

**Lim för läder och skomaterial – Lösning-
medelsbaserade lim och dispersionslim –
Provning av limförbands hållfasthet under
specifika förhållanden**

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

Europastandarden EN 1392:2006 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 1392:2006.

Denna standard ersätter SS-EN 1392, utgåva 1.

The European Standard EN 1392:2006 has the status of a Swedish Standard. This document contains the official English version of EN 1392:2006.

This standard supersedes the Swedish Standard SS-EN 1392, edition 1.

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English Version

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

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

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

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

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.

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Contents		Page
Foreword		3
1	Scope	4
2	Normative references	4
3	Terms and definitions	4
4	Principle	4
5	Test methods	5

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of an identical text or by endorsement, at the latest by November 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.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.

EN 1392:2006 (E)

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°;

EN 1392:2006 (E)

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;