

SURFIX® 928 RM

FAST-SETTING, HIGH-STRENGTH, CONCRETE REPAIR MATERIAL

DESCRIPTION

SURFIX® 928 RM is a fast-setting, single component, blended calcium aluminate cementitious repair material formulated for horizontal applications where high early strength is a requirement. Its self-bonding technology allows for a fast installation that can accept vehicular traffic in as little as 3 hours.

APPLICATIONS

Railway track setting repairs
 Damaged concrete on highways
 Parking structures
 Bridges and tunnels
 Balconies
 Airport runways
 Cold storage rooms, warehouse floors, loading docks, and all industrial facilities

ADVANTAGES

Freeze / thaw resistant (interior and exterior)
 Wide temperature range 40-100°F (4-38°C)
 Compatible with Portland cement substrates
 Self-bonding; requires no bonding agents
 Just add water to the pre-blended material
 Fast-setting, early high strength – over 3,000 psi (21 MPa) in 3 hours.
 Non-shrink / non-metallic / non-corrosive
 Contains no chlorides or other salts detrimental to reinforcing steel
 Cement-based to ensure substrate compatibility
 Suitable for DOT horizontal concrete repairs
 Form and pour for structural repairs of interior and exterior surfaces, both above or below grade
 Can be pumped with appropriate equipment
 Designed for horizontal surfaces in thicknesses from 1/2" to 8"
 Meets or exceeds ASTM C928; Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs

SHELF LIFE / STORAGE

12 months from the date of manufacture, when unopened bags are properly stored in a cool, dry place, unexposed to moisture and sunlight.

PACKAGING

50-lb (22.7-kg) bags; 50-lb (22.7-kg) pails.

TECHNICAL DATA

Compressive strength (ASTM C109, moist cure):

3 hours	4,420 psi (30.5 MPa)
1 day	5,670 psi (39.1 MPa)
28 days	12,200 psi (84.1 MPa)

Approximate coverage (Yield) per 50-lb (22.7-kg) bag:

0.42 ft³ (0.01 m³)

Working time (70°F (21°C)):

60 minutes

Set (ASTM C191):

Initial set	Approximately 70 minutes
Final set	Approximately 80 minutes

Flexural strength (ASTM C348):

7 days	1,224 psi
28 days	1,469 psi

Linear shrinkage (ASTM C928, 28 days):

Water storage	+0.011%
Air storage	-0.093%

Water absorption (ASTM C642):

28 days	1.9%
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Freeze/thaw (ASTM C666), Procedure A:

Durability factor @ 300 cycles	97.2
Mass loss	0.3%

Resistance to deicing salts (ASTM C672):

Mass loss at 50 cycles	0.0 lb/ft² (0.0 kg/m²) (Rating 0 - No scaling)
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NOTE: Cooler temperatures, inadequate ventilation and higher humidity can extend drying times. All data derived from tests under laboratory conditions; field conditions may yield slightly different results.

DIRECTIONS FOR USE

Surface preparation:

All materials should be stored at 40-90°F (4-32°C) 24 hours prior to installation. The damaged area should be prepared by back-cutting or sawing of vertical edges. This preparation should be performed in a manner that prevents damage to the surrounding concrete substrate. Surfaces must be sound, clean and free of all bond breaking materials, such as loose scale, dust, oil, grease, dirt and laitance, leaving only clean, sound surfaces.

Repair areas should be mechanically prepared to achieve a profile of CSP 3 to CSP 5 (ICRI) and should be in a saturated surface dry (SSD) condition with all standing water removed. If greater bond strength is needed, a scrub coat may be used to improve adhesion. Using a stiff bristle broom or brush, apply a scrub coat of thinly mixed SURFIX® 928 RM to all adjacent surfaces. Do not let dry. While the scrub coat is still wet, install SURFIX® 928 RM. A minimum patch repair depth of 1/2" (13 mm) is required.

Mixing:

Ideal mixed product temperature at placement is 65-70°F (18-21°C). Hot temperatures will shorten setting time, while cold temperatures will extend setting time.

Mix as close as possible to the area where the material is being used. SURFIX® 928 RM requires only the addition of clean potable water.

SURFIX® 928 RM

Use 2.75 qt (2.6 l) of clean potable water per 50-lb (22.7-kg) bag. Place the potable water into the mixing container first and then, while mixing, add the material.

SURFIX® 928 RM may be mixed in a mortar mixer or in a bucket with a heavy-duty drill and a mixing paddle. Mix for 2-3 minutes to a lump-free consistency.

Working time is approximately 50 minutes at 75°F (24°C), and becomes shorter as the temperature increases. Do not mix more product than you can place in 50 minutes. Clean mixer or mixing paddle with water between mixes and after last mix to avoid build-up of product. SURFIX® 928 RM can be installed in multiple lifts of up to 2" (5 cm) each. Scarify (cross hatch with a steel trowel) the surface after the previous application has achieved initial set.

When extending with 3/8" (10 mm) pea gravel, add 25 lb (11.3 kg) of pea gravel for each 50-lb (22.7-kg) bag of SURFIX® 928 RM used. Add into the mixer only after a uniform lump free consistency is obtained (see above), then continue mixing until the pea gravel is fully encapsulated. Do not add additional water when using pea gravel. For additional information refer to Penetron Specialty Products Technical Bulletin "Recommended Procedure for Aggregate Extension of SURFIX 928 RM".

Installation:

Air, material and substrate temperatures should be between 40-90°F (4- 32°C) during repair and for 24 hours afterward. Place SURFIX® 928 RM in the area to be repaired, filling flush with surrounding concrete, and consolidate during placement by rodding. Surface is ready for final finish in 40 to 60 minutes. Do not use on vertical or overhead surfaces.

Hot and cold weather applications:

Ideally, when temperature of the mixed material at installation is 65-70°F (18- 21°C), the final setting time should be 70 to 90 minutes. Hot temperatures will shorten set times, and cold temperatures will extend set times.

Hot weather 70-100°F (21-38°C): Keep material cool. Pre-soak the area where the material is being installed with cool potable water, and remove any standing water, resulting in a saturated surface dry (SSD) condition. Mix SURFIX® 928 RM using cool water to extend working time. The installed material must be protected from rapidly drying by placing wet burlap or a water-based curing compound. For additional information refer to Penetron Specialty Products Technical Bulletin "Recommended Procedure for Adding 928 SET EXTENDER to SURFIX® 928 RM".

Cold weather 20-40°F (-7 to 4°C): Do not use antifreeze or accelerator type additives. Keep material warm prior to mixing. Warm the repair area and the surrounding concrete. Mix the SURFIX® 928 RM with warm potable water and protect with construction insulating blankets for 2 to 3 hours. Do not allow the material to freeze. Heaters may be necessary if the area is exposed to prolonged or severe cold conditions.

Curing:

SURFIX® 928 RM should be moist cured for 1 hour after final set (approximately 90 minutes) or by applying a water-based curing compound. Prolonged wet curing minimizes the chances of cracking and improves physical properties. Refer to:

- ACI 305R - Guide to Hot Weather Concreting
- ACI 306R - Guide to Cold Weather Concreting
- ACI 308 - Standard Practice for Curing Concrete

NOTE: It is the responsibility of the installer / applicator to ensure the suitability of the product for its intended use and compatibility. Jobsite mockups are recommended.

CLEAN UP

Clean all tools and equipment with water immediately after use, prior to material hardening.

TECHNICAL SUPPORT

For more detailed instructions, alternative application methods, or information concerning the compatibility with other products or technologies, contact the Penetron Specialty Products Technical Department at (631) 941-9700 or email psptechsupport@penetronsp.com.

SPECIAL CONSIDERATIONS

- Cooler temperatures, higher humidity and inadequate ventilation can extend SURFIX® 928 RM drying times. Warmer temperatures will shorten drying times.
- All materials should be stored at 40-90°F (4-32°C) 24 hours prior to installation.
- Do not allow the material to freeze.
- Do not use antifreeze or accelerator type additives.
NOTE: Only 928 SET EXTENDER is approved for extending set times when used as per Technical Bulletin TB1021.

JOB MOCKUPS

Penetron Specialty Products recommends that, when our products are used in any application or as part of any system that includes other manufacturers' products, the installer and/or design professional shall test all the system components collectively for compatibility, performance and long-term intended use in accordance with pertinent and accepted industry standards prior to any installation. Written documentation of the tests performed shall be satisfactory to the design professional and installer. Test results must include the means and methods of application, products used, project specific conditions being addressed, and standardized tests performed for each proposed system or variation.

SAFE HANDLING INFORMATION

Before using this product, review the SURFIX® 928 RM Safety Data Sheet (SDS) that can be found on the Penetron Specialty Products website: www.penetronsp.com. Avoid contact with eyes and wear suitable protective eyewear. Avoid prolonged or repeated contact with skin. Wear gloves and suitable protective clothing. Do not breathe dust. In case of insufficient ventilation, wear respiratory equipment.

For additional information regarding first aid and emergency procedures, refer to the product Safety Data Sheet (SDS).

Waste disposal: This product, when discarded or disposed of, is not listed as a hazardous waste in federal regulations. Dispose in a landfill in accordance with local regulations. KEEP OUT OF REACH OF CHILDREN

WARRANTY: PENETRON SPECIALTY PRODUCTS INC. warrants that the products manufactured by it shall be free from material defects and will conform to formulation standards and contain all components in their proper proportion. Should any of the products be proven defective, the liability to PENETRON SPECIALTY PRODUCTS INC. shall be limited to replacement of the material proven to be defective and PENETRON SPECIALTY PRODUCTS INC. shall in no case be liable otherwise or for incidental or consequential damages. **PENETRON SPECIALTY PRODUCTS INC. MAKES NO WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED.** User shall determine the suitability of the product for its intended use and assume all risks and liability in connection therewith.

This Product Data Sheet has been prepared in good faith on the basis of information available at the time of publication. It is intended to provide users with information about and guidelines for the proper use and application of Penetron Specialty Products under normal environmental and working conditions. Because each project is different, PENETRON SPECIALTY PRODUCTS INC. cannot be responsible for the consequences of variations in such conditions, or for unforeseen conditions.

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