

SECTION 15081

Sheet Metal Ducts - Thermal Insulation Wrap

PART 1.00 - GENERAL

1.01 Summary

A. The work covered by this specification consists of furnishing all labor, equipment, materials and accessories, and performing all operations required, for correct fabrication and installation of sheet metal duct systems with fibrous glass duct wrap, in accordance with applicable project drawings and specifications, subject to terms and conditions of the contract:

1. All air duct systems operating at internal air temperatures not exceeding 250°F(121°C).

B. Duct wrap insulation shall meet the requirements of ASTM C1290; [Type I, Type II or Type III] to a maximum service temperature of 250°F (121 °C). Type II materials shall have a vapor-retarder facing with a water vapor permeance no greater than 1.30 perms. Type III material shall have a vapor-retarder facing with a water vapor permeance no greater than .02 perms and meet the physical requirements of ASTM C1136, Type II.

C. All duct dimensions shown on the plans are finished inside dimensions.

D. Duct wrap shall be installed in accordance with manufacturer's instructions in such a manner that the insulation will provide the installed R-value, as published for the product and printed on the facing, thus assuring specified in-place thermal performance.

1.02 Delivery, Storage and Handling

A. Deliver all insulation materials to the job site and store in a safe, dry place.

B. Use all means necessary at the job site to protect materials from dust, dirt, moisture, and physical abuse before and during installation.

PART 2.00 - PRODUCTS

2.01 Insulated Duct System

A. All supply ducts, return ducts, and related fittings shall be insulated with [1-1/2"(38 mm), 2"(51 mm), 2-1/4"(57 mm), 3"(76 mm)] thick, [unfaced, FSK-faced, vinyl film faced] fibrous glass duct wrap insulation per project drawings.

B. The duct wrap insulation shall consist of a blanket-type insulation composed of wool-type glass fibers firmly bonded with a thermosetting resin. Faced duct wrap material shall be factory-laminated to a scrim reinforced, foil-kraft(FSK) vapor retarder facing having a 2" (51 mm) stapling flange on one edge. Material to be CertainTeed Duct Wrap or equal.

C. When installed in accordance with recommended installation procedures, duct wrap insulation shall provide installed R-values as follows:

<u>Type</u>	<u>LABELED THICKNESS</u>	<u>INSTALLED R-VALUE</u>
Type 75	1-1/2"(38 mm)	4.2
Type 75	2"(51 mm)	5.7
Type 75	2-1/8"(54 mm)	6.0
Type 75	2-1/4"(57 mm)	6.4
Type 75	2-1/2"(64 mm)	7.1
Type 75	3"(76 mm)	8.5
Type 100	1-1/2"(38 mm)	4.5
Type 100	2"(51 mm)	6.1
Type 150	1-1/2"(38 mm)	4.8
Type 150	2"(51 mm)	6.4

PART 3.00 - EXECUTION

3.01 Inspection

A. Verify that the duct wrap product may be installed in accordance with project drawings and operating performance parameters and limitations.

3.02 Insulation of Straight Duct and Fittings

A. Before applying duct wrap, sheet metal ducts shall be clean, dry, and tightly sealed at all joints and seams.

B. All portions of duct designated to receive duct wrap shall be completely covered with duct wrap.

C. To ensure installed thermal performance, duct wrap shall be cut to "stretch-out" dimensions as follows (P = perimeter of duct in inches / mm):

Labeled Thickness	Average Installed Thickness		Thickness Calculation To Arrive at Correct Installed Thickness		
			Round Duct	Square Duct	Rectangular Duct
1-1/2"(38 mm)	1.125(29 mm)	P+	9.5"(241 mm)	8.0"(203 mm)	7.0"(178 mm)
2"(51 mm)	1.5"(38 mm)	P+	12.0"(305 mm)	10.0"(254 mm)	8.0"(203 mm)
2-1/4"(57 mm)	1.69"(43 mm)	P+	13.5"(343 mm)	11.5"(292 mm)	9.0"(229 mm)
2-1/2"(64 mm)	1.88"(48 mm)	P+	14.5"(368 mm)	12.5"(318 mm)	9.5"(241 mm)
3"(76 mm)	2.25"(57 mm)	P+	17.0"(432 mm)	14.5"(368 mm)	11.5"(292 mm)

D. A 2"(51 mm) piece of insulation shall be removed from the facing at the end of the piece of insulation to form an overlapping stapling and taping flap.

E. Install duct wrap insulation with facing outside so that the stapling flap overlaps the insulation and facing at the other end of the piece of duct wrap. Adjacent sections of duct wrap insulation shall be tightly butted, with the 2" (51 mm) stapling and taping flap overlapping. If ducts are rectangular or square, install so insulation is not excessively compressed at corners. Seams shall be stapled approximately 6"(152 mm) on center, with 1/2"(13 mm) minimum, steel, outward-clinching, staples.

F. Where a vapor barrier is required, seams shall be sealed with pressure-sensitive tape matching the insulation facing, either plain foil or foil-scrim-kraft(FSK). Seal all tears, punctures, and other penetrations of the duct wrap facing with tape or mastic to provide a vapor-tight system.

3.03 Inspection

A. Upon completion of installation of duct wrap and before system operation is to commence, visually inspect the system and verify that duct insulation has been correctly installed.

B. Open all system dampers and turn on fans to purge all scraps and other loose pieces of material from the duct system. Allow for a means of removal of such material from the duct system.

C. Check the duct system to ensure that there are no air leaks through duct joints.