



SLOVENSKI STANDARD

SIST EN 4840-001:2018

01-november-2018

Aeronavtika - Toplotno skrčljive ulite forme - 001. del: Tehnična specifikacija

Aerospace series - Heat shrinkable moulded shapes - Part 001: Technical specification

Luft- und Raumfahrt - Wärmeschrumpfende Formteile - Teil 001: Technische Spezifikation

Série aérospatiale - Manchons thermorétractables - Partie 001 : Spécification technique

STANDARD PREVIEW
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Ta slovenski standard je istoveten z: EN 4840-001:2018

<https://standards.iteh.ai/catalog/standards/sist/7e1c9ba5-7fdd-495e-82be-a1ec78cc7d48/sist-en-4840-001-2018>

ICS:

49.025.40 Guma in polimerni materiali Rubber and plastics

SIST EN 4840-001:2018

en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 4840-001

August 2018

ICS 29.035.20; 49.060

English Version

**Aerospace series - Heat shrinkable moulded shapes - Part
001: Technical specification**

Série aéronautique - Manchons thermorétractables -
Partie 001 : Spécification technique

Luft- und Raumfahrt - Wärmeschrumpfende Formteile
- Teil 001: Technische Lieferbedingungen

This European Standard was approved by CEN on 18 January 2018.

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, Serbia, 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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 4840-001:2018) 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 February 2019, and conflicting national standards shall be withdrawn at the latest by February 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 4840-001:2018 (E)

1 Scope

This European standard specifies the required characteristics, test methods, qualification and production routine testing of heat shrinkable moulded shapes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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

EN 4840-002, *Aerospace series — Heat shrinkable moulded shapes — Part 002: Index of product standards and product dimensions*

EN 9133, *Aerospace series — Quality Management Systems — Qualification Procedure for Aerospace Standard Parts*

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

IEC 60304, *Standard colours for insulation for low-frequency cables and wires* ¹⁾

IEC 62329-2, *Heat-shrinkable moulded shapes — Part 2: Methods of test* ¹⁾

IEC 62329-3, *Heat-shrinkable moulded shapes — Part 3: Specification requirements for shape dimensions, material requirements and compatibility performance — Sheet 100: Heat-shrinkable moulded shape dimensions* ¹⁾

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3 Definitions and symbols

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

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 Materials and characteristics

4.1 General

The moulded shapes shall be made from materials that ensure the finished product conform to the product standard.

4.2 Material types

See product standards.

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

4.3 Finish

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

4.4 Dimensions

As detailed in EN 4840-002.

4.5 Temperature range

See product standard.

4.6 Shelf life

The use by date shall be the guaranteed minimum storage time for which the moulded shape retains the “as supplied” internal diameter. Following unrestricted shrinkage in accordance with the product standard, the moulded shape shall conform to the dimensions as specified in the EN 4840-002.

In the event that the shelf life specimens fail the requirements of the product standard of any product still held by the manufacturer or distributors delivery shall be halted, until samples of each batch in storage has been tested to confirm that they satisfy the original recovery qualification requirements before release can be resumed. In the event of failure the Mandated Body is to be notified.

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

4.7 Colours

See product standards for available colours. The colours shall be a reasonable match to one of those specified in IEC 60304-1. <https://standards.iteh.ai/catalog/standards/sist/7e1c9ba5-7fdd-495e-82be-a1ec78cc7d48/sist-en-4840-001-2018>

4.8 Standard test specimens

Moulded shape material specimens shall be prepared according to IEC 62329-2 Clause 4.

5 Required properties

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

6 Test methods

For each product standard, tests shall be as given in Table 1.

6.1 Shelf life tests

Sufficient quantities of moulded shapes used for qualification shall be retained to provide the test samples for the conducting of the shelf life test for 60 months. (Shorter if specified in the product standard). Tests shall be conducted at 12 monthly intervals. The moulded shapes shall be stored at a temperature of $(23 \pm 3) ^\circ\text{C}$ and a relative humidity between 45 % and 75 %. Measure the as supplied internal diameters and then fully recover the moulded shapes in accordance with the product standard. Measure the recovered internal diameters, length and wall thicknesses. The measurements shall be made in accordance with IEC 62329-2 Clause 5.

Table 1 — Tests methods, frequency, requirements (1 of 2)

Tests					
Description	Test method IEC 62329-2 Clause	Qualification 7.1	Routine 7.3	Periodic 7.4	Requirements
Test conditions	3	x	x	x	—
Dimensions	5	x	x	x	See EN 4840-002 and product standard
Density ^a	6	x	x	x	Product standard
Heat shock Resistance to heat	7	x	x	x	Product standard
Bending at low temperature	8	x	—	x	Product standard
Dimensional stability on storage	9	x	—	x	Product standard
Tensile strength and elongation at break	10	x	x	x	Product standard
Secant modulus at 2 % elongation	11	x	x	x	Product standard
Electric strength	12	x	x	x	Product standard
Volume resistivity after damp heat	13	x	—	x	Product standard
Permittivity and dissipation factor	14	x	—	x	Product standard
Resistance to tracking	15	x	—	—	Product standard
Flammability	16	x	—	x	Product standard
Oxygen index	17	x	—	x	Product standard
Copper corrosion	18	x	—	x	Product standard
Colour fastness to light ^b	19	x	—	x	Product standard
Resistance to selected fluids	20	x	—	x	Product standard
Long term ageing (3 000 h) ^c	21	x	—	—	Product standard
Mass	22	x	—	x	Product standard
Heat ageing	23	x	—	x	Product standard
Water absorption	24	x	—	x	Product standard
Colour stability to heat ^b	25	x	—	x	Product standard
Smoke index	26	x	—	x	Product standard

Table 1 — Tests methods, frequency, requirements (2 of 2)

Tests					
Description	Test method IEC 62329-2 Clause	Qualification 7.1	Routine 7.3	Periodic 7.4	Requirements
Toxicity index	27	x	—	x	Product standard
Halogen content	28	x	—	x	Product standard
Acid gas generation	29	x	—	x	Product standard
Resistance to mould growth ^c	30	x	—	—	Product standard
Compatibility	31	—			
Dynamic shear at ambient temperature	31.1	x	—	x	Product standard
Static load	31.2	x	—	x	Product standard
Fluid resistance	31.3	x	—	x	Product standard
Thermal Ageing	31.4	x	—	x	Product standard
Peel Adhesion	31.5	x	—	x	Product standard
Altitude immersion	31.6	x	—	x	Product standard
Artificial weathering ^c	In accordance with EN ISO 4892-2 Table 3 method A cycle 1 relative humidity (565 ± 10) % duration 720 h	x	—	—	Product standard
Shelf life	EN 4840-001 6.1	x	—	—	—

^a The density of the material shall be initially established and declared during qualification testing, and shall not deviate from this value by more than ± 0,03 during subsequent routine testing.

^b All colours are to be tested.

^c The test only needs to be repeated if there is a significant change to composition or manufacturing techniques.

7 Quality assurance

7.1 Qualification

7.1.1 General requirements

See EN 9133.

NOTE Sleeving technical specification says EN 9133.