SLOVENSKI STANDARD
SIST EN 12962:2011

01-julij-2011

Nadomešča:
SIST EN 12962:2002

Lepila - Določevanje elastičnih lastnosti tekočih lepil ("indeks elastičnosti")

Adhesives - Determination of elastic behaviour of liquid adhesives (elasticity index)

Klebstoffe - Bestimmung des elastischen Verhaltens flüssiger Klebstoffe (Elastizitätsindex)

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Adhésifs - Détermination du comportement élastique des adhésifs liquides (indice d'élasticité)

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Ta slovenski standard je istoveten z: EN 12962:2011

ICS:

83.180	Lepila	Adhesives

SIST EN 12962:2011 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12962

April 2011

ICS 83.180

Supersedes EN 12962:2001

English Version

Adhesives - Determination of elastic behaviour of liquid adhesives (elasticity index)

Adhésifs - Détermination du comportement élastique des adhésifs liquides (indice d'élasticité)

Klebstoffe - Bestimmung des elastischen Verhaltens flüssiger Klebstoffe (Elastizitätsindex)

This European Standard was approved by CEN on 10 March 2011.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 12962:2011) 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of an identical text or by endorsement, at the latest by October 2011, and conflicting national standards shall be withdrawn at the latest by October 2011.

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 12962:2001.

The main modifications regarding the previous version are in Figure 1 and 6.10.

SAFETY STATEMENT — Persons using this document should be familiar with the normal laboratory practice, if applicable. 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.

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ENVIRONMENTAL STATEMENT — It is understood that some of the material permitted in this standard may have negative environmental impact. As technological advantages lead to acceptable alternatives for these materials, they will be eliminated from this standard to the extent possible.

At the end of the test, the user of the standard should take care to carry out an appropriate disposal of the wastes, according to local regulation.

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Introduction

Many liquid elastomeric adhesives show, depending on the nature of basic elastomer, under specific conditions an elastic behaviour.

The elastic behaviour of an adhesive apart of its viscosity is of great practical significance. It affects both processability (by brush or roller) of an adhesive and its bonding properties to porous substrates like wood, leather or fabric.

For achieving optimum bond strength on porous substrates it is indispensable to adjust both viscosity and elasticity to the porosity of the substrates to be bonded. At a given viscosity, if the elasticity is too high, the adhesive will only rest on the surface of the substrate without penetration and anchoring in the substrate. If, on the contrary, the elasticity is too low, the adhesive is almost completely absorbed by the porous substrate without being able to form a bond-line. In both cases a lower bond strength results.

A "cone and plate rheometer" as specified in EN 12092 allows to determine viscosity and elasticity of an adhesive by measurement of shear tension and tension vertical to shear tension ("normal tension"). However, a "cone and plate rheometer" is very expensive and its maintenance too, operating requires a skilled staff, and cleaning is time-consuming. It is mainly used for scientific purposes.

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1 Scope

This European Standard specifies a test method to determine the elastic behaviour of and elastomeric monocomponent liquid adhesive under specified conditions.

This method is particularly suitable for production control.

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+A1:2008, *Adhesives — Terms and definitions*

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923:2005+A1:2008 apply.

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4 Principle

A specifically shaped and graduated spindle (see Figure 1) is dipped into the adhesive to be tested. The shaft of the spindle is attached to a motor rotating at a constant specified speed for a certain period of time. During rotation, the adhesive under test rises (in equilibrium to gravitation) up to a reproducible height on reading of the spindle shaft. The height (in millimetres) measured is taken as "elasticity index".

5 Apparatus

5.1 Beakers, of 100 mm diameter, capacity about 1 000 ml (see Figure 1).

5.2 Spindle, with size and dimensions shown in Figure 1, with markings at 10 mm intervals and sub-graduated to millimetres.

5.3 Mechanical or electronic stirrer, with the possibility of fine speed control.

5.4 Analytical balance, with scale divisions of 0,01 g.

5.5 Stopwatch, or other suitable timing-device with accuracy of 0,2 s or higher.

5.6 Temperature-controlled room or enclosure, capable of maintaining the sample and the necessary apparatus at (23,0 ± 0,5) °C.

6 Procedure

6.1 Carry out the determination in duplicate.

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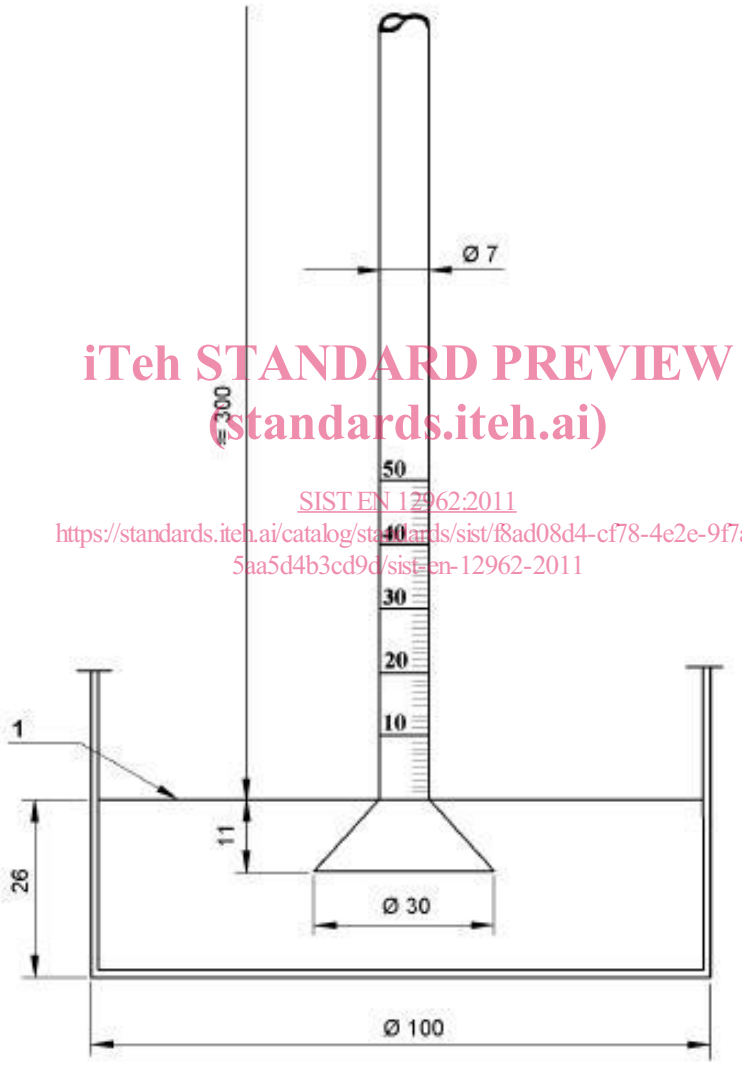
6.2 A significant sample of the adhesive shall be taken in accordance with EN ISO 15605 and prepared for testing as described in EN 1067. Store the sample in a closed container and keep it in the temperature-controlled room (5.6) until the sample reaches (23 ± 2) °C (at least 30 min).

In order to minimize evaporation of solvent, the operations from 6.3 to 6.8 shall be carried out in the shortest possible time.

6.3 Weight (200,0 ± 0,1) g of the adhesive under test into the beaker (5.1).

6.4 Place the beaker containing the adhesive under the stirrer (5.3) taking care to centre the beaker.

Dimensions in millimetres



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Key

1 Solution level

Figure 1 — Spindle

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6.5 Dip slowly the spindle (5.2) into the adhesive avoiding trapping air bubbles in the liquid (for example hold the spindle at an angle of approximately 45° to the surface of the product and manually turn during the immersion).

6.6 Insert the spindle in the mandrel of the stirrer.

6.7 Regulate the spindle immersion until the liquid reaches the highest part of the cone: position zero, and lock the mandrel of the stirrer.

6.8 Protect the adhesive by covering the beaker with a properly shaped paper.

6.9 Start the motor set at the speed of (300 ± 10) min^{-1}.

6.10 Start the stopwatch simultaneously with the motor and then stop both after (30 ± 1) s from the starting.

6.11 Read and note the height reached by the adhesive on the shaft of the spindle for the test report. Ignore any value exceeding 50 mm and the results of any tests during which an irregular, irreproducible behaviour of the adhesive on the rotating stirrer was stated, e.g. a "throwing" caused by centrifugal forces.

6.12 Clean the spindle with a suitable solvent (acetone, aliphatic hydrocarbons or ethanol) and repeat the measurement.

6.13 Take the average of the two values measured.

7 Expression of results

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Express the "elasticity index" as the mean of the duplicate determination (6.11) in millimetres rounded to the nearest 1 mm.

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8 Test report

The test report shall include:

a) a reference to this European Standard, i.e. EN 12962;

b) all details necessary for a complete identification of the adhesive tested;

c) any circumstances which may have affected the result;

d) the test results according to Clause 7, individual and mean values;

e) date of the test.