



# V/O Patch CI

## One-Component, Polymer-Modified Repair Patch

### DESCRIPTION

**V/O Patch CI** is a one-component, dry polymer-modified, portland cement mortar. **V/O Patch CI** is a fast setting patching material for vertical and overhead repairs for applications up to 2" in depth. **V/O Patch CI** utilizes a low solubility corrosion inhibitor to extend service-life of reinforced structures reducing absorption and chloride ion permeability. **V/O Patch CI** exhibits superior workability by maintaining a non-sag consistency for easy molding and shaving.

### USES

**V/O Patch CI** is ideal for a wide variety of vertical and overhead concrete repairs:

- Parking structures
- Bridge structures
- Docks and piers
- Tunnels
- Vertical precast concrete products
- Tilt-up panels
- Columns
- Concrete walls
- Interior or exterior applications

### BENEFITS

- Resistant: Withstands freeze/thaw cycles
- Rapid Set: 20 minutes
- Versatile: Horizontal, vertical and overhead
- Performance: Excellent flexural, tensile and compressive strengths
- Corrosion Inhibitor: Effectively reduces corrosion rate of steel reinforcement
- Low Permeability: Reduces potential for corrosion
- Consistent: Strict Quality Control testing and standards

### STANDARDS

**V/O Patch CI** meets and exceeds the requirements of ASTM C928 R2.

### SURFACE PREPARATION

All surfaces in contact with **V/O Patch CI** shall be free of dirt, oil, grease, laitance and other contaminants that may act as bondbreakers. All unsound concrete should be removed to ensure a good bond. Smooth, dense surfaces need to be mechanically abraded to provide necessary bonding requirements. Mechanically prepare the substrate to a minimum CSP 5 following ICRI Guideline 310.2R to allow proper bonding. ACI recommends the area to be patched should be saturated for 24 hours before placement. Remove any standing water. Surface should be saturated surface dry (SSD). For best results, scrub some of the mixed components into the prepared surface. Do not allow scrub coat to fully dry before placement. Always apply a test patch. Maintain contact areas between 40°F (4°C) and 90°F (32°C) prior to repair and during initial curing period.

### YIELD

50 lbs (22.7 kg) will fill approximately 0.43 ft<sup>3</sup> (0.012 m<sup>3</sup>) when 4.0 quarts mixing water is used.

### MIXING

For best results, use a mechanical mixer with rotating blades or use a heavy duty drill 1/2" (15 mm) (or larger) low-speed, corded drill and mixing paddle #6 per ICRI Technical Guideline 320.5. Pre-wet mixer and empty excess water. Place 4.0 quarts of cool, clean potable water in mixer, then add dry material. Mix on low RPM for a total of 3 to 5 minutes. Mix only enough material that can be placed within working time. Do not blend excess water as this will cause bleeding and segregation. Do not use any other admixtures or additives.

### PLACING

**V/O Patch CI** should be placed upon completion of mixing. Place material consistently, avoiding any air entrapment. Use slightly more material than needed and roughly shape during placement. When material has reached the proper set, it can be shaved, shaped or molded with a steel trowel. For placements greater than 2", multiple lifts can be applied. Allow material to reach initial set before the next layer is applied. Profile or roughen each lift to ensure a good bond.

### FINISHING AND CURING

Follow standard ACI curing practices. Exposed surfaces should be cured with a membrane forming compound such as **US SPEC Maxcure Resin Clear**, **US SPEC Hydrasheen** or **US SPEC Hydrasheen 30%**.

### STORAGE

Normal cement storage and handling practices should be observed. Store material in an interior, cool, dry place. Shelf life is one year in original, unopened container.

### LIMITATIONS

In addition to limitations already mentioned, please note the following. Do not apply when the surface or ambient temperature is below 40°F (4°C) or expected to fall below 40°F (4°C) within 48 hours. Do not apply over surfaces that are frozen or contain frost. Do not apply over any active faults or cracks in the substrate without addressing any movement that may occur. Allow concrete to fully cure for 28 days before use of this product. Setting time will speed up in hot weather and slow in cold weather. For hot and cold weather applications, contact your US SPEC manufacturer's representative.

**Packaging: 50 lb (22.7 kg) bag, 63 bags per pallet**



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### PHYSICAL PROPERTIES

All Physical Property testing performed in laboratory conditions of 73.5 ± 3.5°F (23 ± 2°C) and a relative humidity no less than 50% unless otherwise determined by the test method or specification. All results represent **V/O Patch CI** with 4.0 quarts water unless listed otherwise. Tests are conducted under standardized conditions for comparative purposes, and results may not be representative of performance under field conditions.

| Property and Test Method                           | Results   |                          |                                |                          |
|--|---|--------------------------|--------------------------------|--------------------------|
| <b>Compressive Strength</b><br>ASTM C109           | <b>3 Hours</b>  | <b>1 Day</b>             | <b>7 Days</b>                  | <b>28 Days</b>           |
|  | 2,000 psi<br>(13.78 MPa)  | 3,000 psi<br>(20.68 MPa) | 4,500 psi<br>(31.02 MPa)       | 5,500 psi<br>(37.92 MPa) |
| <b>Rate of Set</b><br>ASTM C266                    | <b>Working Time</b>   |                          | <b>Initial</b>                 | <b>Final</b>             |
|  | :20   |                          | :30                            | :45                      |
| <b>Length Change</b><br>ASTM C157                  | <b>Storage</b>  |                          | <b>% Length Change Average</b> |                          |
|  | 28 Day Air  | 28 Day Water             | (-)0.03<br>(+)0.08             |                          |
| <b>Density</b><br>ASTM C138                        | 122 lb/ft <sup>3</sup> (1,954 kg/m <sup>3</sup> )   |                          |                                |                          |
| <b>Modulus of Elasticity</b><br>ASTM C469          | 2.38 x 10 <sup>6</sup> @ 28 days (16.42 GPa)  |                          |                                |                          |
| <b>Freeze/Thaw Resistance</b><br>ASTM C666         | <b>F/T Cycles</b>   |                          | <b>Durability</b>              |                          |
|  | 300   |                          | 100%                           |                          |
| <b>Scaling Resistance</b><br>ASTM C672             | <b>Cycles</b>   |                          | <b>Scaled Material</b>         |                          |
|  | 25  |                          | .24 kg/m <sup>2</sup>          |                          |
| <b>Bond Strength</b><br>ASTM C882                  | <b>1 Day</b>  |                          | <b>7 Days</b>                  |                          |
|  | 1,500 psi<br>(10.34 MPa)  |                          | 1,700 psi<br>(11.72 MPa)       |                          |
| <b>Chloride Ion Resistance</b><br>ASTM C1202       | <b>Age</b>  | <b>Penetrability</b>     | <b>Electrical Resistivity</b>  |                          |
|  | 28 Days   | <1200 coulombs           | (ohm.cm)<br>50,000             |                          |
| <b>Coefficient of Thermal Expansion</b><br>CRD C39 | 5.3 x 10 <sup>-6</sup> in/in°F (9.54 x 10 <sup>-6</sup> cm/cm°C)  |                          |                                |                          |
| <b>Corrosion Resistivity</b>                       | V/O Patch CI tested compatible with Vector™ Corrosion Technologies Galvashield® embedded galvanic anodes. |                          |                                |                          |

### DANGER

This product contains Crystalline Silica (CAS# 14808-60-7) and Portland Cement (CAS# 65997-15-1). Harmful if swallowed. Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May cause cancer. May cause respiratory irritation. Causes damage to organs through prolonged or repeated exposure. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Do not breathe dust. Keep away from children. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Dispose of contents/container in accordance with local/regional/national/international regulations.



**WARNING: Cancer and Reproductive Harm -**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

### FIRST AID

If swallowed: Immediately call a poison center/doctor. Rinse mouth. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.

### MANUFACTURER/TECHNICAL SERVICE

Contact your US SPEC manufacturer's representative for the most current product information. Always read and follow the warnings and instructions on the most current technical data sheets and safety data sheets (SDS), available online at [www.usspec.com](http://www.usspec.com).

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**NOTICE OF LIMITED WARRANTY** US MIX Co. (manufacturer) warrants to buyer that this product at the time and place of shipment is of good quality and conforms to the manufacturer's specifications in force on the date of manufacture when used in accordance with the instructions hereon. Manufacturer cannot warrant or guarantee any particular method of use, application or performance of the product under any particular condition. This limited warranty cannot be extended or amended by manufacturer's sales people, distributors or representatives or by any sales information, specifications of anyone other than the manufacturer. Liability under this warranty is expressly limited to refund of the purchase price. See product packaging for complete limitation of warranties and liability.