IEC 60684-3-285

Edition 1.0 2014-10

INTERNATIONAL STANDARD

Flexible insulating sleeving –
Part 3: Specifications for individual types of sleeving –
Sheet 285: Heat-shrinkable polyolefin sleeving, for medium voltage joint insulation

IEC 60684-3-285:2014-10(en)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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FOREWORD

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International Standard IEC 60684-3-285 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

The text of this standard is based on the following documents:

CDV	Report on voting
15/694/CDV	15/727/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60684 series, published under the general title *Flexible insulating sleeving*, can be found on the IEC website.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

This International Standard is one of a series which deals with flexible insulating sleeving for electrical purposes.

The series consists of three parts:

Part 1: Definitions and general requirements (IEC 60684-1)

Part 2: Methods of test (IEC 60684-2)

Part 3: Specifications for individual types of sleeving (IEC 60684-3)

This standard gives one of the sheets comprising Part 3, as follows:

Sheet 285: Heat-shrinkable polyolefin sleeving, for medium voltage joint insulation.

FLEXIBLE INSULATING SLEEVING –

Part 3: Specifications for individual types of sleeving – Sheet 285: Heat-shrinkable polyolefin sleeving, for medium voltage joint insulation

1 Scope

This part of IEC 60684 gives the requirements for heat-shrinkable sleeving for medium voltage joint insulation, with a range of shrink ratios.

This sleeving has been found suitable up to temperatures of 100 °C.

These sleevings are normally supplied in colour, red or brown.

Since this type of sleevings covers a significantly large range of sizes and wall thicknesses, the actual size will be agreed between the purchaser and supplier.

Materials which conform to this standard meet established levels of performance. However, the selection of a material by a user for a specific application should be based on the actual requirements necessary for adequate performance in that application and not based on this standard alone. This sleeving is designed to be used in medium voltage cable accessories and as such electrical performance will be proven as part of the assembly. Examples of this are described in HD 629 and IEC 60502.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60684-1:2003, *Flexible insulating sleeving – Part 1: Definitions and general requirements*

IEC 60684-2:2011, *Flexible insulating sleeving – Part 2: Methods of test*

IEC 60757:1983, *Code for designation of colours*

3 Designation

The sleeving shall be identified by the following designation:

Description	IEC publication number	IEC part number	IEC sheet number	Size (Expanded and recovered internal diameter in mm)	Colour
↓	↓	↓	↓	↓	↓
Sleeving	IEC 60684	- 3	- 285	- 75,0/30,0	- RD

Any colour abbreviation shall comply with IEC 60757, where applicable. Non-standard colours shall be written out in full.

NOTE This information is for packaging labelling only in accordance with IEC 60684-1.

4 Conditions of test

Unless otherwise specified, the sleeving shall be shrunk in a forced air circulation oven for (20 ± 1) min at 200 °C ± 3 K prior to testing.

5 Requirements

In addition to the general requirements given in IEC 60684-1, the sleeving shall comply with the requirements of Tables 1 and 2.

6 Sleeving conformance

Conformance to the requirements of this standard shall normally be based on the results from typical sizes.

Recovered ID 25 mm – 30 mm

Table 1 – Property requirements

Property	IEC 60684-2:2011 Clause or Subclause	Units	Max. or Min.	Requirements	Remarks
Dimensions Internal diameter Wall thickness Concentricity expanded recovered	3 3.1.2 3.3.2 3.3.3	mm mm %	Min. Min.	To be agreed between purchaser and supplier 60 85	
Heat shock Tensile strength Elongation at break	6 19.1 and 19.2 19.1 and 19.2	MPa %	Min. Min.	5 200	Heat at 200 °C ± 5 K
Longitudinal change	9	%	Max.	– 10 + 5	Heat expanded sleeving at 200 °C ± 3 K for (20 ± 1) min
Bending at low temperature	14	–	–	No cracking shall be visible	Test at -20 °C For strips, the mandrel shall be between 20 and 22 times the wall thickness. Full section sleeving is tested unfilled and the mandrel shall be between 20 and 22 times the outer diameter.
Dimensional stability on storage	16	–	–	The dimensions shall remain as agreed.	See Clause 1 (Scope)
Tensile strength Elongation at break	19.1 and 19.2 19.1 and 19.2	MPa %	Min. Min.	8 400	Rate of jaw separation shall be 100 mm/min.
Secant modulus at 2 % elongation	19.5	MPa	Max.	175	
Breakdown voltage	21	kV	Min.	See Table 2.	
Volume resistivity at room temperature	23 23.5.2	Ω. m	Min.	10^{12}	
Heat ageing Tensile strength Elongation at break	39 19.1 and 19.2 19.1 and 19.2	MPa %	Min. Min.	5 200	Heat at 135 °C ± 3 K

Table 2 – Requirements for breakdown voltage

Expanded wall thickness (mm)	**Electric strength** [a] Min.	
All dimensions	Expanded wall thickness/mm	Electric strength kV/mm
	Type B	
	< 1	12
	1 to 1,5	10
	> 1,5	8
[a] Measure the expanded wall thickness and calculate the electric strength by dividing the breakdown voltage by this value.		

The breakdown voltage shall be determined by the method described in 21.4 of IEC 60684-2:2011. The central value shall comply with the minimum value in the above Table 2.

The sleeving shall be tested in the expanded condition.

The rate of application of the voltage shall be 500 V/s.

Care should be taken on selection of sizes based on these values. Refer to the manufacturer for actual values on installed conditions.

Bibliography

IEC 60502 (all parts), *Power cables with extruded insulation and their accessories for rated voltages from 1 kV (U*m *= 1,2 kV) up to 30 kV (U*m *= 36 kV)*

IEC 60684-3 (all sheets), *Flexible insulating sleeving – Part 3: Specifications for individual types of sleeving*

HD 629, *Test requirements on accessories for use on power cables of rated voltages from3,6/6(7,2) kV up to 20,8/36 (42) kV– Part 1: Cables with extruded insulation*

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

3, rue de Varembé
PO Box 131
CH-1211 Geneva 20
Switzerland

Tel: + 41 22 919 02 11
Fax: + 41 22 919 03 00
info@iec.ch
www.iec.ch