SLOVENSKI STANDARD
SIST EN 15191:2010

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Montažni betonski izdelki - Klasifikacija lastnosti steklocementnega kompozita

Precast concrete products - Classification of glass-fibre reinforced concrete performances

Betonfertigteile - Klassifizierung der Leistungseigenschaften von Glasfaserbeton

Produits préfabriqués en béton - Classification des performances des composites ciment -verre

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91.100.30	Beton in betonski izdelki	Concrete and concrete products

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Precast concrete products - Classification of glassfibre reinforced concrete performance

Produits préfabriqués en béton - Classification des performances des composites ciment-verre

Betonfertigteile - Klassifizierung der Leistungseigenschaften von Glasfaserbeton

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 15191:2009) has been prepared by Technical Committee CEN/TC 229 “Precast concrete products”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

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Introduction

The classification covers all GRC formulation and production processes.

The properties of GRC depend on:

a) the constituent materials used;

b) the composition of glassfibre reinforced concrete;

c) the production processes.

The classification of GRC is based on the material properties that can be achieved.

1 Scope

This European Standard deals with the classification of glassfibre reinforced concrete. This classification conforms to the needs of the design process of glassfibre reinforced concrete components. This European Standard applies only if EN 1169 is followed.

This standard does not deal with design methods.

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 196-1, *Methods of testing cement — Part 1: Determination of strength*

EN 196-2, *Methods of testing cement — Part 2: Chemical analysis of cement*

EN 1170-4, *Precast concrete products — Test method for glass-fibre reinforced cement — Part 4: Measuring bending strength, "Simplified bending test" method*

EN 1170-5, *Precast concrete products — Test method for glass-fibre reinforced cement — Part 5: Measuring bending strength, "Complete bending test" method*

EN 1170-6, *Precast concrete products — Test method for glass-fibre reinforced cement — Part 6: Determination of the absorption of water by immersion and determination of the dry density*

EN 1170-7, *Precast concrete products — Test method for glass-fibre reinforced cement — Part 7: Measurement of extremes dimensional variations due to moisture content*

EN 1170-8, *Test method for glass-fibre reinforced cement — Part 8: Cyclic weathering type test*

EN 1339, *Concrete paving flags — Requirements and test methods*

EN 13198, *Precast concrete products — Street furniture and garden products*

EN 13501-1, *Fire classification of construction products and building elements — Part 1 : Classification using data from reaction to fire tests*

EN 14649, *Precast concrete products — Test method for strength retention of glass fibres in cement and concrete (SIC TEST)*

EN 15422, *Precast concrete products — Specification of glassfibres for reinforcement of mortars and concretes*

EN ISO 6946, *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method (ISO 6946:2007)*

ISO 12491:1997, *Statistical methods for quality control of building materials and components*

3 Definitions and abbreviations

3.1 Terms and definitions

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

3.1.1
addition
product that may be added by weight or volume/weight to the matrix composition to improve some properties

NOTE 1 An addition can be reactive or inert, mineral or organic.

NOTE 2 Silica fumes are reactive and polymer dispersions are organic.

3.1.2
admixture
product added in quantity less than 5 % by weight), before or during mixing and giving expected modifications to the initial and final properties

NOTE The quantity of admixture is related to the mass of cement. The properties are for example: workability, air content.

3.1.3
AR glassfibre
glassfibre product with a proven resistance to the alkaline environment of matrices made from hydraulic cement

3.1.4
basic strand
glassfibre obtained by stranding a number of filaments having a defined individual diameter

NOTE Number of filaments: typically 100 to 200; individual diameter: typically 10 µm to 30 µm.

3.1.5
roving
number of parallel strands wound together on a mandrel to form uniform cylindrical package size

3.1.6
glassfibre reinforced concrete
GRC
composite material consisting of a matrix reinforced with glassfibres, these materials being compatible

3.1.7
matrix
part of GRC which is not fibres, normally composed of sand, cement, water and any additions and admixtures

3.1.8
spray process
process whereby continuous glassfibres are cut into set lengths and sprayed together with the matrix

NOTE The processes are designed to give a glassfibre reinforced concrete in which the fibres are oriented parallel to the mould surface.

3.1.9
premix process
process whereby chopped strands of glassfibres are blended with the matrix to make a glassfibre reinforced concrete ready for processing

NOTE The processes can be “casting and vibration”, wet spraying, injection, extrusion, etc.

3.1.10
process with oriented fibres
process whereby chopped strands or roving of glassfibre are placed in the matrix in a defined direction

3.1.11
facing coat
outer surface layer of fine-grained concrete which is often pigmented

3.1.12
SIC test
test method for strength retention of glass fibres in cement and concrete

3.1.13
fibre content
fibre content of glassfibre reinforced concrete is given in percentage by weight and it is related to the total weight of the GRC

3.1.14
limit of proportionality
LOP
bending stress at which the linear-elastic material behaviour becomes plastic in the stress-strain diagram

3.1.15
modulus of rupture
MOR
ultimate bending stress as determined in accordance with EN 1170-4 or EN 1170-5

3.1.16
characteristic property
value of a property above which 95 % of the population of all possible measurements of that property of the specified GRC are expected to lie

3.1.17
acceptance test
test carried out on a predetermined regular basis to confirm that batches of product conform to specification

3.1.18
initial type testing
complete set of tests or other procedures described in the technical specification, to determine the performance of samples of products representative of the product type for the characteristics

3.1.19
cement
hydraulic binder
finely ground inorganic material which, when mixed with water, forms a paste that sets and hardens by means of hydration reactions and processes and which, after hardening, retains its strength and stability even under water

NOTE The cement should conform to EN 197-1.

3.1.20
sand
granular mineral material suitable for use in cement or concrete

NOTE Sands may be natural or artificial. The sand should conform to EN 12620.