

# PRODUCT DATA SHEET

## SikaRepair<sup>®</sup>-224

ONE-COMPONENT, CEMENTITIOUS, SPRAYABLE MORTAR FOR STRUCTURAL REPAIRS

### PRODUCT DESCRIPTION

SikaRepair<sup>®</sup>-224 is a one-component, cementitious, ready-to-use mortar, with silica fume, fiber-reinforced with compensated shrinkage. Formulated for trowel or low pressure applications. Designed especially for vertical and head applications.

### USES

- A high performance repair mortar for wet spray application.
- Floor, overhead and vertical applications
- Structural repairs in parking lots, industrial plants, walkways, bridges, tunnels, ramps and dams
- Use on grade, above, and below grade on concrete and mortar.
- Potable water tank. (NSF approved in Marion, OH and Santa Fe Springs, CA)

### CHARACTERISTICS / ADVANTAGES

- Ready-for-use, one-component material
- Easy to use, just add water
- Approved to be in contact with drinking water
- Can be trowelled and screeded after application
- Sprayable system
- Superior workability
- Superior abrasion resistance compared to conventional cementitious mortars
- Great adhesion
- Compatible with the coefficient of thermal expansion of concrete
- Increased resistance to de-icing salts
- Early high resistance
- Good freeze/thaw resistance.
- Added with silica fume
- Reinforced with fibers

## PRODUCT INFORMATION

<b>Packaging</b>	SikaRepair®-224: 50 lb. (22.7 kg) bag SikaLatex® (R): 1 gal. (3.8 L) jug and 5 gal. (19 L) pail
<b>Appearance / Color</b>	Dark gray powder
<b>Shelf Life</b>	12 months from date of production if stored properly in original, unopened and undamaged sealed packaging
<b>Storage Conditions</b>	Store dry at 40–95 °F (4–35 °C). Protect from moisture. If damp, discard material

## TECHNICAL INFORMATION

<b>Compressive Strength</b>	1 day	4,500 psi (31.0 MPa)	(ASTM C-109)
	7 days	8,000 psi (55.2 MPa)	73 °F (23 °C)
	28 days	10,000 psi (69.0 MPa)	50 % R.H.
<b>Flexural Strength</b>	28 days	1,100 psi (7.6 MPa)	(ASTM C-293) 73 °F (23 °C) 50 % R.H.
	28 days	735 psi (5.1 MPa)	(ASTM C-496) 73 °F (23 °C) 50 % R.H.
<b>Tensile Adhesion Strength</b>	28 days	> 350 psi (2.4 MPa) substrate failure	(ASTM C-1583) 73 °F (23 °C) 50 % R.H.
<b>Sulfate Resistance</b>	1 year	< 0.06 %	(ASTM C-1012)
<b>Chloride Ion Diffusion Resistance</b>	28 days	< 500 C	(ASTM C-1202 AASHTO T-277)

## APPLICATION INFORMATION

<b>Mixing Ratio</b>	3/4 - 7/8 gal. (2.8 - 3.3 L) of liquid		
<b>Fresh Mortar Density</b>	125 lb./ft <sup>3</sup> (2.0 kg/l)	(ASTM C-138)	
<b>Coverage</b>	0.40 ft <sup>3</sup> (0.01m <sup>3</sup> ) per bag (Coverage figures do not include allowance for surface profile and porosity or material waste)		
<b>Layer Thickness</b>	<b>Min.</b>	<b>Max. in one lift</b>	
	Vertical	3/8" (9.5 mm)	2" (50.8 mm)
	Overhead	3/8" (9.5 mm)	1.5" (38.1 mm)*
* If repair requires several lifts (over 1.5"), each lift should be applied as soon as the previous lift will support it.			
<b>Product Temperature</b>	65–75 °F (18–24 °C)		
<b>Ambient Air Temperature</b>	40–86 °F (4–30 °C)		
<b>Substrate Temperature</b>	40–86 °F (4–30 °C)		
<b>Initial Set Time</b>	2–3 hours	(ASTM C-266)	
<b>Final Set Time</b>	5–6.5 hours	(ASTM C-266)	

# APPLICATION INSTRUCTIONS

## SUBSTRATE QUALITY / PRE-TREATMENT

### Concrete

- 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 3/8" (9.5 mm) deep.
- Preparation work should be done by high pressure water blast, scabbler, or other appropriate mechanical means. Obtain an exposed aggregate surface with a minimum surface profile of  $\pm 1/8"$  (3 mm) (CSP-6) on clean, sound concrete.
- 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: 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 SikaRepair®-224 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

- **With water**: Start with 3/4 gal. (2.8 L) of water added to the mixing vessel. Add 1 bag of SikaRepair®-224 while continuing to mix with a low-speed drill (400-600 rpm) and mixing paddle or in an appropriate mortar mixer. Add up to another 1/8 gal (0.5 L) of water to achieve desired consistency. Do not over-water.
- **With SikaLatex® R**: Pour 3/4 gal. (2.8 L) of SikaLatex® R into the mixing container. Slowly add powder, mix and adjust as above.
- **With diluted SikaLatex® R**: SikaLatex® R may be diluted up to 5:1 (water: SikaLatex® R) for projects requiring minimal polymer modification. Pour 3/4 gal. (2.8 L) of the mixture into the mixing container. Slowly add powder, mix and adjust as above.

### Extension with aggregates:

- For horizontal applications greater than 1" (25 mm) in depth, add 3/8" (9.5 mm) coarse aggregate.
- The aggregate must be non-reactive (reference ASTM C-1260, C-227 and C-289), clean, well graded, SSD, have low absorption and high density, and comply with ASTM C-33 size number 8 per Table 2.
- Variances in aggregate may result in different strengths

- The addition rate is 25 lb. (11.3 kg) of aggregate per bag. It is approximately 2.0-2.5 gal. (7.6-9.5 L) by loose volume of aggregate.
- Water may be varied to achieve the desired consistency. Do not over water.
- If the placement is vertical or overhead, temporary support of the material is required.

## APPLICATION

- A conventional wet or dry process casting equipment can be used.
- At the time of application the substrate must be SSD but hold no standing water.
- For vertical or overhead applications you can release the SikaRepair®-224 at low pressure or apply it with trowel.
- Release the SikaRepair®-224 perpendicular (90°) to the surface, as this minimizes rebound, even application (reduces bumps), and properly wraps reinforcing bars.
- The velocity of the shotcrete is sufficient if, at a distance of 18-24" (46-61 cm), the shotcrete pattern flattens out on contact with the surface and the rebars are encased.
- After applying the shotcrete, wait 10 minutes for the SikaRepair®-224 to pick up consistently before passing a trowel.
- Before applying the next coat, allow the released product to reach the initial setting; This can take about 45 minutes or several hours, depending on the consistency of the mixture, ambient temperature, wind conditions and humidity.
- Start and end a certain application on the same day.

## 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.
- 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.

## LIMITATIONS

- Because it is a cementitious material, avoid contact with aluminum to prevent adverse chemical reactions and product failure. Isolate potential contact areas by painting aluminum bars, rails, posts, etc., with an appropriate epoxy such as the Sikadur® Hi-Mod 32.
- It is not a vapor barrier

## 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.

## LOCAL RESTRICTIONS

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Product Data Sheet, product label and Safety Data Sheet which are available online at <http://usa.sika.com/> or by calling Sika's Technical Service Department at 800.933.7452 nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instructions for each Sika product for each Sika product as set forth in the current Product Data Sheet, product label and Safety Data Sheet prior to product use.

## ECOLOGY, HEALTH AND SAFETY

Keep container tightly closed. Keep out of reach of children. Not for internal consumption. For industrial use only. For professional use only. For further information and advice regarding transportation, handling, storage and disposal of chemical products, users should refer to the actual Safety Data Sheets containing physical, ecological, toxicological and other safety related data. Read the current actual Safety Data Sheet before using the product. In case of 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)

## LEGAL NOTES

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**Sika Corporation**  
201 Polito Avenue  
Lyndhurst, NJ 07071  
Phone: 800-933-7452  
Fax: 201-933-6225

**Sika Canada Inc.**  
601 Delmar Avenue  
Pointe Claire  
Quebec H9R 4A9  
Phone: 514-697-2610  
Fax: 514-694-2792

**Sika Mexicana S.A. de C.V.**  
Carretera Libre Celaya Km. 8.5  
Fracc. Industrial Balvanera  
Corregidora, Queretaro  
C.P. 76920  
Phone: 52 442 2385800  
Fax: 52 442 2250537



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