

CCS K 15



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

GB/T 41631-2022

**Specification for unused insulating mineral oils for cables with
oil ducts**

Issued on: July 11, 2022

Implemented on: February 1, 2023

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

foreword

1 Scope

2 Normative references

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 is modified to use IEC 60465.1988 "Unused mineral insulating oils for oil-filled cables".

Compared with IEC 60465.1988, this document has made the following structural adjustments.

--- Added Chapter 2 "Normative References";

--- Chapter 7 corresponds to Chapter 3 of IEC 60465.1988.

The technical differences between this document and IEC 60465.1988 and their reasons are as follows.

--- Replace IEC 60475 (see Chapter 4) with our country's document GB/T 41146 to adapt to our country's technical conditions and improve operability.

action;

--- Replace ISO 3675 (see 5.2) with my country's document GB/T 1884 to adapt to my country's technical conditions and improve operability;

--- Replace ISO 3104 (see 5.3) with our country's document GB/T 30515 to adapt to our country's technical conditions and improve operability;

--- Replace ISO 2719 (see 5.4.1) with our country's document GB/T 261 to adapt to our country's technical conditions and improve operability;

--- Replace ISO 2592 (see 5.4.2) with our country's document GB/T 3536 to adapt to our country's technical conditions and improve operability;

--- Replace ISO 3016 (see 5.5) with our country's document GB/T 3535 to adapt to our country's technical conditions and improve operability;

--- Replaced IEC 60814 (see 5.8) with our country's document NB/T 42140 to adapt to our country's technical conditions and improve operability;

--- Replace IEC 60156 (see 5.11) with our country's document GB/T 507 to adapt to our country's technical conditions and improve operability;

--- Replace IEC 60247 (see 5.12) with our country's document GB/T 5654 to adapt to our country's technical conditions and improve operability;

--- Replace IEC 60628 (see 5.13) with our country's document GB/T 10065-2007 to adapt to our country's technical conditions and improve the availability

operational;

--- Deleted the content of "the applicable correction factor see ISO R91-1" in 5.2 of IEC 60465.1988, because the document is not easy to

get.

--- Added the reagent of 5.7 "acid value" in IEC 60465.1988.10% cobalt nitrate solution to facilitate operation and use;

--- Deleted IEC 60465.1988 5.8 "water content" test method IEC 60733, because this document has been abolished.

The following editorial changes have been made to this document.

--- The IEC 60465.1988 "scope" "this document is based on certain physical properties of mineral insulating oils for oil-filled cables, such as viscosity, flash

Point and pour point, divided into three types. No. I oil, No. II oil and No. III oil. "The content is adjusted to Chapter 6;

--- Deleted Chapter 6 "General Provisions" in IEC 60465.1988;

--- Added references.

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 specification and test methods for unused mineral insulating oils for oil-filled cables in delivery condition. these cable packs

Including hollow cable, conduit cable and any other form of cable with oil flow measures.

This document applies to mineral insulating oils with or without additives, obtained by petroleum distillation and refining.

This document does not apply to mineral insulating oils used in transformers, switches,

capacitors and similar equipment, nor to chemically synthesized Hydrocarbon insulating oil.

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 261-2008, ISO 2719.2002, MOD)

GB/T 507 Determination of breakdown voltage of insulating oil (GB/T 507-2002, IEC 60156.1995, eqv)

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

1998, MOD)

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

GB/T 3536 Determination of flash point and fire point of petroleum products Cleveland open cup method (GB/T 3536-2008, ISO 2592.

2000, 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)

Note. There is no technical difference between the quoted content of GB/T 10065-2007 and the content of IEC 60628.1985.

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 0304 Electrical Insulating Oil Corrosive Sulfur Test Method (SH/T 0304-1999, ISO 5662.1997, eqv)

Note. GB/T 7602.4-2017 Determination of T501 Antioxidant Content in Transformer Oil and Turbine Oil Part 4.GC-MS method (IEC 60666.2010, NEQ)