



SLOVENSKI STANDARD

SIST EN 4708-001:2014

01-julij-2014

**Aeronavtika - Toplotno skrčljiva cev za utrjevanje, izolacijo in identifikacijo - 001.
del: Tehnična specifikacija**

Aerospace series - Sleeving, heat-shrinkable, for binding, insulation and identification -
Part 001: Technical specification

Luft- und Raumfahrt - Wärmeschrumpfender Schlauch zur Befestigung, Isolierung und
Identifizierung - Teil 001 Technische Lieferbedingungen

Série aérospatiale - Manchons thermoretractables, de jonction, isolement et identification
- Partie 001: Spécification technique

<https://standards.iteh.ai/catalog/standards/sist/93f9b087-6836-4220-9763-6ec0d9ec3783/sist-en-4708-001-2014>

Ta slovenski standard je istoveten z: EN 4708-001:2014

ICS:

49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems
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SIST EN 4708-001:2014

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 4708-001

April 2014

ICS 49.060

English Version

Aerospace series - Sleeving, heat-shrinkable, for binding, insulation and identification - Part 001: Technical specification

Série aérospatiale - Manchons thermorétractables, de
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Befestigung, Isolierung und Identifizierung - Teil 001:
Technische Lieferbedingungen

This European Standard was approved by CEN on 27 December 2013.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 4708-001:2014) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2014, and conflicting national standards shall be withdrawn at the latest by October 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 4708-001:2014 (E)**1 Scope**

This European Standard specifies the required characteristics, test methods, qualification and production routine testing of heat shrinkable sleeving for binding, insulation and identification.

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.

EN 3475-100, *Aerospace series - Cables, electrical, aircraft use - Test methods - Part 100: General*

EN 9133, *Aerospace series - Quality management systems - Qualification procedure for aerospace standard parts*

EN ISO 846, *Plastics - Evaluation of the action of microorganisms (ISO 846)*

EN ISO 4892-2, *Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps (ISO 4892-2)*

IEC 60304¹⁾, *Standard colours for insulation for low-frequency cables and wires*

IEC 60684-2, *Flexible insulating sleeving — Part 2: Methods of test*¹⁾

3 Definitions and symbols

[SIST EN 4708-001:2014](#)

[https://standards.iteh.ai/catalog/standards/sist/93f9b087-6836-4220-9763-](https://standards.iteh.ai/catalog/standards/sist/93f9b087-6836-4220-9763-61049e3783/sist-en-4708-001-2014)

For the purposes of this document, the definitions and symbols given in EN 3475-100 apply.

4 Materials and characteristics**4.1 General**

Sleeving shall be made from materials that ensure the finished sleeveings conform to the product standard.

4.2 Material types

See product standards.

4.3 Finish

The sleeving, both before and after unrestricted shrinkage, shall be free from bubbles, pinholes, creases and other defects that may affect performance.

4.4 Dimensions

See product standard.

1) Published by: IEC International Electrotechnical Commission. <http://www.iec.ch/>

4.5 Shrink ratio

See product standard.

4.6 Temperature range

See product standard.

4.7 Shelf life

NOTE The use by date is the shelf life when stored under the conditions recommended in Annex A.

The use by date shall be the guaranteed minimum storage time for which the sleeving retains the “as supplied” internal diameter. Following unrestricted shrinkage in accordance with the product standard, the sleeving shall conform to the internal diameter, wall thickness and longitudinal change requirements as specified in the product standard.

4.8 Colours

See product standards for available colours. The colours shall be a reasonable match to one of those specified in IEC 60304.

4.9 Standard cutting tolerances for cut lengths of sleeving

See Table 1.

Table 1 — Standard cutting tolerances for cut lengths of sleeving

Cut length mm	Standard cutting tolerances
0 to 9,9	± 0,5
10 to 24,9	± 1,0
25 to 49,9	± 1,5
50 to 100	± 3,0
101 to 150	± 4,0
151 to 250	± 5,0
251 to 1 200	± 12,0
1 201 and over	± 1 %

5 Required properties

The properties of the sleeves, tested according to the methods described hereafter shall comply with the values given in the product standards.

6 Test methods

See Table 2.

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Table 2 — Tests: methods, frequency, requirements

Description	Test method IEC 60684-2 Clause	Qualification 8.1	Routine 8.2	Periodic 8.3	Requirements
Test conditions	2	X	X	X	–
Measurements of bore, wall thickness and concentricity	3	X	X	X	Product standard
Density ^a	4	X	X	X	Product standard
Heat shock (resistance to heat)	6	X	X	X	Product standard
Longitudinal change	9	X	X	X	Product standard
Bending after heating	13	X	–	X	Product standard
Bending at low temperature	14	X	–	X	Product standard
Dimensional stability on storage	16	X	–	X	Product standard
Tensile strength, tensile stress at 100 % elongation, elongation at break and secant modulus at 2 % elongation	19	X	X	X	Product standard
Breakdown voltage	21	X	X	X	Product standard
Volume resistivity	23	X	–	X	Product standard
Flame propagation tests ^a	26	X	–	X	Product standard
Oxygen index ^a	27	X	–	X	Product standard
Transparency ^b	28	X	–	X	Product standard
Corrosion resistance (tensile and elongation)	32	X	–	X	Product standard
Copper corrosion (presence of corrosive volatiles) ^a	33	X	–	X	Product standard
Colour fastness to light ^{a c}	34	X	–	X	Product standard
Resistance to selected fluids ^a	36	X	–	X	Product standard
Thermal endurance ^a	37	X	–	–	Product standard
Mass per unit length	38	X	–	X	Product standard
Heat ageing	39	X	–	X	Product standard

Water absorption ^a	40	X	–	X	Product standard
Restricted shrinkage	41	X	–	X	Product standard
Colour stability to heat ^{a c}	42	X	–	X	Product standard
Smoke index ^a	43	X	–	X	Product standard
Toxicity index ^a	44	X	–	X	Product standard
Halogen content ^a	45	X	–	X	Product standard
Acid gas generation ^a	46	X	–	X	Product standard
Long term ageing (3 000 h) ^a	50	X	–		Product standard
Dynamic shear at ambient temperature	51	X	–	X	Product standard
Dynamic shear at elevated temperature	52	X	–	X	Product standard
Dynamic shear after heat shock and heat ageing	53	X	–	X	Product standard
Rolling drum peel to aluminium	54	X	–	X	Product standard
Aluminium rod dynamic shear	55	X	–	X	Product standard
Sealing	56	X	–	X	Product standard
Adhesive T peel strength of two bonded heat shrinkable substrates	57	X	–	X	Product standard
Fungus resistance ^a	In accordance with EN ISO 846 method B, 56 days exposure, followed by the measurement of tensile strength and elongation at break	X	–	–	Product standard
Artificial weathering ^a	In accordance with EN ISO 4892-2, Table 3 method A cycle 1 relative humidity (565 ± 10) % duration 720 h	X	–	–	Product standard

X = Test applicable.

^a Only one size of sleeving needs to be tested.

^b Test the greatest wall thickness.

^c All colours are to be tested.