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SECTION 03 62 13

MasterFlow® 928 Grout (Formerly Masterflow 928)

NOTES TO SPECIFIERS:

The Construction Systems business of BASF Corporation previously conducted business as Degussa, Inc. Building Systems. The Admixture Systems business of BASF Corporation previously conducted business as Degussa Admixtures, Inc. and Master Builders, Inc.

On January 1, 2014 BASF launched the Master Builders Solutions brand in North America. With Master Builders Solutions, BASF combined its existing construction brands such as Master Builders, Chemrex, Sonneborn, MBT and others that have established a legacy of innovation, to create one unparalleled, globally recognized brand for its solutions to the construction industry.

This new BASF harmonized naming system, presents simpler, more logical and easier to understand product names. Each new name reflects an application property or function.

PLEASE UPDATE YOUR MASTER SPECIFICATIONS TO REFLECT THE PRODUCT NAME CHANGES. THE OLD PRODUCT NAMES ARE PROVIDED IN PARENTHESES FOLLOWING THE NEW NAMES IN THIS SECTION FOR REFERENCE.

THE PURPOSE OF THIS GUIDE SPECIFICATION IS TO ASSIST THE SPECIFIER IN DEVELOPING A PROJECT SPECIFICATION FOR THE USE OF BASF CONSTRUCTION CHEMICALS PRODUCTS. THIS GUIDE DOCUMENT HAS BEEN PREPARED TO BE PART OF A COMPLETE PROJECT MANUAL. IT IS NOT INTENDED TO BE A "STAND ALONE" DOCUMENT, AND IT IS NOT INTENDED TO BE COPIED DIRECTLY INTO A PROJECT MANUAL.

THIS GUIDE SPECIFICATION WILL NEED TO BE CAREFULLY REVIEWED FOR APPROPRIATENESS FOR THE GIVEN PROJECT AND EDITED ACCORDINGLY TO COMPLY WITH PROJECT-SPECIFIC REQUIREMENTS.

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Application of high-precision, hydraulic, cement-based, mineral-aggregate grout with extended working time.

DELETE SECTIONS BELOW NOT RELEVANT TO THIS PROJECT; ADD OTHERS AS REQUIRED.

B. Related Sections:

1. Section 03 30 00 – Cast-in-Place Concrete.
2. Section 03 45 00 – Precast Architectural Concrete.
3. Section 05 12 00 – Structural Steel Framing.
4. Section 05 50 00 – Metal Fabrications.
5. Section 31 40 00 – Shoring and Underpinning.

1.2 SUBMITTALS

A. Comply with Section [01 33 00] [__ __ __].

B. Product Data: Submit manufacturer's technical data sheets and LEED product information for each product.

C. Submit list of project references as documented in this Specification under Quality Assurance Article. Include contact name and phone number of person charged with oversight of each project.

D. Quality Control Submittals:

1. Provide protection plan of surrounding areas and non-cementitious surfaces.

1.3 QUALITY ASSURANCE

- A. Comply with Section [01 40 00] [__ __ __].
- B. Qualifications:
 - 1. Manufacturer Qualifications: Company with minimum 15 years of experience in manufacturing of specified products.
 - 2. Manufacturer Qualifications: Company shall be ISO 9001:2000 Certified.
 - 3. Applicator Qualifications: Company with minimum of 5 years experience in application of similar products on projects of similar size and scope, and is acceptable to product manufacturer.
 - a. Successful completion of a minimum of 3 projects of similar size and complexity to specified Work.

DELETE BELOW IF WORK OF THIS SECTION IS NOT EXTENSIVE OR COMPLEX ENOUGH TO JUSTIFY A PRE-INSTALLATION CONFERENCE. IF RETAINING, COORDINATE WITH DIVISION 1.

- C. Pre-Installation Meetings: Conduct meeting at Project site to comply with requirements in Section 01 31 00 – Project Management and Coordination.
 - 1. Schedule and convene meeting a minimum of 1 week before starting Work of this Section.
 - 2. Review weather conditions, surface preparation, forming, mixing, application, curing, and protection.
 - 3. Discuss procedures for protecting adjacent finished Work.
 - 4. Provide manufacturer's representative with 10 days written notice of pre-installation meeting.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section [01 60 00] [__ __ __].
- B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Store materials in unopened packaging in clean, dry area protected from sunlight. Prevent material from freezing.

1.5 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Mix and place grout between 45 and 90 degrees F (7 and 32 degrees C).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products from the following manufacturer:
 - BASF Corporation
 - Construction Chemicals
 - 889 Valley Park Drive
 - Shakopee, MN 55379
 - Customer Service: 800- 433-9517
 - Technical Service: 800-243-6739
 - Direct Phone: 952-496-6000
 - Internet: www.master-builders-solutions.basf.us
- B. Substitutions: Comply with Section [01 60 00] [__ __ __].

- C. Specifications and Drawings are based on manufacturer's proprietary literature from BASF Construction Chemicals. Other manufacturers shall comply with minimum levels of material and detailing indicated in Specifications or on Drawings. Architect will be sole judge of appropriateness of substitutions.

2.2 MATERIALS

- A. High-precision, hydraulic, cement-based, mineral-aggregate grout with extended working time.
1. Acceptable Product: MasterFlow 928 (Formerly Masterflow 928) by BASF Construction Chemicals.
- B. Performance Requirements: Provide grout complying with the following requirements:
1. Compliances:
 - a. ASTM C1107, Grades B and C.
 - b. Corps of Engineers CRD C621, Grades B and C, at fluid consistency over 30-minute working time at temperature range of 40 to 90 degrees F (4 to 32 degrees C).
 - c. ANSI/NSF 61, for use with potable water.
 2. Compressive Strength, Plastic Consistency, ASTM C942 according to ASTM C1107:
 - a. 1 Day: 4,500 psi (31 MPa).
 - b. 3 Days: 6,000 psi (41 MPa).
 - c. 7 Days: 7,500 psi (52 MPa).
 - d. 28 Days: 9,000 psi (62 MPa).
 3. Volume Change, Fluid Consistency, ASTM C1090:
 - a. 1 Day: Greater than 0 percent.
 - b. 3 Days: 0.04 percent.
 - c. 14 Days: 0.05 percent.
 - d. 28 Days: 0.06 percent.
 4. Setting Time, Plastic Consistency, ASTM C191:
 - a. Initial Set: 2 hours 30 minutes.
 - b. Final Set: 4 hours.
 5. Flexural Strength, Fluid Consistency, ASTM C78:
 - a. 3 Days: 1,000 psi (6.9 MPa).
 - b. 7 Days: 1,050 psi (7.2 MPa).
 - c. 28 Days: 1,150 psi (7.9 MPa).
 6. Modulus of Elasticity, Fluid Consistency, ASTM C469, Modified:
 - a. 3 Days: 2.82×10^6 psi (1.94×10^4 MPa).
 - b. 7 Days: 3.02×10^6 psi (2.08×10^4 MPa).
 - c. 28 Days: 3.24×10^6 psi (2.23×10^4 MPa).
 7. Coefficient of Thermal Expansion, Fluid Consistency, ASTM C531:
 - a. 6.5×10^{-6} in/in/degree F (11.7×10^{-6} mm/mm/degree C).
 8. Splitting Tensile Strength, Fluid Consistency, ASTM C496:
 - a. 3 Days: 575 psi (4.0 MPa).
 - b. 7 Days: 630 psi (4.3 MPa).
 - c. 28 Days: 675 psi (4.7 MPa).
 9. Tensile Strength, Fluid Consistency, ASTM C190:
 - a. 3 Days: 490 psi (3.4 MPa).
 - b. 7 Days: 500 psi (3.4 MPa).
 - c. 28 Days: 500 psi (3.4 MPa).
 10. Punching Shear Strength, Fluid Consistency, BASF Method, 3-inch by 3-inch by 11-inch (76-mm by 76-mm by 279-mm) beam:
 - a. 3 Days: 2,200 psi (15.2 MPa).
 - b. 7 Days: 2,260 psi (15.6 MPa).
 - c. 28 Days: 2,650 psi (18.3 MPa).

11. Resistance to Rapid Freezing and Thawing, ASTM C666, Procedure A, 300 cycles RDF:
 - a. 99 percent.
12. VOC Content: 0 lbs per gal (0 g/L), less water and exempt solvents.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Comply with Section [01 70 00] [_ _ _].

3.2 SURFACE PREPARATION

- A. Prepare surfaces in accordance with manufacturer's instructions.
- B. Clean steel surfaces of dirt, oil, grease, and other contaminants.
- C. Ensure surface to be grouted is clean, saturated-surface dry, sound, and roughened to CSP of 5 to 9 in accordance with ICRI Guideline 03732 to permit proper bond.
- D. Chip concrete surfaces to roughness of plus or minus 3/8 inch (10 mm) when dynamic, shear, or tensile forces are anticipated. Verify absence of bruising in accordance with ICRI Guideline 03732.
- E. Saturate concrete surfaces with clean water for 24 hours immediately before grouting.
- F. Remove freestanding water from foundations and bolt holes immediately before grouting.
- G. Grout and sufficiently set anchor bolt holes before major portion of grout is placed.
- H. Shade foundation from sunlight 24 hours before and 24 hours after grouting.

3.3 FORMING

- A. Erect forms in accordance with manufacturer's instructions.
- B. Erect forms liquid tight and nonabsorbent. Seal forms with putty, sealant, caulk, or polyurethane foam.
- C. Use head form sloped at 45 degrees to enhance grout placement, if necessary.
- D. Erect side and end forms minimum of 1 inch (25 mm) horizontally from object grouted to permit expulsion of air and remaining saturation water as grout is placed.
- E. Leave minimum of 2 inches (51 mm) between bearing plate and form to allow for ease of placement.
- F. Use sufficient bracing to prevent grout from leaking or moving.
- G. Eliminate large, nonsupported grout areas wherever possible.
- H. Extend forms minimum of 1 inch (25 mm) higher than bottom of equipment being grouted.
- I. Consult grout manufacturer for recommendations regarding expansion joints.

3.4 MIXING

- A. Mix materials in accordance with manufacturer's instructions.
- B. Store and mix grout to produce desired mixed-grout temperature. If bagged material is hot, mix with cold water. If bagged material is cold, mix with warm water. Achieve mixed-product temperature as close to 70 degrees F (21 degrees C) as possible.

- C. Adjust water to achieve desired flow. Recommended flow is 25 to 30 seconds using ASTM C939 Flow-Cone Method. Use minimum amount of water required to achieve necessary placement consistency.
- D. Mix grout a minimum of 5 minutes after material and water is in mixer. Use mechanical mixers.
- E. Do not mix more grout than can be placed in approximately 30 minutes.
- F. Do not retemper grout by adding water and remixing after it stiffens.

3.5 APPLICATION

- A. Place grout in accordance with manufacturer's instructions.
- B. Ensure foundation, plate, and grout temperatures do not fall below 40 degrees F (7 degrees C) until after final set, when grouting at minimum temperatures.
- C. Place grout from only 1 side of equipment to prevent air or water entrapment beneath equipment. Place grout in continuous pour.
- D. Discard grout that becomes unworkable.
- E. Ensure grout fills entire space being grouted and remains in contact with plate throughout grouting process.
- F. Do not vibrate grout to facilitate placement. Use steel straps inserted under plate to help move grout.
- G. Immediately after placement, trim surfaces with trowel and cover exposed grout with clean wet rags. Do not use burlap. Keep rags moist until grout surface is ready for finishing or until final set.
- H. Wait until grout offers stiff resistance to penetration with pointed mason's trowel before grout forms are removed or excessive grout is cut back.
- I. Consult grout manufacturer before placing lifts more than 6 inches (152 mm) in depth.

3.6 CURING

- A. Cure grout in accordance with manufacturer's instructions.
- B. Cure exposed grout with membrane curing compound approved by grout manufacturer and compliant with ASTM C309 or preferably ASTM C1315.
- C. Apply curing compound immediately after wet rags are removed to minimize potential moisture loss.

3.7 PROTECTION

- A. Protect grout from temperatures at and below 32 degrees F (0 degrees C) until grout has attained compressive strength of 3,000 psi (21 MPa).
- B. Protect completed grout from damage during construction.

END OF SECTION

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