



SLOVENSKI STANDARD

SIST EN 14258:2005

01-marec-2005

Konstruksijska lepila - Mehansko obnašanje lepljenih spojev ob kratkotrajni ali dolgotrajni izpostavitvi temperaturni obremenitvi

Structural adhesives - Mechanical behaviour of bonded joints subjected to short and long terms exposure at specified conditions of temperature

Strukturklebstoffe - Mechanisches Verhalten von Klebverbindungen bei kurzzeitiger oder langzeitiger Beanspruchung bei festgelegter Temperatur

Adhésifs structuraux - Comportement mécanique des assemblages collés soumis a une exposition a court et long termes a des conditions de température spécifiées

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Ta slovenski standard je istoveten z: **EN 14258:2004**

ICS:

83.180 Lepila Adhesives

SIST EN 14258:2005 **en**

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EUROPEAN STANDARD

EN 14258

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2004

ICS 83.180

English version

Structural adhesives - Mechanical behaviour of bonded joints subjected to short and long terms exposure at specified conditions of temperature

Adhésifs structuraux - Comportement mécanique des assemblages collés soumis à une exposition à court et long termes à des conditions de température spécifiées

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This European Standard was approved by CEN on 2 September 2004.

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.

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 Central Secretariat has the same status as the official versions.

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

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Foreword

This document (EN 14258:2004) 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 May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Introduction

The mechanical properties of adhesively bonded joints are strongly dependent on the temperature at which they are determined, and could be altered when subjected to continuous exposures at specified conditions of time and temperature.

This document specifies how adhesively bonded joints can be characterised:

- a) at different temperatures;
- b) after having been submitted to continuous exposure under specified conditions of time and temperature.

Characterisation can be determined on different standardised shear specimens according to the type of adhesive being assessed and the purpose of the characterisation itself (comparison or design purposes). However, this standard should not be considered to provide information concerning the general suitability of a structural adhesive for a particular application.

Due to the diversity of possible applications and the interactive influences of different adhesive and substrate properties, it is not appropriate to define or determine exposure performance limits.

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1 Scope

This document specifies guidelines for the evaluation of the mechanical behaviour of structural adhesively bonded joints subjected to short and long term exposure at specified conditions of temperature (heat resistance). This is determined by means of measurement of the shear properties of structural adhesively bonded joints.

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 923:1998, *Adhesives – Terms and definitions*.

EN 1465, *Adhesives – Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies (ISO 4587:1979 modified)*.

EN 14869-2, *Structural adhesives – Determination of shear behaviour of structural bonds – Part 2 : Thick adherends shear test (ISO 11003-2:2001, modified)*.

EN ISO 9142, *Adhesives – Guide to the selection of standard laboratory ageing conditions for testing bonded joints (ISO 9142:2003)*.

ISO 10123, *Adhesives – Determination of shear strength of anaerobic adhesives using pin-and-collar specimens*.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923:1998 apply.

4 Safety

People using this standard shall be familiar with normal laboratory practice.

This standard does not purport to address all safety problems, if any, associated with its use.

It is the responsibility of the user to establish health and safety practices and to ensure compliance with any European or regulatory conditions.

5 Apparatus

5.1 Apparatus required to test the specimens at room temperature, in accordance with EN 1465, EN 14869-2 and ISO 10123.

5.2 Tensile test machine, for short term testing equipped with an environmental chamber suitable for conditioning and testing the specimens at the desired temperature.

5.3 Environmental chamber, for thermal ageing, complying with the relevant standard or required specification.

EN 14258:2004 (E)**6 Specimens**

Specimens shall be prepared in accordance with EN 1465, ISO 10123 or EN 14869-2 as appropriate. Before testing, or initiating the thermal ageing programme, specimens shall be conditioned for 1 day at $(23 \pm 2) ^\circ\text{C}$ and a relative humidity of $(50 \pm 5) \%$, in accordance with EN ISO 9142.

7 Procedure**7.1 Temperature dependent test**

For design purposes:

- only EN 14869-2 shall be used;
- anaerobic adhesives shall only be assessed in accordance with ISO 10123.
- all other adhesives shall be assessed in accordance with EN 1465 ; Test temperatures should be chosen according to the specific application and according to EN ISO 9142. The specimens shall be held at the relevant temperature until temperature equilibrium is reached.

The tests shall be monitored in accordance with the standard used.

7.2 Long term thermal exposure test

For design purposes, only EN 14869-2 shall be used.

For comparison purposes:

- anaerobic adhesives shall only be assessed in accordance with ISO 10123;
- all other adhesives shall be assessed in accordance with EN 1465 ; Unaged reference specimens shall be prepared and evaluated at $(23 \pm 2) ^\circ\text{C}$.

NOTE The tests described in 7.1 can be used as guidance for the selection of exposure temperatures.

An exposure time shall be chosen according to the specific application. The specimens shall be conditioned at the desired temperatures in a suitable environmental chamber (5.3), accurately monitored and controlled for the desired periods of time.

After thermal ageing, all specimens shall be conditioned at $(23 \pm 2) ^\circ\text{C}$ and a relative humidity of $(50 \pm 5) \%$ for 24 h prior to testing. The shear specimens shall then be evaluated according to the standard test methods at $(23 \pm 2) ^\circ\text{C}$.

8 Report

For the temperature dependent tests the test temperature shall be reported, in addition to the information required for the test report(s) for the test standard used.

Long term thermal exposure time and temperature shall be reported, in addition to the information required for the test report(s) for the test standard used.