



innovative building concept

benqumesh®-45

Macro-synthetic fiber

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benqumesh®-45 is a macro-synthetic fiber designed specifically for the reinforcement of concrete and other cementitious mixes. benqumesh®-45 fibers have an engineered, contoured profile that serves to effectively anchor the fibers into the concrete, thus resisting matrix pullout and enhancing the concrete's performance even after it has developed stress cracks. Another important feature of this design is that it allows much higher dosage levels resulting in performance levels that extend beyond those achieved with traditional secondary reinforcement.

benqumesh®-45 fibers are non-corrosive and may be considered, in many applications, as an alternative to both steel fabric and steel fibers.

Features and benefits

- Geometrically engineered to resist matrix pullout
- Increases flexural toughness
- Increases cohesion and reduces segregation
- Increases impact and shatter resistance
- Non-magnetic
- Rustproof
- Chemically inert and alkali proof
- Reduced wear on concrete pumps and hoses
- Safe and easy to handle
- Simplified logistics
- Economical alternative to steel wire mesh and/or steel fibers

Primary applications

- Ground supported slabs
- External pavements
- Roads
- Precast structures
- Sea defense
- Overlays and toppings
- Airport pavements

Compliance

Complies with ASTM C1116 Type III 4.1.3

Chemical and physical properties

Fiber length:	45 mm	Acid and salt resistance:	high
Type / shape:	macro/monofilament	Melting point:	164 °C (328 °F)
Absorption:	nil	Ignition point:	> 550 °C (1022 °F)
Specific gravity:	0.9 l	Thermal conductivity:	low
Electrical conductivity:	low	Alkali resistance:	alkali proof

Product use

Mixing designs and procedures

The specified dosage per cubic meter should be added to the mixer after batching the other concrete materials. After the addition of the fibers, the concrete should be mixed for sufficient time (minimum 5 minutes) to ensure uniform distribution of the fibers throughout the concrete mix.

Placing

benqumesh®-45 micro-reinforced concrete can be pumped, sprayed or placed using conventional equipment as with other fibrous concrete.

Finishing

Conventional techniques and equipment can be used when finishing benqumesh®-45 fiber concrete.

Dosage rate

The recommended dosage rate for benqumesh®-45 macro-synthetic fibers will vary depending on the application, mix design and the toughness requirements of each particular project. Typically, benqumesh®-45 macro-synthetic fiber dosage will be in the range of 4.5 kg to 9.0 kg/m³ of concrete. When used in conjunction with benqumesh®-45 fibers the dosage rate and the performance of the sprayed concrete can be optimized economically. ibc technical staff can offer advice on dosage requirements once performance requirements have been established by the project designer/engineer.

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Compatibility	benqumesh®-45 macro-synthetic fibers are compatible with all curing compounds, super-plasticizers, water reducers, hardeners and coatings.
Safety	No special handling is required with benqumesh®-45 macro-synthetic fibers. Full material safety data sheets are available on request.
Packaging	benqumesh®-45 macro-synthetic fibers are collated in bundles or pucks with degradable wrapping to aid rapid dispersion and mixing. The fiber bundles are packaged in 10 kg cartons. Store materials in a cool dry place. Do not store in direct sunlight.
Technical service	benqumesh®-45 is backed by our team of reinforced concrete specialists who can carefully analyze each project and provide fiber-reinforced concrete design solutions to ensure maximum project performance and cost efficiency.
Specification clause	<p>benqumesh®-45 macro-synthetic fibers for concrete shall be polyolefin high performance macro-monofilament fiber and manufactured specifically for the reinforcement of concrete.</p> <p>benqumesh®-45 macro-synthetic fibers shall be mixed at the batch plant, at the recommended rate of 5 to 7 kg/m³ and mixed for sufficient time (minimum 5 minutes) to ensure uniform distribution of the fibers throughout the concrete mix.</p>

Notice: All representations made in this technical data sheet result from extensive internal and independent external testing, as well as long-term practical experience. They are made to the best of our knowledge and belief and do not release the user from the compulsory or common tests and preliminary inspections. They must be adapted to the special conditions and requirements of the application at hand. The generally accepted rules of building technology must be adhered to in accordance with the current state of the art. This technical datasheet supersedes all previously released datasheets. We reserve the right to make technical changes in the context of further developments. Recommendations made by ibc employees that deviate from anything stated in this datasheet are valid only upon written confirmation by our technical laboratory.