

# VERTICAL PATCH

NONSAG, POLYMER-MODIFIED REPAIR MORTAR

## PURPOSE

VERTICAL PATCH is a one component, nonsag repair mortar for vertical and overhead concrete repairs. It will not rust, shrink, corrode or break down under moist or humid conditions.

VERTICAL PATCH can be used up to 2" deep per lift and provides a material that exhibits greater flexural and shear bond strengths than many other repair materials. Extremely low water permeability provides excellent durability to freeze/thaw conditions.

VERTICAL PATCH is recommended for vertical and overhead concrete repairs. It is appropriate for repairing concrete structures, including bridge piers, viaducts, pre-cast panels pipes and beams.

## DESCRIPTION

VERTICAL PATCH is a single component, cement-based, polymer-modified, nonsag repair material.

## PACKAGING

VERTICAL PATCH is available in 50 lb. (22.7 kg) bags or pails.

## PROPERTIES

### Bond Strength (ASTM C-882 Modified)

1100 psi (7.6 Mpa) at 7 days

### Compressive Test (ASTM-C-39)

psi	MPa	
2400	16.5	3 hours
3200	22.0	1 day
3800	26.2	3 days
4100	28.2	7 days
5000	34.5	28 days

### Flexural Strength (ASTM-C-348)

1100 psi (7.6 Mpa) at 28 days

### Freeze/Thaw Resistance (ASTM-C-666 "B")

300 cycles with percent loss 0.72% (excellent)

### Length Change (ASTM-C-157 and ASTM-C-928)

Water Cure	Air Cure	
-0.0005%	-0.041%	at 28 days

### Set Times (ASTM-C-266)

Initial Set - 20 minutes @ 72°F (22°C)

Final Set - 30 minutes @ 72°F (22°C)

## COVERAGE

Yield is approximately .46 cubic feet per 50 lbs. (.013 m<sup>3</sup> per 22.7 kg). Actual yield will vary slightly depending on the amount of water, mixing equipment, temperature and other field conditions.

## APPLICATION

**Storage:** To prevent contamination, containers should be tightly closed and properly stored.

**Preparation:** For best results follow ACI standards for concrete preparation. Clean all residue, grease, dirt and oil from the repair surfaces.

All loose concrete must be removed until firm substrate is exposed. Saw cut the perimeter of the area to be repaired to a maximum depth of ½" (1.3 cm) and then jack hammer the area to be repaired to provide a uniform and firm bonding area. Minimum depth of ¼" (0.6 cm) is required in the repair area. All surfaces to be repaired should be in a saturated surface dry (SSD) condition with no standing water on the surface.

A scrub coat or approved bonding agent, like Symons STRONG BOND is recommended as a primer.

**Mixing:** Mix only as much material as can be easily placed within 15 minutes. VERTICAL PATCH sets initially in approximately 20 minutes and reaches final set in less than 30 minutes. A wheelbarrow, large pan or pail can be used as a mixing container.

Use mixing water at a rate of 3½ to 3¾ qts. (3.3 to 3.6 L) to 50 lb. (22.7 kg) of material. Always add VERTICAL PATCH to the water, thoroughly mixing to a putty-like consistency for at least 2-3 minutes.

**Placement:** Pack the material firmly into the prepared area. Ensure good contact with the bonding surface. Use slightly more material than is needed and roughly shape the material within the initial setting time. After initial set, when VERTICAL PATCH surface is hard, shave the material to the desired final shape with a steel trowel.

Maximum depth of installation is 2" (5.1 cm) for each lift. Additional applications can be placed after the previous lift has achieved final set (approximately 30 minutes). Each previous lift should be left with a rough surface to improve bond between each application.

The less VERTICAL PATCH is handled, the better the results. Each application should be completed by the time of initial set or stiffening. Never leave excess material lapping over the edges of the repair. Each application should be smooth and level with the surrounding concrete. After leveling, VERTICAL PATCH can be rubbed with a wet sponge and textured, if desired.

Adequate curing is critical, especially during windy, hot or dry conditions. Apply curing compound, like Symons RESI-CHEM CLEAR CURE, immediately after final set.

For large repairs over 2" (5.1 cm) thick, VERTICAL PATCH can be extended with up to 15 lb. (6.8 kg) of clean, surface-dry pea gravel per 50 lb. (22.7 kg).

Unusual applications or conditions may require the technical assistance of a Symons representative.

### **CLEAN-UP**

Clean tools and equipment with water immediately because this is a fast-setting product.

### **LIMITATIONS**

Minimum thickness for patching is ¼" (0.6 cm) and maximum thickness is 2" (5.1 cm) for each application of material.

Do not retemper after initial mixing. Do not add other cements or additives to this product.

### **SHELF LIFE**

Shelf life of properly stored material is one year.

### **PRECAUTIONS**

It is mandatory to take the following precautions to protect workers and the public:

1. KEEP OUT OF THE REACH OF CHILDREN.
2. Contains free silica and may cause delayed lung injury (silicosis). Avoid inhalation of dust and ensure adequate ventilation.
3. Avoid contact with skin. Protective clothing is recommended. Contact areas should be thoroughly washed with soap and water.
4. Avoid contact with eyes. Protective goggles are recommended in case of splashing. Flush eyes with water if contact occurs.
5. Avoid ingestion of material. If ingestion occurs, contact poison center or physician.

### **WARRANTY**

Symons warrants, for 12 months from the date of manufacture, or for the duration of the published product shelf life, whichever is less, that at the time of shipment by Symons, the product is free of manufacturing defects and conforms to Symons' published specifications in force on the date of acceptance by Symons of the order. Symons shall only be liable under this warranty if the material has been applied, used, and stored in accordance with Symons instructions in this technical data sheet.

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