

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Flexible insulating sleeving –
Part 3: Specifications for individual types of sleeving – Sheet 205: Heat-
shrinkable chlorinated polyolefin sleeving, flame retarded, nominal shrink ratio
1,7:1 and 2:1**

[IEC 60684-3-205:2011](https://standards.iteh.ai/catalog/standards/sist/2032f7f9-741a-4e11-a0b6-5089bad3eee8/iec-60684-3-205-2011)

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Gaines isolantes souples –

**Partie 3: Spécifications pour types particuliers de gaines – Feuille 205: Gaines
thermorétractables en polyoléfine chlorée, retardées à la flamme, rapport de
rétreint nominal de 1,7:1 et 2:1**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FLEXIBLE INSULATING SLEEVING –

**Part 3: Specifications for individual types of sleeving –
Sheet 205: Heat-shrinkable chlorinated polyolefin sleeving,
flame retarded, nominal shrink ratio 1,7:1 and 2:1**

FOREWORD

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International Standard IEC 60684-3-205 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

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

FDIS	Report on voting
15/626/FDIS	15/638/RVD

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

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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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 205: Heat-shrinkable chlorinated polyolefin sleeving, flame retarded, nominal shrink ratio 1,7:1 and 2:1

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FLEXIBLE INSULATING SLEEVING –

Part 3: Specifications for individual types of sleeving – Sheet 205: Heat-shrinkable chlorinated polyolefin sleeving, flame retarded, nominal shrink ratio 1,7:1 and 2:1

1 Scope

This part of IEC 60684 gives the requirements for one type of heat-shrinkable chlorinated polyolefin sleeving, flame retarded, nominal shrink ratio 1,7:1 and 2:1 for use at temperatures up to 120 °C.

These sleeveings are normally supplied with internal diameters up to 102 mm, and the standard colour is black.

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 property requirements listed in Tables 3, 4 and 5 except for dimensions and mass, and Table 6, as applicable.

Materials which conform to this specification 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 specification alone

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2 Normative references [b089bad3eee8/iec-60684-3-205-2011](https://standards.iteh.ai/catalog/standards/sist/2032f7f9-741a-4e11-a0b6-b089bad3eee8/iec-60684-3-205-2011)

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 60684-2:1997, *Flexible insulating sleeving – Part 2: Methods of test*
Amendment 1 (2003)
Amendment 2 (2005)

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

ISO 846:1997, *Plastics – Evaluation of the action of micro-organisms*

ISO 1817:2005, *Rubber, vulcanized – Determination of the effect of liquids*

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	-205	- 12,7/6,4	- BK

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

4 Conditions of test

Unless otherwise specified, the sleeving shall be shrunk in a forced air circulation oven for (5 ± 1) min at $175 \text{ °C} \pm 3 \text{ K}$ 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, 2, 3, 4, 5 and 6 as applicable.

6 Sleeving conformance

Product conformance shall normally be based on the results from size 12,7/7,3 mm black sleeving. The colour fastness to light shall be qualified for all colours.

Table 1 – Dimensional and mass requirements (nominal shrink ratio 1,7:1)

Size code	Internal diameter mm		Recovered wall thickness mm	Mass per unit length g/m max.
	Expanded min.	Recovered max.		
3,2/1,8	3,2	1,8	0,70 ± 0,25	9,91
4,8/2,7	4,8	2,7	0,89 ± 0,25	16,60
6,4/3,6	6,4	3,6	0,89 ± 0,25	20,49
9,5/5,4	9,5	5,4	1,00 ± 0,25	31,52
12,7/7,3	12,7	7,3	1,20 ± 0,40	54,00
15,9/9,1	15,9	9,1	1,30 ± 0,40	69,62
19,1/10,9	19,1	10,9	1,45 ± 0,40	86,68
22,2/12,7	22,2	12,7	1,65 ± 0,50	121,07
25,4/14,5	25,4	14,5	1,77 ± 0,50	144,35
31,8/18,1	31,8	18,1	2,20 ± 0,50	250,83
38,1/21,8	38,1	21,8	2,40 ± 0,50	271,61
44,5/25,4	44,5	25,4	2,70 ± 0,50	347,03
50,8/29,0	50,8	29,0	2,80 ± 0,50	404,18
76,2/43,4	76,2	43,4	3,20 ± 0,50	660,81
101,6/57,9	101,6	57,9	3,55 ± 0,50	951,38

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Table 2 – Dimensional and mass requirements (nominal shrink ratio 2:1)

Size code	Internal diameter mm		Recovered wall thickness mm	Mass per unit length g/m max.
	Expanded min.	Recovered max.		
6,4/3,2	6,4	3,2	0,89 ± 0,25	18,76
9,5/4,8	9,5	4,8	1,00 ± 0,25	28,68
12,7/6,4	12,7	6,4	1,20 ± 0,40	48,54
15,9/7,9	15,9	7,9	1,30 ± 0,40	61,88
19,1/9,5	19,1	9,5	1,40 ± 0,40	77,13
22,2/11,1	22,2	11,1	1,65 ± 0,50	108,02
25,4/12,7	25,4	12,7	1,77 ± 0,50	128,86
31,1/15,5	31,1	15,5	2,20 ± 0,50	186,33
38,1/19,0	38,1	19,0	2,40 ± 0,50	240,82
44,5/22,2	44,5	22,2	2,70 ± 0,50	308,21
50,8/25,4	50,8	25,4	2,80 ± 0,50	359,13
76,2/38,1	76,2	38,1	3,20 ± 0,50	586,46
101,6/51,0	101,6	51,0	3,55 ± 0,50	845,41

Table 3 – Property requirements

Property	IEC 60684-2 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.	Table 1 and 2 Table 1 and 2 65 85	
Heat shock	6	-	-	No cracking, flowing or dripping	Heat at 200 °C ± 3 K.
Longitudinal change	9	%	Max.	+ 1 - 10	Heat the expanded sleeving at 175 °C ± 3 K for (15 ± 1) min.
Bending at low temperature	14	–	–	There shall be no signs of cracking.	Test the expanded sleeving. Test temperature –70 °C ± 3 K. For strips, the mandrel shall be no more than 10 times the wall thickness. Full section sleeving shall be tested unfilled and the mandrel shall be no more than 10 times the outer diameter.
Dimensional stability on storage	16	–	–	The dimensions shall be as specified in Table 1.	
Tensile strength Elongation at break	19.1 and 19.2 19.1 and 19.2	MPa %	Min. Min.	10 225	Rate of jaw separation 100 mm/min. Below 6,5 mm diameter as sleeving; at 6,5 mm diameter and above as dumb-bells.
Tensile stress at 200 % Elongation	19.5 ^a	MPa	Max.	10,3	
Breakdown voltage	21	kV	Min.	Table 4	
Volume resistivity – at room temperature	23 23.4.2	Ω·cm	Min.	10 ¹¹	
Flame propagation Time of burning Length burned	26 Method C	s mm	Max. Max.	15 75	
^a Use the test procedure from 19.5, but measure the elongation at 200 %.					