



DIVISION 15 FLUOROPOLYMER COATED DUCT FOR CAUSTIC ENVIRONMENTS

Part I – General

1.1 Related Documents

- A. All terms and general provisions of contract, General and Supplementary Conditions, and Specification Sections contained in Division 1 apply to work in this Section.
- B. Division 15: Basic Mechanical Materials Section and Method Section apply to work in this Section.

1.2 Related Work

- A. For the extent of coated duct, refer to drawings and schedules, and by the requirements contained in this Section.
- B. For exterior insulation of coated duct, refer to the appropriate Division 15 Sections—NOT the work of this Section.
- C. For fans and air handling units, refer to the appropriate Division 15 Sections—NOT the work of this Section.

1.3 Quality Assurance

- A. Manufacturer's Qualifications:

Companies specialized in manufacturing Stainless Steel Duct coated with Prime*Guard, and related products of types, sizes, and materials required for this project.

The manufacturer shall demonstrate satisfactory use of their own Stainless Steel Duct coated with Prime*Guard for NO less than three (3) years.

The manufacturer shall fabricate their own sheet metal, and perform their own coating processes.

The owner and the owner's representatives have the privilege to tour the manufacturer's plant at anytime during the fabrication of the duct intended for this project.



1. Codes and Standards:

- a. Ductwork shall be listed for use—as established by Factory Mutual Standard 4922—that does NOT require internal fire-protection sprinklers; and does NOT rely on any device designed to eliminate airflow in the event of a fire.
 - i. Ductwork shall maintain a flame spread less than 25, and a smoke generation rate of less than 50.
 - ii. Ductwork shall be approved by Factory Mutual for use without requiring sprinklers.

b. SMACNA Standards:

Fabrication and installation of Stainless Steel metal duct shall comply with SMACNA's "HVAC Duct Construction Standards, Metal and Flexible."

Comply with SMACNA's "Round Industrial Duct Construction Standards," intended for industrial ventilation system designers.

B. Installer Qualifications:

Installation contractors shall have, at minimum, three (3) years experience with installing duct systems—particularly industrial exhaust systems.

1. Codes and Standards:

- b. ASHRAE Standards: Fabrication and installation of metal duct must comply with the ASHRAE handbook, Equipment Volume, Chapter 1 – "Duct Construction."
- c. NFPA Compliance: Comply with the following:
 - NFPA 90A – "Standard for the Installation of Air Conditioning and Ventilating Systems"
 - NFPA 90B – "Standard for the Installation of Warm Air Heating and Air Conditioning Systems"
 - NFPA 91 – "Standard for the Installation of Blower and Exhaust Systems"
- d. Field Reference Manual: A copy of SMACNA's "Round Industrial Duct Construction Standards" shall be available for reference at the project field office.



1.4 Submittals

- A. Submit the manufacturer's product specifications (technical data), as well as installation instructions, for Stainless Steel Duct coated with Prime*Guard.
- B. Shop Drawings:

Submit scaled drawing showing the layout of coated duct and fittings. Drawings should also include duct sizes, connections, identification of slopes, elevations, and locations of horizontal runs, as well as floor and wall penetrations;

Drawings should demonstrate interface and spatial relationships between coated duct and adjoining equipment.

Drawings shall show modifications of indicated requirements, and how the modifications ensure that free area, materials, and rigidity are not compromised in any way.

1.5 Delivery, Storage, and Handling

- A. Protection:

Take care to protect coated duct from damage resulting from handling during the shipping and storage.

- C. Delivery:

The consignee is responsible for visually inspecting and verifying the shipment upon delivery, making note of any damages or discrepancies on the bill of lading, and notifying the manufacturer of unsatisfactory items within 48 hours.

- D. Handling:

If the coating is found to be scratched, perform a spark test using the appropriate protocol. If a spark is detected, notify the manufacturer for approved repair procedures.

- E. Storage:

Exercise care when storing coated ductwork to ensure that items remain in clean, serviceable condition. When possible, keep all factory-installed packaging in place until immediately prior to installation. Take special care not to scratch or damage the coating by keeping items free of debris and clear of high-traffic areas.



Part 2 – Products

2.1 Acceptable Manufacturers

Stainless Steel ductwork and Components coated with Prime*Guard

COR*Guard™, LLC.

Attn: Steve Durham

6428 Business Way

Boise, ID 83705

Phone: (208) 429.8896

Fax: (208) 343.3719

Powder and Primer

Prime*Guard (Fluorothermoplastic) as manufactured by:

Dyneon LLC

6744 – 33rd Street North

Oakdale, MN 55128

Phone: (651) 733.5353

Duct Joint Sealant and Form-in-Place Gasket

Gore-Tex® (100% expanded PTFE) as manufactured by:

W.L. Gore and Associates, Inc.

Sealant Technologies Group

Attn: Robert Haywood

201 Airport Road

P.O. Box 1488

Elkton, MD 21922

Phone: (410) 392.3200

Fax: (410) 392.4817



2.2 Duct Construction Materials

- A. Stainless Steel Duct coated with Prime*Guard shall be manufactured in accordance with the following specifications:
1. All hard ductwork and components shall be fabricated from commercially available series 300 Stainless Steel, unless otherwise specified. Duct and components are fabricated in accordance with "SMACNA Round Industrial Duct Construction Standards, and shall be continuously welded with all welds ground or polished smooth.
 2. Coating is a Prime*Guard Fluoropolymer coating. The primer coating shall be two (2) to three (3) mils thick, and the topcoat eight (8) to ten (10) mils thick. All coated ducts shall have a final coating with a mean thickness of ten (10) mils minimum, and twelve (12) mils maximum as a standard. Complete and uniform coverage is required on both inside and outside (where applicable) surfaces.
 3. Coating on all pieces of duct shall be electronically tested using a D.E. Stearns Model 14/20 voltage regulated holiday detector, A.K.A "Spark Tester." Testing standard is 300 Volts per Mil of coating thickness.

2.3 Miscellaneous Duct Construction Materials

- A. General:
1. Duct Fittings – All fittings such as elbows, laterals, tees, and reducers shall be equal or superior in strength, to the adjacent pipe section and shall have the same diameter as the adjacent pipe. The dimensions of fittings shall be as shown in fitting fab sheets.
 - a. Elbows: Standard elbows shall have a centerline radius of one and one half (1-1/2) times the diameter of the fitting.
 - b. Reducers: Reducers of either concentric or eccentric style will have a length as determined by the difference of the diameters of the reducer (either 2.5 or 5X the differences are standard). Alternate reducer lengths are acceptable in order to accommodate end user layout requirements.



2. Duct joints shall be Van Stone style (Companion Angle Ring Bolted Flange) made of 300 series Stainless Steel.
- a. Hardware (bolts, nuts, washers) shall be SAE grade 5 plated steel, which shall be tightened to the following torques:

Bolt Diameter	Torque
5/16"	22
3/8"	36

- b. Gaskets shall be Gore-Tex® Joint Sealant, Form-In-Place Gasket, fully expanded 100% PTFE material, sized according to the table below:

Duct Diameter	Width
4" to 11"	3/16" (.18)
12" and up	1/4" (.25)



Part 3 – Execution

3.1 Installation

A. General:

Observe the area and the conditions where the coated ductwork is to be installed. Proceed with the project ONLY when the installer accepts the conditions as satisfactory for commencing the project. If unsatisfactory conditions exist, proceed only when the conditions have been corrected in a manner acceptable to the installer.

1. Installation of Coated Stainless Steel Duct:

1. Inspect Product – inspect the overall appearance of the item: the items should be free of physical damages such as dents, nicks, and scrapes. Inspect the coating both visually and electronically for scrapes and pinholes (if deficient areas are found, contact a COR*Guard™ customer representative within 48 hours).
2. General Assembly – use extreme care to avoid damage the coated surface in any way while assembling and installing ductwork (if scratched during handling, immediately contact the manufacturer for repair procedures).
3. Routing – Located runs indicated on project diagrams.
4. Electrical Equipment Spaces –
5. Penetrations –
6. Installation - Assemble and install all ductwork as shown in project documents, and in accordance with SMACNA “Industrial Duct Construction Standards,” as well as state and city codes. Support ductwork rigidly using hangar straps or rods for support in accordance to SMACNA Duct Construction Standards.
 - a. Penetrating fasteners such as Tek screws, rivets, etc. are NOT to be used for hanging ductwork.