



SLOVENSKI STANDARD
SIST EN 14257:2019

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Nadomešča:
SIST EN 14257:2006

Lepila - Lepila za les - Ugotavljanje natezne trdnosti spojev s preklopom pri povišani temperaturi (WATT'91)

Adhesives - Wood adhesives - Determination of tensile strength of lap joints at elevated temperature (WATT '91)

Klebstoffe - Holzklebstoffe - Bestimmung der Klebfestigkeit von Längsklebungen im Zugversuch in der Wärme (WATT'91)

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Adhésifs - Adhésifs pour bois - Détermination de la résistance en traction à température élevée des joints à recouvrement (essai WATT'91)

<https://standards.iteh.ai/catalog/standards/sist/7e0f54a2-76c3-4dbd-bec3-08d8b2678b38/sist-en-14257-2019>

Ta slovenski standard je istoveten z: EN 14257:2019

ICS:

83.180 Lepila Adhesives

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EUROPEAN STANDARD

EN 14257

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2019

ICS 83.180

Supersedes EN 14257:2006

English Version

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This European Standard was approved by CEN on 5 August 2019.

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

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

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European foreword

This document (EN 14257:2019) has been prepared by Technical Committee CEN/TC 193 “Adhesives”, the secretariat of which is held by UNE.

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 March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

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

This document supersedes EN 14257:2006.

In comparison with the previous edition, the following technical modifications have been made:

- Clause 4 “Principle” revised;
- 5.1 relevant to tensile testing machine revised;
- 6.1 “Preparation of the bonded test pieces”: number of the test pieces modified;
- Clause 7 “Test procedure” revised;
- 9.3 “Preparation of the test pieces and testing procedures” revised;
- 9.4 “Test results” revised.

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.

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

EN 14257:2019 (E)

1 Scope

This document specifies a method for testing the strength of wood adhesives at 80 °C.

NOTE The procedure described is based on a test developed in Germany known originally as the WATT '91 test. It uses the test piece described in EN 205.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 205, *Adhesives — Wood adhesives for non-structural applications — Determination of tensile shear strength of lap joints*

EN 923, *Adhesives — Terms and definitions*

ISO 5893, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Specification*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at <http://www.electropedia.org/>

— ISO Online browsing platform: available at <https://www.iso.org/obp>
<https://standards.iteh.ai/catalog/standards/sist/7e0f54a2-76c3-4dbd-bec3-08d8b2678b38/sist-en-14257-2019>

4 Principle

A symmetrical bonded lap joint between two wooden adherents is subjected to a period of heating at controlled temperature and then strained to rupture by a longitudinal force parallel to the grain.

The heating test is carried out on thin (0,1 mm) glue lines.

5 Apparatus

5.1 Tensile testing machine, as described in ISO 5893, capable of maintaining a constant strain rate. The jaws shall be mounted in such a way as to permit self-alignment whilst the test pieces are being pulled.

5.2 Fan assisted oven, capable of maintaining a temperature of (80 ± 2) °C.

6 Sample preparation

6.1 Preparation of the-test pieces

Prepare 20 test pieces in accordance with the procedure described in EN 205.

6.2 Conditioning of the bonded assemblies

After bonding and pressing, condition the assembly for a minimum of seven days in a standard atmosphere of either $(20 \pm 2) ^\circ\text{C}$, $(65 \pm 5) \%$ relative humidity [20/65] or $(23 \pm 2) ^\circ\text{C}$, $(50 \pm 5) \%$ relative humidity [23/50].

7 Test procedure

Place each test piece, in a preheated fan oven, at $(80 \pm 2) ^\circ\text{C}$, for (60 ± 2) min and then test it to fracture in a tensile testing machine.

In order to allow time for removal and testing it can be helpful to place the test pieces into the oven at set intervals, and to remove them in sequence after each has been in the oven for 1 h.

Whilst in the oven, the test pieces shall be well spaced in the circulating air.

The time between removal of the test piece from the oven and the start of the test (beginning of the application of the load) shall be (9 ± 1) s.

Test the test pieces in a tensile testing machine.

Clamp the ends of the test pieces in the jaws of the tensile testing machine up to a length of 40 mm to 50 mm. Ensure that the force is applied centrally and in the plane of the bond. Load the test piece until rupture. Record the applied maximum force F_{max} in newtons (N).

For comparative tests of adhesives conduct the test at a rate of traverse of approximately 50 mm/min for thermoplastic adhesives or 6 mm/min to 12 mm/min for thermosetting adhesives respectively.

8 Calculation and express of results

Calculate the hot strength, τ , of the joint in N/mm^2 using Formula (1):

$$\tau = \frac{F_{\text{max}}}{A} = \frac{F_{\text{max}}}{l_2 \cdot b} \quad (1)$$

where

F_{max} is the maximum force in Newton (N);

A is the area of bonded test surface in square millimetres (mm^2);

l_2 is the length of the bonded test surface in millimetres (mm);

b is the width of the bonded test surface in millimetres (mm).

NOTE l_2 and b are defined in EN 205.

9 Test report

9.1 General

A reference to this document, i.e. EN 14257 and the items listed in 9.2 to 9.4 shall be recorded in the test report.

EN 14257:2019 (E)**9.2 The adhesive**

- a) Type and origin of the adhesive;
- b) batch number or other marking of uniquely identifying the adhesive used;
- c) number of components and working methods (procedure of preparing and applying of adhesive);
- d) durability class (for information only).

9.3 Preparation of the test pieces and testing procedures

- a) Species of wood with botanical name;
- b) moisture content of wood relative to oven-dry mass;
- c) characteristic data relating to the bonding procedure (for instance information about the amount of glue applied, the open and closed assembly time, pressing pressure, pressing temperature, pressing time);
- d) special treatment of the surface of the boards to be bonded;
- e) time between the termination of pressing and the cutting of the test pieces;
- f) number of bonded test pieces;
- g) conditioning atmosphere used;
- h) rate of traverse.

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9.4 Test results

- a) Hot strength in Newton per square millimetre, rounded to nearest 0,1 N/mm² of each of the 20 test pieces;
- b) mean and standard deviation of the 20 values of hot strength and coefficient of variation (expressed as percentage);
- c) results from tests in which failure occurred in the wood at values below the specified minimum are invalid. Test pieces that are twisted, bended or showing other irregularities in form are valid if they reach the requirements; otherwise, or if visual examination shows that the adhesive was not correctly applied, the results are invalid. All results, valid or invalid, shall be reported. Explanation of the invalid values shall be reported;
- d) indication of the estimated portion of wood failure as a percentage graded as follows: 0 %, 25 %, 50 %, 75 %, 100 % breakage of wood (mean value of all test pieces);
- e) description of further peculiarities of the appearance of the break;
- f) if necessary, deviations from this document;
- g) date of issue of the report.