



# SLOVENSKI STANDARD

## SIST EN 15701:2009

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Plastics - Thermoplastic jackets for insulation products for building equipment and industrial installations - Requirements and test methods

Kunststoffe - Ummantelungen aus thermoplastischen Kunststoffen für Dämmstoffe für die Haustechnik und für betriebstechnische Anlagen - Anforderungen und Prüfungen

Plastiques - Enveloppes thermoplastiques pour isolants destinés au bâtiment et aux installations industrielles - Exigences et essais

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### ICS:

83.140.99	Drugi izdelki iz gume in polimernih materialov	Other rubber and plastics products
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EUROPEAN STANDARD

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## Plastics - Thermoplastic jackets for insulation products for building equipment and industrial installations - Requirements and test methods

Plastiques - Enveloppes thermoplastiques pour isolants destinés au bâtiment et aux installations industrielles - Exigences et essais

Kunststoffe - Ummantelungen aus thermoplastischen Kunststoffen für Dämmstoffe für die Haustechnik und für betriebstechnische Anlagen - Anforderungen und Prüfungen

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## Foreword

This document (EN 15701:2009) has been prepared by Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

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.

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**EN 15701:2009 (E)****1 Scope**

This European Standard specifies the requirements for thermoplastic cladding for insulation products for building equipment and industrial installations and the test methods to be used.

The European Standard does not apply to systems in which the cladding has already been securely fixed over the whole surface of an insulating material in situ.

**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.

EN 13501-1:2007 *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN ISO 6401, *Plastics — Homopolymer and copolymer resins of vinyl chloride — Determination of residual vinyl chloride monomer — Gas chromatographic method (ISO 6401:1985)*

EN ISO 8256, *Plastics — Determination of tensile impact strength (ISO 8256:2004)*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2:2002)*

ISO 4593, *Plastics — Film and sheeting — Determination of thickness by mechanical scanning*

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**3 Terms and definitions**

For the purposes of this document, **the following terms and definitions apply.**

**3.1****film**

plastic sheeting generally supplied in the form of a roll

**3.2****moulding**

single or multi-part, three-dimensional product made by thermoforming of a plastic film or board. It is made up of cut and machined film/boards

EXAMPLE Elbows, branches, covers, valve coatings, special parts

**3.3****laminate**

combination of two or more materials that are bonded together during manufacture to produce a single item or product

[EN ISO 9229:2007]

**3.4****linear application**

use of cladding on insulation on straight sections of pipe

**3.5****board**

rectangular solid product generally supplied in slabs

**3.6****thermoplastic**

plastic that can be formed in a specific temperature range

**3.7****cladding**

rigid, semi-rigid, frequently preformed sheet material that provides mechanical and/or environmental protection or a decorative finish to thermal insulation

[EN ISO 9229:2007]

**4 Requirements****4.1 Requirements for the material composition of the cladding**

Thermoplastic materials within the meaning of this standard are homogenous plastics, composite structures (laminates) of different plastics and composite structures of plastics and other materials including primers where the percentage by mass of the plastic film shall be at least 80 %.

**4.2 Requirements for VC residual monomer content**

Only plastic film shall be used that has a VC residual monomer content not exceeding 0,0001 % by mass.

The test shall be carried out according to 5.1.1.

**4.3 Technical and mechanical requirements****4.3.1 General**

With regard to the technical and mechanical requirements, a distinction is made between:

- a) film in linear applications;
- b) plastic film or boards as initial materials for mouldings or finished mouldings made from them.

**4.3.2 Technical and mechanical requirements for film for linear applications****4.3.2.1 Film thickness**

The tolerances given in Table 1 relative to the nominal thickness shall be maintained in at least 95 % of all measurements.

**Table 1 — Tolerances relative to the nominal thickness**

Nominal thickness	Tolerance
$\leq 200 \mu\text{m}$	$\pm 10 \%$
201 $\mu\text{m}$ to 400 $\mu\text{m}$	$\pm 7 \%$
$\geq 400 \mu\text{m}$	$\pm 5 \%$

The test shall be carried out according to 5.2.1

#### 4.3.2.2 Tensile-impact strength

The tensile-impact strength shall be at least 300 kJ/m<sup>2</sup>.

The test shall be carried out according to 5.2.2.

#### 4.3.2.3 Width

The permissible tolerance of the actual width from the nominal width shall be  $\pm 1$  mm.

The tolerance shall be maintained in at least 95 % of all width measurements.

#### 4.3.2.4 Roll run length

For nominal run lengths up to 50 m, the tolerance shall be  $\pm 0,5$  m.

The tolerance shall be maintained in at least 95 % of all run length measurements.

#### 4.3.3 Technical and mechanical requirements for the initial material for mouldings

The initial material for mouldings shall have a tensile-impact strength of at least 300 kJ/m<sup>2</sup>.

#### 4.3.4 Technical and mechanical requirements for the mouldings

##### 4.3.4.1 Moulding thickness

The minimum material thickness of the mouldings shall meet the requirements of Table 2.

**Table 2 — Minimum material thickness**

Moulding	Minimum material thickness
Elbows Branches End pieces	0,15 mm
Valve coatings	0,2 mm
Special parts	no specification

##### 4.3.4.2 Overlapping

The design of the mouldings shall allow an overlap of at least 10 mm during assembly.



#### 4.3.5 Other requirements for film for linear applications and for the initial material for mouldings

For thermal calculations, the values given in Table 3 shall be made available by the manufacturer either as general calculation values based on the literature or as explicit measured values.

**Table 3 — Values to be made available**

Physical variable	Symbol	Unit
Emissivity	$\epsilon$	-
Thermal conductivity	$\lambda$	W/mK

#### 4.4 Reaction to fire

If required, the reaction to fire of the cladding shall be determined according to 5.3.

### 5 Test methods

#### 5.1 Chemical testing

##### 5.1.1 VC residual monomer content

The residual content of monomer vinyl chloride shall be determined according to EN ISO 6401.

#### 5.2 Mechanical testing

##### 5.2.1 Film thickness

The test shall be carried out according to ISO 4593.

In addition, random measurements shall be taken and recorded.

##### 5.2.2 Tensile-impact strength

The test shall be carried out according to EN ISO 8256.

#### 5.3 Reaction to fire test

The requirements of Table 3 "Classes of reaction to fire performance for linear pipe thermal insulation products" of EN 13501-1:2007 apply as the classification criteria of the cladding.

The reaction to fire test of the cladding shall be carried out linearly according to prEN 15715 on glass wool pipe sections with an insulation thickness of 30 mm. When testing according to EN ISO 11925-2, the cladding shall be subjected only to surface flame impingement.

The film shall be fastened to the pipe sections with rivets.

For the test, the film shall be aligned with the closing seam in the direction of the back plate.