

BS ISO 13270:2013



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Steel fibres for concrete — Definitions and specifications

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee ISE/106, Wire Rod and Wire.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Steel fibres for concrete — Definitions and specifications

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13270 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 17, *Steel wire rod and wire products*.

Steel fibres for concrete — Definitions and specifications

1 Scope

This International Standard specifies definitions and symbols, classification and codes, dimensions, masses and permissible variations, inspection methods, packing, delivery and storage for steel fibres for concrete.

This International Standard covers fibres intended for use in fibre-reinforced concrete, in all types of concrete and mortar, including sprayed concrete, flooring, precast, *in situ* and repair concretes

This International Standard can also be referred to for fibres used in fibre-reinforced engineering material, such as stainless steel fibre use in reinforced refractory material.

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.

ISO 404, *Steel and steel products — General technical delivery requirements*

ISO 1920-2:2005, *Testing of concrete — Part 2: Properties of fresh concrete*

ISO 5725-2:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

ISO 7989-1, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 1: General principles*

ISO 10474, *Metallic products — Inspection documents*

ISO 22034-1, *Steel wire and wire products — Part 1: General test methods*

EN 197-1:2011, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

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

EN 933-2, *Tests for geometrical properties of aggregates — Part 2: Determination of particle size distribution — Test sieves, nominal size of apertures*

EN 934-2:2009, *Admixtures for concrete, mortar and grout — Part 2: Concrete admixtures — Definitions, requirements, conformity, marking and labeling*

EN 1008, *Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

EN 1766:2000, *Products and systems for the protection and repair of concrete structures — Test methods — Reference concretes for testing*

EN 1992-1-1, *Eurocode 2: Design of concrete structures — Part 1-1: General rules and rules for buildings*

EN 12350-1, *Testing fresh concrete — Part 1: Sampling*

EN 12350-3, *Testing fresh concrete — Part 3: Vebe test*

EN 12350-4, *Testing fresh concrete — Part 4: Degree of compactability*

EN 14651, *Test method for metallic fibre concrete — Measuring the flexural tensile strength (limit of proportionality (LOP). residual)*

EN 14845-2, *Test methods for fibres in concrete — Part 2: Effect on concrete*

3 Terms and definitions

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

3.1

steel fibres

straight or deformed pieces of cold-drawn steel wire, straight or deformed cut sheet fibres, melt-extracted fibres, shaved cold-drawn wire fibres and fibres milled from steel blocks which are suitable to be homogeneously mixed into concrete or mortar

Note 1 to entry: Steel fibres are suitable reinforcement material for concrete because they possess a thermal expansion coefficient equal to that of concrete, their Young's Modulus is at least 5 times higher than that of concrete and the creep of regular carbon steel fibres can only occur above 370 °C.

3.2

length

distance between the outer ends of the fibre

3.2.1

developed length

length of the deformed fibres after straightening the fibre without deforming the cross-section

3.3

equivalent diameter

diameter of a circle with an area equal to the mean cross-sectional area of the fibre

Note 1 to entry: For circular fibres, the equivalent diameter is equal to the diameter of the fibres.

3.4

aspect ratio

ratio of length (l) to equivalent diameter of the fibre

3.5

fibre shape

specific outer configuration of the fibres, both in the longitudinal direction and in the shape of the cross-section and also the possible surface coatings and/or bundling of fibres

3.6

tensile strength of fibre

stress corresponding to the maximum force that one fibre can resist

Note 1 to entry: The methods concerning how to determine the tensile strength are explained in [7.3](#). The tensile strength is calculated by dividing the maximum force a fibre can resist by the mean cross-sectional area of the fibre.

3.7

crack mouth opening displacement

CMOD

linear displacement measured by a transducer installed on a prism subjected to a centre-point load F

3.8

elastic modulus

initial slope of the tensile stress versus tensile strain curve