SLOVENSKI STANDARD
SIST EN 14257:2006

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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)

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

Ta slovenski standard je istoveten z: **EN 14257:2006**

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83.180	Lepila	Adhesives

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English Version

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

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

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

This European Standard was approved by CEN on 21 November 2005.

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Foreword

This European Standard (EN 14257:2006) 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of an identical text or by endorsement, at the latest by December 2006, and conflicting national standards shall be withdrawn at the latest by December 2006.

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 European Standard should be familiar with the normal laboratory practice, in principle. This European Standard 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 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 referenced documents are indispensable for the application of this European Standard. 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 European Standard, the terms and definitions given in EN 923 apply.

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 normally carried out on thin (0,1 mm) glue lines. However if the manufacturer makes specific claims for the gap filling properties of the test adhesive then the heating test is carried out with both thin and thick (1 mm) glue lines.

5 Apparatus

5.1 Tensile testing machine, as described in ISO 5893, capable of maintaining a constant strain rate of 50 mm/min. 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 bonded test pieces

Prepare 10 test pieces in accordance with the procedure described in EN 205.

6.2 Conditioning bonded assemblies or test pieces

After bonding and pressing, condition the assembly or test pieces for a minimum of seven days in a standard atmosphere of either (20 ± 2) °C, (65 ± 5) % relative humidity [20/65] or (23 ± 2) °C, (50 ± 5) % relative humidity [23/50].

7 Test procedure

Place each test piece, in a preheated fan oven, at (80 ± 2) °C, for (60 ± 2) min and then test it to fracture in a tensile testing machine.

NOTE 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.

Clamp the ends of the test pieces in the jaws of the tensile testing machine to a length of 40 mm to 50 mm. Load the test piece to fracture and determine the maximum force F_{max}. The rate of separation of the jaws shall be 50 mm/min.

8 Calculation and expression of results

Calculate the hot strength, τ, of the joint in N/mm^2 using the equation:

$$\tau = \frac{F_{max}}{A}$$

where

F_{max} is maximum force in Newtons;

A is area of bonded test surface in square millimetres.

9 Test report

9.1 General

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

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) indication whether test pieces with a thin (0,1 mm) bond-line or with a thick (1 mm) bond-line have been used;

g) number of bonded test pieces;

h) conditioning atmosphere used;

i) rate of traverse or the time required to rupture.

9.4 Test results

a) Hot strength in Newton per square millimetre, rounded to nearest 0,1 N/mm^2 of each of the 10 test pieces;

b) mean and standard deviation of the 10 values of hot strength and coefficient of variation (expressed as percentage);

c) for each test piece, an indication of the proportion of wood failure graded as follows: 0 %, 25 %, 50 %, 75 %, 100 % and mean percentage wood failure for the group of 10 test pieces;

d) any further particularities in the appearance of the bounded surfaces;

e) any deviation from this European Standard;

f) date of test and details of the testing organisation.