

SYSTEM DATA SHEET

Sikacrete[®]-910 UHPC

Ultra-High Performance Self-Consolidating Fibre Reinforced Concrete Mix

PRODUCT DESCRIPTION

Sikacrete[®]-910 UHPC (formerly King[®] UP-FX Poly) is multi-component, ultra-high performance, self-consolidating concrete with high strength fibers. Sikacrete[®]-910 UHPC is fabricated with a pre-blended, pre-package material, liquid admixtures and steel fibers.

WHERE TO USE

Sikacrete[®]-910 UHPC may be used in:

- Precast to Precast connection joints such as in Precast Bridge Decks.
- Concrete repairs requiring ultra high strengths and durability.
- Concrete Overlays in harsh environments requiring exceptional abrasion resistance and durability.
- Precast elements that would benefit from reduced thickness and weight.

Sikacrete[®]-910 UHPC should only be used by trained and experienced professionals.

CHARACTERISTICS / ADVANTAGES

Sikacrete[®]-910 UHPC provides:

- Ultra-high compressive, tensile, flexural and shear strengths allowing significant reduction of concrete element sections, concrete volumes and reinforcing steel, resulting in a lightweight and slender structural element profile.
- Superior impact and abrasion resistant characteristics
- Superior resistance to cracking caused by shrinkage, thermal stresses and other conditions.
- Very high energy absorbing capacity (toughness)
- Ultra-compact material with very low porosity and permeability
- Superior resistance to freeze-thaw cycling and salt scaling.
- Superior resistance to sulfate attack.
- Excellent bond to parent concrete without requiring an additional bonding agent.

APPROVALS / CERTIFICATES

Sikacrete[®]-910 UHPC conforms to:

CSA A23.1:19 Annex U.

Ontario Ministry of Transport DSM 9.25.50.

Approved list for PJCCI (Pont-Jacque Cartier and Champlain Bridges Inc).

SYSTEMS

System Structure

Sikacrete[®]-910 UHPC is composed of Mortar (DC-101 CEM), carefully selected admixtures, (ADMX 201, ADMX 202 and/or ADMX 203) and either a micro steel fibre or a Synthetic fibre, along with the site addition of water/ice. Other additives may be recommended in certain applications only on the

specific advice and approval of your Sika representative.

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TECHNICAL INFORMATION

Compressive Strength	Tested in accordance with CSA A23.2-9C and Clause U4.1.5 Annex U With 2.5% Steel Fibre 4 Day Strength > 80 Mpa 28 Day Strength > 130 Mpa
Tensile Strength in Flexure	Flexural/Tensile strength-ASTM C 1609 > 15 Mpa (Peak Strength)
Tensile Strength	CSA A23.1 U4.1.2.2.5 Strain Hardening Factor 1.29
Shrinkage	Standard test method for length change of hardened hydraulic-cement mortar and concrete (CSA A23.2-21C) 28 Day 0.02 90 Day 0.03
Chemical Resistance	Chloride Ion Permeability ASTM C1202 58 Coulombs
Freeze thaw resistance	ASTM C666 - Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing: Procedure A 300 cycles - Durability factor 101%
Freeze Thaw De-icing Salt Resistance	Tested to CSA A-23.1 U4.1.8.3 Salt Scaling 0.06 Kg/m ²

PRODUCT INFORMATION

Packaging	Component	Package Size	Package Size	Package Size
	DC-101 CEM Mortar	25 kg	300 kg BB	600 kg BB
	ADMX-201	20 L Pail	205 L Drum	1000 L IBC
	ADMX-202	20 L Pail	205 L Drum	1000 L IBC
	ADMX-203	20 L Pail	205 L Drum	1000 L IBC
	Micro Steel Fibre 13 mm	20 kg		
	Synthetic Fibre 12mm	8 kg		

Shelf Life	<p>Sika DC-101 CEM (Cementitious pre-blend): Pre-blend bags must be protected from moisture, freezing, and kept dry at all times. Unopened bags of Sika DC-101 CEM have a shelf life of 6 months.</p> <p>ADMX 201,202 and 203 (Liquid Additives): Keep from freezing, if frozen will require thorough agitation before use. Shelf life when properly stored and not previously frozen, 1 year.</p> <p>Steel and Synthetic Fibers: When stored in dry conditions, shelf life is 5 years.</p>
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Storage Conditions	Protect against all moisture and freezing conditions.
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BASIS OF PRODUCT DATA

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including

environment, preparation, application, curing and test methods.

FURTHER INFORMATION

All test results are based on using 2.5% dosage of micro steel fibre.

Higher dosages of micro steel fibre may be used for increased flexural strength. Contact your Sika Representative for further details.

Sikacrete®-910 UHPC may also be used with synthetic fibres, (example may be desired in Architectural applications such as wall panels) however flexural strengths and other physical properties will be affected. Contact your Sika Representative for further information.

ENVIRONMENT, HEALTH & SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

Please refer to the Sikacrete®-910 UHPC Installation manual for detailed instructions on component dosages, mixing, placement and curing procedures. Fibre and admixture dosages may be adjusted to conform to specific project requirements or specifications.

SUBSTRATE PREPARATION

All surfaces to be in contact with Sikacrete®-910 UHPC must be free of dust, oil, grease, rust or any other foreign substances that may interfere with the bond of the material. For concrete repair applications, remove all delaminated or unsound concrete providing a roughened surface equivalent to minimum CSP 7 and a minimum of 25 mm (1 inch) clearance behind any corroded reinforcing steel. The perimeter of the repair area should be saw-cut a minimum of 20 mm (3/4 inch). Clean the area to be repaired with potable water, leaving the concrete saturated but free of standing water (SSD).

MIXING

Mixing Sikacrete®-910 UHPC requires a high shear mixer and qualified personnel on-site. The number of mixers should be adjusted to reduce the waiting time between batches, depending on the volume of material to be placed. Since a wheelbarrow or a buggy will be used to transport the fresh material to the pouring location, the mixer(s) must be raised high enough to ensure that it discharges properly. A platform can also be used next to the mixer to allow workers to batch properly and safely. The mixer(s) should be kept as clean as possible between batches in order to guarantee the performance of subsequent batches. Alternative methods of transporting the prepared SikaCrete-910 UHPC can be approved such as a vehicle mounted agitators and pumps. All alternatives should be discussed with your representative prior to commencing.

Prior to placing the Sikacrete®-910 UHPC should remain agitated on low speed in the mixers. Under no circumstances should additional water be added to the mix, this will result in lower performance.

Sikacrete®-910 UHPC has very specific mixing instructions regarding the sequencing, addition rates and mixing times. At application temperatures above 15 °C both ice and potable water is used for mixing.

Contact your local Sika representative to obtain a copy of the Contractor Training Manual for complete instructions on mixing and approved mixers.

APPLICATION

Sikacrete®-910 UHPC placement methods will vary depending on intended application. Normal consistency is as viscous flowable mortar, that can be poured in place under head pressure or pumped. Slump may be adjusted up or down by the use of ADMX-201 under guidance of your Sika Representative.

Contact your local Sika Representative to discuss your application and obtain a copy of the Contractor Training Manual and if required pumping guidelines.

CURING TREATMENT

Removal of formwork can be done after two days, but the contractor must maintain a continuous wet cure of the material until the Sikacrete®-910 UHPC has achieved a compressive strength of 100 MPa in accordance with clause U.7.3.2 of CSA A23.1-19 Annex U. The temperature of the Sikacrete®-910 UHPC should be maintained between 10 °C and 60 °C throughout the curing period. If the ambient temperature is too low, a heating system must be used to provide the necessary heated environment for the appropriate strength development of the material, the heating system should not be directly emitting carbon dioxide to the curing region. Refer to your local Sika Representative for more information.

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

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 recommendations, or from any other advice offered. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. 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 or may be downloaded from our website at: www.sika.ca

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