

BS EN 12765:2016



BSI Standards Publication

# Classification of thermosetting wood adhesives for non-structural applications

**National foreword**

This British Standard is the UK implementation of EN 12765:2016. It supersedes BS EN 12765:2001 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/52, Adhesives.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EUROPEAN STANDARD

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August 2016

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English Version

## Classification of thermosetting wood adhesives for non-structural applications

Classification des colles thermodurcissables pour bois  
à usages non structurauxKlassifizierung von duromeren Holzklebstoffen für  
nichttragende Anwendungen

This European Standard was approved by CEN on 8 July 2016.

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<b>Contents</b>		Page
<b>European foreword</b> .....		<b>3</b>
<b>Introduction</b> .....		<b>4</b>
<b>1</b>	<b>Scope</b> .....	<b>4</b>
<b>2</b>	<b>Normative references</b> .....	<b>4</b>
<b>3</b>	<b>Terms and definitions</b> .....	<b>4</b>
<b>4</b>	<b>Classification</b> .....	<b>4</b>
<b>5</b>	<b>Test method</b> .....	<b>5</b>
<b>6</b>	<b>Requirements</b> .....	<b>5</b>
<b>Bibliography</b> .....		<b>7</b>

## European foreword

This document (EN 12765:2016) 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of an identical text or by endorsement, at the latest by February 2017, and conflicting national standards shall be withdrawn at the latest by February 2017.

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 12765:2001.

Compared to EN 12765:2001 the following modifications have been made:

- a) references to tests with thick bond lines have been removed;
- b) assessment is based on 20 test pieces;
- c) additional information on conditioning sequences added in Table 2.

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, 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.

## Introduction

European Standards giving a common classification with respect to durability classes for wood adhesives will allow considerable improvement in consumer protection in any future product liability system with regard to properties guaranteed by the adhesive manufacturer.

### 1 Scope

This European Standard classifies thermosetting resin based wood adhesives for non-structural applications into durability classes C1 to C4 based on the dry and wet strengths of bond-lines measured under specified conditions after various conditioning treatments.

For special applications, further tests, which do not fall within the scope of this European Standard can be applicable.

The adhesives specified in this European Standard are suitable for the bonding of furniture and interior structures, panelling, doors, windows, stairs etc. made of wood or derived timber products.

### 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 205:2016, *Adhesives — Wood adhesives for non-structural applications - Determination of tensile shear strength of lap joints*

EN 923, *Adhesives - Terms and definitions*

### 3 Terms and definitions

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

#### 3.1

##### **thermosetting resin**

##### **thermoset**

monomer, polymer or copolymer, which when cured, changes into a substantially infusible and insoluble product

[SOURCE: EN 923:2015, 2.2.9]

#### 3.2

##### **thermosetting wood adhesive**

adhesive whose main constituent is a thermosetting resin and which has been formulated for bonding wood

### 4 Classification

An adhesive shall be classified in accordance with Table 1, which gives examples of climatic conditions and fields of application in which the bonded member is to be used. The classification shall be based on tests on thin bond-lines as defined in EN 205:2016.

**Table 1 — Description of durability classes**

<b>Durability class</b>	<b>Examples of climatic conditions and fields of application</b>
C1	Interior, in which the moisture content of the wood does not exceed 15 %
C2	Interior with occasional short-term exposure to running or condensed water and/or to occasional high humidity provided the moisture content of the wood does not exceed 18 %
C3	Interior with frequent short-term exposure to running or condensed water and/or to heavy exposure to high humidity. Exterior not exposed to weather
C4	Interior with frequent long-term exposure to running or condensed water. Exterior exposed to weather but with protection by an adequate surface coating

## 5 Test method

The adhesive shall be tested in accordance with EN 205:2016, and as follows:

- a) bond-lines shall be tested as according to their assigned durability class (see Table 1);
- b) the tests shall be performed using the appropriate conditioning sequence given in Table 2;
- c) the individual strength values  $\tau$  in N/mm<sup>2</sup> rounded to 0,1 N/mm<sup>2</sup> and the mean value of the 20 test pieces for each conditioning sequence shall be recorded. 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;

The standard atmosphere used as a control climate is either (20 ± 2) °C and (65 ± 5) % relative humidity (RH), (20/65), or (23 ± 2) °C and (50 ± 5) % relative humidity (RH), (23/50).

## 6 Requirements

When tested in accordance with EN 205:2016, the mean strength of an adhesive shall conform to the values shown in Table 2.

**Table 2 — Minimum values of adhesive strength for thin bond lines**

Conditioning sequences		Adhesive strength in N/mm <sup>2</sup> Durability classes			
Sequence number	Duration and condition	C1 <sup>c</sup>	C2 <sup>c</sup>	C3 <sup>c</sup>	C4 <sup>c</sup>
1	7 days <sup>a</sup> in standard atmosphere <sup>b</sup>	≥ 10	≥ 10	≥ 10	≥ 10
2	7 days in standard atmosphere 1 day in water at (20 ± 5) °C	—	≥ 7	≥ 7	≥ 7
3	7 days in standard atmosphere 3 h in water at (67 ± 2) °C 2 h in water at (20 ± 5) °C	—	—	≥ 4	—
4	7 days in standard atmosphere 3 h in boiling water 2 h in water at (20 ± 5) °C	—	—	—	≥ 4

In each conditioning sequence, specimens shall change from one step to another immediately (not gradually). For the conditioning sequences 2,3 and 4 the specimens shall be tested in wet state after removing them from water.

NOTE 1 The seven days in standard atmosphere are included in the conditioning time mentioned EN 205:2016, 6.2.

NOTE 2 A longer conditioning time between gluing and testing might be necessary as advised by the adhesive manufacturer.

NOTE 3 The number used in the designation does not indicate ranking order. A given adhesive can be assigned to more than one durability class.

<sup>a</sup> 1 day = 24 h.

<sup>b</sup> (20 ± 2) °C and (65 ± 5) % relative humidity or (23 ± 2) °C and (50 ± 5) % relative humidity.

<sup>c</sup> All minimum values indicated in the columns of durability classes C1 to C4 shall be reached as mean values for the classification of an adhesive (for example for C4 the conditioning sequences are 1, 2 and 4).

— = No test required.



## Bibliography

- [1] EN 204, *Classification of thermoplastic wood adhesives for non-structural applications*





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