BUILDING TRUST

PRODUCT DATA SHEET

Sikacrete®-213 F

Wet sprayed, or hand applied, specialist fire protection mortar

PRODUCT DESCRIPTION

Sikacrete®-213 F is a one-part, cementitious, specialist fire protection mortar for wet spray or hand application. Suitable for fire protecting all types of reinforced concrete buildings and civil engineering structures, including tunnels. It contains phyllosilicate aggregates, which are highly effective in resisting the heat of hydrocarbon fires. The fire protection performance allows a reduced thickness of fire protection required compared to concrete. The fire protection layer thickness depends on the specified fire resistance (up to 4 hours is achievable).

USES

- Fire protection of concrete and reinforced concrete structures exposed to fire risk (e.g. tunnels).
- Fire protection of concrete member reinforced with FRP (e.g. Sika® CarboDur® and SikaWrap®).
- Factory made lightweight (LW) rendering and plastering mortar intended for interior and exterior use in walls, ceilings, columns and partitions as per EN 998-1.

CHARACTERISTICS / ADVANTAGES

- Pre-bagged dry mortar mix.
- Application by the wet spray process, or by hand.
- Minimal layer thickness to comply with fire regulations.
- Does not contribute to the formation of smoke or toxic fumes during a fire.
- Lightweight, low density and breathable system.
- Easily surface finished by trowel or wooden float.
- >240 minutes fire resistance achievable.
- Minimal rebound when wet spray applied.
- High thermal and acoustic insulation.
- Easy to maintain and repair.

ENVIRONMENTAL INFORMATION

- VOC emission classification GEV-EMICODE® EC1 plus.
- Attestation LEED v4 and v4.1 BETA.

APPROVALS / STANDARDS

- 3 hours fire testing to EN 1363-1 (RWS curve), VSH, Report No. 20200010.
- 4 hours fire testing, Lachenbrand curve, VSH, Report No. 20090011.
- 4 hours fire resistance testing over SikaWrap® and Sika® CarboDur®, NRC, Reports No. B4247.1 & B4247.2.
- Fire resistance RABT-ZTV (train) fire curve, ENALOS.
- Fire resistance ratings - BXUV - ANSI/UL 263 certified for United States & BXUV7 - CAN/ULC-S101 Certified for Canada, January 2020:
  - BXUV.N856 — beam strengthened with Sika® CarboDur® plates and SikaWrap® fabrics.
  - BXUV.N857 — beam strengthened with SikaWrap® fabrics.
  - BXUV.X855 — column strengthened with SikaWrap® fabrics.
- CE Marking and Declaration of Performance to EN 998-1 — Factory made lightweight (LW) rendering and plastering mortar intended for interior and exterior use in walls, ceilings, columns and partitions.

PRODUCT INFORMATION

Chemical Base	Portland cement, additives and phyllosilicate aggregates
Packaging	8 kg bag Refer to current price list for packaging variations
Appearance / Colour	Grey powder
Shelf Life	12 months from date of production if stored properly in undamaged unopened, original sealed packaging
Storage Conditions	The product must be stored in original, unopened and undamaged packaging in dry conditions at temperatures between +5 °C and +30 °C. Always refer to packaging.
Density	Powder ~0,5 kg/L Fresh applied ~1,0 kg/L (sprayed) Applied after 28 days ~0,6 kg/L (sprayed)
Maximum Grain Size	~3 mm

TECHNICAL INFORMATION

Compressive Strength	≥ 1.0 N/mm² after 28 days (Class CS I) **NOTE:** Tests conducted with wet spray applied mortar.	(EN 1015-12)
Tensile adhesion strength	≥ 0.15 MPa (after 28 days) **NOTE:** Tests conducted with wet spray applied mortar and Sika® MonoTop®-1010 as the bonding primer.	(EN 1015-12)
Reaction to Fire	Euroclass A1	(EN 13501-1)
Freeze Thaw De-Icing Salt Resistance	To be resistant to frost, freeze-thaw cycles and de-icing salts, the surface of the mortar must be protected. Please refer to the "System Structure" section.	
Diffusion Resistance to Water Vapour	$\mu \leq 6.0$	(EN 1015-19)
Thermal Conductivity	$\lambda_{10,dry,mat} \approx 0.12$ W/m·K (tab. mean value, P=50%)	(EN 1745)
Water Absorption	Class W_c0	(EN 1015-18)

APPLICATION INFORMATION

Mixing Ratio	7.1 to 9.8 litres of water per 8 kg bag
Consumption	~4.5 to 5.5 kg of powder per m² at 10 mm thickness. **NOTE:** This figure is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level or wastage, etc.
Layer Thickness	Minimum: 10 mm Maximum: 40 mm (per layer)
Ambient Air Temperature	5 °C minimum / 30 °C maximum
Substrate Temperature	5 °C minimum / 30 °C maximum

SYSTEM INFORMATION

System Structure

Bonding Primer

- Sika® MonoTop®-1010.

Reinforcement

Structure	Reinforcement Type
Tunnels*	Galvanised or stainless steel. Wire diameter 1 to 2 mm. Mesh size 50 mm.
Other structures	According to the application thickness.**

* A light mesh is always recommended in order to prevent debonding of the mortar layer.
** Contact Sika® Technical Services for more information.

Fire Protection Mortar

- Sikacrete®-213 F, application thickness depends on the specified fire resistance.

Surface Protection

Structure	Exposure	Surface Protection
Tunnels and other structures	Internal and normal exposure.	No protection required.
Tunnels	Exposure to freeze thaw cycles, de-icing salt. Improved resistance to mechanical wear (with pore sealer).	Sikagard®-340 WCT Sikagard®-260 WPU Sikagard® Wallcoat T
Other structures	Exposure to CO_2, freeze-thaw cycles, de-icing salt. Improved resistance to mechanical wear (with pore sealer). Aesthetic colour finish.	*Hydrophobic Impregnation:* Sikagard®-705 L Sikagard®-706 Thixo *Rigid Coating:* Sikagard®-675 W *Elastic Coating:* Sikagard®-5500

VALUE BASE

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.

FURTHER DOCUMENTS

For detailed application information, please refer to the latest Method Statement for Sikacrete®-213 F.

LIMITATIONS

For professional use only!

ECOLOGY, HEALTH AND 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

EQUIPMENT

Select the most appropriate equipment required for the project:

Substrate Preparation

- High pressure water blasting system.

Mixing

- Large quantities shall be mixed in a suitable forced action mixer. Small quanities can be mixed using a low speed electric single or double paddle mixer (<500 rpm).

Application

- Wet Spray: All-in-one mixing and spraying machine or separate spraying machine and all associated ancillary equipment to suit application volumes.
- Hand: Clean containers, plasterer's hawk and trowel.

Finishing

- Trowel (PVC or wooden).
- Sponge.

SUBSTRATE QUALITY / PRE-TREATMENT

Concrete:

Important: The substrate must have a roughness depth of >2 mm.
- Apply only to sound, prepared substrates.
- Before application, pre-dampen concrete surfaces to a saturated surface-dry (SSD) condition.

FRP Protection:

- FRP composite materials, such as carbon and glass fibre reinforced polymers, must be cured, clean, dry and stable.
- Remove all 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, Sikadur®-330 (for SikaWrap®) or Sikadur®-30 epoxy (for Sika® CarboDur®).
- Broadcast binding aggregate (kiln dried quartz sand) into the wet prime coat to adhere the Sikacrete®-213 F fire resistant mortar.

MIXING

Important: The consistency must be checked after every mix.
1. Pour the minimum recommended clean, potable water quantity into a suitable clean mixing container / equipment.
2. While stirring slowly, add the powder to the water.
3. Mix thoroughly for at least for 5 minutes, adding additional water if necessary to the maximum specified amount, adjusting to the required consistency to achieve a smooth consistent mix.

APPLICATION

Strictly follow installation procedures as defined in the latest Method Statement of Sikacrete®-213 F, application manuals and working instructions which must always be adjusted to the actual site conditions.

Sprayed Application - Wet Spray

NOTE: Include light wire mesh as required.
1. Place the wet mixed Sikacrete®-213 F into the suitable wet spraying equipment and apply onto the pre-wetted substrate between the minimum and maximum layer thicknesses without the formation of voids.
2. Where layers are to be built up, to prevent sagging or slumping, each layer must be allowed to harden before applying subsequent layers 'wet-on-wet'.

Hand Application

NOTE: Include light wire mesh as required.
1. Place workable amounts of the wet mixed Sikacrete®-213 F onto a plasterer's hawk and apply onto the pre-wetted substrate with a trowel between the minimum and maximum layer thicknesses without the formation of voids.
2. Where layers are to be built up, to prevent sagging or slumping, each layer must be allowed to harden before applying subsequent layers 'wet-on-wet'.

Sprayed Application - Dry Spray

Dry spray application of Sikacrete®-213 F is possible, please contact Sika® Technical Service for detailed application information.

Surface Finishing

Important: Do not add additional water during the surface finishing as this can cause discolouration and cracking.
- Carry out finishing to the required surface texture using suitable finishing tools up to one hour after application, dependent on the temperature and humidity.

CURING TREATMENT

Important: Curing compounds must not be used when they could adversely affect subsequently applied products and systems.
- Protect fresh mortar immediately from freezing and premature drying using an appropriate curing method (e.g. curing compound, moist geotextile membrane, polythene sheet, thermal blankets, etc.).

CLEANING OF TOOLS

Clean all tools and application equipment with water immediately after use. Hardened material can only be removed mechanically.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

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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