SLOVENSKI STANDARD
SIST EN 1169:2025

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Nadomešča:
SIST EN 1169:2001

Montažni betonski izdelki - Splošna pravila za notranjo kontrolo proizvodnje steklobetonskega kompozita

Precast concrete products - General rules for factory production control of glassfibre reinforced concrete

Vorgefertigte Betonerzeugnisse - Allgemeine Regeln für die werkseigene Produktionskontrolle von Glasfaserbeton

Produits préfabriqués en béton - Règles générales pour le contrôle de la production en usine des composites ciment-verre

Ta slovenski standard je istoveten z: **EN 1169:2024**

ICS:

91.100.30	Beton in betonski izdelki	Concrete and concrete products

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EUROPEAN STANDARD
NORME EUROPÉENNE
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English Version

Precast concrete products - General rules for production control of glassfibre reinforced concrete

Produits préfabriqués en béton - Règles générales de contrôle de production des composites ciment-verre

Vorgefertigte Betonerzeugnisse - Allgemeine Regeln für die werkseigene Produktionskontrolle von Glasfaserbeton

This European Standard was approved by CEN on 1 December 2024.

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

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European foreword

This document (EN 1169:2024) 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of an identical text or by endorsement, at the latest by June 2025, and conflicting national standards shall be withdrawn at the latest by June 2025.

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 1169:1999.

EN 1169:2024 includes the following significant technical changes with respect to EN 1169:1999:

— clarification of the scope, with precision about what is covered and what is excluded;

— modification of the symbols used in coherence with EN 1170 and EN 15191;

— updated reference to the new EN 1170:2024 as resulting of the revision and merging of parts of the EN 1170 series;

— technical modifications in accordance with EN 1170:2024.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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Introduction

When developing a GRC composite material, the manufacturer should not only consider the properties required for the specific application but also the requirements of the production processes.

Where a customer is considering using products manufactured from GRC composites, early consultation with GRC manufacturers is recommended.

1 Scope

This document defines the general processes, procedures and rules for production and production control system (PCS) of glassfibre reinforced concrete (GRC) used to manufacture products commonly used in construction, civil engineering, architecture and other applications.

GRC can be produced from a range of mix designs comprising various materials and manufactured by different processes. This document covers two primary production processes, namely sprayed GRC and premix GRC.

This document does not cover concrete, where the glassfibre does not act as primary reinforcement but is used as an additive. It does not cover but can be used as guidance for injection and extrusion manufacturing processes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1170:2024, *Precast concrete products — Test methods for glassfibre reinforced concrete*

EN 15191:2024, *Precast concrete products — Classification of glassfibre reinforced concrete performance*

EN 15422:2008, *Precast concrete products — Specification of glassfibres for reinforcement of mortars and concretes*

3 Definitions and abbreviation

For the purposes of this document, the terms, definitions, symbols and abbreviated terms given in EN 15191:2024 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Definitions

3.1.1
additive
product that may be added to the matrix composition to improve some properties

Note 1 to entry: It can be reactive (e.g. silica fumes) or inert, mineral or organic (e.g. polymer dispersions).

Note 2 to entry: Inorganic additives are called additions in EN 206:2013.

[SOURCE: EN 15191:2024]

3.1.2
admixture
constituent added during the mixing process in small quantities related to the mass of cement to modify the properties of fresh or hardened concrete

[SOURCE: EN 206:2013]

3.1.3
glassfibre content
fibre content of glassfibre reinforced concrete given in percentage by weight and related to the total weight of the GRC

3.1.4
AR glassfibre
alkali-resistant glassfibre
glassfibre resistant to the alkaline environment of matrices made from cement, sand etc

Note 1 to entry: This resistance is due particularly to a specific composition of the glass.

3.1.5
strand
glassfibre reinforcement element formed by binding together individual filaments of a nominal diameter between 10 µm to 30 µm

[SOURCE: EN 15191:2024]

3.1.6
glassfibre reinforced concrete
GRC
composite material consisting of a matrix of hydraulic binder reinforced with glassfibres usually randomly distributed throughout the matrix, these materials being compatible

[SOURCE: EN 15191:2024]

3.1.7
matrix
part of GRC which does not contain AR glassfibres, normally composed of sand, cement, water, and additives and admixtures when used

[SOURCE: EN 15191:2024]

3.1.8
spray process
process whereby a GRC product in which the fibres are oriented randomly in layers parallel to the mould surface is manufactured by simultaneously spraying a cementitious matrix and alkali resistant glassfibres through the same nozzle of a spray gun specifically designed for the purpose

3.1.9
premix process
process whereby glassfibres, which have been cut to predetermined lengths, are blended with the cementitious matrix to produce a glassfibre reinforced concrete which can be formed into products by casting, with or without vibration to aid compaction, spraying, injection, extrusion, etc

3.1.10
roving
number of parallel strands wound together on a mandrel to form uniform cylindrical package size

3.1.11
tex
weight of the roving or strand per kilometre, normally measured in grams

3.1.12
filament
individual element of the glassfibre from which strands are formed

3.1.13
textile GRC
process where a premix is cast or sprayed in layers and additional AR glassfibres (e.g., textiles, continuous strands, mats, and other forms of continuous, directional reinforcement made from AR glass) are placed in a defined direction

3.2 Symbols and abbreviated terms

PCS	production control system
QMS	quality management system
LOP	limit of proportionality
MOR	modulus of rupture
ε_{LOP}	strain at limit of proportionality
ε_{MOR}	strain at failure
σ_{LOP}	stress at limit of proportionality, in megapascals
σ_{MOR}	stress at failure, in megapascals

4 Production control system

4.1 General

The manufacturer shall establish, document, maintain and implement a production control system (PCS) to ensure that the GRC composite material meets the requirements of this standard and complies with the specified or declared values and with the requirements on technical documentation.

NOTE A manufacturer that operates a quality management system (QMS) in accordance with EN ISO 9001 and takes into account the requirements of this document is deemed to satisfy the production control system requirements as described hereafter.

4.2 Organization

The tasks, competences, responsibilities and authority of the personnel involved in production control system shall be defined, documented, maintained and implemented, including procedures for the following activities:

a) demonstration of conformity of the GRC composite material at appropriate stages;

b) identification recording and dealing with any instance of non-conformity;

c) establishment of causes of non-conformity and possible corrective action.

An organisational scheme shall clarify the activities given in a) to c) of the personnel involved.

Special requirements regarding the competence level of various functions may be applicable.