SLOVENSKI STANDARD
SIST-TP CEN/TR 14548:2003

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Lepila – Vodilo za preskusne metode in druge standarde za splošne zahteve, lastnosti in varnost konstrukcijskih lepil

Adhesives - Guide to test methods and other standards for the general requirements, characterization and safety of structural adhesives

Klebstoffe - Anleitung zur Anwendung von Prüfverfahren und anderen Normen für allgemeine Anforderungen, Charakterisierung und Sicherheit von Strukturklebstoffen

Adhésifs - Guide des méthodes d'essai et d'autres normes pour les spécifications générales, la caractérisation et la sécurité des adhésifs structuraux

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English version

Adhesives – Guide to test methods and other standards for the general requirements, characterization and safety of structural adhesives

Adhésifs – Guides des méthodes d'essai et d'autres normes pour les spécifications générales, la caractérisation et la sureté des adhésifs structuraux

Klebstoffe – Anleitung zur Anwendung von Prüfverfahren und anderen Normen für allgemeine Anforderungen, Charakterisierung und Sicherheit von Strukturklebstoffen

This Technical Report was approved by CEN on 2 January 2003. It has been drawn up by the Technical Committee CEN/TC 193.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (CEN/TR 14548:2003) has been prepared by Technical Committee CEN/TC 193 “Adhesives”, the secretariat of which is held by AENOR.

1 Scope

This Technical Report identifies and categorises the European and International Standards relating to structural adhesives. It encompasses the methods used to both prepare and assess surfaces and to determine the general characteristics of structural adhesives. Additionally, it provides methods for gauging the performance of structural adhesives under load and the means of obtaining design data. Standards relating to safety, storage and product life are also provided.

NOTE In this Technical Report safety does not refer to the mechanical integrity of bonded joints.

2 References

This Technical Report incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Technical Report only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 542, *Adhesives - Determination of density.*

EN 543, *Adhesives - Determination of apparent density of powder and granule adhesives*.

EN 827, *Adhesives - Determination of conventional solids content and constant mass solids content* .

EN 828, *Adhesives - Wettability - Determination by measurement of contact angle and critical surface tension of solid surface*.

EN 923:1998, *Adhesives - Terms and definitions.*

EN 924, *Adhesives - Solvent-borne and solvent-free adhesives - Determination of flashpoint*.

EN 1066, *Adhesives - Sampling.*

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

EN 1239, *Adhesives - Freeze-thaw stability*.

EN 1244, *Adhesives - Determination of the colour and/or colour changes of adhesive coats under the influence of light*.

EN 1245, *Adhesives - Determination of pH - Test method.*

EN 1464, *Adhesives - Determination of peel resistance of high-strength adhesive bonds - Floating roller method (ISO 4578:1990 modified)*

EN 1465, *Adhesives - Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies (ISO 4578:1990 modified)*

EN 1965-1, *Structural adhesives - Corrosion - Part 1 : Determination and classification of corrosion to a copper substrate*.

EN 1965-2, *Structural adhesives - Corrosion - Part 2 : Determination and classification of corrosion to a brass substrate*.

EN 1966, *Structural adhesives - Characterisation of a surface by measuring adhesion by means of the three point bending method*.

EN 1967, *Structural adhesives - Evaluation of the effectiveness of surface treatment techniques for aluminium using a wet peel test in association with the floating roller method.*

EN 2101, *Aerospace series - Chromic acid anodizing of aluminium and wrought aluminium alloys.*

prEN 2243-1, *Aerospace series - Structural adhesives - Test methods - Part 1: Single lap shear*

EN 2243-2, *Aerospace series - Structural adhesives - Test methods - Part 2: Peel metal-metal.*

EN 2243-5, *Aerospace series – Structural adhesives - Test methods – Part 5: Ageing tests*

prEN 2243-6, *Structural adhesives - Test methods - Part 6: Single lap shear-thick adherend (shear stress and shear displacement .*

EN 2334, *Aerospace series - Chromic-sulphuric acid pickle of aluminium and aluminium alloys.*

EN 2497, *Aerospace series – Dry abrasive blasting of titanium and titanium alloys.*

EN 2667, *Aerospace series - Non-metallic materials; foaming structural adhesives, Test methods.*

prEN 3002, *Aerospace series - Chromic acid anodizing - Testing of adhesives.*

prEN 3003, *Structural adhesives – Test method for the determination of mass per unit area of film adhesives.*

prEN 4106, Aerospace series - *Non metallic materials - Structural adhesive system - Paste adhesive - Technical specification.*

prEN 6040, *Aerospace series - Non-metallic materials - Test method - Analysis of thermoset systems by High Performance Liquid Chromatography (HPLC).*

prEN 6041, *Aerospace series - Non-metallic materials - Test method - Analysis of non-metallic (uncured) by differential scanning calorimetry (DSC).*

EN 12092, *Adhesives - Determination of viscosity.*

EN 12701, S*tructural adhesives - Storage - Determination of words and phrases relating to the product life of structural adhesives and related materials.*

prEN 13887, *Structural adhesives – Guidelines for surface preparation of metals and plastics prior to adhesive bonding.*

prEN 14022, *Structural adhesives - Determination of the pot life (working life) of multicomponent adhesives.*

EN 14173, Structural adhesives - T-peel test for flexible-to-flexible bonded assemblies (ISO 11339:1993 Modified)

prEN 14444, *Adhesives - Characterization of durability of structural-adhesive-bonded assemblies - Wedge rupture test (ISO 10354:1992, modified).*

EN 26922, *Adhesives - Determination of tensile strength of butt joints.*

EN 28510-1, *Adhesives - Peel test for a flexible-bonded-to-rigid test specimen assembly - Part 1 : 90º peel.*

EN 28510-2, *Adhesives - Peel test for a flexible-bonded-to-rigid test specimen assembly - Part 2 : 180º peel.*

EN 29142, *Adhesives - Guide to the selection of standard laboratory ageing conditions for testing bonded joints.*

EN 29653, *Adhesives - Test method for shear impact strength of adhesive bonds. (ISO 9653:1991)*

EN ISO 291, *Plastics - Standard atmospheres for conditioning and testing (ISO 291:1997)*

EN ISO 868, *Plastics and ebonite. Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868:1985).*

EN ISO 6721-2, *Plastics - Determination of dynamic mechanical properties - Part 2 : Torsion-pendulum method (ISO 6721-2:1994, including Technical Corrigendum 1:1995)*

EN ISO 9664, *Adhesives - Test methods for fatigue properties of structural adhesives in tensile shear (ISO 9664:1993).*

EN ISO 10365, *Adhesives - Designation of the main failure patterns. (ISO 10365:1992).*

EN ISO 10964, *Adhesives - Determination of torque strength of anaerobic adhesives on threaded fasteners (ISO 10964:1993).*

prEN ISO 11003-1, *Adhesives - Determination of shear behaviour of structural adhesives - Part 1 : Torsion test method using butt-bonded hollow cylinders.*

prEN ISO 11003-2, *Adhesives - Determination of shear behaviour of structural bonds - Part 2 : Thick-adherend tensile-test method.*

prEN ISO 14678, *Adhesives - Determination of resistance to flow (sagging) (ISO/DIS 14678)*

EN 14493, *Structural adhesives - Determination of dynamic resistance to cleavage of high strength adhesive bonds under impact conditions - Impact wedge method.* (ISO 11343:1993 modified)

ISO 527, *Plastics - Determination of tensile properties (Five parts)*

ISO 604, *Plastics - Determination of compressive properties.*

ISO 760, *Determination of water - Karl Fischer method (General method).*

ISO 4578, *Adhesives - Determination of peel resistance of high-strength adhesive bonds - Floating-roller method.*

ISO 4588, *Adhesives - Guidelines for the surface preparation of metals.*

ISO 6441-1, *Paints and varnishes – Determination of micro-indentation hardness – Part 1 : Knoop hardness by measurement of indentation length.*

ISO 6441-2, *Paints and varnishes – Determination of micro-indentation hardness – Part 2 : Knoop hardness by measurement of indentation depth under load.*

ISO 7619, *Rubber - Determination of indentation hardness by means of pocket hardness meters.*

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

ISO 14615, Adhesives. Durability of structural adhesive joints. Exposure to humidity and temperature under load.

IEC 60112, *Method for determining the proof and the comparative tracking indices of solid insulating materials.*

3 Terms and definitions

For the purposes of this Technical Report, the terms and definitions given in EN 923:1998 apply, and in particular the following one:

3.1
structural bond
bond which is capable of sustaining in a structure a specified strength level under a combination of stresses for a specified period of time.

NOTE The combination of stresses can, for example, include peel and shear forces, flutuating loads, environmental exposure and steady load. An adhesive that is capable of forming a structural bond is commonly referred to as a "structural adhesive".

[EN 923:1998]

4 Categorisation of test methods and other standards

Test methods and other standards concerned with structural adhesives can be classified under three categories, as follows:

Category I: General methods for qualitative and/or quantitative assessment..

Category II: Characterisation methods to get quantitative design values.

Category III Methods and standards related to safety, storage and product life.

NOTE Some methods and standards can be classified under more than one category.

5 Examination and preparation of samples

The examination and preparation of samples of structural adhesives for testing in accordance with the methods identified is carried out according to EN 1066 and EN 1067.

Test specimens are conditioned and tested in one of the standard laboratory atmospheres specified in EN ISO 291.

Test specimens for testing after ageing are subjected to conditioning selected from EN 29142 or EN 2243-5.

6 Category I: General methods for qualitative and/or quantitative assessment.

6.1 Adhesives

— Appearance/Colour EN 1244.

— Freeze/Thaw stability EN 1239.

— Solids content EN 827.

— pH EN 1245.

— ViscosityEN 12092.