



# SLOVENSKI STANDARD

## SIST EN 1391:1999

01-maj-1999

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### Lepila za usnje in obutvene materiale – Metoda za vrednotenje vezivnosti materialov – Minimalne zahteve in razvrstitev materialov

Adhesives for leather and footwear materials - A method for evaluating the bondability of materials - Minimum requirements and material classification

Klebstoffe für Leder und Schuhwerkstoffe - Verfahren zur Beurteilung der Klebbarkeit von Werkstoffen - Mindestanforderungen und Werkstoffklassifikation

Adhésifs pour cuir et matériaux de la chaussure - Une méthode d'évaluation de l'aptitude à l'adhésion - Prescriptions minimales et classification des matériaux

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Ta slovenski standard je istoveten z: **EN 1391:1998**

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#### **ICS:**

61.060	Obuvala	Footwear
83.180	Lepila	Adhesives

**SIST EN 1391:1999**

**en**

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EUROPEAN STANDARD

EN 1391

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 61.060; 83.180

Descriptors: Bondability, footwear, materials, leather, rubber, polyvinyl chloride, adhesive, bonding, destructive test, bond strength, peel test, shear test, creep test at elevated temperature, testing conditions, classification

English version

## Adhesives for leather and footwear materials - A method for evaluating the bondability of materials - Minimum requirements and material classification

Adhésifs pour cuir et matériaux de la chaussure - Une méthode d'évaluation de l'aptitude à l'adhésion - Prescriptions minimales et classification des matériaux

Klebstoffe für Leder und Schuhwerkstoffe - Verfahren zur Beurteilung der Klebbarkheit von Werkstoffen - Mindestanforderungen und Werkstoffklassifikation

This European Standard was approved by CEN on 24 January 1998.

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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CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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**Foreword**

This European Standard has been prepared by Technical Committee CEN/TC 193 "Adhesives", the secretariat of which is held by AENOR.

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 August 1998, and conflicting national standards shall be withdrawn at the latest by August 1998.

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

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## 1 Scope

This standard specifies a method for evaluating the bondability of leather and footwear materials in particular soling and upper materials in stuck-on assemblies using solvent-based or dispersion adhesives under specified conditions.

It defines some minimum bond strength requirements for assessing the bondability of leather and footwear materials used for the manufacture of footwear, and establishes a classification of these materials based on the results obtained with reference test adhesives representing types of adhesives often used for sole attachment in footwear manufacture.

This classification is intended to assist the manufacturers of footwear in selecting and processing materials of certified bondability.

## 2 Normative references

This European standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 923	<a href="https://standards.iteh.ai/catalog/standards/sist-en-1391-1999/984570c72b-4331-4bb0d98f58771/sist-en-1391-1999">https://standards.iteh.ai/catalog/standards/sist-en-1391-1999/984570c72b-4331-4bb0d98f58771/sist-en-1391-1999</a> Adhesives - Terms and definitions
EN 1392:1998	Adhesives for leather and footwear materials - Solvent-based and dispersion adhesives - Test methods for measuring the bond strength under specified conditions.
EN ISO 10365	Adhesives - Designation of main failure patterns (ISO 10365:1992)
ISO 554	Standard atmospheres for conditioning and/or testing - Specifications
ISO 868	Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness)

## 3 Definitions

For the purposes of this standard, the definitions in accordance with EN 923, and the following definitions apply:

**3.1 bondability:** Ability of a material to form a bond of specified properties with a specified adhesive under specified conditions.

**3.2 leather:** Tanned animal skin, usually free of hair.

**3.3 footwear materials:** Natural and synthetic materials which are suitable for footwear manufacture or repair and have adequate wear properties as upper or sole material.

#### **4 Principle**

The surface of the leather or the footwear material to be tested is treated by a method specific to the type of material. Then strips of specified length and width are cut from the treated material.

Two of these strips or one strip of the material to be tested together with one strip of a suitable different material are bonded by a test adhesive to test pieces of specified form.

If the bondability of a material to be tested is to be classified a specific reference test adhesive shall be used.

The test pieces shall be stored under specified conditions and their bond strength determined under specified conditions.

#### **5 Safety**

Persons using this standard shall be familiar with normal laboratory practice.

This standard does not purport to address all the safety problems, if any, associated with its use.

It is the responsibility of the user to establish safety and health practices and to ensure compliance with any European or national regulatory conditions.

#### **6 Requirements**

##### **6.1 General**

In practice leather and footwear material bonds are usually part of complex structures which are subjected to various stresses and used in different climates.

All requirements met in practice cannot be covered by one single standard. This standard only defines some minimum requirements for evaluating the bondability of leather and footwear materials.

##### **6.2 Material identification**

The leather or footwear material under test shall be identified by name and/or designation, manufacturer, date of manufacture/supply, type of leather or footwear material, e.g. soling or upper material. For leathers the colour, thickness and type of tannage (if known) shall be listed, for rubber and plastic materials, colour, polymer base and Shore-hardness shall be in accordance with ISO 868. Identification of the material shall be included in the test report.

### 6.3 Minimum Requirements

**6.3.1** The initial peel resistance 2 min after assembling shall be not less than 1,0 N/mm.

**6.3.2** The peel resistance after three days to five days storage in the standard atmosphere 23/50 in accordance with ISO 554 shall be not less than 5,0 N/mm.

**6.3.3** The peel resistance after seven days at  $(50 \pm 2)$  °C and two days to four days storage in the standard atmosphere 23/50 in accordance with ISO 554 shall be not less than 80 % of the value determined in accordance with 6.3.2 but not less than 5,0 N/mm.

**6.3.4** The shear strength after three days to five days storage in the standard atmosphere 23/50 in accordance with ISO 554 shall be not less than 2,0 MPa.

**6.3.5** The peel resistance at a load of 1,5 kg at  $(50 \pm 2)$  °C for 10 min ("creep resistance") shall be less than 10 mm.

The above mentioned minimum requirements shall be considered fulfilled if cohesive substrate failure (CSF) in accordance with EN ISO 10365 occurs. Occurrence of cohesive substrate failure and the value at which it was stated shall be recorded in the test report and taken into consideration in the classification of the bondability of the material in accordance with clause 9 of this standard.

## 7 Test methods

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### 7.1 Types of tests

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#### 7.1.1 Peel test at $(23 \pm 2)$ °C

In accordance with EN 1392.

#### 7.1.2 Shear test at $(23 \pm 2)$ °C

In accordance with EN 1392.

#### 7.1.3 Peel test at $(50 \pm 2)$ °C for 10 min at a constant load of 1,5 kg ("creep test")

In accordance with EN 1392.

### 7.2 Reference adhesives

#### 7.2.1 General reference adhesives

The adhesive which is to be used as reference adhesive, shall be generally suitable for bonding footwear materials because of its intrinsic generic properties.

The reference adhesive shall be identified by name and/or designation, manufacturer, date of manufacture/supply and/or lot number, main polymer and colour. For two-part adhesives the nature of the crosslinking agent and the mixing ratio of the components shall be identified.



### 7.2.2 Reference test adhesives

If the test leather or footwear material have to be classified in accordance with clause 9 the following reference test adhesives shall be used:

NOTE 1: In the footwear industry a large number of different adhesives are used for sole attachment offering a broad range of technical effects. From the most important and most commonly used adhesives groups based on polychloroprene and polyurethane the following simply formulated 1- and 2-part adhesives have been selected as reference test adhesives. These can be considered as typical adhesives of these types.

- a) Reference test adhesive CR 1 : One part polychloroprene adhesive;
- b) Reference test adhesive CR 2 : Two part polychloroprene/polyisocyanate adhesive;
- c) Reference test adhesive PU 1 : One part polyurethane adhesive;
- d) Reference test adhesive PU 2 : Two part polyurethane/polyisocyanate adhesive.

NOTE 2: The properties and the suitability of the test adhesives listed should be checked and ensured by the supplier.

### 7.3 Preparation of test pieces

In accordance with 6.6 of EN 1392:1998.

### 7.4 Storage of test pieces

Before testing all test pieces shall be stored as specified in 6.3.

Store test pieces for measuring the minimum requirements in compliance with 6.3.3 for three days to five days and in compliance with 6.3.5 for five days to seven days in the standard atmosphere of 23/50 in accordance with ISO 554 before warming up to  $(50 \pm 2)$  °C in an oven or in a warm air cabinet respectively.

### 7.5 Procedures and evaluation

In accordance with EN 1392.

## 8 Test report

The test report shall include:

- a) a reference to this European Standard;
- b) a complete identification of the leather or footwear material tested in accordance with 6.2;