

STO GUIDE SPECIFICATION  
SPECIFICATION 80311 – Sto Full-Depth Plus, Pre-extended, Cement-Based, Structural Repair with  
Integral Corrosion Inhibitor  
REPAIR MORTARS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide repair mortar for horizontal and formed vertical/overhead patch and repair of existing substrates.
- B. Related Sections: Other specification sections which relate directly to the work of this section include the following:
  - 1. Section 03300, Cast-In-Place Concrete.

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used. Include manufacturer's Safety Data Sheets (SDS).

1.03 REFERENCES

- 1. ASTM C39, Compressive Strength
- 2. ASTM C1583, Direct Tensile Bond Strength
- 3. ASTM C496, Splitting Tensile Strength
- 4. ASTM C882, Slant Shear Bond Strength
- 5. ASTM C469, Modulus of Elasticity
- 6. ASTM C666, Freeze/Thaw Resistance
- 7. ASTM C672, Salt Scaling Resistance
- 8. ASTM C78, Flexural Strength
- 9. ASTM C 57, Drying Shrinkage
- 10. ASTM C309, Specification for Curing Compounds
- 11. ICRI Technical Guideline No. 03732 Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays
- 12. ACI 305R, Guide to Hot Weather Concreting
- 13. ACI 306R, Guide to Cold Weather Concreting

1.04 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: The manufacturer shall be a company with at least five years experience and regularly engaged in the manufacture and marketing of products specified herein. The manufacturer shall have an ISO 9001 certified quality system and ISO 14001 environmental management system .

B. Installer's Qualifications: The contractor shall be qualified to perform the work specified by reason of experience.

C. Job Site: Verify bond to properly prepared substrate as specified by design professional

#### 1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.

B. Store products in a dry area with temperature maintained between 50 and 85 degrees F(10 and 29 degrees C). Protect from direct sunlight.

C. Handle products in accordance with manufacturer's printed recommendations.

### PART 2 - PRODUCTS

#### 2.02 MATERIALS

A. Horizontal repair mortar: Single-component, cement-based repair mortar, containing portland cement, graded specialty aggregates, integral corrosion inhibitor and admixtures. Comply with the following:

1. Product: 80311 Sto Full-Depth Plus as manufactured by Sto Corp. 3800 Camp Creek Parkway, Building 1400, Suite 120, Atlanta, Georgia 30331
2. Performance and Physical Properties: Meet or exceed the following values for material cured at 73 degrees F and 50 percent relative humidity:
  - a. Working Time: 20 – 40 minutes.
  - b. Compressive Strength per ASTM C39: >2,800 psi (19.3 MPa) at 1 day, >6,000 psi (414 MPa) at 7 days, >7,000 psi (48.3 MPa) at 28 days
  - c. Flexural Strength per ASTM C78: >700 psi (4.8 MPa) at 7 days, >900 psi (6.2MPa) at 28 days
  - d. Direct Tensile Bond Strength per ASTM C1583: >400 psi (2.8 MPa) at 28 days
  - e. Slant Shear Bond Strength per ASTM C882 mod.: >2,000 psi (13.8 MPa) at 7 days, >2,800 psi (19.3 MPa) at 28 days
  - f. Modulus of Elasticity per ASTM C469:  $5.38 \times 10^6$  psi ( $37.1 \times 10^3$  MPa) at 28 days
  - g. Splitting Tensile Strength per ASTM C496: >400 psi (2.8 MPa) at 7 days, >460 psi (3.2 MPa) at 28 days
  - h. Freeze/Thaw Resistance per ASTM C666: >99% at 300 cycles
  - i. Salt Scaling Resistance per ASTM C672: 0 rating and 0 scaled material at 50 cycles
  - j. Shrinkage per ASTM C157 mod.: Less than 0.032% at 28 days, air cured.
  - k. Color: Concrete gray.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION OF FULL DEPTH REPAIR MORTAR WITH CORROSION INHIBITOR:

A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until all unsatisfactory conditions are corrected.

B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas and landscaping from contact due to mixing and handling of materials.

C. Surface Preparation: Comply with manufacturer's printed instructions and the following.

1. Remove loose and deteriorated materials from surfaces to be patched using mechanical chipping, bush-hammering, sand-blasting, or hydrodemolition to obtain an ICRI Concrete Surface Profile CSP 5 or greater.
  2. Saw-cut or chip the edge of the patch to a right angle with concrete surface. Do not feather edge.
  3. Clean surfaces of bond-inhibiting materials including oil, dust and dirt, laitance and standing water.
    - a. If hydrodemolition is used, cement and particulate slurry must be removed from the prepared surfaces before the slurry hardens.
- D. Mixing: Comply with manufacturer's printed instructions and the following.
1. Precondition components to temperature of 70 degrees F plus or minus 5 degrees F (21 degrees C plus or minus 2.5 degrees C) prior to mixing.
  2. Add 5.3 to 5.8 pints (2.5 to 2.74 L) of clean water per 65-pound (29.5-kg) bag.
  3. Mix using a mechanical mixer to a uniform, lump-free consistency. Avoid over-mixing.
  4. Do not add water beyond manufacturer's instructions. Do not add additional powder.
- E. Application: Comply with manufacturer's printed instructions and the following.
1. Apply when ambient and surface temperatures are 45 degrees F (7.5 degrees C) and rising.
  2. Comply applicable sections of ACI 305R and ACI 306R and applicable published product limitations for hot and cold weather application..
  3. Dampen substrate to fill concrete pores with water. Remove ponding, glistening, or surface water (saturated surface dry).
  4. Apply scrub coat of repair mortar into substrate to ensure intimate contact and establish bond.
    - a. Alternatively, prepared concrete and reinforcing steel may be primed using Sto Bonding and Anti-Corrosion Agent.
  5. Apply mortar while scrub coat is wet. Consolidate and trowel to the desired finish, with a minimum thickness of 1-inch (25mm).
  6. Vibrate closed-form repairs to ensure intimate contact with the substrate, establish bond, and ensure proper consolidation. Avoid over-vibration.
- F. Curing
1. Keep surface damp for 48 hours with continuous light water fogging.
  2. If no coating or sealer is to be applied, a water-based curing compound meeting ASTM standard C309 may be used.
  3. Do not use solvent-based curing compounds
  4. Comply with applicable sections of ACI 305R and ACI 306R for curing in hot and cold weather conditions.
- G. Cleaning: Remove excess material before material cures. If material has cured, remove using mechanical methods that will not damage substrate.

END OF SECTION

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