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

GB/T 13542.5-2022

**Films used for electrical insulation - Part 5: Balanced biaxially
oriented polyethylene naphthalate films**

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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 is part 5 of GB/T 13542 "Films for Electrical Insulation". GB/T 13542 has released the following parts.

- Part 1. Definitions and general requirements;
- Part 2. Test methods;
- Part 3. Biaxially oriented polypropylene films for capacitors;
- Part 4. Polyester film;
- Part 5. Biaxially oriented polynaphthalene film;
- Part 6. Polyimide film for electrical insulation.

This document is modified and adopted IEC 60674-3-8.2016 "Plastic Films for Electrical Use - Part 3. Specification for Individual Materials Part 8. Electrical Balanced Biaxially Oriented Polynaphthalene (PEN) Films for Insulation".

A chapter "Terms and Definitions" has been added to this document.

The technical differences between this document and IEC 60674-3-8.2016 and their reasons are as follows.

- Deleted the "safety warning" of "scope" in IEC 60674-3-8.2016;
- Added the normative reference GB/T 1033.2 (see Table 1) to adapt to my country's

technical conditions and improve operability;

---Replace IEC 60674-1.1980 (see Chapter 6) with the normatively cited GB/T 13542.1-2009 to adapt to my country's

technical conditions to improve operability;

--- Changed the "melting point" test method ISO 11375-3DSC method in Table 1 to Chapter 25 in GB/T 13542.2-2021 (see

Table 1) to adapt to my country's technical conditions and improve operability;

--- Replace IEC 60674-2.1988 with the normative reference GB/T 13542.2-2021 (see Chapter 7, Chapter 8, 9.2, 9.3,

9.4), in order to adapt to the technical conditions of our country and improve the operability;

---Replace IEC 60243-1 (see 8.2) with the normatively quoted GB/T 1408.1 to adapt to the technical conditions of our country and improve the availability

operational;

--- Increased the width specification and its requirements for a film roll width of 150mm to clearly cover all width ranges (see Table 7).

The following editorial changes have been made to this document.

--- In order to harmonize with existing standards, the standard name is changed to "Films for Electrical Insulation Part 5.Biaxially Oriented Polynaphthalene Films";

---In order to meet the compilation requirements of GB/T 1.1, "Scope" has added "This document applies to biaxially oriented polynaphthalene for electrical insulation"

(PEN) film design, production, inspection, etc. ";

--- For convenience, change IEC 60674-3-8 in "naming" to GB/T 13542.5, and change IEC 60757 to

GB/T 13534;

---According to the actual situation of the product, the incorrect unit representation of volume resistivity in IEC 60674-3-8 is corrected, and the unit is changed from ohm m

Corrected to ohm.cm;

--- 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.

Introduction

The electrical insulating film standard is widely used in the research and development, production, quality inspection, sales, acceptance and technical exchange of this series of products.

The series of standards can guide the industry to more effectively carry out the detection and evaluation of electrical insulating films, and can improve the quality of electrical insulating films.

quality and application reliability.

GB/T 13542 specifies the definition and general requirements, test methods, and product standards of individual materials for electrical insulating films.

Column part composition.

--- Part 1. Definitions and general requirements. The purpose is to determine the terms and definitions of electrical insulating films, general requirements.

--- Part 2. Test methods. The purpose is to determine the test method for electrical insulating films.

--- Part 3. Biaxially oriented polypropylene film for capacitors. The purpose is to determine the properties of biaxially oriented polypropylene films for capacitors.

Classes and nomenclature, dimensions, performance requirements and roll characteristics.

--- Part 4. Polyester film. The purpose is to determine the classification, dimensions, performance requirements and film roll characteristics of polyester film for electrical insulation.

--- Part 5. Biaxially oriented polynaphthalene film. The purpose is to determine the properties of biaxially oriented polynaphthalene (PEN) films for electrical insulation

Classes, naming and requirements.

--- Part 6. Polyimide film for electrical insulation. The purpose is to determine the classification and naming of polyimide films for electrical insulation,

Dimensions, performance requirements and film roll characteristics.

Films for Electrical Insulation Part 5. Biaxial Orientation

Polynaphthalene film

1 Scope

This document gives the classification, nomenclature and requirements for biaxially oriented polynaphthalene films for electrical insulation.

This document is applicable to the design, production and inspection of biaxially oriented

polynaphthalene film for electrical insulation.

NOTE. Materials that meet the requirements of this document demonstrate that they have achieved the performance levels specified in this document. However, when selecting materials for a particular application, users should

Based on the actual requirements necessary for its performance to be sufficient to meet the application requirements, not just according to this document.

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 1033.2 Determination of the density of non-foamed plastics - Part 2.Density gradient column method (GB/T 1033.2-2010,

ISO 1183-2.2004, MOD)

GB/T 1408.1 Test method for electrical strength of insulating materials Part 1.Test under power frequency (GB/T 1408.1-2016,

IEC 60243-1.2013, IDT)

GB/T 2423.40-2013 Environmental Test Part 2.Test Method Test Cx. Unsaturated High Pressure Steam Constant Humid Heat

(IEC 60068-2-66.1994, IDT)

GB/T 11026.7-2014 Heat resistance of electrical insulating materials - Part 7.Determining the relative heat resistance index (RTE) of insulating materials

(IEC 60216-5.2008, IDT)

GB/T 13542.1-2009 Films for Electrical Insulation Part 1.Definitions and General Requirements (IEC 60674-1.1980, MOD)

Note. There is no technical difference between the quoted content of GB/T 13542.1-2009 and the content of IEC 60674-1.1980.

GB/T 13542.2-2021 Films for Electrical Insulation Part 2.Test Methods (IEC 60674-2.2019, MOD)

3 Terms and Definitions