



# SLOVENSKI STANDARD SIST EN 15274:2015

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Nadomešča:  
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## Lepila za splošne namene montaže v gradbeništvu - Zahteve in preskusne metode

General purpose adhesives for structural assembly - Requirements and test methods

Klebstoffe für allgemeine Anwendungen in strukturellen Klebverbunden - Anforderungen und Prüfverfahren

Adhésifs structuraux pour applications générales - Exigences et méthodes d'essai

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EUROPEAN STANDARD

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**General purpose adhesives for structural assembly -  
Requirements and test methods**Adhésifs structuraux pour applications générales -  
Exigences et méthodes d'essaiKlebstoffe für allgemeine Anwendungen in strukturellen  
Kleverbunden - Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 25 January 2015.

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EUROPÄISCHES KOMITEE FÜR NORMUNG**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (EN 15274:2015) 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of an identical text or by endorsement, at the latest by October 2015, and conflicting national standards shall be withdrawn at the latest by January 2017.

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 15274:2007.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

For relationship with EU Regulation see informative Annex ZA, which is an integral part of this document.

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

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**EN 15274:2015 (E)****1 Scope**

This European Standard specifies requirements for adhesives intended for use in the creation and general assembly of load-bearing, structural elements used in civil engineering works and the construction of buildings. Other than the exceptions stated, it embraces all combinations of bonded materials, used to create or repair load-bearing elements.

It covers individual adhesives and special purpose kits comprising various combinations of adhesive types and components.

It includes test methods and methods of assessment.

The performance requirements in this standard may not be applicable to highly specialized applications in extreme environmental conditions, e.g. cryogenic use, nor do they cover specialized circumstances such as accidental impact, e.g. due to traffic or ice, or earthquake loading where specific performance requirements will apply.

The intended use is for internal and external construction elements and those cladding and covering elements (excluding ceramic tiles) specifically required, by regulatory authorities, to provide protection from fire in identified building zones, including escape routes.

This European Standard does not cover:

- prefabricated, bonded structural components;
- concrete bonded either to itself or steel or a material based on carbon fibre;
- wood, when bonded to itself to form a timber based, laminated beam [of the type known as a 'Glulam' beam] intended for use as a major structural, load bearing element;
- thermoplastics [e.g. polyethylene, polypropylene, polyamide and fluorinated polymers in general] unless they have been specifically prepared [usually through a specialized oxidative process] for bonded assembly on site;
- co-axial metallic assemblies comprising fasteners- threaded and otherwise, pipes and tubes;
- glass assemblies in structural glazing applications made using silicone adhesives;
- those structural elements that are permanently immersed in water.

**2 Normative references**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 1242, *Adhesives — Determination of isocyanate content*

EN 1465, *Adhesives — Determination of tensile lap-shear strength of bonded assemblies*

EN 1877-1, *Products and systems for the protection and repair of concrete structures — Test methods — Reactive functions related to epoxy resins — Part 1: Determination of epoxy equivalent*

EN 1877-2, *Products and systems for the protection and repair of concrete structures — Test methods — Reactive functions related to epoxy resins — Part 2: Determination of amine functions using the total basicity number*

EN 12092, *Adhesives — Determination of viscosity*

EN 13999-1, *Adhesives — Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application — Part 1: General procedure*

EN 13999-2, *Adhesives — Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application — Part 2: Determination of volatile organic compounds*

EN 13999-3, *Adhesives — Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application — Part 3: Determination of volatile aldehydes*

EN 13999-4, *Adhesives — Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application — Part 4: Determination of volatile diisocyanates*

EN 14022, *Structural Adhesives — Determination of the pot life (working life) of multi-component adhesives*

EN 15336, *Adhesives — Determination of the time to rupture of bonded joints under static load (ISO 15109)*

EN ISO 75-3, *Plastics — Determination of temperature of deflection under load — Part 3: High-strength thermosetting laminates (ISO 75-3)*

EN ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2)*

EN ISO 527-3, *Plastics — Determination of tensile properties — Part 3: Test conditions for films and sheets (ISO 527-3)*

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

EN ISO 9664, *Adhesives — Test methods for fatigue properties of structural adhesives in tensile shear (ISO 9664)*

EN ISO 11339, *Adhesives — T-peel test for flexible-to-flexible bonded assemblies (ISO 11339)*

EN ISO 11909, *Binders for paints and varnishes — Polyisocyanate resins — General methods of test (ISO 11909)*

EN ISO 14896, *Plastics — Polyurethane raw materials — Determination of isocyanate content (ISO 14896)*

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

### 3 Terms and definitions

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

NOTE CEN/TR 14548 also provides relevant guidance.

## EN 15274:2015 (E)

## 4 Performance characteristics for intended uses

## 4.1 General

The manufacturer shall undertake initial performance tests on the product in accordance with Table 1.

The measurement temperature is  $(23 \pm 2)$  °C. For measurements obtained at other temperatures, record the temperature with the value.

Table 1 — Performance characteristics for intended uses

No	Characteristics	Units	Reference Test Method	Additional information and test methods <sup>a</sup>
1	Bond shear strength	MPa	EN 1465	Explain the used adherend material, surface treatment and thickness of adhesive layer in the technical documentation of the product, because this has an influence to the measured value.
2	Tensile strength <sup>b</sup>	MPa	EN ISO 527-2 EN ISO 527-3	For very brittle adhesives it may be more suitable to perform flexural tests instead of tensile, e.g. the EN ISO 178. This is also depending from available test equipment. Especially for production control the test should be easy to perform and show reliable results.
3	Young's modulus	MPa	EN ISO 527-2 EN ISO 527-3	
4	Fatigue strength <sup>b</sup>	MPa	EN ISO 9664	Shear stress determined at a specific number of fault test cycles.
5	Heat resistance	°C	EN ISO 75-3 SIST EN 15274:2015 <a href="https://standards.iteh.ai/catalog/standards/sist/32222222-2015-55/e603a67a3457/sist-en-15274">https://standards.iteh.ai/catalog/standards/sist/32222222-2015-55/e603a67a3457/sist-en-15274</a>	Determination of temperature of deflection under load. Heat resistance can also be determined by means of the determination of glass transition temperature according to EN ISO 6721-2.
6	Creep <sup>b</sup>		EN 15336	
7	Durability		EN ISO 9142	Durability shall be measured by means of the change of the bond shear strength (according to EN 1465) after an ageing test according to EN ISO 9142 conditions. Manufacturer shall declare the relevant ageing conditions for the specific application.
8	Release of dangerous substances	µg/m <sup>3</sup>	EN 13999 (all parts)	
9	Impact resistance <sup>b</sup>	N/mm	EN ISO 11339	
10	Pot life (working life)	Minutes	EN 14022	Only suitable for two component products.
<p><sup>a</sup> Instead of the reference test method other test methods may be more suitable, depending from the type of adhesive e.g. Therefore additional test methods are possible for factory production control provided that the producer demonstrates sufficient correlation.</p> <p><sup>b</sup> The determination of these additional performance characteristics is only partly needed for specific applications by demand of the user or operator and when subject to regulations.</p>				

**WARNING** — The characteristics of the bonded joint may be adversely affected by fire and therefore appropriate protection measures will need to be taken where fire is anticipated.



## 4.2 Sampling

General requirements for sampling procedures are set out in EN ISO 15605 and EN 1067.

## 5 Requirements

### 5.1 Production control requirements

The manufacturer shall undertake selected representative initial identification tests for the product or system as specified in Table 2. These tests shall be used to confirm the composition of the product. The manufacturer shall undertake these tests every 10 tons or every batch, whatever is reached first, and hold the test records (batch is a usual production unit).

**Table 2 — Production control requirements**

No	Characteristics	Reference Test Method	Requirement/Tolerance additional information and test methods <sup>a</sup>
1	Appearance Texture and odour	Sensory check	Serious errors will be detected by a careful visual judgment of the material.  The visual check judges the colour and the colour characteristics (clear / cloudy) as well as the surface structure (fineness of grind, gloss) of the material. If the material has to fulfil not only functional requirements but esthetic ones as well, the visual aspect of the material and/or application becomes increasingly important. In this case, the material has to be compared to references. References can be colour charts, customer or standard laboratory samples. If there is any doubt, following measurements have to be made.
2	Epoxy equivalent	EN 1877-1	Determination of epoxy equivalent (only suitable for two component epoxy)
3	Amine functions	EN 1877-2	Determination of amine functions using the total basicity number (only suitable for two component epoxy)
4	Isocyanate content for adhesives not containing blocked isocyanate group	EN 1242	Determination of isocyanate content
5	Isocyanate content for adhesives containing blocked isocyanate group	EN ISO 14896 or EN ISO 11909	Determination of isocyanate content <sup>a</sup>

<sup>a</sup> Instead of the reference test method other test methods may be more suitable, depending for example from the type of adhesive. Therefore additional test methods are possible for factory production control provided that the producer demonstrates sufficient correlation.

### 5.2 Performance requirements

The manufacturer shall undertake performance tests on the product in accordance with Table 3, yearly or every 500 tons, whatever is reached first. The manufacturer shall hold the test records.

Table 3 — Performance requirements of adhesive

Item No	Characteristics	Reference Test Method	Requirement/Tolerance additional information and test methods <sup>a</sup>
1	Bond shear strength	EN 1465	Within the specification of this adhesive
2	Pot life (working life)	EN 14022	Within the specification of this adhesive (only suitable for two component adhesives)
3	Viscosity	EN 12092	Within the specification of this adhesive, for very high viscous adhesives other test methods may be more practical <sup>a</sup>

<sup>a</sup> Instead of the reference test method other test methods may be more suitable, depending for example from the type of adhesive. Therefore additional test methods are possible for factory production control provided that the producer demonstrates sufficient correlation.

### 5.3 Sampling

General requirements for sampling procedures are set out in EN ISO 15605 and EN 1067.

## 6 Assessment and verification of constancy of performance (AVCP)

### 6.1 General

The compliance of general purpose adhesives with the requirements of this standard and with the performances declared by the manufacturer in the DoP shall be demonstrated by:

- determination of the product type;
- factory production control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the conformity of the product with its declared performance(s).

### 6.2 Type testing

#### 6.2.1 General

All performances related to characteristics included in this standard shall be determined when the manufacturer intends to declare the respective performances unless the standard gives provisions for declaring them without performing tests. (e.g. use of previously existing data, CWFT and conventionally accepted performance).

Assessment previously performed in accordance with the provisions of this standard, may be taken into account provided that they were made to the same or a more rigorous test method, under the same AVCP system on the same product or products of similar design, construction and functionality, such that the results are applicable to the product in question.

- For the purposes of assessment, the manufacturer's products may be grouped into families, where it is considered that the results for one or more characteristics from any one product within the family are representative for that same characteristics for all products within that same family.

NOTE Products may be grouped in different families for different characteristics.

Reference to the assessment method standards should be made to allow the selection of a suitable representative sample.

In addition, the determination of the product type shall be performed for all characteristics included in the standard for which the manufacturer declares the performance:

- at the beginning of the production of a new or modified general purpose adhesive (unless a member of the same product range), or
- at the beginning of a new or modified method of production (where this may affect the stated characteristics); or

they shall be repeated for the appropriate characteristic(s), whenever a change occurs in the general purpose adhesive design, in the raw material or in the supplier of the components, or in the method of production (subject to the definition of a family), which would affect significantly one or more of the characteristics.

Where components are used whose characteristics have already been determined, by the component manufacturer, on the basis of assessment methods of other product standards, these characteristics need not be re-assessed. The specifications of these components shall be documented.

Products bearing regulatory marking in accordance with appropriate harmonized European specifications may be presumed to have the performances declared in the DoP, although this does not replace the responsibility on the general purpose adhesives manufacturer to ensure that the general purpose adhesive as a whole is correctly manufactured and its component products have the declared performance values.

### 6.2.2 Test samples, testing and compliance criteria

The number of samples of general purpose adhesive to be tested/assessed shall be in accordance with Table 4.

**Table 4 — Number of samples to be tested and compliance criteria**

Characteristic	Requirement	Assessment method	No. of samples	Compliance criteria
Bond shear strength	Clause 4, 5.2	EN 1465	1	Clause 4, 5.2
Tensile strength	Clause 4	EN ISO 527-2 EN ISO 527-3	1	Clause 4
Fatigue strength	Clause 4	EN ISO 9664	1	Clause 4
Young's modulus	Clause 4	EN ISO 527-2 EN ISO 527-3	1	Clause 4
Impact resistance (by means of T-peel test)	Clause 4	EN ISO 11339	1	Clause 4
Heat resistance	Clause 4	EN ISO 75-3	1	Clause 4
Creep	Clause 4	EN 15336	1	Clause 4
Release of dangerous substances	Clause 4	EN 13999 (all parts)	1	Clause 4
Durability	Clause 4	EN ISO 9142	1	Clause 4
Pot life (working life)	Clause 4	EN 14022	1	Clause 4

### 6.2.3 Test reports

The results of the determination of the product type shall be documented in test reports. All test reports shall be retained by the manufacturer for at least 10 years after the last date of production of the general purpose adhesive to which they relate.