

**SECTION 07 16 00**  
**MasterSeal® 581 (formerly Thoroseal)**

**NOTE 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.

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:**

**EDIT NOTE: DELETE APPLICATION NOT REQUIRED.**

1. Waterproofing below grade exterior surface of basement, retaining walls, and foundations as scheduled.
2. Waterproofing below grade interior surface of basement and foundation walls as scheduled.
3. Waterproofing of water cisterns as indicated.
4. Waterproofing of light-pedestrian horizontal surfaces as scheduled.

**EDIT NOTE: 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 41 00 – Precast Structural Concrete.
3. Section 04 21 00 – Masonry Assemblies Unit Masonry.
4. Section 07 20 00 – Thermal Protection for Perimeter insulation.

**1.2 SYSTEM DESCRIPTION**

- A. Portland-cement based coating for concrete and masonry that resists both positive and negative hydrostatic pressure.**

- B. Performance Requirements: Provide patching material complying with the following requirements:
1. Service temperatures: Immersion, up to 140 degrees F (60 degrees C); cleaning water, up to 200 degrees F (93 degrees C); dry air, up to 220 degrees F (104 degrees C).
  2. VOC: 0 lbs/gal (0 g/L) less water and exempt solvents.
  3. Initial Set, minutes at 70 degree F (21 degree C), 50 percent relative humidity: 10 minutes per Lab Method.
  4. Final Set, minutes at 70 degree F (21 degree C), 50 percent relative humidity: 90 minutes per Lab Method.
  5. Density (cured): 129 pounds per foot (2,080 kg/m) per Lab Method.
  6. Positive resistance to hydrostatic pressure, hrs, at 200 psi (1.4 MPa), 461 head feet, air cured at 70 degree F (21 degree C) 50 percent relative humidity: 752 (No leakage, no softening) per CRD C 48, modified.
  7. Negative resistance to hydrostatic pressure, hours, at 200 psi (1.4 MPa), 461 head feet, air cured at 70 degree F (21 degree C) 50 percent relative humidity: 664 (Limited dampness) per CRD C 48, modified.
  8. Potable water (direct contact): Suitable approved per BS6920 (British standard), NSF Standard 61.
  9. Water absorption, boiling water submersion at 24 hour: 3.6 percent per ASTM C 67 (Section 7.3).
  10. Compressive strength, ASTM C 109:
    - a. 7 days: 4,200 psi (29 MPa)
    - b. 28 days: 6,030 psi (42 MPa)
  11. Flexural strength, ASTM C 348:
    - a. 7 days: 360 psi (2.5 MPa)
    - b. 28 days: 1,027 psi (7 MPa)
  12. Tensile strength, ASTM C 190:
    - a. 7 days: 250 psi (2 MPa).
    - b. 28 days: 440 psi (3 MPa).
  13. Modulus of elasticity, ASTM C 469, 28 days:  $2.72 \times 10$  to the 6th psi ( $1.87 \times 10$  to the 4th MPa).
  14. Artificial weathering, hrs:
    - a. Xenon Arc: 5,000 = No failure per ASTM G 26.
    - b. Carbon Arc: 500 = No failure per ASTM G 23.
  15. Adhesion strength, Test by tensile bond: 418 psi (2.9 MPa).
  16. Artificial weathering, Atlas Type DMC weatherometer: No cracking, loss of adhesion, checking or other defect.
  17. Freeze/thaw resistance, 200 cycles: No change per ASTM C 666 (Procedure B).
  18. Salt spray resistance, 300 hours: No defect per ASTM B 117.
  19. Carbon Dioxide (CO<sub>2</sub>), 1/16 inch (1.6 mm) per Lab Method Diffusion. Equivalent to 3/4 inch (19 mm) new concrete.
  20. Permeance:
    - a. Perms: 12 (0.10698) per ASTM E 96
    - b. Metric permeability  $18 \times 10$  to the 3rd resistance (water-vapor transmission) per Swedish standard SS-02-15-82.
  21. Wind-driven rain, hrs: 8 = excellent per Fed. Spec. TT-P-0035 (Para 4.4.7).
  22. Coefficient of thermal expansion in/in/degree F (mm/mm/degree C), at 28 days:  $6.99 \times 10$  to the minus 6th ( $5 \times 10$  to the minus 7th) per ASTM C 531.
  23. Impact strength (Gardener impact tester): No chipping per Fed. Spec. TT-P-0035 (Cement paints para. 3.4.8)

24. Hardness, (Barber Coleman Impressor) Requirement min = 30, max = 60 (para 4.4.9) Fed. Spec. TT-P-0035:
  - a. 7 days: 35.
  - b. 14 days: 47.
  - c. 21 days: 52.
25. Abrasion resistance 3,000 L sand: Passed per Fed. Spec. TT-P-141B.
26. Reflectance ASTM D 2244 using Hunterlab D-25 meter:
  - a. Gray Thoroseal: 64.2.
  - b. White Thoroseal: 88.1.
27. Fungus resistance at 21 days: No growth; meets all requirements of Fed. Spec. TT-P-29B.
28. Surface burning characteristics per ASTM E 84:
  - a. Flame Spread: 0.
  - b. Smoke developed: 5.
29. Fire Propagation Flame spread: Index = 1.5, Class 1 per BS476: Part 6:1981, BS476: Part 7:1971.

### 1.3 SUBMITTALS

- A. Comply with Section [01 33 00] [ \_\_\_ \_\_\_ \_\_\_ ].
- B. Product Data: Submit manufacturer's technical bulletins and MSDS on 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-work surfaces.

### 1.4 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 and systems.
  2. Manufacturer Qualifications: Company shall be ISO 9001:2000 Certified.
  3. Applicator Qualifications: Company with minimum of 5 years experience in application of specified products and systems on projects of similar size and scope, and is acceptable to product manufacturer.
    - a. Successful completion of a minimum of 5 projects of similar size and complexity to specified Work.
- C. Field Sample:
  1. Install at Project site or pre-selected area of building an area for field sample, as directed by Architect.
  2. Apply material in strict accordance with manufacturer's written application instructions.
  3. Manufacturer's representative or designated representative will review technical aspects; surface preparation, application, and workmanship.
  4. Field sample will be standard for judging workmanship on remainder of Project.
  5. Maintain field sample during construction for workmanship comparison.
  6. Do not alter, move, or destroy field sample until Work is completed and approved by Architect.

7. Obtain Architect's written approval of field sample before start of material application, including approval of aesthetics, color, texture, and appearance.

#### 1.5 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. Transport and store in unopened containers and keep in clean, dry condition protected from rain, dew, and humidity. If dry onsite storage of bags is unavailable or if Project is located in a very wet, humid climate zone, purchase product in manufacturer's packaged metal pails.
- E. Do not stack bags more than 2 pallets high.
- F. Store Acryl 60 in similar conditions. Do not allow Acryl 60 to freeze.

#### 1.6 PROJECT CONDITIONS

- A. Environmental Requirements:
  1. Do not apply in rain or when rain is expected within 24 hours. Do not apply above 90 degrees F (32 degrees C) or below 40 degrees F (4 degrees C) or when temperatures are expected to fall below 40 degrees F (4 degrees C) within 24 hours. For hot and cold temperature applications, store materials and water at 50 degrees F (10 degrees C) to 70 degrees F (21 degrees C) before use.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products from the following manufacturer:
  1. BASF Corporation  
Construction Systems  
889 Valley Park Drive  
  
Shakopee, MN 55379  
  
Customer Service: 800- 433-9517  
  
Technical Service: 800-243-6739  
  
Internet: [master-builders-solutions.basf.us](http://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 Corporation. Other manufacturers shall comply with minimum levels of material, color selection, and detailing indicated in Specifications or on Drawings. Architect will be sole judge of appropriateness of substitutions.

## 2.2 MATERIALS

- A. Portland-cement based coating for concrete and masonry that resists both positive and negative hydrostatic pressure.
  - 1. Acceptable Product:
    - a. Standard Coating: MasterSeal 581 by BASF Corporation.
    - b. Plaster Mix: MasterSeal 584 by BASF Corporation.
    - c. Foundation Coating: MasterSeal 582 by BASF Corporation.
    - d. Waterstop: MasterSeal 590 by BASF Corporation.

EDIT NOTE: YIELD: 225 SQ FT/50 LB (20.9 M2/22.7 KG) BAG AS A BASE COAT AT 1/16 INCH (1.6 MM) DRY-FILM THICKNESS. 450 SQ FT/50 LB (41.8 M2/22.7 KG) BAG AS TOPCOAT AT 1/32 INCH (0.8 MM) DRY-FILM THICKNESS. COVERAGE WILL VARY DEPENDING ON SURFACE TEXTURE AND POROSITY.

## 2.3 MIXING

- A. Mix material per manufacturer instructions allowing material to rest 10 minutes before remixing and application.
- B. Color:

EDIT NOTE: DELETE COLORS NOT REQUIRED.

- 1. White.

EDIT NOTE: THIS COLOR IS NOT UNIFORM.

- 2. Standard Gray.

EDIT NOTE: CUSTOM COLORS ARE AVAILABLE FOR 5,000 LBS (2268 KG) MINIMUM ORDER

- 3. Custom color. Refer to Drawings.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

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

### 3.2 SURFACE PREPARATION

- A. Ensure that substrates are sound and free of dust, dirt, laitance, paints, oils, grease, curing compounds, and other contaminants.

EDIT NOTE: DELETE IF CONCRETE SUBSTRATE NOT PRESENT.

- B. Ensure substrate has properly cured. Concrete should obtain 80 percent of design strength. If efflorescence is present, mechanically remove it before proceeding. For extreme cases where this is not adequate, contact Technical Service.
- C. Patch holes and cracks before installation.

EDIT NOTE: DELETE IF SUBSTRATE CONDITION NOT PRESENT.

- D. Relieve hydrostatic pressure in concrete block with weep holes.
- E. Roughen or brush blast extremely smooth surfaces to ensure good mechanical adhesion.

EDIT NOTE: DO NOT APPLY TO SUBSTRATES WITH ACTIVE WATER LEAKS OR MOVING CRACKS; PATCH ALL LEAKING STATIC CRACKS AND HOLES WITH WATERPLUG. REPAIR ANY OTHER NONMOVING CRACKS OR VOIDS WITH THE APPROPRIATE THORO REPAIR PRODUCT AND REPAIR ALL MOVING CRACKS OR VOIDS WITH APPROPRIATE SEALANT.

### 3.3 APPLICATION - GENERAL

- A. Apply coating with manufacturer recommend brush or broom or equivalent stiff fiber brush or by textured spray equipment. Spray, back-brush, or broom applications of first coat to fill voids and achieve uniformity.
- B. Completely dampen substrate with water before starting application. Do not saturate substrate. Keep substrate cool and damp throughout application.
- C. Work first coat thoroughly into substrate to completely fill and cover voids, holes, and nonmoving cracks.

EDIT NOTE: ABOVE GRADE, THE SECOND COAT CAN BE REPLACED WITH A THORO HIGH-BUILD ARCHITECTURAL COATING TO ACHIEVE BETTER COLOR UNIFORMITY. WITH ANY CEMENTITIOUS PRODUCT, SUCH AS THOROSEAL IT MAY BE DIFFICULT TO ACHIEVE COLOR UNIFORMITY DUE TO WEATHER AND SUBSTRATE VARIABILITY.

- D. Allow to cure 24 hours, then apply second coat and finish with vertical stroke.

EDIT NOTE: DELETE IF NOT REQUIRED.

- E. On concrete block or masonry walls, allow 5 to 7 days before applying second coat to eliminate joint read through.

EDIT NOTE: DELETE IF NOT REQUIRED.

- F. Allow coating to cure 7 to 10 days before immersion in water.

EDIT NOTE: ABOVE-GRADE INTERIOR OR EXTERIOR APPLICATIONS IN POSITIVE PRESSURE SITUATIONS (DIRECT CONTACT WITH RAIN OR STANDING WATER WITH A LOW HEAD OF PRESSURE). DELETE IF NOT REQUIRED.

### 3.4 ABOVE GRADE WITH POSITIVE SIDE WATER PRESSURE APPLICATION

- A. Typical Application:
  - 1. First Coat: 2 pounds per square yard (1.1 kg/sm) = 225 square feet per 50 pound bag (20.9 sm/22.7 kg bag).
  - 2. Second Coat: 1 pounds per square yard (0.54 kg/m<sup>2</sup>) = 450 square feet per 50 pound bag (41.8 sm/22.7 kg bag)
  - 3. Total: 3 pounds per square yard (1.6 kg/sm), cured nominal thickness of 1/16 inch (1.6 mm).

EDIT NOTE: A 3 LBS/SQ YD (1.6 KG/M<sup>2</sup>) APPLICATION RATE DOES NOT ELIMINATE SURFACE IRREGULARITIES SUCH AS STRUCK MORTAR JOINTS. DELETE IF NOT REQUIRED.

- B. Application at Struck Joints:
  - 1. Spray and back-brush base coat of standard coating at 2 pounds per square yard (1.1 kg/sm) and allow it to cure for 5 to 7 days.
  - 2. Spray apply and back trowel topcoat of plaster mix at an application rate of 9 pounds per square yard (4.9 kg/sm).

EDIT NOTE: DELETE IF NOT REQUIRED.

### 3.5 BELOW GRADE INTERIOR APPLICATION

- A. Typical Application:

1. Total: 3 pounds per square yard (1.6 kg/sm), cured nominal thickness of 1/16 inch (1.6 mm).

EDIT NOTE: FOR HIGH HYDROSTATIC PRESSURE CONDITIONS (OVER 15 PSI [0.10 MPA]). DELETE IF NOT REQUIRED.

- B. Application at High Hydrostatic Conditions: Refer to Drawings
  1. Spray and back-brush coat of standard coating at 4 pounds per square yard (2.2 kg/sm) waterproofing from positive side if possible.

EDIT NOTE: USE THOROSEAL FOUNDATION COATING (SEE FORM NO. 1019907) FOR HIGH HYDROSTATIC PRESSURE CONDITIONS (OVER 15 PSI [0.10 MPA]). DELETE IF NOT REQUIRED.

### 3.6 BELOW GRADE EXTERIOR APPLICATION

- A. Typical Application:
  1. Apply base coat of foundation coating at 2 pounds per square yard (1.1 kg/sm) and allow to cure for 5 to 7 days.
  2. After base coat properly cures, apply topcoat of plaster mix at 12 pounds per square yard (6.5 kg/sm). Provide steel trowel finish.

EDIT NOTE: DELETE IF NOT REQUIRED.

### 3.7 WATERPROOFING POTABLE WATER TANKS OR RESERVOIRS

- A. Install standard coating as specified in Application - General instructions.
- B. After standard coating has fully cured, wash down surface with saline solution (salt brine, 1 pound salt per 1 gallon water). Leave saline solution on entire surface for at least 24 hours. Rinse off saline solution completely. If needed, reapply saline solution until final rinse water is completely clean and clear.

EDIT NOTE: DELETE IF NOT REQUIRED.

### 3.8 WALL/FLOOR COVE DETAILING

EDIT NOTE: FOR BOTH BELOW-GRADE INTERIOR AND BELOW-GRADE EXTERIOR APPLICATIONS WHERE WATER MIGHT MOVE BETWEEN VERTICAL WALLS AND SLAB OR FOOTER, IT IS RECOMMENDED TO CUT OUT AND PLACE A WATERPLUG® COVE AT THE WALL AND FLOOR JUNCTION PRIOR TO THE APPLICATION OF THE THOROSEAL® BASE COAT. DELETE IF NOT REQUIRED.

- A. Cut out intersection of floor/wall and install waterstop cove seal at wall and floor junction prior to application of base coat.

EDIT NOTE: THOROSEAL® CAN BE COVERED WITH EXTRUDED POLYSTYRENE INSULATION BOARD DURING THE SECOND COAT APPLICATION. THE BOARD MUST BE FULLY COATED WITH THOROSEAL AND EMBEDDED INTO THE STILL WET COATING ALREADY PLACED ON WALL. EXERCISE CARE WHEN PLACING THE COATED BOARD. AFTER CURING, PREPARE THE ABOVE-GRADE PORTIONS OF THE BOARDS AND COAT WITH THOROSEAL® TO PROTECT THEM FROM UV LIGHT DEGRADATION. DELETE IF NOT REQUIRED.

### 3.9 RIGID INSULATION APPLICATION

- A. Fully coat insulation with coating and embed into still-wet coating already in place on wall. Follow manufacturer instructions for temporary support and curing.
- B. Prepare above-grade portions of insulation board by roughening or removing surface skin and coating.

### 3.10 CLEANING

- A. Clean waterproofing material from tools and equipment with water. Remove cured materials mechanically.
- B. Clean up and properly dispose of debris remaining on Project site related to application.
- C. Remove temporary coverings and protection from adjacent Work areas.

### 3.11 PROTECTION

- A. Protect system from damage during construction.

## END OF SECTION

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