



### Submittal Review Response

Project Name: Hilo WWTP Rehabilitation and Replacement Project Phase 1  
Submittal No.: 03926-001.0  
Date: 5/14/2025

Client: County of Hawai'i Carollo Project No.: 203975  
Contractor: Nan, Inc.  
Submittal Name: Concrete Repair  
Reviewed By: Felicia Fan

#### SUBMITTAL REVIEW

Review is for general compliance with contract documents. No responsibility is assumed by Carollo for correctness of quantities, dimensions, and details. No deviation or variation is approved unless specifically addressed in these review comments. Refer to Section 01330 for additional requirements. The Contractor shall assume full responsibility for coordination with all other trades and deviations from contract requirements.

Approved	<input checked="" type="checkbox"/>	No Exceptions
	<input type="checkbox"/>	Make Corrections Noted - See Comments
	<input type="checkbox"/>	Make Corrections Noted - Confirm
Not Approved	<input type="checkbox"/>	Correct and Resubmit
	<input type="checkbox"/>	Rejected - See Remarks
Receipt Acknowledged	<input type="checkbox"/>	Filed for Record
	<input type="checkbox"/>	With Comments - Resubmit

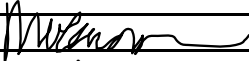
#### Review Comments:

1. No comment.

## CONTRACTOR SUBMITTAL TRANSMITTAL FORM

<b>Owner:</b>	County of Hawaii	<b>Date:</b>	5/9/2025
<b>Contractor:</b>	Nan, Inc.	<b>Project No.:</b>	WW-4705R
<b>Project Name:</b>	Hilo WWTP Phase 1	<b>Submittal Number:</b>	03931-001.0
<b>Submittal Title:</b>	Concrete Repair		
<b>To:</b>	County		
<b>From:</b>	Nan, Inc.		

Specification No. and Subject of Submittal / Equipment Supplier			
Spec #:	03926	Subject:	Concrete Repair
Authored By:	Makoa Ng	Date Submitted:	5/9/2025

Submittal Certification	
<b>Check Either (A) or (B):</b>	
<input checked="" type="checkbox"/> (A)	We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings with no exceptions.
<input type="checkbox"/> (B)	We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings except for the deviations listed.
Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements.	
General Contractor's Reviewer's Signature: 	
Printed Name and Title: Makoa Ng, QC Representative	
In the event, Contractor believes the Submittal response does or will cause a change to the requirements of the Contract, Contractor shall immediately give written notice stating that Contractor considers the response to be a Change Order.	
Firm:	Signature:                      Date Returned:

PM/CM Office Use
Date Received GC to PM/CM:
Date Received PM/CM to Reviewer:
Date Received Reviewer to PM/CM:
Date Sent PM/CM to GC:

Nan, Inc

PROJECT: HILO WWTP REHABILITATION  
AND REPLACEMENT PROJECT - PHASE 1

JOB NO. WW-4705R

THIS SUBMITTAL HAS BEEN CHECKED BY  
THIS CONTRACTOR. IT IS CERTIFIED  
CORRECT, COMPLETE, AND IN  
COMPLIANCE WITH CONTRACT  
DRAWINGS AND SPECIFICATIONS. ALL  
AFFECTED CONTRACTORS AND  
SUPPLIERS ARE AWARE OF, AND WILL  
INTEGRATE THIS SUBMITTAL (UPON  
APPROVAL) INTO THEIR OWN WORK.

DATE RECEIVED 05/09/2025  
SPECIFICATION SECTION # 03931-001.0  
SPECIFICATION Structural Concrete Repair  
PARAGRAPH 2.02  
DRAWING n/a  
SUBCONTRACTOR n/a  
SUPPLIER White Cap  
MANUFACTURER Sika, BASF

CERTIFIED BY: Makoa Ng

## SECTION 03926

### STRUCTURAL CONCRETE REPAIR

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section includes: Repairing damaged structural concrete.

##### 1.02 REFERENCES

- A. ASTM International (ASTM):
  1. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens).
  2. C293 - Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading).
  3. C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars).
  4. C666 - Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
  5. C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.

##### 1.03 SUBMITTALS

- ✓ A. Product data: Submit manufacturer's data completely describing structural repair concrete materials.
- ✓ B. Certificates of Compliance.
- ✓ C. Manufacturer's Instructions.

##### 1.04 QUALITY ASSURANCE

- ✓ A. Manufacturer qualifications: The manufacturer of the specified product shall have been in existence, for a minimum of 10 years.
- ✓ B. Allowable tolerances: Deviation from plumb or level shall not exceed 1/8 inch within 10 feet in any direction, as determined with a 10-foot straight edge.

##### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver the specified product in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers.
- B. Store and condition the specified product as recommended by the manufacturer.

- C. Deliver, store, and handle packaged materials in the manufacturer's original, sealed containers, each clearly identified with the manufacturer's name, and name and type of product.
- D. Store materials subject to damage by dirt and moisture in a clean, dry location, off the ground, and suitably protected.

## 1.06 PROJECT CONDITIONS

- A. Existing conditions:
  - 1. Hot weather: ACI 305.
  - 2. Do not place concrete repair mortar during precipitation, unless adequate protection is provided.

## PART 2 PRODUCTS

### 2.01 DESIGN AND PERFORMANCE CRITERIA

- A. General: Structural repair concrete composed of cementitious material capable of being placed in formed vertical and overhead applications, and on horizontal surfaces.
- B. Design requirements:
  - 1. Provide material suitable for performing in environments subject to corrosive attack by chlorides and sulfates, freeze/thaw cycles, low permeability, and abrasion resistant.
  - 2. Provide concrete repair mortar cement that is placeable from 1 inch in depth and extendable in greater depths.
  - 3. Concrete repair mortar shall be capable of being poured in place or troweled in place to suit the conditions encountered.

### 2.02 MATERIALS

- A. Structural repair concrete:
  - ✓ 1. Manufacturers: One of the following or equal:
    - ✓ a. Master Builder Solutions, MasterEmaco S 466CI.
    - ✓ b. Sika Corp., SikaTop 123 Plus.
  - ✓ 2. Compressive strength: As follows in accordance with ASTM C109:
    - ✓ a. 1 day: 2,500 pounds per square inch, minimum.
    - ✓ b. 7 day: 6,000 pounds per square inch, minimum.
    - ✓ c. 28 day: 7,000 pounds per square inch, minimum.
  - ✓ 3. Bond strength by slant shear: 2,200 pounds per square inch minimum at 28 days, in accordance with ASTM C882 modified.
  - ✓ 4. Flexural strength: 2,000 pounds per square inch minimum at 28 days, when tested in accordance with ASTM C293, or 770 pounds per square inch minimum at 28 days when tested in accordance with ASTM C348.
  - ✓ 5. Rapid freeze/thaw durability: In accordance with ASTM C666; Procedure A.
    - ✓ a. Relative durability factor at 300 cycles: 95 percent minimum.
  - ✓ 6. Working time: 30 to 40 minutes.
  - ✓ 7. Color: Concrete gray.

- B. Water: Potable, clean, not detrimental to concrete.
- C. Form materials:
  - 1. Smooth finish.
  - 2. Brace as required to maintain tolerances.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that concrete surfaces and exposed reinforcing are clean and free of contaminants.

### **3.02 PREPARATION**

- A. Prepare existing concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. Thoroughly clean reinforcement and other embedded items to remove loose rust and other objectionable matter.
- C. Thoroughly wet wood forms, except coated plywood, and adjacent concrete at least 1 hour in advance of placing concrete; securely close cleanout end inspection ports; repeat wetting as necessary to keep forms damp.
- D. Damaged concrete:
  - 1. Areas to be repaired shall be clean, sound, and free of contaminants.
    - a. Remove loose and deteriorated concrete by mechanical means acceptable to the Engineer.
    - b. Saw cut perimeter 1/2-inch maximum.
  - 2. Chip concrete substrate to obtain a surface profile of 1/16 inch to 1/8 inch in depth with a new fractured aggregate surface.
    - a. The area to be repaired shall be not less than 1 inch in depth.
  - 3. Concrete removal shall extend along the reinforcing steel to locations along the bar free of bond inhibiting corrosion, and where the bar is well bonded to surrounding concrete.
- E. Use the following procedures where reinforcing steel with active corrosion is encountered:
  - 1. Sandblast reinforcing steel to remove contaminants and rust.
  - 2. Determine section loss, splice new reinforcing steel where there is more than 15 percent loss as directed by the Engineer.
    - a. If more than half the diameter of the reinforcing steel is exposed, chip out behind the reinforcing steel a minimum of 1/2 inch. The distance chipped behind the reinforcing steel must also equal or exceed the minimum placement depth of the accepted material.
- F. Treat cracks in the substrate at the area of patching or overlay work as directed by the Engineer.

- G. Extend existing control and expansion joints through any concrete repair.
- H. Apply an epoxy-bonding agent to area to be repaired, as specified in Section 03071 - Epoxies, prior to patching concrete with polymer-modified portland cement mortar.

### **3.03 MIXING**

- A. Mix in accordance with manufacturer's mixing instructions.

### **3.04 INSTALLATION**

- A. Formed surface finishes:
  - 1. Smooth finish:
    - a. Obtain by the use of plywood, sheet metal, or lined wood forms; no fins, pockmarks, or other irregularities shall be present in the exposed surfaces of concrete.
    - b. Place no structural repair concrete without prior authorization of Engineer.
- B. Verify that form materials are in place and ready to receive installation of concrete repair material.
- C. Install in accordance with manufacturer's installation instructions.
- D. In accordance with ACI recommendations, apply concrete repair material only when ambient conditions of moisture, temperature, humidity, and wind are favorable for curing.
- E. Scrub mortar into substrate, filling cracks, voids, and pores.
- F. For new construction, finish of repaired area shall match required finish for concrete being repaired.
- G. For existing concrete, finish of repair area shall match finish of concrete being repaired.
- H. During the curing process, protect concrete repair from rain, wind, or freezing as required:
  - 1. Keep sufficient covering on hand at all times for protection of repair concrete.

### **3.05 CLEANING**

- A. Remove debris and excess material. Leave work site in a neat, clean condition.

END OF SECTION



We create chemistry

Technical Data Guide

3

03 01 00  
Maintenance of  
Concrete

For more information  
Or to buy this product  
[Click here](#)

# MasterEmaco® S 466CI

Flowable structural-repair concrete with  
integral corrosion inhibitor

FORMERLY EMACO® S66 CI

## PACKAGING

55 lb (25 kg) polyethylene-lined bags  
3,300 lb (1,500 kg) bulk bags

## YIELD

0.43 ft<sup>3</sup> (0.012 m<sup>3</sup>) per 55 lb bag (25 kg)

## STORAGE

Store in unopened containers in a  
cool, clean, dry area

## SHELF LIFE

55 LB BAGS: 12 months  
when properly stored  
3,300 LB BAGS: 3 months  
when properly stored

## VOC CONTENT

0 g/L less water and exempt solvents

## DESCRIPTION

MasterEmaco S 466CI is a flowable, shrinkage-compensated repair concrete. It is designed for large volume repairs, including structural elements in applications from 1" (50 mm) to full depth. It has a unique formulation that provides excellent bond, resistance to sulfates and chlorides, high electrical resistivity, low permeability, high-compressive strengths, and protection from corrosion.

## PRODUCT HIGHLIGHTS

- Very low chloride permeability and an integral corrosion inhibitor protects reinforcing steel
- Only requires the addition of potable water
- High compressive strength
- Excellent freeze/thaw resistance for durability in cold, wet environments
- Abrasion resistant for repairs requiring protection from vehicular traffic
- Flowability makes it ideal for placement by pumping or pouring into congested locations
- Shrinkage compensated, minimizing cracking from drying shrinkage reducing stress at the bond line

## APPLICATIONS

- Interior and exterior
- Large volume structural repairs
- Repair or replacement of concrete elements

## SUBSTRATES

- Concrete

## HOW TO APPLY

### SURFACE PREPARATION CONCRETE

1. Substrate must be structurally sound and fully cured (28 days).
2. Saw cut the perimeter of the area being repaired into a square with a minimum depth of 1" (25 mm).
3. Refer to current ICRI Guideline no. 310.2R for surface prep requirements to permit proper bond.

### REINFORCING STEEL

1. Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 310.1R.
2. For additional protection from future corrosion, coat the prepared reinforcing steel with MasterProtect P 8100 AP.

**Technical Data****Composition**

MasterEmaco S 466CI is a rheoplastic cement-based silica-fume-modified flowable repair concrete.

**Typical Properties**

PROPERTY	VALUE
<b>Unit weight</b> , lb/ft <sup>3</sup> (kg/m <sup>3</sup> )	142 (2,275)
<b>Working time</b> , min	90
<b>Set times</b> , hours (ASTM C 266)	
Initial set	4
Final set	6

**Test Data**

PROPERTY	RESULTS			TEST METHODS
	1 Day Psi (MPa)	7 Day Psi (MPa)	28 Day Psi (MPa)	
<b>Splitting tensile strength</b>	300 (2.1)	550 (3.8)	700 (4.8)	ASTM C 496
<b>Flexural strength</b>	— —	— —	770 (5.3)	ASTM C 348
<b>Compressive strength</b>	2,500 (17.2)	6,000 (41.4)	8,000 (55.2)	ASTM C 109
<b>Direct tensile bond strength</b>	— —	260 (1.8)	340 (2.3)	ACI 503R, Appendix A
<b>Direct shear bond strength</b>	350 (2.4)	500 (3.4)	600 (4.1)	Michigan DOT
<b>Slant shear bond strength</b>	— —	2,150 (14.8)	3,300 (22.8)	ASTM C 882, modified <sup>1</sup>
<b>Drying shrinkage</b> , %, at 28 days	0.06			ASTM C 157, modified <sup>2</sup>
<b>Modulus of elasticity</b> , psi (GPa), at 28 days	5.90 x 10 <sup>6</sup> (40.7)			ASTM C 469
<b>Rapid chloride permeability</b> , coulombs, at 28 days	650			ASTM C 1202 / AASHTO T 277
<b>Freeze/thaw resistance</b> , % RDM, at 300 cycles	97.0			ASTM C 666, Procedure A
<b>Scaling resistance</b> , 50 cycles	2; slight to moderate			ASTM C 672
<b>Sulfate resistance</b> , %, length change at 6 months	+0.006			ASTM C 1012

<sup>1</sup>No epoxy-bonding agent used

<sup>2</sup>ICRI Guideline No. 03733, 3 by 3 by 10" (75 by 75 by 250 mm) prism, air cured

Results were obtained when material was mixed with 0.6 gallons (2.3 L) of water per bag and cured at 70° F (21° C).

Expect reasonable variations depending upon application methods, test methods, and curing conditions.



**MIXING**

1. Precondition material to 70° F  $\pm$  5° (21° C  $\pm$  3°) before mixing.
2. Add 0.40–0.60 gallons (1.5–2.3 L) of potable water for each 55 lb (25 kg) bag of MasterEmaco S 466CI. Mix mechanically using a slow-speed drill (400–600 rpm) and a Jiffy paddle or mix in an appropriately sized mortar mixer.
3. Pour approximately 90% of the mix water into the mixing container, and then charge the mixer with the MasterEmaco S 466CI. Add the remaining mix water as required to obtain desired consistency. Add enough water to the mixing container to obtain a slump of 4–6" (102–152 mm), approximately 0.6 gallons (2.3 L) per bag. Maximum recommended slump is 7" (175 mm).
4. Mix until a homogeneous consistency is achieved, approximately 3–5 minutes. Do not mix longer than 5 minutes.
5. For applications greater than 8" (203 mm), add up to 25 lbs (11.3 kg) of ½–¾" rounded, high-density, washed, SSD coarse aggregate for each 55 lbs (25 kg) of MasterEmaco S 466CI.
6. Aggregate must comply with the requirements of ASTM C 33.

**APPLICATION****FORMED APPLICATIONS**

1. Build forms in accordance with ACI 347R. Keep the unrestrained surface area of the repair to a minimum.
2. Saturate the prepared concrete substrate by filling the prepared formwork with clean water 24 hours before placement.
3. Immediately before the placement of MasterEmaco S 466CI, completely drain this water and seal the drainage outlets, leaving the substrate saturated surface-dry (SSD) with no ponded water remaining.
4. In jobsite circumstances where the formwork cannot be filled with water to achieve an SSD surface, the prepared concrete substrates must be thoroughly hosed down with clean water to achieve an equal level of saturation. Apply the repair material with sufficient pressure to ensure intimate contact with the substrate.
5. A long open-time bonding agent such as MasterEmaco P 124 may be used in place of a saturated substrate. In such a case, place the MasterEmaco S 466CI before the bonding agent becomes tack free.
6. Immediately after mixing, pump or pour the MasterEmaco S 466CI into the formed area. The material does not require vibrating.
7. The recommended application range of MasterEmaco S 466CI is from 45 to 85° F (7 to 29° C). Follow ACI 305 and 306 for hot or cold weather guidelines.

**HORIZONTAL APPLICATIONS**

1. After removing all standing water, thoroughly scrub a thin layer of bond coat into the saturated surface with a stiff-bristled broom or brush. Do not dilute the bond coat with water. Do not apply more of this bond coat than can be covered with mortar before the bond coat dries. Do not retemper the bond coat.
2. Immediately place the repair mortar from one side of the prepared area to the other. Work the material firmly into the bottom and sides of the patch to ensure good bond. Level the MasterEmaco S 466CI and screed it to the elevation of the existing concrete. Apply the appropriate finish.
3. Finish the completed repair, as required, taking care not to overwork the surface.
4. The recommended application range of MasterEmaco S 466CI is from 45 to 85° F (7 to 29° C). Follow ACI 305 and 306 for hot or cold weather.
5. A maximum of 90 minutes should be allowed to mix, place, and finish MasterEmaco S 466CI at 70° F (21° C).

**CURING**

1. Leave the formwork in place until the compressive strength reaches 2,500 psi (17.2 MPa) or a strength specified by the engineer.
2. Cure with an approved curing compound compliant with ASTM C 309 or preferably ASTM C 1315. If the repair area will receive a coating, wet curing is recommended.

**CLEAN UP**

Clean tools and equipment with clean water immediately after use. Cured material must be removed mechanically.

**FOR BEST PERFORMANCE**

- Do not mix partial bags.
- Do not add plasticizers, accelerators, retarders, or other additives.
- For professional use only; not for sale to or use by the general public.
- Make certain the most current versions of product data sheet and SDS are being used; visit [www.master-builders-solutions.BASF.us](http://www.master-builders-solutions.BASF.us) to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

**HEALTH, SAFETY AND ENVIRONMENTAL**

Read, understand and follow all Safety Data Sheets and product label information for this product prior to use. The SDS can be obtained by visiting [www.master-builders-solutions.basf.us](http://www.master-builders-solutions.basf.us), e-mailing your request to [basfbscst@basf.com](mailto:basfbscst@basf.com) or calling 1(800)433-9517. Use only as directed.

**For medical emergencies only,  
call ChemTrec® 1(800) 424-9300.**

**LIMITED WARRANTY NOTICE**

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is the replacement of product or refund of the purchase price, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

# PRODUCT DATA SHEET

## SikaTop®-123 Plus

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

### PRODUCT DESCRIPTION

SikaTop®-123 Plus is a two-component, polymer-modified, Portland cement-based, fast-setting, non-sag mortar. It is a high performance repair mortar for vertical and overhead surfaces and offers the additional benefit of Sika FerroGard® 901, a penetrating corrosion inhibitor included in its formulation.

### USES

- On grade, above and below grade on concrete and mortar.
- On vertical and overhead surfaces.
- As a structural repair material for parking structures, industrial plants, walkways, bridges, tunnels, dams and ramps.
- Approved for repairs over cathodic protection systems

### 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.
- Compatible with coefficient of thermal expansion of concrete - Passes ASTM C 884.

### APPROVALS / STANDARDS

- USDA certifiable for incidental food contact
- ANSI/NSF Standard 61 potable water approved compliant.
- Tested per ICRI Guideline NO. 320.3R for inorganic repair material data sheet protocol

### PRODUCT INFORMATION

Packaging	Component A	1 gal (3.68 L) jug - 4/carton
	Component B	44 lb. (20 kg) bag
Appearance / Color	Gray powder	
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 Component 'B' from moisture. If damp, discard material  
Protect Component 'A' from freezing. If frozen, discard.

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## TECHNICAL INFORMATION

Does not meet  
specification

Compressive Strength	1 day	3,000 psi (20.7 MPa)	(ASTM C-109) 73 °F (23 °C) 50 % R.H.
	7 days	4,000 psi (27.6 MPa)	
	28 days	6,000 psi (41.4 MPa)	
Modulus of Elasticity in Compression	2.94 x 10 <sup>6</sup> psi		(ASTM C-469)
Flexural Strength	28 days	1,500 psi (10.3 MPa)	(ASTM C-293) 73 °F (23 °C) 50 % R.H.
Splitting tensile strength	28 days	900 psi (6.2 MPa)	(ASTM C-496) 73 °F (23 °C) 50 % R.H.
Tensile Adhesion Strength	28 days	2,000 psi (13.8 MPa)	(ASTM C-882 modified)
* Mortar scrubbed into substrate at 73 °F (23 °C) and 50 % R.H.			
Pull-Out Resistance	28 days	500 psi (3.4 MPa) Substrate failure	(ASTM C-1583)
Shrinkage	28 days	1x1x11-1/4" specimen	(ASTM C-157, mod. ICRI 320.3R)
	28 days	3x3x11-1/4" specimen	
Ring test		> 70 days Average Max Strain - 36 µstrain Average Stress Strain 4.92 psi/day Potential for Cracking Low	(ASTM C-1581)
Baenziger block	90 days	No cracking	
Freeze-Thaw Stability	300 cycles	98 %	(ASTM C-666)
Rapid Chloride Permeability	28 days	< 500 C	(ASTM C-1202 AASHTO T-277)

## APPLICATION INFORMATION

Fresh mortar density	132 lb/ft <sup>3</sup> (2.2 kg/l)	(ASTM C-138)
Coverage	0.39 ft <sup>3</sup> (0.01 m <sup>3</sup> ) per bag (Coverage figures do not include allowance for surface profile and porosity or material waste)	
Layer Thickness	Min.	Max.
	1/8" (3 mm)	1.5" (38 mm)
Product Temperature	65–75 °F (18–24 °C)	
Ambient Air Temperature	> 45 °F (7 °C)	
Substrate Temperature	> 45 °F (7 °C)	
Set Time	15 - 40 min.	(ASTM C-266)
Final set time	< 60 min.	(ASTM C-266)

## 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.

## DIRECTIVE 2004/42/CE - LIMITATION OF EMISSIONS OF VOC

0 g/l

(EPA method 24)

## LIMITATIONS

- Do not use solvent-based curing compound.
- Size, shape and depth of repair must be carefully considered and consistent with practices recommended by ACI or ICRI.
- For additional information on substrate preparation, refer to ICRI Guideline No. 310.2R.
- If aggressive means of substrate preparation is employed, substrate strength should be tested in accordance with ACI 503 Appendix A prior to the repair application.
- 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.

## APPLICATION INSTRUCTIONS

### SURFACE PREPARATION

#### Surface preparation

- Surface must be clean and sound. Remove all deteriorated concrete, dirt, oil, grease, and other bond-inhibiting materials from the area to be repaired.
- Be sure repair area is not less than 1/8" (3 mm) in depth.
- Preparation work should be done by high pressure water blast, scabbler or other appropriate mechanical means to obtain an exposed aggregate surface profile of  $\pm 1/16$ " (1.6 mm) (CSP-5).
- To ensure optimum repair results, the effectiveness of decontamination and preparation should be assessed by a pull-off test.
- Saw cutting of edges is preferred and a dovetail is recommended.
- Substrate should be Saturated Surface Dry (SSD) with clean water prior to application. No standing water should remain during application.

#### Priming

- 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 Sika® Armatec® 110 EpoCem (consult PDS).
- Concrete Substrate:
  - Prime the prepared substrate with a brush or sprayed

applied coat of Sika® Armatec® 110 EpoCem (consult PDS).

- Alternately, a scrub coat of SikaTop®-123 Plus can be applied prior to placement of the mortar. The repair mortar has to be applied into the wet scrub coat before it dries.

## MIXING

- Pour Component 'A' into mixing container.
- Add Component 'B' while mixing continuously.
- Mix mechanically with a low-speed drill (400–600 rpm) and mixing paddle or mortar mixer.
- Mix to a uniform consistency, maximum 3 minutes.
- Manual mixing can be tolerated only for less than a full unit. Thorough mixing and proper proportioning of the two components is necessary.

## APPLICATION

- SikaTop®-123 Plus must be scrubbed into the substrate, filling all pores and voids.
- Force material against edge of repair, working toward center.
- After filling repair, consolidate, then screed.
- Material may be applied in multiple lifts.

### Multiple lifts

- Where multiple lifts are required score top surface of each lift to produce a roughened surface for next lift.
- Allow preceding lift to reach initial set, 30 minutes minimum, before applying fresh material.
- Substrate should be Saturated Surface Dry (SSD) with clean water prior to application. No standing water should remain during application.
- Scrub fresh mortar into preceding lift.
- Allow mortar or concrete to set to desired stiffness, then finish with wood or sponge float for a smooth surface.

## CURING TREATMENT

- As per ACI 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 (ASTM C-309).
- 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.

\* Pretesting of curing compound 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](https://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.

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product's shelf life. User determines suitability of product for intended use and assumes all risks. User's and/or buyer's sole remedy shall be limited to the purchase price or replacement of this product exclusive of any labor costs.

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**Product Data Sheet**

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