SLOVENSKI STANDARD
SIST HD 523.3.100 to 105 S1:1998

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Specification for flexible insulating sleeving - Part 3: Specification requirements for individual types of sleeving - Sheets 100 to 105: Extruded PVC sleeving (IEC 60684-3-100 to 105:1988)

Specification for flexible insulating sleeving -- Part 3: Specification requirements for individual types of sleeving -- Sheets 100 to 105: Extruded PVC sleeving

Bestimmung für Isolierschläuche -- Teil 3: Bestimmungen für einzelne Schlauchtypen -- Blätter 100 bis 105: Extrudierte PVC-Schläuche

Spécification pour gaines isolantes souples -- Partie 3: Spécifications particulières aux types particuliers de gaines -- Feuilles 100 à 105: Gaines en PVC extrudé

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SPECIFICATION FOR FLEXIBLE INSULATING SLEEVING PART 3: SPECIFICATION REQUIREMENTS FOR INDIVIDUAL TYPES OF SLEEVING SHEETS 100 TO 105: EXTRUDED PVC SLEEVING

Spécification pour gaines isolantes souples
Troisième partie: Spécifications particulières aux types particuliers de gaines
Feuilles 100 à 105: Gaines en PVC extrudé

Bestimmung für flexible Isolierschläuche
Teil 3: Technische Lieferbedingungen für einzelne Schlauchtypen
Blätter 100 bis 105: Extrudierte PVC-Schläuche

BODY OF THE HD

The Harmonization Document consists of:

- IEC 684-3-100 to 105 (1988) ed 1; IEC/SC 15C, not appended

This Harmonization Document was approved by CENELEC on 1989-12-05.

The English and French versions of this Harmonization Document are provided by the text of the IEC publication and the German version is the official translation of the IEC text.

According to the CENELEC Internal Regulations the CENELEC member National Committees are bound:

to announce the existence of this Harmonization Document at national level by or before 1990-03-01

to publish their new harmonized national standard by or before 1990-09-01

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Harmonized national standards are listed on the HD information sheet, which is available from the CENELEC National Committees or from the CENELEC Central Secretariat.

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INTERNATIONAL STANDARD

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à/to
105

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Spécification pour gaines isolantes souples

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

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4) The IEC has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its recommendations.

PREFACE

This standard has been prepared by Sub-Committee 15C: Specifications, of IEC Technical Committee No. 15: Insulating materials.

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

Six Months' Rule	Report on Voting
15C(CO)204	15C(CO)226

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

The following IEC publication is quoted in this standard:

Publication No. 757 (1983): Code for Designation of Colours.

Other publication quoted:

ISO Recommendation R 182 (1970): Plastics — Determination of the Thermal Stability of Polyvinyl Chloride and Related Copolymers and Their Compounds by splitting off of Hydrogen Chloride.

SPECIFICATION FOR FLEXIBLE INSULATING SLEEVING

Part 3: Specification requirements for individual types of sleeving
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INTRODUCTION

This 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 Publication 684-1);
— Part 2: Methods of Test (IEC Publication 684-2);
— Part 3: Specification Requirements for Individual Types of Sleeving (IEC Publication 684-3).

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

— Sheet 100: Extruded PVC sleeving — General purpose grade;
— Sheet 101: Extruded PVC sleeving — High temperature grade;
— Sheet 102: Extruded PVC sleeving — Low temperature grade;
— Sheet 103: Extruded PVC sleeving — General purpose grade — Unilateral tolerances;
— Sheet 104: Extruded PVC sleeving — High temperature grade — Unilateral tolerances;
— Sheet 105: Extruded PVC sleeving — Low temperature grade — Unilateral tolerances;

1. Scope

This standard gives requirements for non-heat-shrinkable sleeving of circular cross-section, extruded from PVC.

Sheets 100 and 103 cover sleeving having a temperature index of 90, Sheets 101 and 104 cover sleeving having a temperature index of 105, and Sheets 102 and 105 cover sleeving formulated to be flexible at −65 °C.

Sheets 100, 101 and 102 employ bilateral tolerances for the bore diameter; Sheets 103, 104 and 105 employ unilateral positive tolerances. The bilateral tolerances given in Sheets 100, 101 and 102 are preferred but the unilateral tolerances in Sheets 103, 104 and 105 may continue as an interim measure.

Each sheet covers three levels of wall thickness: "thin wall", "standard wall", and "thick wall", related to nominal bore diameter and with corresponding differences in requirements for breakdown voltage.

The sleeving is normally available in bore sizes 0.3 mm to 50 mm and in the following opaque colours:

black, blue, brown, grey, green, orange, pink, red, turquoise, violet, white, yellow and green/yellow.

It is also available in transparent form.

2. Designation

The sleeving shall be identified by one of the following means:

a) in words and numbers;

b) by the designation which follows;

c) by both the above.

IEC 684-3-100 (or 101 to 105) — nominal bore size in millimetres — wall thickness level — colour.

Where a numerical code is required for the wall thickness level the mid point of the range of permitted wall thickness may be used.

The addition of "x" at the end of the identification indicates that one or more of the special requirements in Table II have been agreed and included in the purchase contract.

e.g. IEC 684-3-100-0.8-standard-white-x, or
IEC 684-3-100-0.8-0.4-white-x

Any abbreviation used for colour shall comply with IEC Publication 757.

3. General requirements

3.1 *Basic requirements*

Sleeving shall comply with the requirements of both

a) IEC Publication 684-1 and

b) Table I of this standard and that part of Table III appropriate to the grade.

3.2 *Special requirements*

Where any of the properties listed in Table II are specified the appropriate test procedure shall be employed and the value shall comply with the requirement in the table.

4. Dimensions

When tested by the methods described in Sub-clauses 3.1 and 3.2 of IEC Publication 684-2 the sleeving shall comply with the requirements for tolerance on nominal bore diameter and with the requirements for wall thickness given in Tables IIIa to IIIf.

5. Breakdown voltage

Breakdown voltage shall be determined at room temperature and at elevated temperature as appropriate to the grade, using one of the methods given in Clauses 21.2, 21.3 and 21.4 of IEC Publication 684-2.

The results obtained shall comply with the requirements given in Tables IIIa to IIIf appropriate to the sleeving. The rate of application of voltage shall be 500 V/s or such that the required breakdown value is reached in between 10 s and 20 s.

TABLE I

Property requirements

Property	Clause or sub-clause of IEC Publication 684-2	Units	Max. or min.	Sheet No.			Remarks
				100/103	101/104	102/105	
Density	4	g/cm³	Max.	1.5	1.5	1.5	See also Table II
Resistance to splitting	5	%	Min.	50	50	100	Where the wall thickness does not permit a square section ring to be cut, the length may be increased to not more than 1.5 mm
Resistance to soldering heat	7	—	—	Pass	Pass	Pass	Applicable to sleeving with nominal bore diameter up to and including 5 mm
Longitudinal change	9	%	Max.	10 100 °C	10 130 °C	10 100 °C	Exposure time for all types: 2 h
Resistance to pressure at elevated temperature	10	%	Max.	65	65	75	Not applicable to sleeving with nominal bore diameter below 2 mm
Thermal stability	11	Min.	Min.	200	200	200	In accordance with Method A of ISO Recommendation R 182 at 180 ± 1 °C
Bending at low temperature	14	—	—	—	—	No cracking	Test specimens to be bent over mandrels shown in Table IV at a temperature of −65 °C or below
Brittleness temperature	15	°C	Max.	—	—	−55	
Tensile strength	19	MPa	Min.	15	15	13	At 250 ± 50 mm/min.
Elongation at break	19	%	Min.	200	200	200	At 250 ± 50 mm/min.
Insulation resistance	22						
— at room temperature	22.4.2	MΩ	Min.	10^4	10^4	10^4	
— after damp heat	22.4.4			10^2	10^2	10^2	
Flame propagation	26 Methods A or B	s	Max.	A	B	A	In addition the indicator flag on any one of the three test specimens shall not be burned nor shall flaming or glowing particles or flaming drops ignite the cotton
				60	60	60	
Transparency	28	—	—	Pass	Pass	Pass	Applicable only when transparent sleeving is specified

TABLE I *(continued)*

Property	Clause or sub-clause of IEC Publication 684-2	Units	Max. or min.	Sheet No.			Remarks
				100/103	101/104	102/105	
Corrosive volatiles	33	%	Max.	None above the allowable 8%	None above the allowable 8%	None above the allowable 8%	16 h at 120 ± 2 °C
Thermal endurance	37						The end point shall be either twice the initial value of secant modulus at 100% extension or half the initial elongation at break determined in accordance with Clause 19 of IEC Publication 684-2
Temperature index at 20 000 h		—	Min.	90	105	—	This test need not be repeated unless the manufacturer has made a significant change in the composition or method of production of the material. The type of ageing oven has a profound effect on the rate of ageing of PVC. The rate of air change in the oven shall be 5 to 10 per hour

TABLE II

Special requirements

Property	Clause of IEC Publication 684-2	Units	Max. or min.	Sheet No.			Remarks
				100/103	101/104	102/105	
Density	4	g/cm³	—	± 0.03	± 0,03	± 0,03	Maximum permitted deviation from manufacturers' declared values
Flexibility	18	mm	—	*	*	*	
Mould growth	Appendix B			Scale 1	Scale 1	Scale 1	
Plasticiser migration	—	—	—	The surface of the polystyrene film shall not show significant loss of polish or transparency	The surface of the polystyrene film shall not show significant loss of polish or transparency	—	For method of test see Appendix A
Colour fastness to light	34	—	—	The original colour shall be clearly identifiable	The original colour shall be clearly identifiable	The original colour shall be clearly identifiable	

* To accommodate the range of flexibilities which exists it is necessary for the test weight and test requirements to be specified in the purchase contract.