SLOVENSKI STANDARD
SIST EN 15361:2008

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Doloļ anje vpliva zaġļ ite proti koroziji na sidrno sposobnost preļ nih sidrnih palic

Determination of the influence of the corrosion protection on the anchorage capacity of the transverse anchorage bars

Bestimmung des Einflusses des Korrosionsschutzüberzugs auf die aufnehmbare Verankerungskraft der zur Verankerung benutzten Querstäbe in vorgefertigten bewehrten Bauteilen aus dampfgehärtetem Porenbeton

Détermination de l'influence de la protection contre la corrosion sur la capacité d'ancrage des barres d'ancrage transversales dans les composants préfabriqués en béton cellulaire autoclavé armé

Ta slovenski standard je istoveten z: **EN 15361:2007**

ICS:

91.100.30	Beton in betonski izdelki	Concrete and concrete products

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EUROPEAN STANDARD

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English Version

Determination of the influence of the corrosion protection coating on the anchorage capacity of the transverse anchorage bars in prefabricated reinforced components of autoclaved aerated concrete

Détermination de l'influence de la protection contre la corrosion sur la capacité d'ancrage des barres d'ancrage transversales dans les composants préfabriqués en béton cellulaire autoclavé armé

Bestimmung des Einflusses des Korrosionsschutzüberzugs auf die aufnehmbare Verankerungskraft der zur Verankerung benutzten Querstäbe in vorgefertigten bewehrten Bauteilen aus dampfgehärtetem Porenbeton

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

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Foreword

This document (EN 15361:2007) has been prepared by Technical Committee CEN/TC 177 “Prefabricated reinforced components of autoclaved aerated concrete or light-weight aggregate concrete with open structure”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by October 2007, and conflicting national standards shall be withdrawn at the latest by October 2007.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This document specifies a pull-out test method for the verification of the applicability of the declared outer diameter of the transverse bars with corrosion protection coating $\phi_{tot,g}$ in the calculation of the anchorage capacity of transverse anchorage bars (see A.10.3 in prEN 12602:2006) in prefabricated reinforced components of autoclaved aerated concrete (AAC).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 678, *Determination of the dry density of autoclaved aerated concrete*

EN 679, *Determination of the compressive strength of autoclaved aerated concrete*

3 Principle

Pull-out tests on prismatic AAC test specimens including a longitudinal bar with a welded transverse anchorage bar with corrosion protection coating (see 5.3, type C) are made. The bearing stress in front of the welded transverse anchorage bar is calculated using the measured mean outer diameter $\phi_{tot,m}$.of the welded transverse bar including the coating.

For comparison, pull-out tests are made on otherwise alike test specimens, where the welded transverse bar is without corrosion protection coating, but has been treated with a thin layer of coating for elimination of bond (see 5.3 Type B). In this case the bearing stress in front of the transverse anchorage bar is calculated using the diameter of the transverse bar ϕ_t (without coating).

In both cases the bond between the longitudinal bar and the AAC is eliminated using a proper method.

NOTE Comparison of the determined bearing stresses will show if it is applicable to use the declared effective outer diameter of the transverse bar with corrosion protection coating, $\phi_{tot,g}$, in the calculation of the anchorage capacity of the transverse anchorage bars.

4 Apparatus

a) saw for cutting test specimens from reinforced AAC components without excessive heating, vibration or shock;

b) testing machine or a loading device capable of applying a tension force at the required steady rate without shock and with an accuracy of 2 % of the ultimate pull-out force;

c) rigid steel base plate with a central hole of 20 mm diameter to accommodate for the protruding longitudinal bar of the test specimen;

d) intermediate layer of soft fibre board (thickness 10 mm to 20 mm, density 250 kg/m^3 to 300 kg/m^3, with a central hole of 20 mm diameter, to be inserted between the test specimen and the rigid steel plate;

e) device for measuring the slip between the longitudinal reinforcing bar and the AAC to an accuracy of 1/100 mm and for recording the load-slip curve;

f) callipers capable of measuring the outer diameter of the transverse bar and the corrosion protection coating to an accuracy of 0,1 mm;

g) ventilated drying oven, capable of maintaining a temperature of (105 ± 5) °C;

h) balance for weighing test specimens to an accuracy of 0,1 %.

5 Test specimens

5.1 General

The test specimens are obtained by cutting them e.g. from specially reinforced AAC components with a saw so that the longitudinal bar is in the middle of a 200 mm × 200 mm AAC cross-section. The transverse bars (short sections of 60 mm length welded in centre to the longitudinal bar) shall be located in a distance of approximately 200 mm from the supported surface of the test specimen.

5.2 Measurement of the mean outer diameter of the transverse bar with the corrosion protection coating

The outer diameter of the coated transverse bar shall be measured before the reinforcement is embedded in AAC. The measurement shall be performed by means of callipers at least at 6 different places of the coated transverse bar in perpendicular direction to the longitudinal bar. The mean value of the individual measurements $\phi_{tot,m}$ shall be determined.

5.3 Shape, size and preparation of test specimens

Three types of AAC test specimens with the dimensions of 200 mm × 200 mm × 250 mm are prepared:

Type A. Three test specimens including a ϕ (7 ± 0,5) mm longitudinal steel bar where bond between steel and AAC is eliminated using the same method as in type C test specimens, see Figure 2. They are for the verification that the bond has been adequately eliminated between the longitudinal bar and the AAC.

NOTE Tests made with type A test specimens (i.e. verification of the elimination of bond) are not necessary if previous tests have shown that the method used for the elimination of bond in reliable.

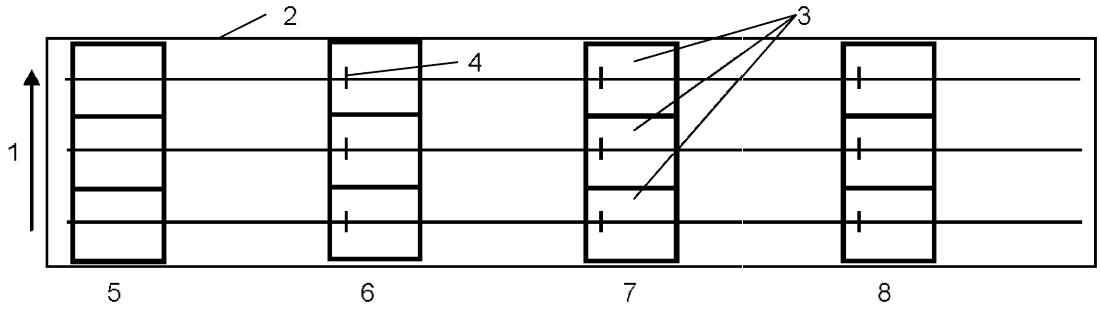
Type B. Three test specimens including a ϕ (7 ± 0,5) mm longitudinal steel bar where bond between steel and AAC is eliminated using the same method as in type C test specimens and a ϕ (7 ± 0,5) mm transverse bar (length L = 60 mm) with thin layer coating for the elimination of bond, see Figure 3.

Type C. Three test specimens including a ϕ (7 ± 0,5) mm longitudinal steel bar where bond between steel and AAC is eliminated using proper method and a ϕ (7 ± 0,5) mm transverse bar (length L = 60 mm) with the coating under consideration, see Figure 4.

Furthermore, 3 reference specimens shall be prepared with the same dimensions and the same reinforcement as the test specimens Type C. They shall be dried to constant mass at (105 ± 5) °C, and their oven-dry mass $m_{d,ref}$ shall be determined.

From each type one test specimen shall be prepared from the upper third of the component, one from the middle and one from the lower third, in the direction of rise of the mass during manufacture (see Figure 1).

NOTE The value $m_{d,ref}$ is needed for the calculation of the required humid mass of the test specimens after conditioning according to NOTE 2 in 5.4.

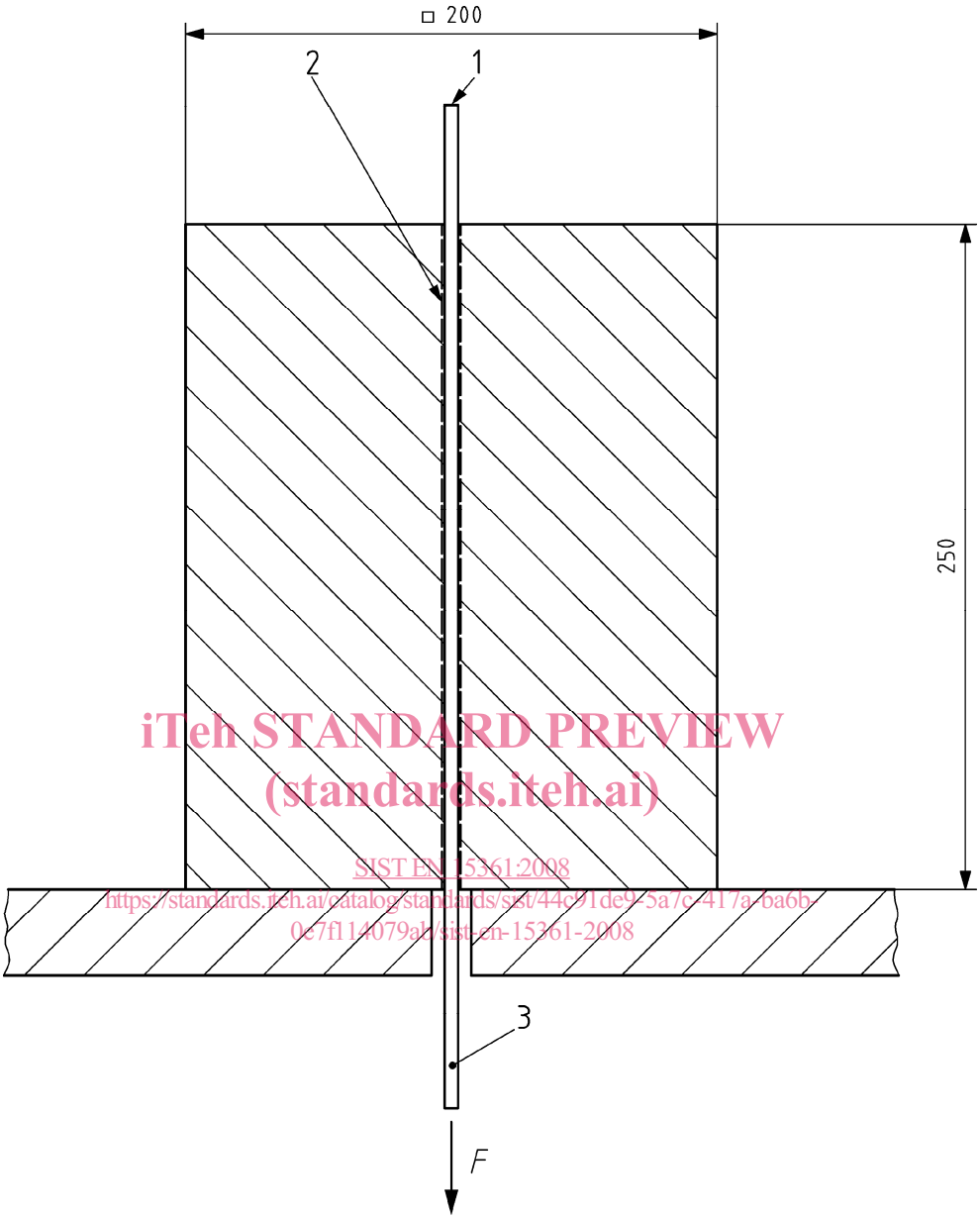


Key

1 direction of rise of mass during manufacture
2 specially reinforced prefabricated AAC-component
3 test specimens with central longitudinal bar ϕ (7 ± 0,5) mm
4 welded transverse bar, ϕ (7 ± 0,5) mm, length L = 60 mm
5 test specimens Type A
6 test specimens Type B
7 test specimens Type C
8 reference specimens

Figure 1 – Example for cutting scheme

Dimensions in millimetres



Key

F pull-out force
1 measurement of displacement
2 bond is eliminated
3 longitudinal bar ϕ 7 mm in the middle

Figure 2 — Test specimen type A (without transverse bar) and test arrangement