



Product Information from NAIMA:

Fibrous Glass Duct Wrap

In this issue, we address the specific uses, performance characteristics, fire safety, condensation control and installation recommendations for fibrous glass duct wrap.

Uses

Fibrous glass duct wrap insulation is designed for application to the exteriors of commercial and residential sheet metal heating, ventilating, and air-conditioning ducts and plenums operating at temperatures between 40°F (4°C) and 250°F (121°C). When installed over sealed sheet metal ducts, duct wrap insulation reduces heat loss or gain through duct walls, conserving energy and controlling moisture condensation. Fibrous glass duct wrap insulations are useful in situations where acoustical performance is not an issue.

Description

Fibrous glass duct wrap insulations are flexible, resilient, light-density blankets of glass fibers factory-laminated to vapor retarder facings. These products are easily cut and fitted to achieve a neat, thermally effective insulation blanket over the exteriors of rectangular, round, oval, or irregularly shaped duct surfaces. They are available in a range of R-values depending on product type, thickness, and density.

Features and Benefits

Condensation control

When installed R-value recommendations are followed, fibrous

glass duct wrap insulation installed over sealed sheet metal ducts reduces the likelihood of condensation occurring on the vapor retarder facing, and of moisture damage to ceilings and other interior finishes.

Enhanced comfort control

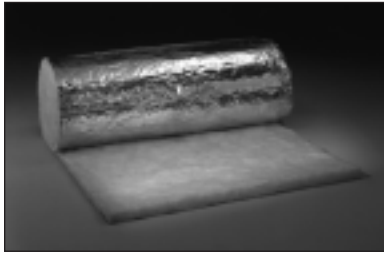
By reducing heat loss or gain through duct walls, conditioned air reaches occupied spaces at temperatures close to design conditions. Central air equipment may therefore be operated at reduced levels, saving energy, while providing the same level of comfort.

Flexible, easily installed

Fibrous glass duct wrap insulation is easily cut to proper fit. For ease of application, a staple flap is provided by the manufacturers.

Code compliance

Fibrous glass duct wrap insulations meet the physical property requirements of ASTM C 1290 as well as meeting the fire safety requirements of NFPA 90A and 90B including limited combustibility, 25/50 as tested in accordance to ASTM E 84, and ASTM C 411 at a minimum of 250°F (121°C). They also comply with all code requirements listed in the ICC building codes.



Fibrous glass duct wrap with FSK facing

Assured Thermal Performance

When installed in accordance with manufacturers' instructions, the installed fibrous glass duct wraps will provide specified thermal performance R-value as printed on the vapor retarder facing. This is achieved by determining the "stretch-out" cutting dimension required so that, once installed, the duct wrap is not compressed to less than 75% of nominal (out-of-package) thickness.

Commonly available installed R-values as published by manufacturers show fibrous glass duct wrap insulations to perform in the R-value ranges shown in Table 1. Consult local building code or appropriate ICC code for required installed duct insulation R-value. Select the duct wrap insulation with an equal or greater installed R-value.

Condensation Control

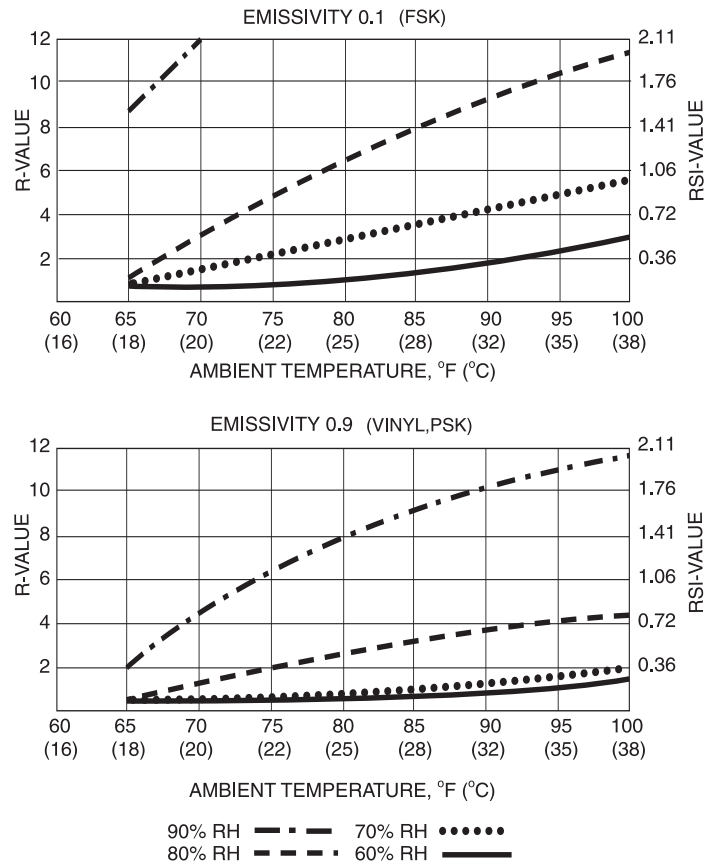
Figure 1 shows the installed R-values of fibrous glass duct wrap required to prevent moisture condensation on the vapor retarder surface under varying conditions of ambient temperature and relative humidity. Curves are based on cold duct internal temperatures of 55°F (13°C) and no air movement on the external surface. Note: R-values as required by ASHRAE 90.1 or IEC code may not be sufficient for condensation control as may be seen in Figures 1 and 2.

Table 1 - Commonly Available Installed R-Values

Thickness, in. (mm)	R-value, hr•ft ² •°F/Btu	(RSI, m ² •°C/W)
1 (25)	3.1 – 3.6	(0.54 – 0.68)
1½ (38)	4.2 – 6.2	(0.74 – 1.09)
2 (51)	5.6 – 8.3	(0.99 – 1.46)
2½ (64)	6.0 – 7.0	(1.06 – 1.28)
3 (76)	8.3 – 10.3	(1.46 – 1.81)
3½ (89)	10.0 – 12.0	(1.76 – 2.11)
4 (102)	11.2 – 16.6	(2.00 – 3.00)

Thermal values are for insulation only as determined by ASTM C 518 at 75° F (24° C) mean temperature and do not include air films or reflective surfaces. Values are subject to normal testing and manufacturing tolerances.

Figure 1 - Required R-Values to Prevent Moisture Condensation



Note that condensation will occur at higher relative humidity. Condensation on the sheet metal duct surface is controlled by using a sealed vapor retarder of sufficient perm rating.

Figure 2 – Installing fibrous glass duct wrap insulation to assure full installed R-value

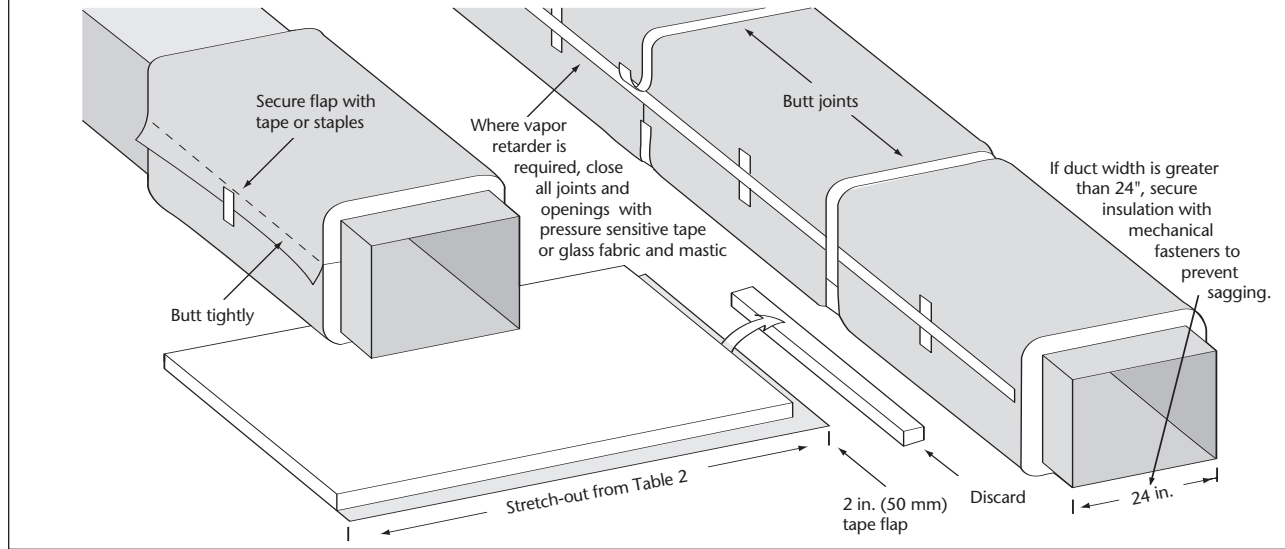


Table 2 – Installation Stretch-Out Dimensions (ASTM C 1290)

Nominal Thickness, in. (mm) (As mfd.)	Average Installed Thickness, in. (mm)	Insulation Stretch-Out Dimensions, P* + in. (mm)		
		Round Duct	Square Duct	Rectangular Duct
1 (25)	¾ (19)	P + 7 (178)	P + 6 (152)	P + 5 (127)
1½ (38)	1⅛ (29)	P + 9½ (241)	P + 8 (203)	P + 7 (178)
2 (51)	1½ (38)	P + 12 (305)	P + 10 (254)	P + 8 (203)
2½ (64)	1⅞ (48)	P + 14½ (368)	P + 12½ (318)	P + 9½ (241)
3 (76)	2¼ (57)	P + 17 (432)	P + 14½ (368)	P + 11½ (292)
3½ (89)	2⅞ (67)	P + 19½ (495)	P + 16½ (419)	P + 13 (330)
4 (102)	3 (76)	P + 22 (559)	P + 19 (483)	P + 16 (406)

* P = perimeter of sheet metal duct. Stretch-Out dimensions must be followed to achieve labeled installed R-values.



Fibrous glass duct wrap is applied to the exterior of sheet metal ducts by cutting to correct stretch-out length with a staple flap. The longitudinal seam is secured with staple or tape tab and, where a vapor retarder is required, sealed with

pressure sensitive tape or glass fabric and mastic. Circumferential joints between pieces of duct wrap are sealed in the same manner.

Installation

Fibrous glass duct wrap insulations are installed with facings away from the duct surface. See Figure 2. A stapling flap, prepared at the time of installation, overlapping the insulation and facing at the other end of the piece of duct wrap, is stapled to form a longitudinal seam. Where a vapor retarder is required, the seam is sealed with pressure-sensitive tape. Adjoining duct wrap sections are similarly stapled and sealed using the facing flap on one edge of the duct wrap as produced at the factory. Seams and joints may also be sealed with mastic and glass fiber fabric.

For complete installation details, consult manufacturers or *National Commercial and Industrial Insulation Standards*, 1999, 5th Edition, Midwest Insulation Contractors Association (MICA). Dimensions in Table 2, (previous page), are established by ASTM C 1290 and should be used when cutting duct wrap insulation so that, once installed, it is not compressed to less than 75% of nominal (out-of-package) thickness.

About NAIMA

NAIMA is the association for North American manufacturers of fiber glass, rock wool, and slag wool insulation products. Its role is to promote energy efficiency and environmental preservation through the use of fiber glass, rock wool, and slag wool insulation, and to encourage the safe production and use of these materials.

In May, 1999, NAIMA began implementing a comprehensive voluntary work practice partnership with the U. S. Occupational Safety and Health Administration (OSHA). The program, known as the Health and Safety Partnership Program, or HSPP, promotes the safe handling and use of insulation materials and incorporates education and training for the manufacture, fabrication, installation, and removal of fiber glass, rock wool, and slag wool insulation products.

For more information, contact: NAIMA

44 Canal Center Plaza, Suite 310
Alexandria, VA 22314
Phone: 703-684-0084
Fax: 703-684-0427
www.naima.org

For additional information on fibrous glass duct wrap, contact one of the manufacturers listed below.

CertainTeed Corp.
P. O. Box 860
Valley Forge, PA 19482
800-233-8990

Johns Manville
P. O. Box 5108
Denver, CO 80217
800-654-3103

Knauf Insulation
One Knauf Drive
Shelbyville, IN 46176
800-825-4434

Owens Corning
One Owens Corning Parkway
Toledo, OH 43659
800-GET-PINK

Short Form Field Inspection Check List		YES	NO
<i>(Refer to MICA Commercial & Industrial Insulation Standards for details)</i>			
Is duct system operating within the temperature range for which duct wrap insulation is rated (40°F – 250°F, or 4°C – 121°C)?	<input type="checkbox"/>	<input type="checkbox"/>	
Has the material with the proper R-value required for energy conservation or condensation control been selected?	<input type="checkbox"/>	<input type="checkbox"/>	
Were all joints in ductwork tightly sealed before applying duct wrap insulation?	<input type="checkbox"/>	<input type="checkbox"/>	
Is duct wrap certified to comply with ASTM C 1290?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the duct wrap insulation's installed R-value clearly printed on the facing?	<input type="checkbox"/>	<input type="checkbox"/>	
Are all seams properly stapled with outward clinching staples every 6 in. (150 mm) or tacked using tape across seam?	<input type="checkbox"/>	<input type="checkbox"/>	
When a vapor retarder is required, are seams tightly taped with pressure-sensitive tape or sealed with glass fabric and mastic?	<input type="checkbox"/>	<input type="checkbox"/>	
Was correct stretch-out dimension used so wrap is not excessively compressed?	<input type="checkbox"/>	<input type="checkbox"/>	
If rectangular ducts are 24 in. (600 mm) wide or greater, is duct wrap secured to bottom of duct with mechanical fasteners to prevent sagging of insulation?	<input type="checkbox"/>	<input type="checkbox"/>	