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NSAI Standards

Irish Standard
I.S. EN 302-4:2013

Adhesives for load-bearing timber structures - Test methods - Part 4: Determination of the effects of wood shrinkage on the shear strength

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I.S. EN 302-4:2013

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 302-4

March 2013

ICS 83.180

Supersedes EN 302-4:2004

English Version

Adhesives for load-bearing timber structures - Test methods - Part 4: Determination of the effects of wood shrinkage on the shear strength

Adhésifs pour structures portantes en bois - Méthodes d'essai - Partie 4: Détermination de l'influence du retrait du bois sur la résistance au cisaillement

Klebstoffe für tragende Holzbauteile - Prüfverfahren - Teil 4: Bestimmung des Einflusses von Holzschwindung auf die Scherfestigkeit

This European Standard was approved by CEN on 5 February 2013.

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Contents

Page

Foreword 3

Introduction 4

1 Scope 6

2 Normative references 6

3 Principle 6

4 Apparatus 6

5 Method 7
5.1 General 7
5.1.1 Selection of timber 7
5.1.2 Preparation of cover pieces 7
5.1.3 Preparation of core pieces 7
5.1.4 Conditioning 8
5.2 Preparation of the bonded assemblies 8
5.3 Number of bonded assemblies 11
5.4 Dry storage treatment 11
5.5 Preparation of the test piece 11
5.6 Climatic storage 12
5.7 Test procedure 12

6 Expression of results 12

7 Test report 13
7.1 The adhesive 13
7.2 Preparation of the samples and the testing procedures 13
7.3 Test results 13

Bibliography 14

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Foreword

This document (EN 302-4:2013) 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of an identical text or by endorsement, at the latest by September 2013 and conflicting national standards shall be withdrawn at the latest by September 2013.

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 302-4:2004.

The following modifications have been made:

— The wood density requirement for Norwegian spruce has been altered;

— A recommended time period is given for the dry storage treatment.

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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Introduction

This document is one of a series dealing with adhesives for use with timber structures, and is published in support of EN 1995, *Eurocode 5: Design of timber structures*. The series consists of three classification and performance requirements for adhesives for load-bearing timber structures, phenolic and aminoplastic adhesives (EN 301), one component polyurethane adhesives (EN 15425) and emulsion polymerised isocyanate adhesives (prEN 16254), and all together eleven test methods (EN 302 Parts 1 to 7 and EN 15416 Parts 2 to 5).

These European Standards have the following titles:

EN 301, *Adhesives, phenolic and aminoplastic, for load-bearing timber structures — Classification and performance requirements*

EN 15425, *Adhesives — One component polyurethane for load bearing timber structures — Classification and performance requirements*

prEN 16254, *Adhesives — Emulsion polymerized isocyanate (EPI) for load-bearing timber structures — Classification and performance requirements*

EN 302, *Adhesives for load-bearing timber structures — Test methods*

— *Part 1: Determination of longitudinal tensile shear strength*

— *Part 2: Determination of resistance to delamination*

— *Part 3: Determination of the effect of acid damage to wood fibres by temperature and humidity cycling on the transverse tensile strength*

— *Part 4: Determination of the effects of wood shrinkage on the shear strength*

— *Part 5: Determination of maximum assembly time under referenced conditions*

— *Part 6: Determination of the minimum pressing time under referenced conditions*

— *Part 7: Determination of the working life under referenced conditions*

EN 15416, *Adhesives for load bearing timber structures other than phenolic and aminoplastic — Test methods*

— *Part 2: Static load test of multiple bondline specimens in compression shear*

— *Part 3: Creep deformation test at cyclic climate conditions with specimens loaded in bending shear*

— *Part 4: Determination of open assembly time for one component polyurethane adhesives*

— *Part 5: Determination of conventional pressing time*

Safety statement

Persons using this document should be familiar with the normal laboratory practice, if applicable. This document cannot address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any regulatory conditions.

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Environmental statement

It is understood that some of the material permitted in this standard can have a negative environmental impact. As technological advantages lead to better alternatives for these materials, they will be eliminated from this standard to the greatest extent possible.

At the end of the test, it is recommended that the user of the standard take care to carry out an appropriate disposal of the wastes, according to local regulations.

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1 Scope

This European Standard specifies a method for determining the influence of shear strength in crosswise gluing by wood shrinkage under drying conditions.

It is suitable for the following applications:

a) for assessing the compliance of adhesives with EN 301, EN 15425 and prEN 16254;

b) for assessing the suitability and quality of adhesives for load-bearing timber structures;

c) for determining if the adhesive is capable of withstanding stresses due to wood shrinkage without unacceptable loss of strength.

This test is intended primarily to obtain performance data for the classification of adhesives for load-bearing timber structures according to their suitability for use in defined climatic environments. This test is carried out on Norway spruce (*Picea abies* L.).

This method is not intended for use to provide numerical design data and does not necessarily represent the performance of the bonded member in service.

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 301, *Adhesives, phenolic and aminoplastic, for load-bearing timber structures — Classification and performance requirements*

EN 13183-1, *Moisture content of a piece of sawn timber — Part 1: Determination by oven dry method*

ISO 5893, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Specification*

ISO 6344-2, *Coated abrasives — Grain size analysis — Part 2: Determination of grain size distribution of macrogrits P12 to P220*

3 Principle

A crosswise double joint with 0,5 mm thick glue line is submitted to a dry storage treatment and then strained to failure by a compressive shear force.

4 Apparatus

4.1 Testing machine, which shall be either:

a) capable of maintaining a constant rate of loading of (20 ± 5) kN/min; or

b) capable of maintaining a constant crosshead speed as described in ISO 5893.

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