BUILDING TRUST

PRODUCT DATA SHEET

SikaTop®-111 Plus

Two-component, polymer-modified, cementitious, screed mortar plus Sika FerroGard®-901 penetrating corrosion inhibitor

PRODUCT DESCRIPTION

SikaTop®-111 Plus is a two-component, polymer-modified, Portland cement-based, fast-setting, screed mortar. It is a high performance repair mortar for horizontal, vertical and overhead surfaces in form and pour applications. It offers the additional benefit of Sika FerroGard®-901, a penetrating corrosion inhibitor included in its formulation.

USES

- On grade, above grade, and below grade concrete
- Horizontal surfaces (e.g. for spall repairs on flat work, or as an overlay): pour and screed
- Vertical and overhead surface repairs when formed and poured, or formed and pumped with an appropriate pump
- Structural repair material for water and wastewater treatment plants, parking facilities, industrial plants, walkways, bridges, tunnels, dams, abutments, floors and balconies
- Approved for repairs over cathodic protection systems
- Free flowing repair mortar for hard-to-reach areas
- Filler for voids and cavities
- Repair of substrates such as concrete, mortar, and masonry

CHARACTERISTICS / ADVANTAGES

- Extremely low shrinkage proven by four industry standard test methods
- High compressive and flexural strengths
- Increased freeze/thaw durability and resistance to deicing salts
- Increased density - improved carbon dioxide resistance (carbonation) without adversely affecting water vapor transmission (not a vapor barrier)
- Enhanced with Sika FerroGard®-901, a penetrating corrosion inhibitor - reduces corrosion even in the adjacent concrete

APPROVALS / STANDARDS

- Compatible with coefficient of thermal expansion of concrete - Passes ASTM C 884
- USDA certifiable for incidental food contact
- Independently certified for NSF/ANSI 61 (potable water) compliance

PRODUCT INFORMATION

Packaging	SikaTop® 'A' Component: 1 gallon (3.8 liters) plastic jug; 4 jugs/carton SikaTop®-111 Plus 'B' Component: 61.5 lb (27.9 kg) bag
Appearance / Color	'A' Component: White liquid 'B' Component: Gray powder 'A' + 'B' mixed: Gray mortar
Shelf Life	12 months from date of production if stored properly in original, unopened and undamaged, sealed packaging
Storage Conditions	Store dry at 40° – 95° F (4° – 35° C) Protect 'A' Component from freezing. If frozen, discard material Protect 'B' Component from moisture. If damp, discard material

TECHNICAL INFORMATION

Compressive Strength	1 day	2,500 psi (17.2 MPa)	(ASTM C 109) 73° F (23° C), 50% R.H.
	7 days	5,500 psi (37.9 MPa)	
	28 days	6,500 psi (44.8 MPa)	
Modulus of Elasticity in Compression	7 days	3.0 x 10^6 psi (20.7 GPa)	(ASTM C 469) 73° F (23° C), 50% R.H.
Flexural Strength	28 days	1,400 psi (9.7 MPa)	(ASTM C 293) 73° F (23° C), 50% R.H.
Splitting tensile strength	28 days	600 psi (4.1 MPa)	(ASTM C 496) 73° F (23° C), 50% R.H.
Tensile Adhesion Strength	28 days	> 500 psi (3.4 MPa) substrate failure	(ASTM C 1583) 73° F (23° C), 50% R.H.
Slant Shear Strength	28 days	2,000 psi (13.8 MPa)	(ASTM C 882 modified)*
	* Mortar scrubbed into mechanically prepared, saturated surface dry (SSD) substrate. 73° F (23° C), 50% R.H.		
Shrinkage	28 days	< 0.05 %	(ASTM C 157, modified per ASTM C 928) 73° F (23° C), 50% R.H.
Ring test	Days	> 70 days	(ASTM C 1581) 73° F (23° C), 50% R.H.
	Average Maximum Strain	-16 µstrain	
	Average Stress Rate	1.46 psi / day (0.01 MPa / day)	
	Potential for Cracking	Low	
Baenziger block	90 days	No cracking	73 °F (23 °C) 50 % R.H.
Freeze-Thaw Stability	300 cycles	98%	(ASTM C 666)

Rapid Chloride Permeability	< 500 Coulombs	(ASTM C 1202) 73° F (23° C), 50% R.H.

APPLICATION INFORMATION

Mixing Ratio	7/8 - 1 gallon (3.3 - 3.8 liters) of 'A' Component : 61.5 lbs (27.9 kg) of 'B' Component	
Fresh mortar density	136 lb/ft³ (2.18 kg/l)	(ASTM C 138) 73° F (23° C), 50% R.H.
Coverage	Neat: 0.5 ft³ (0.01 m³) Extended with 42 lbs (19 kg) of 3/8 inch (10 mm) coarse aggregate: 0.75 ft³ (0.02 m³) (Yield figures do not include allowance for surface profile and porosity or material waste)	

Layer Thickness	**Minimum**	**Maximum in one lift ***
Neat	1/2 inch (12 mm)	1 inch (25 mm)
Extended	1 inch (25 mm)	6 inches (152 mm)

* If repair requires multiple lifts, each lift should be applied as soon as the previous lift has developed enough initial strength to support it.

Product Temperature	65° - 75° F (18° - 24° C)	
Ambient Air Temperature	40° - 95° F (4° - 35° C)	
Substrate Temperature	40° - 95° F (4° - 35° C)	
Set Time	40 – 70 minutes	(ASTM C 266) 73° F (23° C), 50% R.H.
Final set time	> 90 minutes	(ASTM C 266) 73° F (23° C), 50% R.H.
Finishing time	50 – 120 minutes	
Waiting / Recoat Times	Refer to Sika Tech Brief # 18-01 for minimum cure times prior to overcoating.	

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

LIMITATIONS

- Do not use solvent-based curing compound.
- Do not use any admixtures (e.g. plasticizers, accelerators, retarders, etc.) or add cement to SikaTop®-111 Plus.
- Egg beater paddles are not recommended for use with SikaTop®-111 Plus as they will entrap excessive air into the mix.
- SikaTop®-111 Plus does not form a vapor barrier.
- As with all cement based materials, avoid contact with aluminum to prevent adverse chemical reaction and possible product failure. Insulate potential areas of contact by coating aluminum bars, rails, posts etc. with an appropriate epoxy such as Sikadur®-32 Hi-Mod.
- Elevated temperatures will decrease working time and slump.
- Rate of strength gain will be reduced at colder temperatures. On site testing is recommended.

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

- concrete surfaces must be clean and sound. Remove all deteriorated concrete, dirt, dust, oil, grease, contaminants and other bond-inhibiting materials from the area to be repaired.
- Be sure the repair area is not less than 1/2 inch (12 mm) in depth for placement of a Neat mix. Be sure the repair area is not less than 1 inch (25 mm) in depth for placement of an Extended mix.
- Preparation work should be done by high pressure water blasting, scabbling, or other appropriate mechanical means. Obtain an exposed aggregate surface with a minimum surface profile of ±1/8 inch (3 mm) [ICRI CSP-6 to CSP-7] on clean, sound concrete.
- To ensure optimum repair results, the effectiveness of decontamination and substrate preparation can be assessed by a Pull-Off test (i.e. a Tensile Adhesion test per ASTM C 1583).
- Saw cutting the perimeter edges of the repair area is recommended, preferably cut at a dovetail angle..
- Substrate should be saturated surface dry (SSD) with clean water prior to application. No standing water should remain during application.

CORROSION PROTECTION

- Reinforcing Steel Should be thoroughly prepared by mechanical cleaning to remove all traces of rust and scale. Where corrosion has occurred, the steel should be high-pressure washed with clean water after mechanical cleaning. For the corrosion protection of reinforcing steel use Sika® Armatec® corrosion protection products (consult applicable current Product Data Sheets).

PRIMING

- Prime the prepared substrates with a brush or spray applied coat of Sika® Armatec® or Sikadur® bonding agent products (consult current applicable Product Data Sheets).
- Alternately in lieu of a bonding agent, a scrub coat of a Neat mix of SikaTop®-111 Plus can be applied to the substrate. While the scrub coat is still wet, place the remaining thickness of SikaTop®-111 Plus needed to complete the repair.
- If a bonding agent or a scrub coat of SikaTop®-111 Plus are not possible, other suitable means should be employed such as vibration of the material or pumping under pressure to ensure good intimate contact with the prepared substrate is achieved.

MIXING

- Pour approximately 7 pints (3.3 liters) of SikaTop® 'A' (liquid) into a suitably sized mixing container.
- Add entire bag's contents of SikaTop®-111 Plus 'B' Component (powder) to the container while mixing continuously with a low speed drill (400–600 rpm) and mixing paddle or mortar mixer.
- Add up to an additional maximum 1 pint (0.5 liter) of SikaTop® 'A' if needed for the desired consistency.
- Mix to a uniform consistency, maximum 3 minutes. Thorough mixing and proper proportioning of the two components is necessary.

EXTENSION WITH AGGREGATES

- Pour all of SikaTop® 'A' Component (liquid) into a suitably sized mixing container or concrete mixer.
- Add entire bag's contents of SikaTop®-111 Plus 'B' Component (powder) to the container while mixing continuously, then introduce 3/8 inch (10 mm) coarse aggregate at desired quantity.
- Mix to uniform consistency, maximum 3 minutes. Thorough mixing and proper proportioning of all components is necessary.
- The aggregate must be non-reactive (reference ASTM C 1260, ASTM C 227 and ASTM C 289), clean, well graded, saturated surface dry (SSD), have low absorption, high density, and comply with ASTM C 33, size number 8 per Table 2.
- Variances in aggregate quality may result in different strengths and performance.
- The typical addition rate is 42 lbs (19 kg) of aggregate per mix. This is approximately 3.0 - 3.5 gallons (11.3 - 13.2 liters) of aggregate by loose volume.

APPLICATION

- Ensure substrate is properly prepared and saturated surface dry (SSD) before application.
- Ensure good intimate contact with the substrate is achieved either through a bonding agent or a scrub coat application, or other suitable means such as vibration of the material or pumping under pressure.

Horizontal Installations:

- After filling repair area, screed the material.
- Allow SikaTop®-111 Plus to set to desired stiffness, then finish with wood or sponge float for a smooth surface or broom or burlap-drag for a rough finish.
- If a smoother finish is desired, a magnesium float should be used.
- To assist in the finishing process, use SikaFilm® finishing aid. Consult current Product Data Sheet.

Form and Pour / Pump Installations:

- Vibrate form while pouring or pumping.
- Pump Extended mixes with a variable pressure concrete pump.
- Continue pumping until a 3 to 5 psi (20 - 34 Pa) 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 to be stripped when appropriate.
- Begin and finish multiple lift repairs on the same day.

- Refer to ACI 305 the "Guide to Hot Weather Concreting" or ACI 306 the "Guide to Cold Weather Concreting" when there is a need to place this product while either hot or cold temperatures prevail. Thinner placements will be more sensitive to the temperature conditions.

CURING TREATMENT

- As per ACI recommendations for Portland-cement concrete, curing is required.
- Moist curing should commence immediately after finishing.
- Moist cure with wet burlap and polyethylene, a fine mist of water or a water-based, compatible* curing compound meeting ASTM C 309.
- Curing compounds adversely affect the adhesion of following layers of mortar, leveling mortar or protective coatings.
- Protect newly applied material from direct sunlight, wind, rain and frost.
- To prevent from freezing, cover with insulating material (e.g. curing blanket).

*Pretesting of curing compound for compatibility is recommended.

OTHER RESTRICTIONS

See Legal Disclaimer.

LEGAL DISCLAIMER

- **KEEP CONTAINER TIGHTLY CLOSED**
- **KEEP OUT OF REACH OF CHILDREN**
- **NOT FOR INTERNAL CONSUMPTION**
- **FOR INDUSTRIAL USE ONLY**
- **FOR PROFESSIONAL USE ONLY**

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates (“SIKA”), the user must always read and follow the warnings and instructions on the product’s most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA’s Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

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