

BS EN 204:2016



BSI Standards Publication

Classification of thermoplastic wood adhesives for non-structural applications

National foreword

This British Standard is the UK implementation of EN 204:2016. It supersedes BS EN 204:2001 which is withdrawn.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.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2016. Published by BSI Standards Limited 2016

ISBN 978 0 580 89029 1

ICS 83.180

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 August 2016.

Amendments issued since publication

Date	Text affected
------	---------------

EUROPEAN STANDARD

EN 204

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2016

ICS 83.180

Supersedes EN 204:2001

English Version

Classification of thermoplastic wood adhesives for non-structural applications

Classification des colles thermoplastiques pour bois à usages non structuraux

Klassifizierung von thermoplastischen Holzklebstoffen für nichttragende Anwendungen

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

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents		Page
European foreword		3
Introduction		4
1	Scope	5
2	Normative references	5
3	Terms and definitions	5
4	Classification	5
5	Test method	6
6	Requirements	6
Bibliography		8

European foreword

This document (EN 204:2016) 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 204:2001.

Compared to EN 204:2001 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 thermoplastic resin based wood adhesives for non-structural applications into durability classes D1 to D4 based on the dry and wet strengths of bond-lines measured under specified conditions after various conditioning treatments.

For special applications, further tests that 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.

This European Standard does not specify the temperature resistance of bond-lines.

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

thermoplastic resin

thermoplast

polymer or copolymer capable of being softened by heating and hardened by cooling

[SOURCE: EN 923:2015, modified — NOTE 1 to entry has been removed]

3.2

thermoplastic wood adhesive

adhesive whose main constituent is a thermoplastic 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

Durability class	Examples of climatic conditions and fields of application
D1	Interior, in which the moisture content of the wood does not exceed 15 %
D2	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 %
D3	Interior with frequent short-term exposure to running or condensed water and/or to heavy exposure to high humidity. Exterior not exposed to weather
D4	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 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 τ in N/mm² rounded to 0,1 N/mm² 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 adhesives strength for thin bond-lines

Conditioning sequences		Adhesive strength in N/mm ² Durability classes			
Sequence number	Duration and condition	D1 ^c	D2 ^c	D3 ^c	D4 ^c
1	7 days ^a in standard atmosphere ^b	≥ 10	≥ 10	≥ 10	≥ 10
2	7 days in standard atmosphere 3 h in water at (20 ± 5) °C 7 days in standard atmosphere	—	≥ 8	—	—
3	7 days in standard atmosphere 4 days in water at (20 ± 5) °C	—	—	≥ 2	≥ 4
4	7 days in standard atmosphere 4 days in water at (20 ± 5) °C 7 days in standard atmosphere	—	—	≥ 8	—
5	7 days in standard atmosphere 6 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 3 and 5 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.

^a 1 day = 24 h.

^b (20 ± 2) °C and (65 ± 5) % relative humidity or (23 ± 2) °C and (50 ± 5) % relative humidity.

^c All minimum values indicated in the columns of durability classes D1 to D4 shall be reached as mean values for the classification of an adhesive (for example for D4, the conditioning sequences are 1, 3 and 5).

— = No test required.

Bibliography

- [1] EN 12765, *Classification of thermosetting wood adhesives for non-structural applications*

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards-based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Copyright in BSI publications

All the content in BSI publications, including British Standards, is the property of and copyrighted by BSI or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use.

Save for the provisions below, you may not transfer, share or disseminate any portion of the standard to any other person. You may not adapt, distribute, commercially exploit, or publicly display the standard or any portion thereof in any manner whatsoever without BSI's prior written consent.

Storing and using standards

Standards purchased in soft copy format:

- A British Standard purchased in soft copy format is licensed to a sole named user for personal or internal company use only.
- The standard may be stored on more than 1 device provided that it is accessible by the sole named user only and that only 1 copy is accessed at any one time.
- A single paper copy may be printed for personal or internal company use only.

Standards purchased in hard copy format:

- A British Standard purchased in hard copy format is for personal or internal company use only.
- It may not be further reproduced – in any format – to create an additional copy. This includes scanning of the document.

If you need more than 1 copy of the document, or if you wish to share the document on an internal network, you can save money by choosing a subscription product (see 'Subscriptions').

Reproducing extracts

For permission to reproduce content from BSI publications contact the BSI Copyright & Licensing team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email subscriptions@bsigroup.com.

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Useful Contacts

Customer Services

Tel: +44 345 086 9001

Email (orders): orders@bsigroup.com

Email (enquiries): cservices@bsigroup.com

Subscriptions

Tel: +44 345 086 9001

Email: subscriptions@bsigroup.com

Knowledge Centre

Tel: +44 20 8996 7004

Email: knowledgecentre@bsigroup.com

Copyright & Licensing

Tel: +44 20 8996 7070

Email: copyright@bsigroup.com

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK