GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 29.035.20

CCS K 15

GB/T 42733-2023

Extruded PTFE Sleeving for Electrical Applications

电工用挤出 PTFE 软管

(IEC 60684-3-145:2001, Flexible Insulating Sleeving - Part 3: Specifications for Individual Types of Sleeving - Sheets 145 to 147: Extruded PTFE Sleeving, MOD)

Issued on: May 23, 2023 **Implemented on: December 1, 2023**

Issued by: State Administration for Market Regulation;

Standardization Administration of the People's Republic of China.

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---The normative reference GB/T 7113.2-2014 is used to replace IEC 60684-2:1997 (see 5.2 ~ 5.10), and the degree of consistency between the two documents is MOD, so as to conform to the technical conditions of China and facilitate the application;

---The "longitudinal change" is modified: "+10" is modified into the maximum value (see Table 2), so as to conform to the technical conditions of China and facilitate the application;

---The test temperature and time of "longitudinal change", the test temperature tolerance of "bending at low temperature", and the test methods for tensile strength and elongation at break with a nominal inner diameter less than 6 mm are added (see 5.5, 5.6 and 5.7), so as to conform to the national conditions of China and facilitate the application;

---The relevant contents of "inspection rules", "marking, packaging, transportation and storage" are added (see Chapter 6 and Chapter 7), so as to conform to the technical conditions of China and facilitate the application.

This document makes the following editorial modifications:

---In order to coordinate with the existing standards, the title of the Standard is modified into *Extruded PTFE Sleeving for Electrical Applications*;

---The unit "°C" is used to replace the unit "K".

Please be noted that certain content of this document may involve patents. The institution issuing this document does not undertake the responsibility of identifying these patents.

This document was proposed by China Electrical Equipment Industry Association.

This document shall be under the jurisdiction of National Technical Committee on Insulating Materials of Standardization Administration of China (SAC/TC 51).

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Extruded PTFE Sleeving for Electrical Applications

1 Scope

This document specifies the technical requirements, inspection rules, marking, packaging, transportation and storage requirements for extruded PTFE sleeving for electrical applications, and describes the corresponding test methods.

This document is applicable to extruded PTFE sleeving for electrical applications with a maximum service temperature of 250 °C.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 2828.1-2012 Sampling Procedures for Inspection by Attributes - Part 1: Sampling Schemes Indexed by Acceptance Quality Limit (AQL) for Lot-by-lot Inspection (ISO 2859-1:1999, IDT)

GB/T 7113.1-2014 Flexible Insulating Sleeving - Part 1: Definitions and General Requirements (IEC 60684-1:2003, MOD)

GB/T 7113.2-2014 Flexible Insulating Sleeving - Part 2: Methods of Test (IEC 60684-2:2003, MOD)

IEC 60304:1982 Standard Colors for Insulation for Low-frequency Cables and Wires

3 Terms and Definitions

This document does not have terms or definitions that need to be defined.

4 Technical Requirements

4.1 Overall Requirements

The inner diameter of the extruded PTFE sleeving for electrical applications usually does not exceed 8.53 mm. The wall thickness ranges between 0.15 mm and 0.51 mm, and is divided into three types: thin wall, standard wall and thick wall. The colors usually include opaque colors, such as: black, brown, red, orange, yellow, green, blue, purple, gray, white, pink and turquoise,

5 Test Method

5.1 Colors

The colors are tested in accordance with the stipulations of IEC 60304:1982. The colors usually include opaque colors, such as: black, brown, red, orange, yellow, green, blue, purple, gray, white, pink and turquoise, or they can be colorless.

5.2 Inner Diameter and Wall Thickness

The inner diameter and wall thickness are tested in accordance with the stipulations of Chapter 4 in GB/T 7113.2-2014.

5.3 Density

The density is tested in accordance with the stipulations of Chapter 5 in GB/T 7113.2-2014.

5.4 Thermal Shock

The thermal shock is tested in accordance with the stipulations of Chapter 7 in GB/T 7113.2-2014. The test temperature is 350 °C ± 5 °C, and the length of the specimen is 150 mm.

5.5 Longitudinal Change

The longitudinal change is tested in accordance with the stipulations of Chapter 10 in GB/T 7113.2-2014. The test temperature is 350 °C ± 5 °C, and the test duration is 10 min ± 1 min.

5.6 Bending at Low Temperature

The bending at low temperature is tested in accordance with the stipulations of Chapter 15 in GB/T 7113.2-2014. The test temperature is −65 °C ± 3 °C. For tubular specimens, the outer diameter of the mandrel shall be 18 ~ 20 times the nominal wall thickness of the sleeving; for strip specimens, the outer diameter of the mandrel shall be 9 ~ 10 times the nominal wall thickness of the sleeving.

5.7 Tensile Strength and Elongation at Break

The tensile strength and elongation at break are tested in accordance with the stipulations of Chapter 20 in GB/T 7113.2-2014; the tensile speed is 250 mm/min ± 50 mm/min. For the extruded PTFE sleeving for electrical applications with a nominal inner diameter less than 6 mm, the test is directly carried out without filling in the sleeving; for the extruded PTFE sleeving for electrical applications with a nominal inner diameter greater than or equal to 6 mm, adopt dumbbell-shaped specimens for the test.

5.8 Breakdown Voltage

The breakdown voltage is tested at room temperature in accordance with the stipulations of

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