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SECTION 07 92 15

SHEET METAL SEALANT

******* This product guide specification section can be used to specify Titebond Weathermaster Metal Roof Sealant, a one-component, non-priming, advanced reactive polymer, moisture-curing, sealant. This sealant is suitable for sealing assemblies such as sheet metal roof and wall panels, gutters and downspouts, flashings, and trim. metals for fabricating these assemblies include bare and coated aluminum, plain and galvanized steel, stainless steel, brass, copper, and titanium. Weathermaster Metal Roof Sealant is capable of adhering to wood, masonry, plastics, and other common building materials in addition to metals. This sealant is ultra-violet resistant and its low volatile organic compounds (VOC) emissions allow its use to qualify for LEED credits and meet SCAQMD, NAHB, CARB, Green Globes, and Green Seal emission standards. Titebond Weathermaster Metal Roof Sealant is also approved by USDA for application in food processing plants.**

Titebond Weathermaster Metal Roof Sealant can be specified as a stand-alone specification section (SECTION 07 92 15 - SHEET METAL SEALANT) covering its use for sheet metal roofing, wall cladding, flashings, and trim construction. As an alternative, this guide can be inserted into one of the following comprehensive specification sections:

SECTION 05 50 00 - METAL FABRICATIONS

SECTION 07 61 00 - SHEET METAL ROOFING

SECTION 07 42 13 - METAL WALL PANELS

SECTION 07 62 00 - SHEET METAL FLASHINGS AND TRIM

SECTION 07 92 00 - JOINT SEALANTS (This section is typically used to specify all types of sealant required for a project and could include Titebond Weathermaster Metal Roof Sealant.)

In the above options, the various paragraphs of this guide section will need to be inserted into the appropriate locations in Parts 1, 2, and 3 of the various sheet metal or sealant sections. This guide specification can be easily modified for other applications of Titebond Weathermaster Metal Roof Sealant. Contact Franklin International for information regarding other uses of Titebond Weathermaster Metal Roof Sealant.

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The specification section is organized by placing information in three standard parts:

PART 1 - GENERAL - Describes administrative and procedural requirements.

PART 2 - PRODUCTS - Describes materials, products, and accessories to be incorporated into the construction project.

PART 3 - EXECUTION - Describes how the products will be installed at the construction site.

Throughout this product guide specification, references are made to other specification sections that might be contained in the project manual. These references are presented as examples and coordination reminders. For each project, these references will need to be revised to reflect actual sections being used.

Within the specification text, Imperial dimensions are presented first in brackets followed by System International Metric (SI) equivalents also in brackets. Depending on project requirements, either the Imperial or the SI metric equivalents will need to be deleted.

The specifier will need to edit this product specification for a specific project to reflect the options and applications being used. The guide section has been written so that most editing can be accomplished by deleting unnecessary requirements and options. Depending on project requirements, some additional information will need to be added by the specifier. Options are indicated by [ ]. Notes to assist the specifier in selecting options and editing the specification guide are printed in bold and indicated with ***. For final editing, all brackets and notes will need to be deleted from the guide.**

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PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: One-component, non-priming, advanced reactive polymer, moisture-curing sealant suitable for sealing assemblies fabricated from bear and coated metal.

B. Related sections:

******* List other specification sections dealing with work directly related to this section such as the following. *******

1. Section 05 50 00 - Metal Fabrications: [Steel] [Stainless steel] [Galvanized steel] [Aluminum] [Copper] [_____] fabrications requiring joint sealant specified in this Section.

2. Section 07 61 00 - Sheet Metal Roofing: [Standing Seam] [Corrugated] [Flat] [_____] metal roof panel system including installation of sealant specified in this Section.

3. Section 07 42 13 - Metal Wall Panels: Metal wall panel system including installation of sealant specified in this Section.

4. Section 07 42 44 - Metal Soffit Panels: Metal soffit panel system including installation of sealant specified in this Section.

5. Section 07 62 00 - Sheet Metal Flashings and Trim: Sheet metal [flashings] [gutters] [downspouts] [parapet caps] [fascia] [ridge caps] [window sills] and other trim including installation of sealant specified in this Section.

6. [Section 08 11 10 - Hollow Steel Doors and Frames] [Section 09 41 10 - Aluminum Doors, Windows, and Framing] [_____]: Metal Doors and windows including installation of sealant specified in this Section.

7. Section 08 60 00 - Roof Windows and Skylights: Metal-framed roof windows and skylights including installation of sealant specified in this Section.

1.2 REFERENCES

****** List by number and full title reference standards referred to in remainder of specification section. *******

A. American Society for Testing and Materials (ASTM):

1. ASTM C412 - Standard Test Method for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension.

2. ASTM C510 - Standard Test Method for Staining and Color Change of Single- or Multi-Component Joint Sealants.

3. ASTM C639 - Standard Test Method for Rheological (Flow) Properties of Elastomeric Sealants.

4. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer.

5. ASTM C679 - Standard Test Method for Tack-Free Time of Elastomeric Sealants.

6. ASTM C719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).

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7. ASTM C793 - Standard Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants.

8. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.

9. ASTM C920 - Elastomeric Joint Sealants.

10. ASTM C1193 - Standard Guide for Use of Joint Sealants.

11. ASTM C1246 - Standard Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants After Cure.

12. ASTM C1247 - Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids.

13. ASTM C1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

14. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.

B. Federal Specification (FS): FS TTS002230C.

C. International Standards Organization (ISO): ISO 11600-F-25-LM.

D. California Department of Health Services: South Coast Air Quality Management District (SCAQMD) Rule No. 1168.

E. United States Department of Agriculture (USDA) - Requirements for Food Processing Facilities.

1.3 SUBMITTALS

A. Provide in accordance with Section 01 33 00 - Submittal Procedures:

1. Product data for sheet metal sealant, [primer,] joint backing, and other accessories. Include material safety data sheets (MSDS) and certifications showing compliance with specified standards.

2. Shop drawings detailing sealant joints and indicating joint dimensions, materials, sealant profiles, and size limitations.

3. Manufacturer's instructions for preparing substrates and applying sealants.

4. Copy of warranty required by Paragraph [1.7] [_____] for review by Architect.

******* Titebond Weathermaster Metal Roof Sealant meets the volatile organic compound**

(VOC) limits of the California South Coast Air Quality Management District (SCAQMD) Rule No. 1168. Therefore Titebond Weathermaster Metal Roof Sealant is eligible for Indoor Environmental Quality (EQ) Credit EQc 4.1 for project certification by the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building Rating System for New Construction and Major Renovations. Include the following paragraph if project is registered with the USGBC for obtaining LEED certification. ***

B. LEED Submittals: Provide overall cost of materials on worksheet furnished for LEED documentation. Provide separate cost breakout for materials that contribute to materials and resources credits.

1. Credit EQc4.1 - Low-Emitting Materials: Provide documentation that sheet metal sealant VOC (volatile organic compounds) content meets limits specified in Paragraph 1.4.

1.4 REGULATORY REQUIREMENTS

A. Comply with current applicable regulations of the Environmental Protection Agency (EPA).

B. Sealants provided under this Section for interior application shall comply with sealant VOC content requirements of California's South Coast Air Quality Management District (SCAQMD) Rule No. 1168 and Green Seal Standards for VOC emissions: 250 grams per liter maximum calculated in accordance with 40 CFR 59, Subpart D (EPA Method 24).

***** **Include the following paragraph if sheet metal sealant is to be installed in a food processing facility.** *****

C. Sealant shall be approved by United States Department of Agriculture (USDA) for installation in food processing facilities.

1.5 PRODUCT HANDLING

A. Handle, store, and apply materials in compliance with applicable regulations and material safety data sheets.

B. Packaging: Containers shall be clearly labeled as to contents, manufacturer's name, and date of manufacture. Installation instructions shall be printed on containers.

C. Store materials in clean, dry area at temperatures above [60 degrees F] [16 degrees C].

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not install exterior sheet metal sealant if temperature is below [0 degrees F] [minus 18 degrees C], during inclement weather, or when such conditions are expected. Allow wet surfaces to dry.

B. For interior applications, provide permanent heat, light, and ventilation prior to installation.

C. Install sealant when temperature and relative humidity conditions meet manufacturer's recommended installation conditions.

1.7 WARRANTY

A. Provide in accordance with Section 01 78 00 - Closeout Submittals: Manufacturer's 1-year materials and manufacturing warranty.

PARTS 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Franklin International, 2020 Bruck Street, Columbus, Ohio 43207; 800-347-4583; www.titebond.com.

B. Requests to use equivalent products of other manufacturers shall be submitted in accordance with Section 01 25 13 - Product Substitution Procedures.

2.2 SHEET METAL JOINT SEALANT

******* A low modulus sealant is one that has a high degree of movement. *******

A. Type: One-component, low modulus, moisture-curing, advanced reactive polymer sealant suitable for sealing sheet metal joints; Titebond Weathermaster Metal Roof Sealant as manufactured by Franklin International.

******* Titebond Weathermaster Sealant complies with United States and Canadian. Edit the following paragraph to reflect Project location, conditions, and requirements. *******

B. Compliance: Sealant shall comply with [ASTM C920, Type S, Grade NS, Class 50, Use NT, T, G, A, M,. and I] [Federal Specification TTS002230C, Type II, Class A] [CAN/CGSB-19 13-M87, Classification MCG-2-25-A-N, No. 81026] [USDA approved for use in food processing facilities].

C. Physical properties:

1. Approximate coverage: [308 feet per gallon] [25 meters per liter] of [1/4 inch] [6 mm] sealant bead.

2. Minimum cold weather extrusion temperature: [0 degrees F] [Minus 18 degrees C].

3. Solids content: 99 percent.

4. Calculated VOC less water: 9 grams per liter.

D. Sealant shall not contain isocyanates, solvents, halogens, and acids.

1. Paintable after 1 hour curing.

2. Shelf life: 12 months in closed container at [75 degrees F] [24 degrees C].

3. Tooling time for [1/4 inch] [6 mm] bead: 20 to 40 minutes after application, depending on temperature and humidity.

4. Tack-free time: 1 hour tested in accordance with ASTM C679.

5. Final curing time: 24 hours.

6. Flash point: [200 degrees F] [96 degrees C] minimum.

******* Titebond Weathermaster Metal Roof Sealant is provided in 50 colors. Refer to Franklin International product literature for color illustrations. *******

7. Color: [White] [Off-white] [Black] [Grey] [Aluminum] [Tan] [Stone] [Limestone] [Medium bronze] [Special bronze] [Hunter green] [Redwood tan] [Tile red] [Black] [_____] [As selected by Architect from manufacturer's full range].

E. Properties of installed and cured sealant:

1. Joint movement capability: Plus or minus 50 percent of joint width tested in accordance with ASTM C719.

2. Service range: [Minus 75 degrees F] [Minus 59 degrees C] to [300 degrees F] [149 degrees C].

3. Tear strength: [44.4 pounds force per inch] [7929 grams force per cm] tested in accordance with ASTM D624.

4. Tensile strength: [210 psi] [14.8 kg per square cm] tested in accordance with ASTM C412.

5. Color retention: Pass when tested in accordance with ASTM C510.

6. Maximum elongation: 300 percent tested in accordance with ASTM C412.

7. Modulus of elongation: [125 psi] [8.79 kg per square cm] tested in accordance with ASTM C412.

8. No sag tested in accordance with ASTM C639.

9. Hardness: 45 durometer hardness, Shore A tested in accordance with ASTM C661.

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10. Heat aging: No cracking tested in accordance with ASTM C1246.

11. Ultra violet (UV) resistance: Will not crack when exposed to direct sunlight in accordance with ASTM C793.

12. Peel adhesion after UV exposure through glass: Pass when tested in accordance with ASTM C794.

13. Resistant to water immersion tested in accordance with ASTM C1247.

2.3 ACCESSORIES

******* For most construction materials, a primer is not required when applying Titebond Weathermaster Metal Roof Sealant. For unusual project conditions and materials, testing to verify adhesion and primer use may be required. Contract Franklin International for unique situation recommendations. *******

A. Sealant backing: Provide backing complying with ASTM C1330:

1. Uniform width joints: Closed-cell polyethylene foam.

2. Irregularly shaped joints: Open-cell with impervious skin.

3. Size: Greater than joint opening by 25 percent minimum.

4. Paper, fibrous ropes, and open cell foams are not acceptable.

B. Bond breaker tape: Provide tape to prevent adhesion to joint fillers or joint surfaces at back of joint and to allow sealant movement.

1. Type: Polyethylene or other plastic tape recommended by sealant manufacturer.

C. Masking tape: Non-staining, non-absorbent type compatible with sheet metal sealant and adjacent surfaces.

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PART 3 - EXECUTION

******* Titebond Weathermaster Metal Roof Sealant can be used for sealing joints in metal assemblies and joints between metal components and most adjacent building materials. This sealant can be applied in both interior and exterior locations but is not designed for continuous submersion in water. It can be used for repairing existing metal joints and for new substrates. Substrates need to be properly prepared to receive Titebond Weathermaster Metal Roof Sealant. Edit Part 3 of this specification guide to reflect specific project application. *******

3.1 GENERAL

A. Coordination: Coordinate provision of sealant with type of application. Apply sheet metal sealant as part of:

******* Edit the following list of specification sections to reflect type of sealant applications required for project. Each of these sections should include a cross-reference to this section for specification of required sealant. Delete non-applicable sections. *******

1. Section 05 50 00 - Metal Fabrications.

2. Section 07 61 00 - Sheet Metal Roofing.

3. Section 07 42 13 - Metal Wall Panels.

4. Section 07 42 44 - Metal Soffit Panels.

5. Section 07 62 00 - Sheet Metal Flashings and Trim.

6. Section 08 11 10 - Hollow Steel Doors and Frames.

7. Section 09 41 10 - Aluminum Doors, Windows, and Framing.

8. Section 08 60 00 - Roof Windows and Skylights: Metal-framed roof windows and skylights.

B. Provide sealant joints in metal assemblies as detailed and dimensioned on Drawings and reviewed shop drawings and as required for complete, weathertight, functional installation.

C. Prior to sealant installation, test compatibility of sealant with metal and adjacent materials. Verify that adhesion of sealant is sufficient to form weathertight, functional, durable joint.

D. Prepare substrates and apply sheet metal sealant in accordance with manufacturer's instructions.

E. Do not use sheet metal sealant for underwater applications.

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F. Do not apply in totally confined spaces without ventilation for curing.

3.2 PREPARATION

A. Inspect [existing joints to be repaired.] [new substrates to receive sheet metal sealant.] Ensure surfaces are clean, dry, and free of frost, dust, dirt, grease, oil, curing compounds, laitance, efflorescence, mildew, and previous films and coatings.

******* Include the following paragraph for repairing existing metal sealant joints. *******

B. Remove existing joint sealant materials. Clean joints and remove joint sealant residue. Repair deteriorated or damaged substrates as recommended by sheet metal sealant manufacturer to provide suitable substrate. Allow patching materials to cure.

C. Clean substrates to receive sheet metal sealant.

1. Porous surfaces: Clean by grinding, sand or water blasting, or mechanical abrading, followed by vacuum cleaning or blasting with compressed air.

2. Nonporous surfaces: Clean by wiping with cloth and solvent in accordance with ASTM C1193.

******* Typically a primer is not required for porous substrates. A primer may be required for optimum adhesion to metal, glass, plastic, and other nonporous surfaces. Testing should be conducted to determine if primer is required. Contact Franklin International for primer recommendations. *******

D. Adhesion test: Apply sheet metal sealant to small area of substrate and perform adhesion test in accordance with ASTM C1193 to determine if primer is required to achieve adequate adhesion. If necessary, apply primer of type and at rate as recommended by sealant manufacturer.

E. Masking: Apply masking tape as required to protect adjacent surfaces, to ensure straight bead line, and to facilitate cleaning.

3.3 APPLICATION

A. Sealant backing: Install without gaps, twisting, stretching, or puncturing backing material. Use gage to ensure uniform depth to achieve correct profile, coverage, and performance.

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******* Where backing is not applied in a metal expansion joint, a bond breaker can be installed in the joint opening to prevent sealant from adhering to back surface of substrate and limiting expansion and contraction of sealant. Include the following paragraph if bond breakers are required and are detailed on Drawings. *******

B. Bond breaker: Install on backside of joint where sealant backing is not installed.

C. Sealant: Install sealant bead into opening with dispenser recommended by sealant manufacturer. Fill joint opening to full and proper depth. Allow to self-level and cure.

D. Protect sealants until cured.

3.4 CLEANING

A. Remove masking tape and excess sealant.

B. Clean adjacent soiled surfaces.

C. Repair or replace defaced and disfigured finishes caused by work of this Section.

3.5 FIELD QUALITY CONTROL

******* Edit this article to reflect type, size, and complexity of project. *******

A. Perform adhesion tests in accordance with manufacturer's instructions and ASTM C1193.

B. Provide 1 test minimum for each [500 linear feet] [150 linear meters] of applied sealant.

C. Sealants failing adhesion test shall be removed, substrates cleaned, sealants re-installed, and re-testing performed.

D. Visually inspect joints after 30 days. Replace joints showing bond failure, excessive shrinkage, cracking, or improper curing.

END OF SECTION