SLOVENSKI STANDARD
oSIST prEN IEC 60684-3-116:2023

01-september-2023

Gibke izolacijske cevi - 3. del: Specifikacije za posamezne vrste cevi - 116. in 117. list: Ekstrudirani polipropilen za splošne namene

Flexible insulating sleeving - Part 3: Specifications for individual types of sleeving - Sheets 116 and 117: Extruded polychloroprene, general purpose

Gaines isolantes souples - Partie 3: Spécifications pour types particuliers de gaines - Feuilles 116 à 117: Polychloroprène extrudé, utilisation générale

Ta slovenski standard je istoveten z: **prEN IEC 60684-3-116:2023**

ICS:

29.035.20	Plastični in gumeni izolacijski materiali	Plastics and rubber insulating materials

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15/1005/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 60684-3-116 ED4**	
DATE OF CIRCULATION: **2023-06-16**	CLOSING DATE FOR VOTING: **2023-09-08**
SUPERSEDES DOCUMENTS: **15/945/CD, 15/970/CC**	

IEC TC 15 : SOLID ELECTRICAL INSULATING MATERIALS	
SECRETARIAT: United States of America	SECRETARY: Mr Solomon Chiang
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 112	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Flexible insulating sleeving - Part 3: Specifications for individual types of sleeving - Sheets 116 and 117: Extruded polychloroprene, general purpose

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

60684-3-116 Project Leader has reviewed CC from CD and made changes so this CDV is ready for ballot.

1 CONTENTS

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FLEXIBLE INSULATING SLEEVING –

Part 3: Specifications for individual types of sleeving – Sheets 116 and 117: Extruded polychloroprene, general purpose

FOREWORD

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International Standard IEC 60684-3-116 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

This fourth edition cancels and replaces the third edition published in 2010 and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

Update of clause references in table 2.

Addition of resistance to fluids test.

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

FDIS	Report on voting

70
71 Full information on the voting for the approval of this standard can be found in the report on
72 voting indicated in the above table.

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

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

76

77 The committee has decided that the contents of this document will remain unchanged until the
78 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to
79 the specific document. At this date, the document will be

80 • reconfirmed,
81 • withdrawn,
82 • replaced by a revised edition, or
83 • amended.

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INTRODUCTION

This document is one of a series of standards 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: *Specification requirements for individual types of sleeving (IEC 60684-3)*

This standard comprises two of the sheets of Part 3, as follows:

Sheet 116: Extruded polychloroprene, general purpose: thin wall

Sheet 117: Extruded polychloroprene, general purpose: thick wall

FLEXIBLE INSULATING SLEEVING –

Part 3: Specifications for individual types of sleeving – Sheets 116 and 117: Extruded polychloroprene, general purpose

1 Scope

This part of IEC 60684 gives the requirements for non-heat-shrinkable sleeving, extruded from compounds based on polychloroprene elastomer.This sleeving has been found suitable for temperatures up to 95 ºC.

Sleeving of this type is normally available with internal diameters up to 25 mm, and in the following opaque colours: black, brown, red, orange, yellow, green, blue, violet, grey, white and pink. Sizes or colours other than those specifically listed in this standard may be available as custom items. These items shall be considered to comply with this standard if they comply with the other property requirements listed in Table 2.

Materials which conform to this specification meet established levels of performance. However, the selection of a material by a user for a specific application will be based on the actual requirements necessary for adequate performance in the application and not based on the specification alone.

2 Normative references

The following referenced documents are indispensable for the application of this document. 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 60068-2-74:2018, Tests – Test Xc: Fluid contamination

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

3 Terms and definitions

There are no terms and definitions in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Designation

The sleeving shall be identified by the following designation:

Description	IEC publication number	IEC Part number	IEC Sheet number	Size internal diameter, in millimetres	Colour
↓	↓	↓	↓	↓	↓
Sleeving	IEC 60684	3	116	2,5	GN

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

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

Product qualification shall normally be based on results from 10 mm internal diameter sleeving. Colour and colour fastness to light shall be qualified for all colours.

Table 1 – Dimensional requirements[a]

Internal diameter[b] mm			Wall thickness mm			
Nominal			Sheet 116: Thin wall		Sheet 117: Thick wall	
	Min.	Max.	Min.	Max.	Min.	Max.
0,5	0,4	0,7	0,4	0,6	0,6	0,8
0,8	0,6	0,9	0,4	0,6	0,6	0,8
1,0	0,9	1,2	0,4	0,6	0,6	0,8
1,2	1,0	1,4	0,4	0,6	0,6	0,8
1,5	1,3	1,8	0,5	0,7	0,7	0,9
2,0	1,7	2,3	0,5	0,7	0,7	0,9
2,5	2,1	2,9	0,5	0,7	0,7	0,9
3,0	2,5	3,5	0,5	0,7	0,7	0,9
4,0	3,3	4,6	0,5	0,9	0,9	1,2
5,0	4,2	5,8	0,5	0,9	0,9	1,2
8,0	6,8	9,2	0,5	1,1	1,1	1,5
10,0	8,6	11,4	0,5	1,2	1,2	1,8
12,0	10,4	13,6	0,5	1,2	1,2	1,8
16,0	14,0	18,0	0,5	1,4	1,4	2,0
20,0	17,5	22,5	0,7	1,5	1,5	2,4
25,0	21,5	28,5	0,7	1,5	1,5	2,4

[a] Measurements shall be made to the nearest 0,05 mm.

[b] Sleeving with a non-standard nominal internal diameter shall have a wall thickness at least as large as the next larger standard size. Sleeving with a non-standard internal diameter greater than 25,0 mm shall have a wall thickness that meets the requirements of the 25,0 mm internal diameter sleeving.

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Table 2 – Property requirements

Property	IEC 60684-2, clause or subclause	Units	Max. or min.	Requirements	Remarks
Dimensions	3	mm		Table 1	
Bending after heating	13	–	–	There shall be no sign of cracking and the original colour shall be clearly recognizable.	Oven temperature 95 °C ± 2 K. For nominal internal diameters of 8 mm or less, the mandrel diameters shall be between four and five times the nominal internal diameter of the sleeving. Above 8 mm nominal internal diameter, strips 6 mm wide cut from the sleeving shall be bent around a mandrel 6 mm ± 1 mm in diameter.
Bending at low temperature	14	–	–	There shall be no sign of cracking.	Test temperature –35 °C ± 2 K Sleeving shall be tested unfilled and the mandrel diameter shall be between 15 and 20 times the specified maximum wall thickness. For strips cut from sleeving the mandrel diameter shall be between eight and ten times the specified maximum wall thickness.
Elongation at break	19.2 and 19.3	%	Min.	400	Dumbbell specimens shall be cut from sleeving of 8 mm or greater diameter.
Breakdown voltage	21	kV	Min.	Sheet 116: 2,0 Sheet 117: 4,0	The voltage shall be applied at a rate of 500 V/s or such that the required breakdown value is reached between 10 s and 20 s.
Volume resistivity - at room temperature - after damp heat	23 23.4.2 23.4.4	Ω.m	Min.	 5×10^9 4×10^8	
Flame propagation	26 Method A	s	Max.	30	In addition, the indicator flag shall not be burned, nor shall flaming or glowing particles or drops ignite the cotton in any of the three tests.
Silver staining	30	–	–	Any stain shall not be darker than the standard shade.	
Colour fastness	34	–	–	The colour contrast between the exposed parts of the specimens shall be equal to or less than that of the fastness standard.	Light fastness standard 3 shall be used.
Ozone resistance	35	–	–	There shall be no sign of cracking.	The ozone concentration shall be (1 ± 0,2) ml/m^3 and the temperature shall be 30 °C to 40 °C. The mandrel shall be twice the nominal diameter of the sleeving. The duration of the exposure shall be (20 ± 0,5) h.
Tension test	48	%	Max.	25	
Tear propagation	49.3	–	–	There shall be no splitting.	Oven temperature 95 °C ± 2 K. Test time: 6 hrs NOTE Test not applicable to sleeves with less than 2 mm internal diameter.
Circumferential extension	58	–	–	There shall be no splitting	Oven temperature 70 °C ± 2 K. The mandrel diameter shall be 3,5D, where D is the nominal bore of the sleeves. NOTE Test not applicable to sleeves with less than 2 mm internal diameter.