

ICS 29.035.20

CCS K15



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

GB/T 42733-2023

Extruded PTFE sleeving for electrical applications

电工用挤出PTFE软管

Issued on: May 23, 2023

Implemented on: December 1, 2023

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This document was issued on 23 May 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 December

2023.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

1 Scope

GB/T 42733-2023 covers extruded polytetrafluoroethylene sleeving used to insulate leads, terminations and joints inside electrical equipment - thin-walled tubing whose inner diameter usually does not exceed 8.53 mm and whose wall thickness falls between 0.15 mm and 0.51 mm, divided into thickness grades. The technical requirements clause fixes the overall description of the product and then the general and performance properties it has to meet, and the test clause gives the method behind each property: colour, inner diameter and wall thickness, density, thermal shock, longitudinal change, bending at low temperature, tensile strength and elongation at break, breakdown voltage, volume resistivity, and colour fastness to light. Each answers to a way sleeving fails once fitted. Tubing that pulls back along the conductor when the winding heats leaves bare the joint it was cut to cover; tubing that cracks when bent cold opens a path to the conductor; a fall in volume resistivity or breakdown voltage turns insulation into a leakage path; faded sleeving destroys the wiring identification it was colour-coded to carry. Inspection rules set the classification of inspection, the items, the batching and sampling schemes and the rules for judging a lot, and the last clause deals with marking, packaging, transport and storage. Written for sleeving manufacturers, motor and harness builders, and the laboratories checking incoming lots.

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 $350 \pm 5 \text{ }^{\circ}\text{C}$, 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 $350 \pm 5 \text{ }^{\circ}\text{C}$, and the test duration is 10 min $\pm$ 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 $-65 \pm 3 \text{ }^{\circ}\text{C}$. 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 $\pm$ 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