



**PRODUCT DATA SHEET**

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HIGH-PERFORMANCE STRUCTURAL CONCRETE

# Sikacrete®-211 Flow PLUS

ONE-COMPONENT, CEMENTITIOUS, SILICA FUME-MODIFIED, PUMPABLE AND EASILY POURABLE CONCRETE MIX PLUS MIGRATING CORROSION INHIBITOR

<b>Description</b>	Sikacrete®-211 Flow PLUS is a pre-packaged, ready-to-use, flowable, cement-based concrete, usable for concrete thicknesses exceeding 25 mm (1 in). Sikacrete®-211 Flow PLUS contains special additives designed to improve the ease of use and facilitate surface finishing.
<b>Where to Use</b>	<ul style="list-style-type: none"> <li>▪ Partial or full depth structural repairs.</li> <li>▪ On grade, above, and below grade on concrete.</li> <li>▪ On horizontal surfaces or formed applications.</li> <li>▪ As a structural repair material for parking facilities, industrial sites, walkways, bridges, tunnels, dams and balconies.</li> <li>▪ Filler for voids and cavities.</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>▪ Contains integral corrosion inhibitor based on proven technology.</li> <li>▪ Can be pumped or poured.</li> <li>▪ Enhanced with 5 % content of Silica fume.</li> <li>▪ Good freeze/thaw resistance.</li> <li>▪ High bond strength.</li> <li>▪ Not a vapour barrier.</li> <li>▪ Easily applied to clean, sound substrates.</li> <li>▪ Compatible with coefficient of thermal expansion of concrete.</li> <li>▪ Increased resistance to deicing salts.</li> <li>▪ Formulated with inert, non-reactive aggregates to eliminate potential Alkali-Aggregate Reactivity (AAR) and the need to extend the product in the field with non-compliant aggregates.</li> </ul>

**Technical Data**

<b>Packaging</b>	25 kg bag (55 lb)					
<b>Colour</b>	Concrete Grey					
<b>Yield</b>	Approx. 13 L (0.46 ft³) of fresh concrete per bag.					
<b>Shelf Life</b>	1 year in original, unopened bag. Store dry between 5 and 32 °C (40 and 90 °F), ensuring that product is not exposed to rain, condensation or high humidity. For optimal results, condition material between 18 and 24 °C (65 and 75 °F) before using.					
<b>Mix Ratio</b>	Use clean potable water at rate of between 2.5 and 2.7 L (0.66 and 0.71 US gal.) per bag. Start with 2.1 L (0.55 US gal.) and mix to consistency required with remaining water.					
<b>Properties at 23 °C (73 °F) and 50 % R.H.</b>						
<b>Initial set</b>	160 minutes					
<b>Final Set</b>	270 minutes					
<b>Density ASTM C185</b>	2220 kg/m³ (138 lb/ft³)					
<b>Compressive Strength ASTM C109</b>	<b>Flowable Consistency</b>					
MPa (psi)	(2.7 L/bag)					
1 day	18 (2610)					
7 days	32 (4641)					
28 days	45 (6527)					
<b>*Compressive Strength ASTM C109, MPa (psi)</b>						
<b>(tested with Sikacem® Accelerator)</b>						
<b>Temperature</b>	<b>Dosage</b>	<b>24 hours</b>	<b>2 days</b>	<b>3 days</b>	<b>28 days</b>	
-5 °C (23 °F)	1 bottle (150 mL)	5.1 (740)	8.4 (1220)	13.5 (1958)	36.1 (5235)	
0 °C (32 °F)	1 bottle (150 mL)	7.2 (1045)	10.9 (1580)	16.7 (2422)	44.8 (6498)	
10 °C (50 °F)	1 bottle (150 mL)	16.6 (2407)	25.7 (3727)	33.2 (4815)	54.4 (7890)	
23 °C (73 °F)	1 bottle (150 mL)	29.8 (4322)	37.3 (5409)	39.3 (5700)	60.4 (8760)	
<i>*All moulds, mixing tools and powder components were pre-conditioned to the test temperatures. Prepared test specimens were cast and then cured at the indicated test temperatures until the time of testing.</i>						
<i>Liquid/solids ratio (water + Sikacem® Accelerator/Sikacrete®-211 Flow PLUS) = 0.108; [2.7 L (0.71 US gal.) of liquid per 25 kg (55 lb) bag of Sikacrete®-211 Flow PLUS].</i>						
<b>Freeze/Thaw Durability ASTM C666</b>	> 300 cycles					
<b>Bond Strength CAN A23.2-6B</b>						
28 days	2.3 MPa (333 psi) cohesive failure in substrate (Substrate 35 MPa concrete, surface prep. = Scrubbed coat by brush + SSD)					
<b>Shrinkage ABB BT006 @ 28 days</b>	< 0.07 %					
<b>Rapid Chloride Permeability ASTM C1202</b>	780 Coulombs @ 28 days					

<b>Air Content ASTM C457</b>	6 - 8 %
<b>Absorption ASTM C642</b>	8.18 %
<b>Bond Strength ASTM C882</b>	14 MPa (2030 psi)
<b>VOC Content</b>	0 g/L
<b>Chemical Resistance</b>	Contact Sika Canada

*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.*

## HOW TO USE

### Surface Preparation

**Concrete:** Following ICRI Guideline 310.2, the concrete surface must be clean, sound and mechanically prepared to obtain a surface profile of CSP 6 - 10 (e.g. hydrodemolition, scarification, scabbling, sandblasting, etc.). Follow ICRI Guideline 310.1 for the preparation of the repair perimeter, the repair area geometry and for the cleaning of the concrete and reinforcing steel surfaces. Check for microcracking as per ICRI Guideline 310.2.

**Reinforcing Steel:** Steel reinforcement should be thoroughly prepared by mechanical cleaning to remove all traces of rust. Where corrosion has occurred due to the presence of chlorides, the steel should be high-pressure washed with clean water after mechanical cleaning. For priming of reinforcing steel use SikaTop® Armatec-110 EpoCem® (consult Technical Data Sheet).

### Mixing

Mix using a heavy duty low speed electric drill/mixer (300 - 450 rpm) and mixing paddle (*Jiffy* or *Exomixer*®/spiral type) or a suitable mortar or concrete mixer. Pour 2.1 L (0.55 US gal.) of potable water per bag in a clean mixer or pail. Progressively add Sikacrete®-211 Flow PLUS to the water while continuing to mix. Add additional water up to a maximum of 2.7 L (0.71 US gal.) per bag. Mix to achieve a uniform consistency (maximum three (3) minutes).

### Application

**Form and pour or pump applications:** At time of application, surface should be saturated surface dry (SSD) with no standing water. Ensure good intimate contact with the substrate is achieved. To accomplish this, material should be scrubbed into the substrate or other suitable means should be employed such as vibration of the material or pumping under pressure. Alternatively, SikaTop® Armatec-110 EpoCem® can be used as a bonding agent. Pump with a variable pressure pump. Continue pumping until a 20 to 35 KPa (3 to 5 psi) increase in normal line pressure is evident then STOP pumping. Form should not deflect. Vent to be capped when steady flow is evident, and forms stripped when appropriate.

### Curing

To achieve performance consistent with the technical data, curing is required and must be provided as per ACI 308 recommendations for cement concrete. Execute curing by using recognized methods such as covering with wet burlap tarp or a white polyethylene film, misting with water or an approved water-based curing compound, such as Sika® Florseal WB-18 & -25. Alternatively, the use of Sika® UltraCure DOT™ or NCF™ wet curing blankets is strongly recommended. Curing must commence immediately after placing and finishing the concrete. Protect freshly applied product from direct sunlight, strong winds, rain and freezing.

### Clean Up

Clean all tools and equipment after use with water. Once hardened, the product can only be removed mechanically. Wash soiled hands and skin thoroughly in hot soapy water or use Sika® Hand Cleaner towels.

### Limitations

- **Important:** protect stored material from exposure to rain, condensation and high humidity as moisture may penetrate packaging, causing lumps and making the product not suitable for use.
- For best results, condition product to 18 to 29 °C (65 to 84 °F) prior to mixing and installation. Lower temperatures may result in slower strength development and longer cure times.
- Application thicknesses - minimum : 25 mm (1 in) / maximum : 305 mm (12 in). Consult your Sika Canada inc. technical sales representative for greater thicknesses.
- Minimum ambient and surface temperatures 7 °C (45 °F) and rising at time of application unless using with Sikacem® Accelerator (refer to Technical Data section).
- Do not overwater mix.

### Health and Safety Information

For information and advice on the safe handling, storage and disposal of chemical products, users should refer to the most recent SAFETY DATA SHEET 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 shelflife. 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](http://www.sika.ca)

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