



STRONGCRETE SW-81

Technical Data Sheet

Deep Horizontal and Formed Structural Repairs

STRONGCRETE SW-81 is a versatile, styrene butadiene rubber modified, structural repair mortar. It is formulated for both form and pour and horizontal patching. Repairs greater 1/2" require extension with aggregate to increase their dimensional stability. SW-81 is compatible with a wide range of substrates for use under Strongwall products and systems.

WHERE TO USE:

- Concrete repairs of 3/4" - 2" in a single lift
- Form and pour repairs.
- Formed overhead repairs
- To level, pitch, slope and resurface irregular concrete
- A smoothing underlayment prior to installation of a Strongwall resinous flooring, coating or system
- On, above and below grade repairs
- Interior and exterior service conditions
- Restoration projects of concrete and masonry substrates included within commercial, industrial, institutional and transportation facilities such as parking decks, rail platforms, walkways, ramps, loading docks, stairs, balcony and curb repairs

FEATURES AND BENEFITS:

- Expands and contracts similar to that of concrete
- High polymer-to-cement ratio
- Superior adhesion to durable concrete
- Transmits moisture vapor
- Extension with coarse aggregate
- Contains migratory corrosion inhibitor

TYPICAL PHYSICAL PROPERTIES AT 75°F (24°C):

Typical physical properties and test results may differ based upon statistical variations of independent testing labs with respect to test methods, mixing methods and equipment used. Project application methods as well as temperature, actual site and environmental conditions will all affect the cure rates, working life, recoat time and open to traffic project conditions throughout the installation.

Compressive Strength	ASTM C-109	4,000 psi
Adhesion	MIL-D-3134, (Para 4.7.1.4)	302 psi (shear from steel plate after 96 hours)
Flexural Strength	ASTM C-580	1,100 psi
Tensile Strength	ASTM C-307	750 psi
Adhesion	ASTM D-4541	> 400 psi (100% failure in concrete)
Indention	MIL-D-3134, (Para 4.7.4.2.1)	2.24% (steadily applied load, 2,000 lbs. on a 1" steel ram imposed for 30 min.)
Hardness	ASTM D-2240, (Shore D)	72 psi
Water Absorption	MIL-D-3134	3.12%
Impact Resistance	(Gardner Impact Tester)	No chipping, cracking or delaminating and not more than 0.014"
Working Life		20 minutes
VOC Compliant		Contains no organic solvents
Color		Dark Gray
CSI Division		03550

PACKAGING:

- 5 gallon pail of SW-81 Liquid
- Ten 37.5 pound bags of SW-81 Powder

UNIT YIELD:

Many factors contribute to unit yield such as, but not limited to: substrate texture, porosity, disparities in applied thickness, methods of application, individual installation technique and typical allowance for waste.

Average yield neat: 3 ft³

With extension: 8 gallons: 3.5 ft³; 10 gallons: 4 ft³

JOB SITE SURVEY:

- Evaluate the existing substrate for signs of efflorescence.
- For on or below grade, exterior and non-controlled environments perform multiple adhesion tests.
- Testing may be required for hydrostatic pressure, MVER, chlorides content, depth of carbonation, ASR, AAR and to determine if there are any deleterious aggregate or unacceptably high levels of potassium, sulfate, alkali or other aggressive agents within the concrete substrate.

ENVIRONMENTAL CONDITIONS:

All materials are mixed, applied and cured at the job site. These environmental conditions are required to facilitate proper curing and performance of the product. Do not proceed if outside of these environmental conditions.

Ambient	Minimum	Maximum
Temperature	45°F and rising	90°F
Relative Humidity	20% rh	85% rh
Wind	N/A	30 mph
Substrate: Not frost laden		
Temperature	50°F and rising	85°F
Relative Humidity	N/A	75% rh
MVER	N/A	6 lbs.
Measure and record these temperatures daily. Do not install materials if rain or freezing conditions are anticipated. Substrate temperature must be at least 5°F above measured dew point.		

SUBSTRATE PREPARATION GUIDELINES:

- Determine the best method or combination of methods of concrete removal and mechanical surface preparation: sandblast, scarify, shot blast, scabble or diamond grind to obtain an exposed aggregate profile and open the concrete pore structure. Variations in surface conditions seen in walls and ceilings versus those in horizontal substrates should be considered when choosing surface preparation methods and techniques.
- Carefully sound out the structure. Minimize damage to existing concrete or its bond to embedded reinforcing steel.
- It is practice to have 2" of bar free of any rust stained concrete or contamination and a 3/4" clearance surrounding the reinforcement. Perform according to the ACI and ICRI technical guidelines or specifications.
- All reinforcing steel must be mechanically white metal cleaned, coated or primed and fully dry.
- Restore all non-durable, unsound, damaged, deteriorated, delaminated, cracked, weak, loose, spalled and rust stained concrete.
- Concrete surface repair dimensions including overall length, width, depth and shape require careful consideration. Saw cutting is recommended. Install in compliance with ACI standards of practice for placing and curing of concrete and cement based products.
- Remove or replace areas with penetrating and migrating contaminants, silicone coated surfaces, concrete curing compounds and form release agents, sealers, dirt, adhesives, oil, grease, wax, fatty acids, hydraulic fluid, cutting oils, paint, films, existing coating, laitance, glaze, efflorescence and all contaminants that will inhibit or prevent formation of a penetrating bond within the substrate.
- Mechanically profile the substrate to a concrete surface profile as required depending upon the substrate condition, bonding requirements, type of repair and coating or system installation. Refer to the ICRI Technical Guideline #310.2R-2013 for "Selecting and Specifying Concrete Surface Preparation."
- For assessment of decontamination, surface preparation and profile of the substrate perform a Tensile Adhesion Test as per ASTM C-1583. Mechanical preparation methods may require additional testing to verify tensile strength of the existing substrate in accordance with ICRI Guideline # 210.3R-2013 (Guide for Using In situ Tensile Pull-off Tests to Evaluate Bond of Concrete Surface Materials).

INSTALLATION:

The proper installation of the STRONGCRETE SW-81 is the sole responsibility of the end-user.

The supervision and quality control of the project is the sole responsibility of the user.

Job site visits by SWI representatives are only for the purpose of making recommendations.

- Conduct a pre-installation conference on-site with all parties in attendance to review the surface preparation, concrete removal, structural repair specifications and procedures prior to commencing work.
- For best results, install a field mock-up using the same equipment as in the construction procedures, for owner, architect and engineer approval of the following: surface preparation, adhesion, installation procedures and technique.
- Power wash the substrate at recommended psi to remove all contaminants.
- When power washing is not possible, thoroughly brush. Clean with wet and dry vacuum or compressed air.
- Precondition properly stored material to 65-75 F prior to mixing.
- Make all repairs within acceptable tolerances.
- For repairs less than 1/2", install neat.
- Repairs greater than 1/2", extension is required.
- Mechanically profile all repairs.
- Work according to the approved field mock-up.
- Provide sufficient ventilation to achieve optimal performance and a full and continuous cure.
- Follow all environmental conditions.

PRIME COAT: SW-81 Liquid:

Substrate is SSD.

Achieve a dull concrete finish.

Maintain this status during placement of the prime coat.

No ponding water conditions.

- Pre-mix for 2 minutes.
- Scrub in to fill pores and prime all voids. Leave no standing liquid.
- Prime all steel surfaces to receive mortar mix.
- Re-apply if the substrate is rapidly absorbing primer or it dries.
- Leave no puddles.

REPAIR MORTAR MIX:

Follow unit mix ratio.

For large scope repairs use a paddle type mortar mixer.

Pre-mix liquid prior to each batch.

Mix only what can be placed in 20 minutes.

- Pre-mix liquid for 2 minutes.
- Pour into the mixing vessel.
- Use a 400 rpm drill with a mounted Jiffy mixer.
- Place the paddle at $\frac{3}{4}$ depth of the pail.
- Do not create a vortex or aerate the material.
- Gradually add the powder to the liquid.
- Never reverse this step.
- Scrape sides of the container.
- Mix for 2 minutes until there are not dry pockets of powder.

EXTENSION WITH AGGREGATE - Single lift repairs > $\frac{1}{2}$ "

Variances in aggregate quality may result in different strengths and performances.

As per ACI Guidelines, the aggregate size and thickness should not exceed $\frac{1}{3}$ of the depth of the repair.

The coarse $\frac{3}{8}$ " pea gravel must be non-reactive, clean, well-graded, high density, low water retention and saturated surface dry prior to being incorporated into the mortar mix as per the ACI, ICRI and ASTM Standards of Aggregate Selection repair guidelines and specifications.

- Prepare mortar mix as above.
- Pre-saturate aggregate.
- Slowly add the measured aggregate.
- Mix for 1 minute.

PLACEMENT:

Place in accordance with repair procedures, specifications, and recommendations of ACI for placing and curing of concrete and cement based products.

Ensure good, intimate contact with the prime coat while it is still tacky.

Do not let mix settle, remix during use.

Do not let aggregate settle.

Do not re-temper once mix begins to set up.

- Immediately place the repair material.
- **For horizontal repairs:** place the material against perimeter and work toward its center until filled.
- Thoroughly compact the mortar around the exposed reinforcement.
- Consolidate into a tight compact repair, then screed.
- Finish with a damp sponge, brush or steel trowel.
- Clean all tools and equipment with water while still wet immediately after use.
- If cured, mechanical means will be necessary.

MULTIPLE LIFTS: at 1 $\frac{1}{2}$ "

- Score top surface on each lift to roughen patch.
- Allow preceding lift to harden.
- Prime the patch.
- Scrub in next lift.

FORM AND POUR:

- Vibrate form while pouring or pumping.
- Pump extended mixes with a variable pressure concrete pump.
- Forms should not deflect.
- Forms to be stripped when appropriate.
- Begin and finish multiple lifts on the same day.

CURING:

As per ACI recommendations for Portland cement concrete, curing is required in order to meet published physical properties. Moist curing with burlap, polyethylene or burlene as per the ACI standards is the preferred method. Breathable coatings can be installed within a 24 hour cure. Resinous coatings and primers require a 24 hour cure per ½ inch in depth.

- Protect from direct sun, rain and frost after finishing.
- Moist curing should commence immediately.
- It is recommended to wet cure for 3 days.
- Allow repairs to fully cure prior to profiling.
- Allow to cure for 24 hours before applying weight or stress.

Depth	Cure Time @ 75 F
¼"	4-6 hours cure
¾" - 1"	24 hours

EQUIPMENT AND TOOLS:

Concrete removal
 Mechanical surface preparation
 Power washer
 Air blower
 Mister
 Mixing pails
 Paddle type mortar mixer
 Variable speed industrial drill
 Jiffy mixer model PS-1
 Steel trowel
 Masonry brush

PRECAUTIONS AND LIMITATIONS:

Refer to corresponding Product Data Sheets, Installation Procedures, and Safety Data Sheets of all products and systems prior to installation. Refer to www.strongwall.com for the most recent information and update.

- Do not allow the prime coat to cure prior to the application of the mortar as it will act as a de-bonder.
- Discard any material that starts to set up in the container.
- For extensive repairs, use a mixer large enough to permit continuous placement before any part of the mix has set.
- Prevent any contact with aluminum, as with all Portland cement based products, to prevent adverse chemical reactions and possible product failure. Follow specifications to insulate potential areas of contact by coating aluminum bars, rails and posts with an appropriate epoxy.
- Extension with coarse aggregate may alter the physical properties as published.
- Size, shape and depth of repair must be consistent with practices recommended by ACI and ICRI.
- Do not wet the surface to be finished.
- 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.
- A warm substrate will decrease the pot life and make the materials sticky. A cooler substrate will retard the cure.
- Product is temperature sensitive regarding cure and set time.
- Do not allow repairs to freeze prior to a full cure.

SHELF LIFE:

One year from date of manufacture as long as containers remain unopened and when material is stored in a tempered area at 65° to 75°F.

LEED SUBMITTALS:

Available upon request. Credit points may be available under five different classifications.

SITE, STORAGE AND TRANSPORTATION CONDITIONS:

Materials should be delivered in their original packaging in containers with seals unbroken and bearing the manufacturers' labels indicating brand name, directions for storage and mixing with other components. Check materials upon receipt to make sure all is accounted for and has arrived in good condition. Store materials indoors, off the ground and in a dry location at temperatures not exceeding 80°F or lower than 65°F. Always keep the material out of direct sunlight and freezing temperatures in a protected environment. The liquid component must not freeze.

SPECIFICATION ASSISTANCE:

Consult Strongwall Industries, Inc.

TESTING:

The technical data contained herein is the result of tests made in the manufacturer's laboratories or independent laboratories using small-scale equipment, ideal conditions and following generally accepted trade practices. Although this information is believed to be true and accurate, the use of different equipment for testing under dissimilar conditions or the testing of samples produced under dissimilar conditions may develop substantially different results.

FIRST AID, HEALTH AND SAFETY:

Contains Portland Cement CAS # 65997-15-1. Freshly mixed cement products may cause skin injury. Avoid contact with skin where possible and wash exposed areas promptly with water.

Contains sand CAS # 14808-60-7. Avoid breathing dust. Prolonged exposure to dust may cause delayed lung injury (silicosis) or cancer IARC Class 2A. Wear NIOSH approved mask for silica dust.

In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes. If ingested, do not induce vomiting and get prompt medical attention. For respiratory problems, remove person to fresh air. Contact a physician.

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

MATERIALS GUARANTEE:

Available upon request.

LEGAL DISCLAIMER:

Strongwall Industries, Inc. products and systems are for professional use only and should be applied by professionals with prior experience with SWI products and systems or who have undergone training in the application of SWI products and systems. Published technical data and procedures are subject to change without notice. Call the corporate office at (201)-445-4633 or visit www.strongwall.com for current technical data, guidelines or project specific recommendations.

Prior to each use of any product of Strongwall Industries, Inc., the user must always read and follow the warnings and instructions on the product's most current Product Label, Safety Data Sheet, Product Data Sheet, and Installation Procedures.

In addition, no materials guarantee will be issued with respect to appearance, color, fading, chalking, staining, shrinkage, peeling, normal wear and tear and improper application and/or surface preparation performed by the applicator. Damage caused by abuse, neglect, and lack of proper maintenance, acts of nature and/or physical movement of the substrate or structural defects is also excluded from the materials guarantee. SWI reserves the right to conduct performance tests on any material claimed to be defective prior to any repairs by the owner, general contractor or applicator. Nothing contained in any Strongwall Industries, Inc. literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each Strongwall Industries, Inc., product as outlined in the current Product Label, Product Data Sheet and Installation Procedures prior to use of the Strongwall Industries, Inc. product.

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Keep containers tightly closed. Always keep out of reach of children. Never for internal consumption. For industrial use only. For professional use only. Do not allow application by untrained workers.