



PRODUCT DATA SHEET

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CEMENTITIOUS FIREPROOFING

Sikacrete®-213 F

WET-SPRAYED FIRE PROTECTION MORTAR

Description	Cement-based pre-bagged, dry mix, fire protection mortar for wet-sprayed application especially for concrete structures in tunnel construction as a fire barrier.
Where to Use	Sikacrete®-213 F is used for concrete and reinforced concrete structures exposed to fire hazards. It contains phyllosilicate aggregates, which are highly effective in resisting the heat of hydrocarbon fires. The thickness of the fire protection layer to be applied depends on the specified fire resistance. The outstanding properties of Sikacrete®-213 F allow greatly reduced thickness of the fire protection layer required.
Advantages	<ul style="list-style-type: none"> ▪ Pre-bagged dry mortar mix for application by the wet spray process ▪ Minimal layer thickness to meet specifications ▪ Easy to apply ▪ Does not contribute to the formation of smoke or toxic fumes in fire ▪ Light weight, low density ▪ Sprayed mortar surface can be finished by trowel or wood float ▪ > 240 minutes fire resistance achievable ▪ Minimal rebound
Approvals / Certificates	<ul style="list-style-type: none"> ▪ Four (4) hour fire resistance over SikaWrap® and CarboDur FRP composites ▪ UL File BXUV.N856 and ULC File BXUVC.N813 - beam strengthened with CarborDur plates and SikaWrap®-103C/-230C fabrics ▪ UL File BXUV.N857 and ULC File BXUVC.N814 - beam strengthened with SikaWrap®-103C/-100G/A30G fabrics ▪ UL File BXUV.X855 and ULC File BXUVC.X826 - Column strengthened with SikaWrap®-103C fabric ▪ Independently assessed by UL (ULC) to CAN/ULC-S101, Standard Methods of Fire Endurance ▪ Tests of Building Construction Materials; and ASTM E119 (NFPA 251) Standard ▪ Test Methods of Fire Tests of Building Construction and Materials ▪ Fire-resistance ratings tested in accordance with ANSI/UL 263

Technical Data	
Chemical base / Composition	Portland cement, additives and phyllosilicate aggregates
Packaging	9 kg (19.8 lb) bag
Colour	Grey
Yield	5 - 6 kg/m ² (1.02 - 1.23 lb/ft ²) / 10 mm (0.39 in) thickness
Shelf Life	1 year in original, unopened packaging. Store dry, ensuring that product is not exposed to rain, condensation or high humidity at between 4 and 35 °C (40 and 95 °F). If damp, discard product.
Mix Ratio	Mix mortar with approx. 8 - 10 L (2.1 - 2.6 US gal.) of water per 9 kg (19.8 lb) <i>Note: Coverage figures do not include allowance for surface profile and porosity or material waste.</i>
Application Temperature (substrate & air)	Minimum: 5 °C (41 °F) / Maximum: 35 °C (95 °F)
Layer Thicknesses	Maximum: 40 mm (1.57 in) <i>Note: Wire mesh reinforcement required when applied in thicknesses greater than 40 mm (1.57 in) and for overhead applications.</i>
Properties at 23 °C (73 °F) and 50 % R.H.	
Density	Approx. 1.17 kg/L (73 lb/ft ³) (fresh mortar, spray-applied)
Compressive Strength	2.0 MPa (290 psi)
Thermal Conductivity	Approx. 0.23 W/mK at 10 °C (50 °F)
VOC Content	0 g/L
Chemical Resistance	Freeze Thaw & De-Icing Salt Resistance: In order to guarantee resistance to frost, freeze thaw cycles and de-icing salts, the Salt Resistance surface of the mortar must be treated with Sikagard®-550W Elastic or Sikagard®Color A50 Lo-VOC. Consult Sika Canada for additional information.
<i>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.</i>	

HOW TO USE

Surface Preparation

Concrete

Concrete substrate must be clean and sound. Remove any existing coatings, oil, grease, dirt, dust, curing agents, impregnations, wax, laitance, coatings and bond-inhibiting materials from the surface by appropriate means, including high-pressure water exceeding 76 MPa (11,000 psi). The substrate must be thoroughly pre-dampened to a saturated, surface dry (SSD) condition to prevent water loss and incomplete cement hydration when the mortar is placed.

Steel

Steel substrates must be clean, dry and stable. Remove all existing treatments, such as coatings, sealers, wax and other contaminants such as rust, dirt, grease, oils and foreign matter. A steel primer is recommended.

FRP Composites

Composite materials, such as carbon and glass fiber-reinforced polymers must be cured, clean, dry and stable. Remove all carbon dust from the surface. If the epoxy resin has blushed, this must be cleaned prior to installing Sikacrete®-213 F. Prime the FRP composite surface with Sikadur®-300 or Sikadur®-330 epoxy. Broadcast binding aggregate into the wet prime coat to adhere the Sikacrete®-213 F fire resistant mortar.

Mixing

Pour 8 L (2.1 US gal.) of potable water into a suitably sized and clean mixing container. Add a bag of powder while slowly mechanically mixing, using a low speed drill (300 – 450 rpm) fitted with a mud mixer or other suitable paddle. Mix to a uniform consistency for a minimum of three (3) minutes. Mixing can also be done in a mortar mixer setup for a direct feed in to wet shotcreting equipment, maintaining the same mixing requirements as when mixing with a drill. Once mixed, if a wetter consistency is required, increase the water content up to a maximum of 10 L (2.6 US gal.). Do not overwater as excessive water will cause severe bleeding, retardation and will reduce the strength and performance of the mortar.

Note: Extending (“bulking”) the mortar with additional aggregate or adding any other material into the mix is not permitted as this may impact the fire resistance of the mortar.

Application

At the time of application, the concrete substrate must be SSD (Saturated Surface Dry) with no surface water visible. FRP Composite and steel surfaces should be dry and clean. Resin surfaces must have an acceptable contact surface to which the mortar will adhere. Where there is a risk of vibration or mechanical damage to the surface exists and for overhead applications, the use of a light wire mesh reinforcement is recommended in order to prevent any debonding of the mortar layer.

Sikacrete®-213 F is applied by the wet-spray, dense stream or wet-spray, thin stream method (for vertical/overhead surfaces). Application equipment should include wet-spray, screw pump systems such as an Aliva® rotor system, Putzmeister®, Bunker® spray concrete system or similar.

Position spray nozzle 450 – 600 mm (18 – 24 in) perpendicular to the surface. This will minimize rebound, create a smoother finished surface and will flatten out when applied at the proper pressure. The surface of the freshly applied mortar can be finished for up to one (1) hour after application dependent on the temperature and humidity. When application requires an aesthetic or protective coating, contact Sika Canada for guidance.

Curing

As per ACI 308 recommendations for Portland cement concrete, curing is required. Moist cure with wet burlap and polyethylene, a fine mist of water or a water-based* compatible curing compound. Curing compounds adversely affect the adhesion of following lifts of mortar, leveling mortar or protective coatings. Moist curing should commence immediately after finishing. Protect freshly applied mortar from direct sunlight, wind, rain and frost.

* *Note: Pretesting of curing compound is recommended.*

Clean Up

Remove Sikacrete® -213 F from tools and mixing equipment with water. Cured product can only be removed mechanically.

Limitations

- Do not expose Sikacrete®-213 F to weathering (frost, freeze/thaw, moisture) without additional protection. Protect stored material from exposure to rain, condensation and high humidity as moisture may penetrate packaging, causing lumps.
- Do not overwater as excessive water will cause severe bleeding, retardation and will reduce the strength and performance of the mortar.
- Extending (“bulking”) the mortar with additional aggregate or adding any other material into the mix is **not permitted** as this may impact the fire resistance of the mortar.
- For optimum resistance to mechanical wear, additional sealing of the surface with Sikagard®-550W Elastic or Sikagard®Color A50 Lo-VOC is recommended.
- To achieve the optimum physical characteristics, the spray nozzle must be handled by a trained and experienced operator.
- Sikacrete®-213 F must not assume any load-bearing function.
- Sikacrete®-213 F is a sacrificial layer and must be replaced in the event of a fire.

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

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