

# SikaFiber® Force-600 *(Formerly Enduro 600)*

## Macro-Synthetic Reinforcing Fibre

**Description** SikaFiber® Force-600 is a macro-synthetic fibre specifically designed to satisfy the demanding requirements of modern-day shotcrete reinforcement and equipment. SikaFiber® Force-600 can also be used in pre-cast concrete.

**Where to Use** SikaFiber® Force-600 fibres are designed for use as an effective replacement for welded wire mesh (WWM) in concrete. SikaFiber® Force-600 fibres exhibit excellent bond with the cement matrix producing enhanced reinforcement in concrete. Independent testing-laboratory results demonstrate that concrete containing SikaFiber® Force-600 shows significant reduction in plastic shrinkage cracks, higher flexural strength and post-peak flexural strength when compared to WWM. SikaFiber® Force-600 fibres are chemically inert with high UV-resistance; they will not degrade in the high alkaline environments of concrete. SikaFiber® Force-600 fibres can be used in traditional ready-mix concrete and in self-consolidating concrete applications to replace WWM. Typical applications include interior and exterior slab-on-grade concrete slabs, bridge decks and loading decks. SikaFiber® Force-600 can also be used for pre-cast products like septic tanks, burial vaults, manholes and architectural panels, as well as for shotcrete applications.

- Advantages**
- Provides secondary/post first crack reinforcement in concrete.
  - Significantly reduces plastic shrinkage cracking.
  - Provides multi-dimensional reinforcement for improved durability.
  - Offers reduced permeability of hardened concrete, with high impact- shatter- and abrasion-resistance.
  - Offers high chemical- and UV-resistance, thus improving plastic and hardened concrete properties.
  - Offers improved ductility, toughness and resistance to spalling.
  - In shotcrete, it reduces rebound and wear and tear on hoses and concrete pump.

**Standards** SikaFiber® Force-600 meets the material specification of ASTM C III6, Type III fibre.

Typical Data	
<b>Packaging</b>	2,265 g/bag 5 bags/box 27 boxes/pallet
<b>Fibre Type</b>	Macro synthetic polypropylene fibre
<b>Fibre Length</b>	50 mm
<b>Shelf Life and Storage</b>	5 years if stored in original and unopened packaging and in dry conditions. Protect product from the moisture and rain.
<b>Properties</b>	
<b>Specific Gravity</b>	0.91
<b>E Modulus</b>	4 GPa
<b>Tensile Strength</b>	448 MPa average
<b>Melt Point</b>	164 °C
<b>Alkali resistance</b>	High

### How to Use

**Dosage** The application rate for SikaFiber® Force-600 fibres will vary depending on the application, mix design and the specific requirements of each project. For pre-cast, the typical dosage varies between 3 - 6 kg per cubic meter of concrete. For Shotcrete, the dosage varies between 5 - 9 kg per cubic meter of concrete. Dosages outside of these ranges may be required to meet the needs of specific projects.



<b>Mixing</b>	SikaFiber® Force-600 can be added directly to the mixture at any time prior to placement of concrete; however, it is recommended that they be added at the ready-mix concrete plant during batching. Fibres must be mixed with concrete for a minimum of five minutes at maximum mixing speed to ensure complete dispersion and uniformity.
<b>Tooling and Finishing</b>	Refer to ACI 544.3R for detailed mixing and placing instructions. Make sure the bleed water is gone and concrete is sufficiently set before trowelling. Since concrete with fibres appears stiffer, finishers must exercise care to avoid trowelling concrete too soon. Proper finishing procedures will reduce exposed fibres on finished concrete surfaces. SikaFiber® Force-600 increases the cohesiveness of concrete, which produces greater workability at the same slump. As a result of the increased cohesiveness, the concrete may appear stiffer than it actually is. If additional workability is required, a Sika water-reducer or superplasticizer is recommended instead of extra mixing water. At high addition rates of SikaFiber® Force-600 fibre, cement paste may need to be increased and use of a Sika superplasticizer is highly recommended. SikaFiber® Force-600 concrete should be cured using the same methods as for conventional concrete. SikaFiber® Force-600 fibres are recommended only as a secondary reinforcement. Spacing of control or other joints should not be changed when using SikaFiber® Force-600 fibres.
<b>Clean Up</b>	Use personal protective equipment (chemical resistant goggles/gloves/clothing). Ventilate area. In absence of adequate ventilation, use properly-fitted NIOSH respirator. Without direct contact, remove spilled or excess product and place in suitable sealed container. Dispose of excess product and container in accordance with applicable environmental regulations.
<b>Health and Safety Information</b>	For information and advice on the safe handling, storage and disposal of chemical products, users should refer to the <b>most recent Safety Data Sheet</b> containing physical, ecological, toxicological and other safety-related data.  KEEP OUT OF REACH OF CHILDREN FOR INDUSTRIAL USE ONLY

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, within their shelf life. 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 recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users should always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request or can be accessed in the Internet under [www.sika.ca](http://www.sika.ca).



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