SLOVENSKI STANDARD

SIST EN 1392:2006

01-oktober-2006

Nadomeġļa:

SIST EN 1392:1999

Lepila za usnje in obutvene materiale - Raztopinska in disperzijska lepila - Preskusne metode za merjenje trdnosti vezave pod doloļenimi pogoji

Adhesives for leather and footwear materials-Solvent-based and dispersion adhesives-Testing of bond strength under specified conditions

Klebstoffe für Leder und Schuhwerkstoffe - Lösemittel- und Dispersionsklebstoffe - Prüfung der Festigkeit von Klebungen unter festgelegten Bedingungen

Adhésifs pour cuir et matériaux de la chaussure - Adhésifs a base de solvant ou a dispersion - Méthodes d'essai pour mesurer la résistance de collage dans certaines conditions spécifiées

Ta slovenski standard je istoveten z: EN 1392:2006

ICS:

61.060	Obuvala	Footwear
83.180	Lepila	Adhesives

SIST EN 1392:2006 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1392

May 2006

ICS 61.060; 83.180

Supersedes EN 1392:1998

English Version

Adhesives for leather and footwear materials - Solvent-based and dispersion adhesives - Testing of bond strength under specified conditions

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This European Standard was approved by CEN on 13 April 2006.

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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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Foreword

This document (EN 1392:2006) 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of an identical text or by endorsement, at the latest by November 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.

This document, together with EN 15062, supersedes EN 1392:1998.

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

Safety statement

Persons using this document should be familiar with the normal laboratory practice, in principle. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any regulatory conditions.

1 Scope

This European Standard specifies the testing of some strength properties of bonds of leather and footwear materials, in stuck-on assemblies using solvent-based and dispersion adhesives, under different conditions. These can be chosen taking into account the different stresses that such bonds are subjected to, depending on the type of footwear.

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 923:2005, *Adhesives –Terms and definitions*

EN 1067, *Adhesives – Examination and preparation of samples for testing*

EN 12961, *Adhesives for leather and footwear materials – Determination of optimum activation temperatures and maximum activation life of solvent-based and dispersion adhesives*

EN 15307:2005, *Adhesives for leather and footwear materials – Sole-upper bonds - Minimum strength requirements*

EN ISO 868, *Plastics and ebonite – Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868:2003)*

EN ISO 7500-1, *Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Verification and calibration of the force-measuring system (ISO 7500-1:2004)*

EN ISO 10365, *Adhesives – Designation of main failure patterns (ISO 10365:1992)*

EN ISO 15605, *Adhesives – Sampling (ISO 15605:2000)*

ISO 554, *Standard atmospheres for conditioning and/or testing – Specifications*

ISO 2602, *Statistical interpretation of test results – Estimation of the mean – Confidence interval*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923:2005 and the following apply.

3.1 leather
tanned animal skin, usually free of hair

3.2 footwear materials
natural and synthetic materials which are suitable for footwear manufacture or repair and have adequate wear properties as upper or soling material

3.3 adhesives for leather and footwear materials
adhesives which are intended to produce firm and durable bonds of leather and footwear materials

4 Principle

The surface of the leather or the footwear material used is treated specifically to the nature of the material. Then strips of specified length and width are cut from the treated material.

Two of these strips or one strip of the above mentioned material and one strip of a suitable different material are bonded by an adhesive to test pieces of specified form.

The test pieces are stored under specified conditions and their bond strength is determined under specified conditions.

5 Test methods

5.1 Types of tests

5.1.1 Peel tests at (23 ± 2) °C

See 5.4.2

5.1.2 Peel test under constant load and at a constant elevated temperature ("creep test")

See 5.4.3

5.2 Adhesives and materials

5.2.1 Footwear adhesive

Identify the adhesive used completely in the test report, in particular note name and/or designation, manufacturer, date of manufacture/supply and/or lot number, main polymer, type (solvent-based or dispersion) and colour. For two-part adhesives identify the nature of the crosslinking agent and the mixing ratio of the components. Record this adhesive identification in the test report.

Some one or two part reference footwear test adhesives with specific properties have been developed for research, development and quality certification purposes (see EN 15307:2005, Annex A). Record the designation, source and date of supply of the reference test adhesive, if used, in the test report.

5.2.2 Leather and Footwear materials

Completely identify the footwear material(s) used in the test report.

Record name and/or designation, manufacturer, date of manufacture/supply, type of leather or of footwear material, e.g. soling or upper material. For leathers list colour, thickness and type of tannage (if known), for rubber and plastic materials colour, polymer base and Shore-hardness according to EN ISO 868. Include this identification of the material in the test report. Some reference footwear test materials with specified properties have been developed for research, development and quality certification purposes (see EN 15307:2005, Annex A). Record the designation, source and date of supply of the reference footwear test materials, if used, in the test report.

5.3 Apparatus and reagents

5.3.1 General

The items required will depend on the types of materials used:

5.3.2 Cutting knife

sharp knife, for cutting test pieces according to 5.6.2. The angle between the inner and outer cutting surface shall be approximately 20°;

5.3.3 Splitting machine

for splitting outsole leather;

5.3.4 Roughing machine

consists of a rotary wire brush with a wire diameter between 0,1 mm and 0,4 mm. The linear speed of revolution shall be between 10 m/s and 25 m/s;

5.3.5 Scouring machine

with a drum covered with emery paper or emery cloth of 60 grit size and a linear speed of revolution of between 10 m/s and 20 m/s;

5.3.6 Hard felt disc

made from wool for removing thin PVC coats from PVC upper materials;

5.3.7 Brush for dust removing

hand or mechanical device for removing the dust from strips of material after roughing or scouring;

5.3.8 Material for solvent wiping

suitable lintfree fabric or cotton wool. The material for solvent wiping must remain unaffected by the solvent used. Size about 150 mm x 150 mm;

5.3.9 Solvents

ethyl acetate (acetic acid ethyl ester) acetone or light petroleum, boiling range 80 °C to 110 °C;

5.3.10 Halogenation agent, solvent borne, 1- or 2-part

for treating rubber surfaces;

5.3.11 Brush for halogenation

hard and soft with a non-metallic bristle holder for halogenation; bristle length about (20 ± 5) mm;

5.3.12 Adhesive applicator

e.g. brush, roller, coating machine etc. for uniform coating of the adhesive under test;

5.3.13 Heat activator

for heating adhesive coats to the required temperature;

5.3.14 Equipment for measurement of temperature

thermocouple, infrared thermometer, thermoindicator papers or melting powders for measuring the temperature of activated adhesive coats;

5.3.15 Pressing device

providing a precise and even pressure of up to 0,6 MPa over the whole of the surface to be bonded;

5.3.16 Tensile testing machine

according to EN ISO 7500-1 for measuring maximum separation forces up to 10 kN and suitable force measurement ranges.

The tensile testing machine shall record automatically the separation forces determined, and to be adjustable to a constant rate of traverse of (100 ± 10) mm/min during the test.

5.3.17 Oven

with forced ventilation capable of storing test pieces at (50 ± 2) °C.

5.3.18 Warm air cabinet

with forced ventilation capable of maintaining the contents at temperatures between 40 °C and 100 °C with tolerances of ± 2 °C and suitable for testing test pieces in accordance with 5.4.The test cabinet shall be fitted with a window and devices for clamping five test pieces. These devices shall consist of upper clamps fixed on a metal bar in the cabinet and lower clamps which shall have means for attaching weights which pass through cylindrical holes in the base of the cabinet. All lower clamps shall be of the same mass and capable of being loaded with weights so that total loads applied by the individual clamps are 0,5 kg, 1,0 kg, 1,5 kg, 2,0 kg and 2,5 kg.

5.3.19 Weights

with a tolerance of ± 1 % for applying loads of 0,5 kg, 1,0 kg, 1,5 kg, 2,0 kg and 2,5 kg, including the weight of a clamp to the test pieces.

5.4 Form of test pieces

5.4.1 General

Prepare from the leather and footwear materials strips as specified in 5.6.2. If a material, does not allow the cutting of strips of the required dimensions, smaller and/or shorter strips may be used for preparing test pieces of the specified form, providing that their dimensions and overlap are recorded in the test report.

5.4.2 Peel test at (23 ± 2) °C

Two strips of material up to (100 ± 2) mm long and (30 ± 0,5) mm wide are bonded to cover each other over a length of at least (60 ± 2) mm (see Figure 1).