



# SLOVENSKI STANDARD

## SIST EN 13956:2005

01-november-2005

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### Hidroizolacijski trakovi – Polimerni in elastomerni trakovi za tesnjenje streh – Definicije in lastnosti

Flexible sheet for waterproofing - Plastic and rubber sheets for roof waterproofing -  
Definitions and characteristics

Abdichtungsbahnen - Kunststoff- und Elastomerbahnen für Dachabdichtungen -  
Definitionen und Eigenschaften

Feuilles souples d'étanchéité - Feuilles d'étanchéité de toiture plastique et élastomère -  
Définitions et caractéristiques

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91.060.20	Strehe	Roofs
91.100.50	Veziva. Tesnilni materiali	Binders. Sealing materials

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EUROPEAN STANDARD

EN 13956

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2005

ICS 01.040.91; 91.100.50

English Version

## Flexible sheet for waterproofing - Plastic and rubber sheets for roof waterproofing - Definitions and characteristics

Feuilles souples d'étanchéité - Feuilles d'étanchéité de toiture plastique et caoutchouc - Définitions et caractéristiques

Abdichtungsbahnen - Kunststoff- und Elastomerbahnen für Dachabdichtung - Definitionen und Eigenschaften

This European Standard was approved by CEN on 22 July 2005.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION  
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**EN 13956:2005 (E)****Foreword**

This European Standard (EN 13956:2005) has been prepared by Technical Committee CEN/TC 254 "Flexible sheets for waterproofing", the secretariat of which is held by BSI.

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 March 2006, and conflicting national standards shall be withdrawn at the latest by June 2008.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this European Standard.

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

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## 1 Scope

This European Standard specifies the definitions and characteristics of plastic and rubber sheets including sheets made out of their blends and alloys (thermoplastic rubber) for which the intended use is roof waterproofing. It specifies the requirements and test methods and provides for the evaluation of conformity of the products with the requirements of this European Standard.

NOTE For typical materials and applications, see Annex E.

## 2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 495-5, *Flexible sheets for waterproofing — Determination of foldability at low temperature — Part 5: Plastic and rubber sheets for roof waterproofing*

EN 1107-2, *Flexible sheets for waterproofing — Determination of dimensional stability — Part 2: Plastic and rubber sheets for roof waterproofing*

EN 1297:2004, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing - Method of artificial ageing by long term exposure to the combination of UV radiation, elevated temperature and water*

prEN 1548, *Flexible sheets for waterproofing — Plastic and rubber sheets for roof waterproofing - Method for exposure to bitumen*

EN 1844, *Flexible sheets for waterproofing — Determination of resistance to ozone — Plastic and rubber sheets for roof waterproofing*

EN 1847, *Flexible sheets for waterproofing — Plastic and rubber sheets for roof waterproofing — Methods for exposure to liquid chemicals, including water*

EN 1848-2, *Flexible sheets for waterproofing — Determination of length, width, straightness and flatness — Part 2: Plastic and rubber sheets for roof waterproofing*

EN 1849-2, *Flexible sheets for waterproofing — Determination of thickness and mass per unit area — Part 2: Plastic and rubber sheets for roof waterproofing*

EN 1850-2, *Flexible sheets for waterproofing — Determination of visible defects — Part 2: Plastic and rubber sheets for roof waterproofing*

EN 1928, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*

EN 1931, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of water vapour transmission properties*

EN 12310-2, *Flexible sheets for waterproofing — Determination of resistance to tearing — Part 2: Plastic and rubber sheets for roof waterproofing*

EN 12311-2, *Flexible sheets for waterproofing — Determination of tensile properties — Part 2: Plastic and rubber sheets for roof waterproofing*

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EN 12316-2, *Flexible sheets for waterproofing — Determination of peel resistance of joints — Part 2: Plastic and rubber sheets for roof waterproofing*

EN 12317-2, *Flexible sheets for waterproofing - Determination of the shear resistance of joints - Part 2: Plastic and rubber sheets for roof waterproofing*

EN 12691 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to impact*

EN 12730, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to static loading*

EN 13416, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Rules for sampling*

EN 13501-1:2002, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

prEN 13501-5, *Fire classification of construction products and building elements — Part 5: Classification using results from external fire exposure to roof tests*

EN 13583, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of hail resistance*

prEN 13948, *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to root penetration*

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)*

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**3 Terms and definitions**

For the purposes of this European Standard, the following terms and definitions apply.

**3.1****waterproofing**

action to prevent the passage of water from one plane to another

**3.2****roof waterproofing system**

assembly of roof waterproofing components in its applied and jointed form, which has certain performance characteristics, to be assessed as a whole

**3.3****roofing**

waterproofing used in the roof of a building including roofs used for parking of vehicles and for roof gardens

**3.4****flexible sheet for roof waterproofing**

factory made waterproofing sheet, which can be rolled up or folded for easy transport to the site

**3.5****sampling**

procedure used to select or constitute a sample



**3.6****sample**

sheet from which a test piece is taken

**3.7****test piece**

part of the sample from which test specimens are taken

**3.8****test specimen**

piece of precise dimensions taken from the test piece

**3.9****surface texture**

textured pattern on one or both surfaces of the sheet creating a difference between the effective and overall thickness not exceeding 0,1 mm

**3.10****surface profile (surface structure)**

raised area on the surface of the sheet creating a difference between the effective and overall thickness exceeding 0,1 mm or a backing exceeding 80 g/m<sup>2</sup>

**3.11****internal fabric**

layer of woven or non-woven fabric of synthetic or mineral fibres incorporated in the sheet. This layer may or may not constitute reinforcement

**3.12****backing**

layer of woven or non-woven fabric of synthetic or mineral fibres or other material fixed to the bottom of the sheet. This layer may or may not constitute reinforcement

**3.13****overall thickness (e)**

thickness of the sheet excluding any surface profile

**3.14****effective thickness (e<sub>eff</sub>)**

thickness of the sheet providing the waterproofing function including any surface texture or backing equal to or less than 80 g/m<sup>2</sup> but excluding any surface profile and backing greater than 80g/m<sup>2</sup>

**3.15****welding**

process of jointing by softening the surfaces to be united, either by heat or with the aid of a solvent (solvent welding, solvent bonding), and then pressing the softened surfaces together

**3.16****adhesive bonding**

process of jointing by applying adhesives to the surfaces to be united or by applying an adhesive tape, and then applying pressure

**3.17****hot bonding**

process of bonding by vulcanising a non vulcanised rubber tape between the two sheets to be jointed by means of heat and pressure

**EN 13956:2005 (E)****3.18****manufacturer's limiting value, (MLV)**

value stated by the manufacturer to be met during testing. The MLV can be a minimum or a maximum value according to statements made under product characteristics of this European Standard

**3.19****manufacturer's declared value, (MDV)**

value declared by the manufacturer accompanied by a declared tolerance

**4 Roofing system related characteristics**

Testing shall be carried out according to Table A.1.

**5 Product characteristics****5.1 General**

**5.1.1** Where a tolerance is limited by this European Standard it does not have to be declared by the manufacturer.

**5.1.2** When tested for purposes other than initial type testing or factory production control, the tests to determine product characteristics indicated in this European Standard shall be started within 1 month of delivery from the manufacturer.

**5.2 General characteristics****5.2.1 Visible defects**

The product shall be free of visible defects in accordance with EN 1850-2.

**5.2.2 Dimensions, tolerances and mass per unit area**

The length, width, straightness and flatness shall be determined in accordance with EN 1848-2 and shall meet the requirements given in Table 1. The values for straightness and flatness only apply to sheets supplied in the form of rolls. The values for straightness and flatness do not apply to folded sheets.

**Table 1 — Length, width, straightness and flatness requirements**

Length:	The measured length shall lie within the declared tolerance of the MDV. The tolerance of the MDV shall lie within $-0\%$ and $+5\%$ .
Width:	The measured mean width shall lie within the declared tolerance of the MDV. The tolerance of the MDV shall lie within $-0,5\%$ and $+1\%$ .
Straightness:	The deviation of the straightness $g$ shall not exceed 50 mm.
Flatness:	The deviation of the flatness $p$ shall not exceed 10 mm.

Thickness and mass per unit area shall be determined in accordance with EN 1849-2, except that where the surface structure is caused by the inner layer, the mechanical thickness measurement method shall be applied and the result shall meet the requirements given in Table 2. Terms and definitions of this European Standard shall have priority over those given in EN 1849-2.

**Table 2 — Thickness and mass per unit area requirements**

Effective thickness:	Thickness of the sheet providing the waterproofing function including any surface texture but excluding any surface profile and backing shall be greater than 80 g/m <sup>2</sup> . The measured effective thickness shall lie within the declared tolerance of the MDV. The tolerance of the MDV shall lie within –5 % and +10 %.
Single measurement:	Each single measurement value shall lie within the declared tolerance of the MDV. The tolerance of the MDV shall lie within ±10 %.
Mass:	The mass per unit area shall lie within the declared tolerance of the MDV. The tolerance of the MDV shall lie within –5 % and +10 %.

### 5.2.3 Watertightness

The watertightness shall be determined in accordance with EN 1928 using method B at an applied water pressure of 10 kPa (0,1 bar) and shall give a pass result.

### 5.2.4 Effects of liquid chemicals including water

Information on the effect of liquid chemicals on plastics and rubber is given in Annex C. When further information on resistance to liquid chemicals is required, tests shall be conducted according to EN 1847 at a temperature of 23 °C for 28 days.

### 5.2.5 Fire performance

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#### 5.2.5.1 External fire performance

Where the manufacturer wishes to declare external fire performance (e.g. when subject to regulatory requirements), the product shall be tested and classified in accordance with prEN 13501-5. Where the defined system meets the deemed to satisfy criteria<sup>1</sup> no testing is required.

#### 5.2.5.2 Reaction to fire

Where required, the product shall be tested and classified in accordance with EN 13501-1:2002, Table 1. When tested according to EN ISO 11925-2, the products shall be tested under conditions of surface flame attack.

NOTE It is currently considered that the Euroclasses Classification system at Classes D and above requires investigation to determine its appropriateness to the products covered by this European Standard (the SBI test may be inappropriate for products covered by the European Standard). Pending results of such an investigation and discussions in the Fire Regulators Group, products covered by this European Standard are tested to EN ISO 11925-2.

If and when a new fire test scenario and test method are developed for the products, this European Standard will be amended to refer to them.

<sup>1</sup> See Commission Decision 2000/553/EC [5].

**EN 13956:2005 (E)****5.2.6 Hail resistance**

Where required, the hail resistance of the sheet shall be determined in accordance with EN 13583 and shall be greater than or equal to the manufacturer's limiting value (MLV).

**5.2.7 Joint strength**

Where required, the peel resistance of joints shall be determined in accordance with EN 12316-2. The peel resistance shall be greater than or equal to the manufacturer's limiting value (MLV). Where required, the shear resistance of joints shall be determined in accordance with EN 12317-2. The shear resistance shall be greater than or equal to the manufacturer's limiting value (MLV). If no result can be obtained due to too great an elongation, the grip distance may be reduced.

**5.2.8 Water vapour properties**

If necessary, the moisture resistance factor  $\mu$  of plastic and rubber sheets may be determined in accordance with EN 1931 and the result shall lie within the declared tolerance of the MDV. The tolerance of the MDV shall lie within  $\pm 30$  %.

**5.2.9 Tensile properties (strength and elongation)**

The tensile properties for homogenous sheets and sheets with a non-woven inner layer (e.g. fibre glass mat) of less than or equal to  $80 \text{ g/m}^2$  shall be determined in accordance with Method B of EN 12311-2. For all other sheets Method A of EN 12311-2 shall be used to determine tensile properties. The tensile force (Method A) or the tensile stress (Method B) shall be greater than or equal to the manufacturer's minimum limiting value (MLV) for the longitudinal and transverse direction of the sheet. The mean of the elongation at maximum tensile force (Method A) or the mean of the elongation at break (Method B) shall be greater than or equal to the manufacturer's limiting value (MLV) for the longitudinal and transverse direction of the sheet.

**5.2.10 Resistance to impact**

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Where required, the resistance to impact shall be determined in accordance with EN 12691 and shall be greater than or equal to the manufacturer's limiting value (MLV).

**5.2.11 Resistance to static loading**

Where required, the resistance to static loading of the sheet shall be determined in accordance with either method A or method B of EN 12730 and shall be greater than or equal to the manufacturer's limiting value (MLV). If method A is used, the depth of the penetrating tool shall not exceed 10 mm.

**5.2.12 Tear resistance**

Where required, the tear force shall be determined in accordance with EN 12310-2. The mean of the tear resistance (maximum tensile force of pre-cut test specimen) shall be greater than or equal to the manufacturer's limiting value (MLV) for the longitudinal and transverse direction of the sheet.

**5.2.13 Resistance to root penetration**

The resistance to root penetration shall only be determined for products used as root barriers. Where required, the resistance to root penetration determined in accordance with prEN 13948 shall give a pass result.

**5.2.14 Dimensional stability**

Dimensional stability shall be determined in accordance with EN 1107-2. The mean of the dimensional change in length ( $\Delta L$ ) and width ( $\Delta T$ ) shall be less than or equal to the manufacturer's limiting value (MLV).