Specification Document
Product: SC Multi-Purpose Grout

DIVISION 3 - CONCRETE
Section 03 60 00 – Grouting

Part 1 – General

1.01 Summary

A. This specification provides guidelines for the application of SC Multi-Purpose Grout, a non-shrink, non-metallic, cement-based grout designed for a variety of grouting applications.

1.02 System Description

A. This specification describes the use of a multi-purpose grout for the filling of voids, gaps, and cavities, under machine baseplates, anchor bolts, and precast components.

1.03 References

A. The following standards are applicable to this section:

- ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
- ASTM C827 - Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures

1.04 Delivery, Storage, and Handling

A. Deliver materials in their original packaging with labels indicating name, manufacturer, batch number, and shelf life.

B. Store materials off the ground, protected from excessive heat and moisture.

C. Handle materials according to manufacturer's instructions to prevent contamination and ensure integrity.

1.05 Job Conditions

A. Do not apply the material in temperatures below 40°F or if inclement weather conditions are expected within 24 hours of application.

B. Protect work areas and adjacent surfaces from spillage, staining, and overspray.

1.06 Submittals

A. Submit manufacturer's technical data sheets, and safety data sheets.

B. Provide documentation of contractor's qualifications and experience.

Part 2 – Products

2.01 Manufacturer

A. SC Multi-Purpose Grout, as manufactured by SpecChem, conforms to the requirements of this specification.

2.02 Materials

A. The material shall be a blend of portland cements, graded aggregates, and proprietary admixtures to control setting time and enhance workability, ensuring a non-shrink, non-metallic grout composition.

B. The material shall be supplied in factory-blended bags.

C. The portland cement grout shall offer controlled positive expansion, formulated to perform with non-metallic and non-corrosive properties.

D. Materials for forming, as required for the designated work, shall be approved by the Engineer.

E. Curing compound, conforming to ASTM C-309, as required for the designated work, shall be approved by the Engineer.

2.03 Performance Criteria

A. The grout shall not exhibit bleeding or segregation.

B. The grout shall be pumpable through standard grout pumping equipment.

C. The grout shall not produce a vapor barrier.

D. The grout shall exhibit positive expansion when tested in accordance with ASTM C-827. E. The grout shall conform to United States Army Corps of Engineers Specification CRD C-621.

F. The grout shall conform to ASTM C-1107.

G. The material shall be approved by the United States Department of Agriculture.

Typical Properties of the Mixed Non-Shrink, Non-Metallic Portland Cement Grout:

1. **Yield:** 0.45 ft^3 (0.0128 m^3) per 50 lb bag at fluid consistency
2. **Color:** Natural concrete gray
3. **Mixing Ratio:**
    - Plastic - 6.3-6.85 pints
    - Flowable – 6.85-7.75 pints
    - Fluid – 7.75 pt-8.35 pints
4. **Application Thickness:**
    - Min: 1/2" (12.7 mm)
    - Max: no specified limit, can be extended with pea gravel for deeper applications
5. **Application Temp:** > 40 °F (4 °C)
6. **Compressive Strength (ASTM C-109):**
    - **Plastic**
        - 1 day - 3,000 psi
        - 7 days – 7,000 psi
        - 28 days – 9,000 psi
    - **Flowable**
        - 1 day - 3,000 psi

- 7 days - 6,000 psi
- 28 days - 8,000 psi

- **Fluid**
  - 1 day - 1,000 psi
  - 7 days – 5,000 psi
  - 28 days – 7,000 psi

7. **Flexural Strength (ASTM C-78):**
   - 28 days - 1,215 psi
8. **Splitting Tensile Strength (ASTM C-496):**
   - 28 days - 645 psi
9. **Expansion (ASTM C-1090):**
   - Plastic, Flowable, Fluid 28 days - 0.07%

Note: The data shown is based on controlled laboratory testing. Reasonable variation from test results shown can be expected. Field and laboratory testing should be controlled based on the desired placing consistency, rather than strictly on water content. Curing conditions were not specified, suggesting field conditions might vary.

Part 3 – Execution

3.01 Surface Preparation

A. **Cleaning the Surface:** Begin by thoroughly cleaning the surface to remove all forms of dirt, oil, and any loose or foreign materials. For metal surfaces in contact with the grout, ensure they are free from rust, oil, grease, and other contaminants that might impair bonding.

B. **Conditioning the Surface:** Ensure the concrete surface is sound and roughened to enhance bonding. Adjust the concrete surface profile to CSP 3 or greater for better adhesion. The surface should be in a saturated surface dry (SSD) state, ideally for at

least an hour before grouting. Excess water must be removed prior to grout application.

C. **Securing the Area:** Verify that bolts, base plates, and equipment are securely fastened and rigid to prevent any movement during the placement of grout.
D. **Temperature Management:** All materials and surfaces in contact with the grout should be within 50°-80°F to ensure optimal performance. Adjust with heating or cooling as necessary to mitigate temperature extremes and their effects on curing time.
E. **Form Preparation:** Design forms to allow continuous grout placement and include provisions for venting to prevent air entrapment. Ensure a minimum of 1" horizontal clearance around the base plate and the forms should be 1" higher than the base plate's bottom.

3.02 Mixing and Application

A. For small quantities, mix manually until a lump-free consistency is achieved. Use a concrete mixing pan for best results.
B. For larger volumes, utilize a mortar mixer with rubber-tipped blades or an appropriate grout pump. Mix for at least 5 minutes.
C. Begin with minimal water, adding to the mixer before slowly introducing the grout powder. Aim for the desired consistency by first mixing in two-thirds of the water, adding the grout, partially mixing, then adding the remaining water. Ensure a thorough mix for an additional 2 to 3 minutes.
D. Execute a continuous and swift placement, starting from one end to avoid air pockets. Ensure the grout thoroughly occupies the spaces and maintains contact with the base plate. Use tools like a rod or strapping for assistance in large or complex areas. Do not vibrate the grout.
E. Apply the grout up to the bottom of the base plate only.

3.03 Curing Process

A. Initiate wet curing immediately after grout placement until the final set is achieved. Post-final set, switch to a SpecChem ASTM C309 compliant curing compound to conclude the process.

3.04 Special Conditions:

A. Deep Applications: Utilize pre-washed 3/8" pea gravel for applications exceeding 3" in depth, adjusting the gravel quantity based on depth.

B. Weather Considerations: Adjust practices for hot or cold weather conditions to maintain grout integrity and performance, following ACI guidelines for hot (ACI 305) and cold (ACI 306) weather concreting.

3.05 Cleaning

A. Clean tools and spills immediately with water before the grout hardens.

3.06 Limitations/Precautions

A. Do not re-temper or add water once the grout has begun to set.

B. Protect freshly grouted areas from traffic until sufficiently cured.