

# SVENSK STANDARD

## SS-EN ISO 11644:2009

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### **Läder – Provning av belägningens vidhäftning (ISO 11644:2009)**

### **Leather – Test for adhesion of finish (ISO 11644:2009)**

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Denna standard ersätter SS-EN ISO 11644, utgåva 1.

The European Standard EN ISO 11644:2009 has the status of a Swedish Standard. This document contains the official English version of EN ISO 11644:2009.

This standard supersedes the Swedish Standard SS-EN ISO 11644, edition 1.

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### **Extract from the Foreword of ISO 11644:2009**

ISO 11644/IUF 470 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 289, *Leather*, in collaboration with the Fastness Tests Commission of the International Union of Leather Technologists and Chemists Societies (IUF Commission, IULTCS), in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement). It is based on IUF 470 published in *J. Soc. Leather Tech. Chem.*, **74**, pp. 155-160, 1990, and was declared an official method of the IULTCS in September 1991.

IULTCS, originally formed in 1897, is a world-wide organization of professional leather societies to further the advancement of leather science and technology. IULTCS has three Commissions, which are responsible for establishing international methods for the sampling and testing of leather. ISO recognizes IULTCS as an international standardizing body for the preparation of test methods for leather.

This second edition cancels and replaces the first edition (ISO 11644:1993), which has been technically revised. This new version is a general update of the procedures, including an alternative adhesive and electronic evaluation of the force.

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 11644**

May 2009

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Supersedes EN ISO 11644:2003

English Version

## Leather - Test for adhesion of finish (ISO 11644:2009)

Cuir - Essai d'adhérence du finissage (ISO 11644:2009)

Leder - Prüfung der Haftfestigkeit von Zurichtungen (ISO 11644:2008)

This European Standard was approved by CEN on 6 May 2009.

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## Foreword

This document (EN ISO 11644:2009) has been prepared by Technical Committee CEN/TC 289 "Leather", the secretariat of which is held by UNI, in collaboration with Technical Committee ISO/TC IULTCS "International Union of Leather Technologists and Chemists Societies".

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 2009, and conflicting national standards shall be withdrawn at the latest by November 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 11644:2003.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, 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 the United Kingdom.

## Introduction

Prior to the first edition of this International Standard in 1993, a similar test method to that specified here, using an epoxy adhesive and metal adherent-plates had been in use in the leather trade for many years, but was never declared an official method by IULTCS or ISO. The adhesive frequently penetrates thin finish films, thus increasing the adhesion value unrealistically, and it is usually not possible to measure wet adhesion, as there is insufficient adhesion to the metal when water is present. Finishes with insufficient adhesion to the adhesive also occur quite frequently. In spite of these drawbacks, this old method was used regularly and was referred to in many specifications. The method specified in this International Standard eliminates most of these drawbacks.

The adhesives used in this method harden quickly and there is no time for them to penetrate even quite thin finishes unless the finish has open cracks in it. While adhesion to most finishes is sufficient, a few cases still exist in which the adhesion is insufficient and either a different adhesive has to be used or the surface lightly roughened. As the adhesive does not penetrate, it is quite possible to test different layers of a multi-layer finish separately. Such a finish can be tested several times until all the layers have been removed from the leather. It would be advisable for specifications to make allowance for this fact.

A strip of hard PVC is used as the adherent-plate; this gives good adhesion under wet conditions. Wet adhesion can therefore be measured easily. Experience has shown that this "real" wet-adhesion value is often lower, a fact that must also be considered when drawing up specifications based on this method.



# Leather — Test for adhesion of finish

## 1 Scope

This International Standard specifies a method for measuring the adhesion of the finish to leather or the adhesion between two adjacent layers of the finish.

The method is valid for all finished leathers with a smooth surface that can be bonded to an adherent-plate without the adhesive penetrating into the finish. Preliminary experiments might be necessary to determine whether these conditions are met.

This test method is valid for finished leathers with a finish-coat thickness of at least 15 µm.

## 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.

ISO 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

ISO 2418, *Leather — Chemical, physical and mechanical and fastness tests — Sampling location*

ISO 2419, *Leather — Physical and mechanical tests — Sample preparation and conditioning*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

## 3 Terms and definitions

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

### 3.1

#### **adhesion**

force required to pull the leather away from its surface finish layer, the force being applied steadily, at an angle of about 90°, to a rigid adherent-plate to which the finished side of the leather has been bonded

## 4 Principle

The finished side of part of a strip of leather is bonded to an adherent-plate by means of an adhesive film. Force is applied to the free end of the strip to peel the leather from the finish over a given distance, the finish layer remaining on the adherent-plate together with the film of adhesive. The force required is measured and reported as the adhesion value of the finish.

The test is usually carried out on specimens conditioned in a standard atmosphere before testing. If required, the test may additionally be carried out on wetted specimens or on specimens that have previously been subjected to other treatments.

## 5 Apparatus and materials

5.1 **Tensile-testing machine**, incorporating the following features:

- a) a force range appropriate to the specimen under test;
- b) a uniform speed of separation of the jaws of  $100 \text{ mm/min} \pm 5 \text{ mm/min}$ ;
- c) suitable means for fixing the adherent-plate holder (5.3) and either the hook link (5.4) or clamp (5.5);
- d) provision for recording a force-distance diagram during the test.

5.2 **Adherent-plate**, comprising a piece of hard poly(vinyl chloride) (PVC), or another suitable material, measuring approximately  $70 \text{ mm} \times 20 \text{ mm} \times 3 \text{ mm}$ , to which the leather specimen is bonded. PVC with a high infrared (IR) absorption is preferred.

5.3 **Adherent-plate holder** (see Figure 1), made of any suitable material, for holding the adherent-plate, to which the leather specimen has been bonded, in the lower clamp of the tensile-testing machine. Optionally, the plates can be held firmly by screws through the sides of the plate holder, see Figure 5.

Dimensions in millimetres

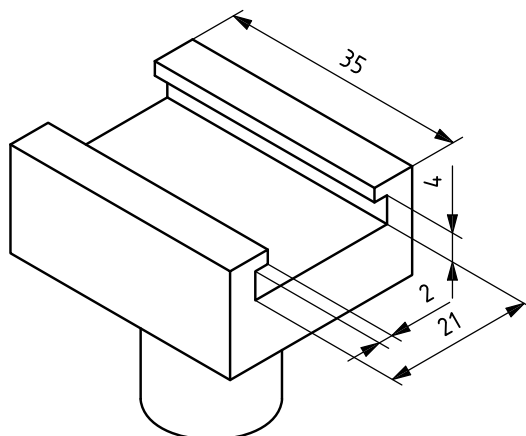


Figure 1 — Adherent-plate holder ( $\pm 2 \text{ mm}$  for 35 mm, otherwise  $\pm 1 \text{ mm}$ )

Either:

5.4 **Hook link**, made of steel wire 1 mm to 2 mm in diameter, at least 200 mm long, for attaching the free end of the leather specimen to the upper clamp of the tensile-testing machine (see Figures 2 and 4). The length of the hook link ensures that the angle of peel always remains close to  $90^\circ$ .

Or:

5.5 **Flat-jawed laboratory screw clamp** (see Figure 3), suitable for clamping the leather sample with a suitable attachment for connecting the laboratory clamp to the upper jaw of the tensile-testing machine, see Figure 5. The length of this attachment should be approximately 250 mm long to ensure that the angle of peel remains close to  $90^\circ$ . Alternatively, a flat-jawed device fitted directly to a tensile-testing machine, such that a peel angle of  $90^\circ$  can be maintained throughout the test, may be used.

5.6 **Punch**, suitable for making a hole 2 mm to 3 mm in diameter in the leather specimen, if using the hook link (5.4).

Dimensions in millimetres

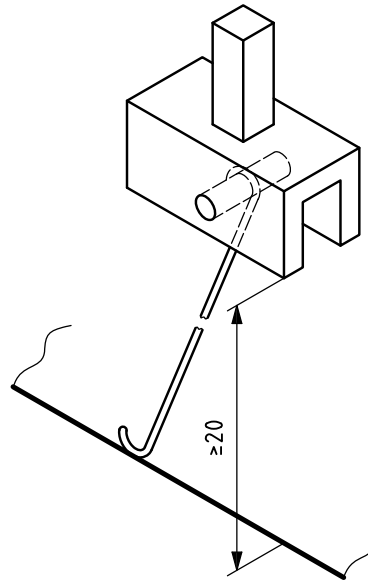


Figure 2 — Hook link



Figure 3 — Flat-jawed clamp

**5.7 Adhesive**, suitable for bonding the leather specimen to the adherent-plate. Types of adhesives found to give satisfactory, reproducible results are

- a single-component cyanoacrylate adhesive, of the instant adhesive type that hardens and bonds within a very short time to avoid penetration of the adhesive through the finish layer, and
- a two-component polyurethane adhesive, comprising a resin and a hardener.

For the two-component adhesive, usually 20 g of solid resin is dissolved in 80 g of ethyl acetate and 5 g of hardener is added, unless otherwise instructed by the supplier of the adhesive. The adhesive shall be used within 8 h of adding the hardener, unless otherwise instructed by the supplier.

NOTE Examples of suitable adhesives available commercially are given in Annex A.