GB/T 10065-2007 is revised to adopt the required value of Method A

in GB/T 10065-2007 (see Table 1, Table 2, Table 3 and Table 4, Table 1, Table 2, Table 3 and Table 4 of the 2007 edition); (Gas evolution)" test method is changed from "measured according to GB/T 11142-1989 and GB/T 10065-2007" to "according to GB/T 10065-2007 Method A Determination" (see 11.13, 6.13 of the 2007 edition).

This document is modified to adopt IEC 60867.1993 "Specification for unused insulating liquids based on synthetic aromatic hydrocarbons".

Compared with IEC 60867.1993, this document has more structural adjustments. This document and IEC 60867.1993 chapter numbering changes

See Appendix A for a list of comparisons.

Compared with IEC 60867.1993, this document has many technical differences. In the outer margins of the clauses involved, vertical

A single line (|) is marked. See Appendix B for a list of these technical differences and their reasons.

The following minimal editorial changes have been made to this document.

- a) Deleted the paragraph "Key points gas chromatograph can be used for composition identification and impurity detection" in the introduction of IEC 60867.1993 "Chapter 3";
- b) Deleted the Note in 6.7.1 of IEC 60867.1993;
- c) Change the title "Part 1", "Part 2", "Part 3" and "Part 4" to "Table 1", "Table 2", "Table 3" and "Table 1", respectively.

In "Table 4", "Allowable values" were changed to "Required".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

1 Scope

This document specifies the marking and general delivery of several unused synthetic aromatic hydrocarbon insulating liquids used as insulating liquid media for electrical equipment

Requirements, sampling, technical specifications and test methods.

This document applies to virgin alkylbenzenes, diphenylethanes, alkylnaphthalenes and methyl polyarylates used as insulating liquid media for electrical equipment

Methane.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

GB/T 261 Determination of flash point Pensky-Martin closed cup method (GB/T 261-2021, ISO 2719.2016, MOD)

GB/T 507 Determination of breakdown voltage of insulating oil (GB/T 507-2002, IEC 156.1995, eqv)

GB/T 1884 Laboratory Determination of Density of Crude Oil and Liquid Petroleum Products (Densitometer Method) (GB/T 1884-2000, ISO 3675.

1998, eqv)

GB/T 3535 Determination of Pour Point of Petroleum Products (GB/T 3535-2006, ISO 3016.1994, MOD)

GB/T 5654 Measurement of relative permittivity, dielectric loss factor and DC resistivity of liquid insulating materials (GB/T 5654-

2007, IEC 60247.2004, IDT)

GB/T 10065-2007 Determination of gas evolution properties of insulating liquids under electrical stress and ionization (IEC 60628.1985,

MOD)

GB/T 18612-2011 Determination of Organic Chlorine Content in Crude Oil

GB/T 25961 Test method for corrosive sulfur in electrical insulating oil

GB/T 27750 Classification of insulating liquids (GB/T 27750-2011, IEC 61039.2008, IDT)

GB/T 30515 Determination of kinematic viscosity and dynamic viscosity calculation method of transparent and opaque liquid petroleum products (GB/T 30515-

2014, ISO 3104.1994, MOD)

GB/T 41146 Sampling method for insulating liquids (GB/T 41146-2021, IEC 60475.2011, IDT)

NB/T 42140 Determination of moisture by Karl Fischer automatic coulometric titration for oil-impregnated paper and oil-impregnated paperboard with insulating liquid (NB/T 42140-

2017, IEC 60814.1997, MOD)

SH/T 0205 Determination of refractive index and specific dispersion of electrical insulating liquids

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1

alkylbenzenes

An insulating liquid consisting of a molecule consisting of a benzene ring and an alkyl group.