

PRODUCT DATA SHEET

SikaFiber®-12-34

SPECIAL POLYPROPYLENE FIBRE FOR CONCRETE AND GUNITE

DESCRIPTION

SikaFiber®-12-34 is a high quality, 100% virgin, mono-filament polypropylene fibre, coated with a surfactant to improve initial dispersion and bond with the cement paste, designed for the prevention of concrete spalling in the event of fire. It also reduces the occurrence of plastic shrinkage and plastic settlement cracking whilst enhancing the surface properties and durability of a cementitious matrix.

Suitable for use in hot and tropical climatic condition

USES

SikaFiber®-12-34 is used to prevent concrete spalling (breaking off of layers or pieces of concrete from the surface of a structural element when exposed to the high and rapidly increasing temperatures experienced in fires), mainly in underground structures. In the event of a fire, as the temperature of the concrete increases, the moisture in the concrete becomes steam. If this steam is unable to escape an increase in pressure inside the concrete builds up to the point where it exceeds the tensile capacity of the concrete causing pieces of concrete to be violently and explosively dislodged. The addition of suitable polypropylene fibres in cast concrete has been accepted to counteract explosive spalling.

The fibres melt inside the concrete creating the necessary voids for the steam to escape thereby preventing spalling and so maintaining the integrity of the structural element.

- Concrete, mainly when HPC and low permeability concrete is specified because of the greater pore pressures that build up during heating
- Precast concrete tunnel segments
- Concrete submitted to very high temperatures

CHARACTERISTICS / ADVANTAGES

- Helps maintain the integrity of the whole structure in the event of fire
- Reduces future repair costs
- Provides passive fire protection to both shotcrete and cast concrete and an extremely cost effective solution when compared to alternatives such as sprayed coatings or barrier methods
- Beyond enhancing spalling resistance, addition of polypropylene fibres to wet shotcrete improves the ability to apply greater thicknesses in a single pass, reduces rebound, enhances early age crack control, reduces line pressure in spray pumps and may reduce the dosage of set accelerator

APPROVALS / STANDARDS

Complies with EN 14889-2: Polymer Fibres - Definitions, Specifications and Conformity; Class 1a

PRODUCT INFORMATION

Chemical base	Polypropylene
Packaging	0.6 kg and 0.9 kg soluble bags in boxes containing 30 x 0.6kg or 40 x 0.9kg bags (1 kg / bag)
Appearance / Colour	White fibre
Shelf life	12 months from date of production if stored properly

Storage conditions	Store in undamaged, unopened, original sealed packaging in dry conditions at temperatures between +5 °C and +45 °C. Protect from direct sunlight, moisture and frost.	
Density	~0.91 kg/l (+25 °C)	
Dimensions	Length	~12 mm
	Diameter	~34 µm
Melting Point	~160 °C	

TECHNICAL INFORMATION

Concreting Guidance	<p>The standard rules of good concreting practice for production and placing must be observed when using SikaFiber®-12-34 in concrete. Refer to relevant standards.</p> <p>Fresh concrete must be cured properly especially at high temperatures in order to prevent plastic and drying shrinkage. Use Sika® Antisol® products as a curing agent.</p>	
Resistance to Alkalinity	Excellent	

APPLICATION INFORMATION

Recommended Dosage	<p>SikaFiber®-12-34 is supplied ready to use.</p> <p>The accurate determination of the minimum fibre dosage to provide explosive spalling resistance can only be established by large scale fire testing of the concrete to be used on a specific project.</p> <p>Section 6.1 of the European Standard EN 1992 Eurocode 2 makes reference to the use of 2 kg/m³ of polypropylene fibres to control explosive spalling in high strength concrete. This dosage provides a very good safety margin, but does not preclude the use of lower dosages if fire testing on large concrete samples has been carried out. Dosage rates of 1.5 kg/m³ or less have been used after accurate trials.</p> <p>We recommend to perform trial mixes to establish the required performance. Please consult our Sika Technical Department for further assistance.</p>	
Compatibility	<p>SikaFiber®-12-34 may be combined with all types of Portland cement, concretes containing pozzolanic materials such as; GGBS, PFA , micro-silica and the following Sika product ranges:</p> <ul style="list-style-type: none"> ▪ Sika®ViscoCrete® ▪ SikaPlast® ▪ Sikament® ▪ Plastiment® ▪ Sika Aer® <p>We recommend to perform trial mixes to establish the required performance when combining SikaFiber®-12-34 with the above or other admixtures. Please consult our Sika Technical Department.</p>	

DISPENSING	<p>Plant mixing: SikaFiber®-12-34 should be added to the mixer after all other ingredients and water. Use a mixing time that ensures uniform dispersion of the fibre.</p> <p>Truck mixing: Run the mixer drum at a speed of 12 – 18 rpm. Adjust the slump to a minimum of 12 cm, depending on the actual fiber dosage. Preferably use a water reducing or high range water reducing admixture. Add the fibers in a maximum ratio of 40 kg/min. After adding the fibers, continue mixing at full speed 1 minute/m³ of concrete and not less than 5 min..</p>	
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BASIS OF PRODUCT DATA

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

LOCAL RESTRICTIONS

ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet (available on request) containing physical, ecological, toxicological and other safety-related data.

LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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