



SLOVENSKI STANDARD

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Specifikacija za dodatne komponente zidovine - 2. del: Preklade

Specification for ancillary components for masonry - Part 2: Lintels

Festlegungen für Ergänzungsbauteile für Mauerwerk - Teil 2: Stürze

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EUROPEAN STANDARD
NORME EUROPÉENNE
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May 2013

ICS 91.080.30

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English Version

Specification for ancillary components for masonry - Part 2: Lintels

Spécifications pour composants accessoires de
maçonnerie - Partie 2: Linteaux

Festlegungen für Ergänzungsbauteile für Mauerwerk - Teil
2: Stürze

This European Standard was approved by CEN on 21 March 2013.

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.

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

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EN 845-2:2013 (E)**Foreword**

This document (EN 845-2:2013) has been prepared by Technical Committee CEN/TC 125 "Masonry", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This document supersedes EN 845-2:2003.

This part has been modified to take into account comments made in the five-year review on the 2003 version. A change has been made in the permission to use historic test data when arriving at declared values; a limited permission is also given for the use of calculation methods in certain cases.

EN 845, *Specification for ancillary components for masonry*, consists of the following parts:

- *Part 1: Wall ties, tension straps, hangers and brackets*
- *Part 2: Lintels*
- *Part 3: Bed joint reinforcement of steel meshwork*

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.

1 Scope

This European Standard specifies requirements for prefabricated lintels for maximum spans of 4,5 m and made from steel, autoclaved aerated concrete, manufactured stone, concrete, fired clay units, calcium silicate units, natural stone units, or a combination of these materials. Concrete and steel beams conforming to EN 1090-1, EN 12602 and EN 13225, as appropriate, are not covered by this standard.

Prefabricated lintels can be either complete lintels or the prefabricated part of a composite lintel.

This European Standard is not applicable to:

- a) lintels completely made on site;
- b) lintels of which the tensile parts are made on site;
- c) timber lintels;
- d) natural stone lintels, not reinforced.

Linear components spanning clear openings greater than 4,5 m in masonry walls and linear components intended for use independently in a structural role (e.g. beams) are not covered by this standard.

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2 Normative references (standards.iteh.ai)

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 206-1:2000, *Concrete — Part 1: Specification, performance, production and conformity*

EN 771 (all parts), *Specification for masonry units*

EN 772-1, *Methods of test for masonry units — Part 1: Determination of compressive strength*

EN 772-11, *Methods of test for masonry units — Part 11: Determination of water absorption of aggregate concrete, autoclaved aerated concrete, manufactured stone and natural stone masonry units due to capillary action and the initial rate of water absorption of clay masonry units*

EN 846-9, *Methods of test for ancillary components for masonry — Part 9: Determination of flexural resistance and shear resistance of lintels*

EN 846-11, *Methods of test for ancillary components for masonry — Part 11: Determination of dimensions and bow of lintels*

EN 846-13:2001, *Methods of test for ancillary components for masonry — Part 13: Determination of resistance to impact, abrasion and corrosion of organic coatings*

EN 846-14, *Methods of test for ancillary components for masonry — Part 14: Determination of the initial shear strength between the prefabricated part of a composite lintel and the masonry above it*

EN 990, *Test methods for verification of corrosion protection of reinforcement in autoclaved aerated concrete and lightweight aggregate concrete with open structure*

EN 998-2:2010, *Specification for mortar for masonry — Part 2: Masonry mortar*

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EN 1745, *Masonry and masonry products — Methods for determining thermal properties*

EN 10080, *Steel for the reinforcement of concrete — Weldable reinforcing steel — General*

EN 10088 (all parts), *Stainless steels*

prEN 10138 (all parts), *Prestressing steels*

EN 10346:2009, *Continuously hot-dip coated steel flat products — Technical delivery conditions*

EN 12602:2008, *Prefabricated reinforced components of autoclaved aerated concrete*

EN 13501-2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods (ISO 1461)*

EN ISO 1463, *Metallic and oxide coatings — Measurement of coating thickness — Microscopical method (ISO 1463)*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE 1 Examples of lintel types are shown in Figures 1 to 3. The figures are only for illustration of lintel types. Other details such as bearings, thermal insulation systems and damp proof courses are not shown.

NOTE 2 General dimensions defined in Clause 3 are illustrated in Figures 3 and 4.

3.1.1

autoclaved aerated concrete lintel

lintel manufactured using reinforced autoclaved aerated concrete

3.1.2

bearing length

length of the end of a lintel which bears on its support

3.1.3

built-in length

minimum length needed to anchor the reinforcing bars

3.1.4

clear opening

clear distance between lintel supports

3.1.5

combined lintel

lintel consisting of two or more structural elements each one acting with compression and tension zones

3.1.6

composite lintel

lintel comprising a prefabricated part and a complementary element of in-situ masonry or concrete above, acting together

3.1.7**composite lintel height**

overall height of the tension and compression zones of a composite lintel

3.1.8**concrete lintel**

lintel manufactured using reinforced or prestressed concrete

3.1.9**declared value**

value for a product property, determined in accordance with this standard, that a manufacturer is confident of achieving, bearing in mind the variability of the manufacturing process

3.1.10**effective span**

distance between the centres of the bearing of a lintel, or the clear opening spanned by the lintel plus the overall height of the lintel including any complementary element, whichever is the lesser

3.1.11**flexural resistance**

mean uniformly distributed load at which failure of a sample of lintel specimens occurs (or a lower load at which tests are stopped in accordance with the recommendations of the manufacturer of the lintel)

3.1.12**lintel**

lineal element supporting load over an opening in a masonry wall

3.1.13**lintel height**

overall height of the prefabricated part of a lintel

3.1.14**lintel length**

overall length of the prefabricated lintel

3.1.15**load bearing capacity**

mean value for a sample of lintels of the total of the uniformly distributed load at failure or at an extreme deflection, whichever is the lesser

3.1.16**load ratio**

ratio of inner leaf load to outer leaf load on a lintel supporting a double-leaf or cavity wall

3.1.17**masonry lintel**

lintel comprising one or more shell casing units completed by the incorporation within the shell casing of reinforced or prestressed concrete

3.1.18**shear resistance**

mean shear load at which failure of a sample of lintel specimens occurs (or a lower load at which tests are stopped in accordance with the recommendations of the manufacturer of the lintel)

3.1.19**shell casing unit**

prefomed component with one or more channels into which is incorporated either reinforced or prestressed concrete

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EN 845-2:2013 (E)**3.1.20****single lintel**

prefabricated lintel acting alone

3.1.21**declared deflection**

deflection at one third of the declared load capacity of the lintel

3.1.22**steel lintel**

lintel manufactured from steel

3.1.23**structural shell casing unit**

shell casing unit which is made of a material with a compressive strength not less than that of the infill concrete

3.2 Symbols

NOTE General dimensions are illustrated in Figures 3 and 4.

b_s is the smallest width of a structural shell casing unit specimen, in mm (see Figure 5);

b is the bearing length, in mm;

d_{ppcl} is the height of the prefabricated part of the composite lintel;

d_c is the composite lintel height, in mm;

d_l is the lintel height, in mm;

δ_{dv} is the declared deflection in a vertical direction, in mm;

δ_{dh} is the declared deflection in a horizontal direction, in mm;

h_u is the height of the masonry unit;

t_{bj} is the thickness of the bedjoint;

h_s is the cut length of a structural shell casing unit specimen, in mm (see Figure 5);

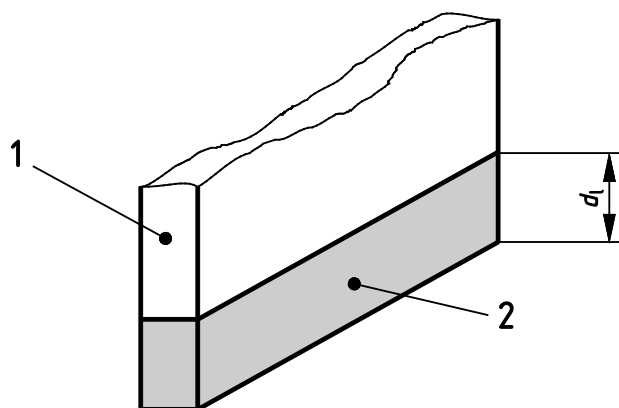
l is the lintel length, in mm;

l_0 is the clear opening, in mm;

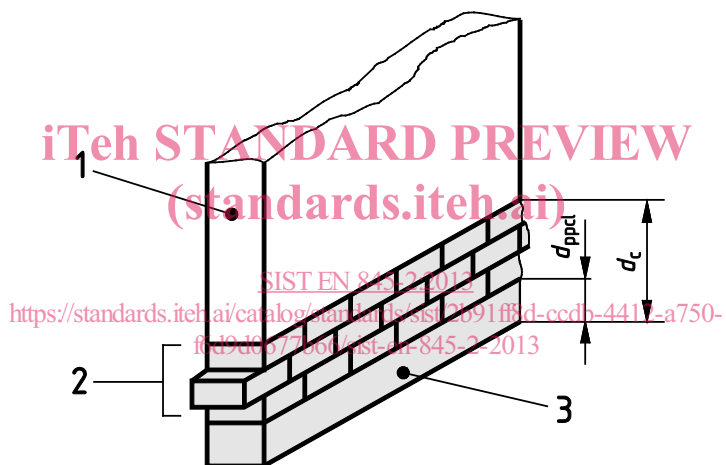
l_e is the effective length, in mm;

F_{tkl} is the tensile resistance of the prefabricated part in the ultimate limit state;

f_{vk0i} is the initial shear strength between the prefabricated part of the lintel and the mortar in the bed joint above.

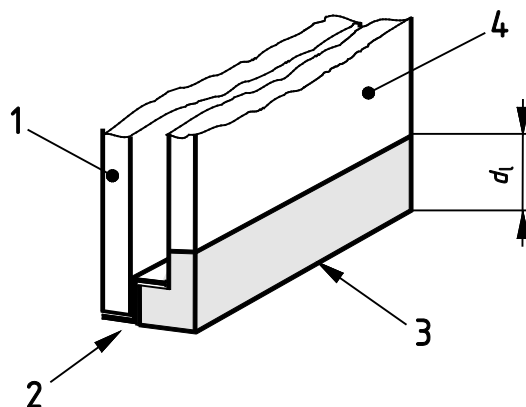
**Key**

- 1 supported masonry
- 2 single lintel

Figure 1 — Example of a single lintel (see 3.1.20)**Key**

- 1 supported masonry
- 2 complementary element (masonry or concrete)
- 3 prefabricated part

Figure 2 — Example of a composite lintel (see 3.1.6)

**Key**

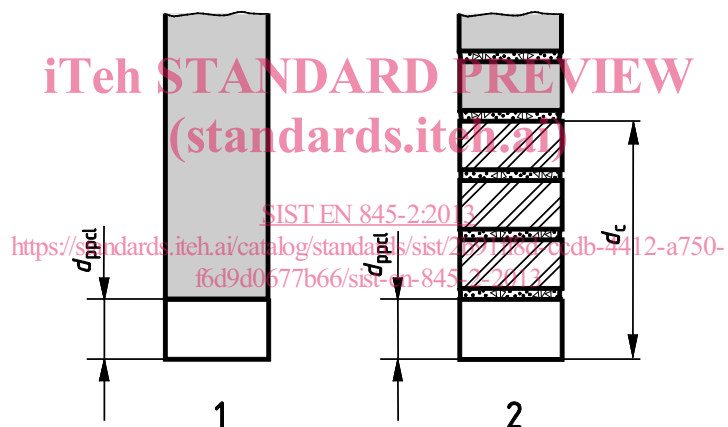
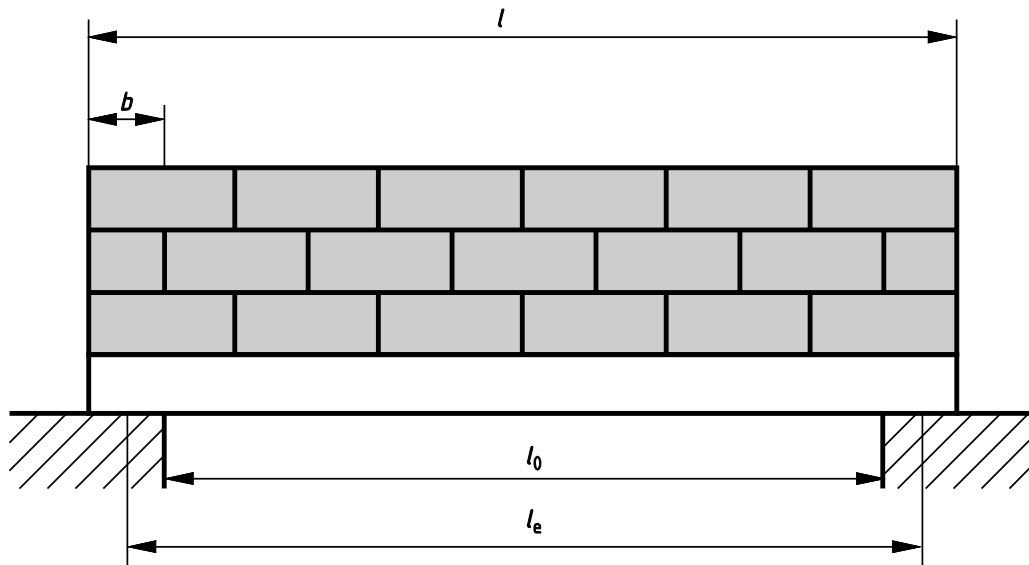
- | | | | |
|---|--------------------------------|---|--------------------------------|
| 1 | supported masonry - outer leaf | 3 | inner leaf lintel |
| 2 | outer leaf lintel | 4 | supported masonry – inner leaf |

Figure 3 — Example of a combined lintel (see 3.1.5)

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Key

- 1 lintels other than composite lintels
- 2 composite lintel

Figure 4 — General dimensions

4 Materials

4.1 Steel lintels

Materials for the manufacture of steel lintels covered by this standard shall be selected from Annex C.1 and the material/coating reference shall be declared.

4.2 Concrete lintels

Concrete lintels shall be fabricated from reinforced or prestressed concrete with or without non-structural shell casing units.