



SLOVENSKI STANDARD SIST EN 522:1999

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Lepila za usnje in obutvene materiale - Vezivna trdnost - Minimalne zahteve in razvrstitev lepil

Adhesives for leather and footwear materials - Bond strength - Minimum requirements and adhesive classification

Klebstoffe für Leder und Schuhwerkstoffe - Festigkeit der Klebungen - Mindestanforderungen und Klebstoffklassifikation

Adhésifs pour cuir et matériaux de la chaussure - Force d'adhésion - Prescriptions minimales et classification des adhésifs

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Ta slovenski standard je istoveten z: **EN 522:1998**

ICS:

61.060	Obuvala	Footwear
83.180	Lepila	Adhesives

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EUROPEAN STANDARD
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Descriptors: adhesives, footwear, materials, leather, rubber, polyvinyl chloride, 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 - Bond strength -
Minimum requirements and adhesive classification

Adhésifs pour cuir et matériaux de la chaussure - Force
d'adhésion - Prescriptions minimales et classification des
adhésifs

Klebstoffe für Leder und Schuhwerkstoffe - Festigkeit der
Klebungen - Mindestanforderungen und
Klebstoffklassifikation

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.

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.

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

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CONTENTS	Page
Foreword	3
1 Scope	4
2 Normative references	4
3 Definitions	4
4 Principle	4
5 Safety	4
6 Requirements	5
7 Test methods	6
8 Test report	7
9 Adhesive classification	8

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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 solvent based and dispersion adhesives intended for use for sole attachment.

It specifies minimum requirements for some strength properties of bonds made with these adhesives and establishes an adhesive classification based on the results obtained with reference test materials representing types of leather, rubber or plastic materials often used as upper or bottom materials in footwear manufacture.

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 Adhesives - Terms and definitions
- EN 1392 Adhesives for leather and footwear materials - Solvent based and water based adhesives - Test methods for measuring the bond strength under specified conditions
- ISO 554 Standard atmospheres for conditioning and/or testing - Specifications
- ISO 868 Plastic 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, EN 1392 and the following definition applies:

3.1 adhesives for footwear materials: Adhesives intended for the permanent bonding of footwear materials.

4 Principle

Two strips of reference test material are bonded with the adhesive to be tested to produce test pieces of defined form. These test pieces are 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. Therefore this standard shall only define some minimum requirements for the bonding properties of sole attaching adhesives. In addition this standard establishes a suitable classification using the results obtained with reference test materials specified in 7.2.

6.2 Adhesive identification

The adhesive to be tested shall be completely identified in the test report, in particular note the 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.

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6.3 Minimum Requirements

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

6.3.2 The peel resistance after 3 days to 5 days storage in the standard atmosphere 23/50 in accordance with ISO 554 shall not be less than 5,0 N/mm.

6.3.3 The peel resistance after 7 days at (50 ± 2) °C and 2 days to 4 days storage in the standard atmosphere 23/50 in accordance with ISO 554 shall be at least 80 % of the value determined in accordance with 6.3.2 but shall not be less than 5,0 N/mm.

6.3.4 The shear strength after 3 days to 5 days storage in the standard atmosphere 23/50 in accordance with ISO 554 shall not be less than 2,0 MPa.

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

NOTE: These minimum requirements refer only to bonds in everyday footwear worn under ambient conditions. For special footwear, for instance safety, work or sports shoes, which are subjected to additional stresses and/or different environmental conditions, other additional testing can be necessary.

7 Test methods

7.1 Types of tests

7.1.1 Peel test at (23 ± 2) °C

In accordance with EN 1392.

7.1.2 Shear test at (23 ± 2) °C

In accordance with EN 1392.

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

In accordance with EN 1392.

7.2 Reference test materials

A large number of different materials are used in leather processing and in the footwear industry. From the most important and most often used material groups the following materials shall be selected as reference test materials:

- a) Reference test material leather 1: Upper leather, chrome tanned split;
- b) Reference test material leather 2: Sole leather, butt, vegetable tanned;
- c) Reference test material SBR 1: Resin rubber, nominal Shore A hardness 95 in accordance with ISO 868;
- d) Reference test material SBR 2: SBR rubber, nominal Shore A hardness 70 in accordance with ISO 868;
- e) Reference test material NBR: Nitrile rubber, Shore A hardness 80 nominal in accordance with ISO 868;
- f) Reference test material SBSR: Thermoplastic rubber, nominal Shore A hardness 60 in accordance with ISO 868;
- g) Reference test material polyvinylchlorid (PVC): Plasticized (PVC), nominal Shore A hardness 70 in accordance with ISO 868.

NOTE: The properties and the suitability of the reference test materials listed are checked and ensured by the supplier. The properties specified (e.g. tannage, Shore hardness) serve only to distinguish the different materials, if necessary.

7.3 Preparation of test pieces

Prepare peel and shear test pieces in accordance with EN 1392 using the reference test materials specified in 7.2 in the following combinations:

Leather 1/SBR 1	
Leather 1/Leather 2	
SBR 1	/SBR 1
SBR 2	/SBR 2
NBR	/NBR
SBSR	/SBSR
PVC	/PVC

Use the assembly of leather 1/SBR 1 to evaluate the suitability of the adhesive for bonding upper leather, the most widely used upper material in the shoe industry.

For the evaluation of the adhesive for bonding all other reference test materials specified in 6.2 having a higher inherent strength than leather 1 (leather 2, SBR 1, SBR 2, NBR, SBSR, and PVC) use test pieces prepared from two strips of the same reference test material.

To carry out the creep test (see 7.1.3) at (50 ± 2) °C, depending on the polymer base of the adhesive under test, prepare leather 1/SBR 1 test pieces (e.g. for polychloroprene adhesives) or leather 1/PVC test pieces (e.g. for polyurethane adhesives).

7.4 Storage of test pieces

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Before testing, store all test pieces as specified in 6.3.

Store test pieces for measuring the minimum requirements in compliance with 6.3.3 for 3 days to 5 days and in compliance with 6.3.5 for 5 days to 7 days in the standard atmosphere of 23/50 in accordance with ISO 554 before warming up to (50 ± 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 adhesive used (see 6.2), particularly the name and/or designation, manufacturer, lot number and/or manufacturing date, type of adhesive, adhesive base polymer type, and mixing proportions in the case of multi-part adhesives;
- c) designation of the reference test materials used (see 7.2), the preparation of the bonding surfaces in accordance