



DUCT INSULATION – SOFTR® DUCT WRAP FRK

General Specification Guide **SECTION 23 07 13**

GUIDE SPECIFICATIONS

PROJECT ENGINEER RESPONSIBILITY: This is a general specification guide, intended to be used by experienced construction professionals, in conjunction with good construction practice and professional judgment. This guide is to aid in the creation of a complete building specification that is to be fully reviewed and edited by the engineer. Sections of this guide should be included, edited, or omitted based on the requirements of a specific project. It is the responsibility of both the specifier and the purchaser to determine if a product or system is suitable for its intended use. Neither Owens Corning, nor any of its subsidiary or affiliated companies, assume any responsibility for the content of this specification guide relative to actual projects and specifically disclaim any and all liability for any errors or omissions in design, detail, structural capability, attachment details, shop drawings or other construction related details, whether based upon the information provided by Owens Corning or otherwise.

SECTION 23 07 13

DUCT INSULATION

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes: Provide fibrous glass thermal insulation wrap on sheet metal ducts for residential and commercial air duct systems.

Note to Specifier: The following temperature ranges are typical for these systems. However, if project requirements call for service temperatures outside the ranges listed, consult the manufacturer's published data to determine operating temperature limitations of the insulation product or products under consideration.

1. Air duct systems operating at internal air velocities not exceeding rated duct liner limitations as listed below, and internal air temperatures not exceeding 250°F (121°C).

1.2 REFERENCES

- A. Materials shall meet the requirements of one or more of the following specifications as applicable to the specific product or end use:

1. American Society for Testing and Materials (ASTM):
 - a. ASTM C1136, Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
 - b. ASTM C1290, Standard Specification for Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts.
 - c. ASTM C1338, Test Method for Determining Fungi resistance of Insulation Materials and Facings
 - d. ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
2. Underwriters Laboratories (UL)
 - a. UL 723, Test for Surface Burning Characteristics of Building Materials.
3. National Fire Protection Association (NFPA):
 - a. NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems.
 - b. NFPA 90B, Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.

1.3 SUBMITTALS

- A. Product Data: Submit product characteristics, performance criteria, and limitations, including installation instructions, for each type of product indicated.
1. For sealants, submit documentation including printed statement of VOC content.
- B. Sustainable Design Submittals: Submit manufacturer's sustainable design certifications as specified.

1.4 DELIVERY AND STORAGE OF MATERIALS

- A. Delivery: Deliver materials in manufacturer's original packaging.
- B. Storage: Store and protect products in accordance with manufacturer's instructions. Store in a dry indoors location. Protect insulation materials from moisture and soiling.
- C. Do not install insulation that has been damaged or wet. Remove it from jobsite.



PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Owens Corning Insulating Systems, LLC, Toledo, OH 43659; www.owenscorning.com.

2.2 DUCT INSULATION

- A. General:
 - 1. Duct Wrap: Resin bonded fibrous glass blanket with a damage-resistant, flame retardant, reinforced aluminum foil (FRK) facing.
 - 2. Owens Corning SOFTR® Duct Wrap insulation is not known to contain penta-, octa-, or deca-brominated diphenyl flame retardant substances, such as deca-Bromine (deca-BDE).
- B. Certifications:
 - 1. SOFTR® Duct Wrap is GREENGUARD Indoor Air Quality Certified® and GREENGUARD Gold Certified.
 - 2. SOFTR® Duct Wrap is certified by SCS Global Services to contain a minimum of 53% recycled glass content, 31% pre-consumer and 22% post-consumer.
 - 3. UL labeled upon request.
- C. Duct Wrap Insulation: ASTM C1290, Type III, to maximum service temperature of 250°F (121°C), and ASTM C1136, Type II, facing material. Provide the following:
 - 1. Acceptable Product: Owens Corning® SoftR® Duct Wrap FRK.
 - a. Type 75: 0.75 lb./cu.ft. (12 kg/m³) density: 1-1/2 in, 2 in, 2.2 in or 3 in (38mm, 51mm, 56mm or 76mm) thick
 - b. Type 100: 1.0 lb./cu.ft. (16 kg/m³) density: 1-1/2 in or 2 in (38mm or 51mm) thick
 - c. Type 150: 1.5 lb./cu.ft. (24 kg/m³) density: 1-1/2 in or 2 in (38mm or 51mm) thick
 - 2. The duct wrap insulation shall consist of a blanket of glass fibers factory-laminated to a foil reinforced kraft (FRK) vapor retarder facing with a 2 in. (50mm) (min.) stapling and taping flange on one edge.
 - 3. When installed in accordance with recommended installation procedures, duct wrap insulation shall provide installed R-values as shown in Table 1 below.

2.3 ACCESSORY MATERIALS

- A. Accessories: Provide accessories per duct insulation system manufacturer's recommendations, including the following:
 - 1. Pressure sensitive tape.
 - 2. Staples and fasteners.
 - 3. Vapor retarders

Part 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that materials and accessories can be installed in accordance with Contract Documents and material manufacturers' recommendations.
- B. Verify, by inspecting product labeling, submittal data, and/or certifications which may accompany the shipments, that materials and accessories to be installed on the project comply with applicable specifications and standards and meet specified thermal and physical properties.
- C. Before starting work under this section, carefully inspect the site and installed work of other trades and verify that such work is complete to the point where installation of materials and accessories under this section can begin.

3.2 Safety Precautions

- A. Insulation contractor's employees shall be properly protected during installation of insulation. Protection shall include proper attire when handling and applying insulation materials, and shall include, but not be limited to, disposable dust respirators, gloves, hard hats, and eye protection.

3.3 PREPARATION

- A. Ensure that surfaces over which insulation is to be installed are clean and dry. Ensure that air ducts are tightly sealed at joints and seams.



3.4 INSTALLATION

- A. Completely cover duct designated to receive duct wrap.
- B. To ensure installed thermal performance, duct wrap insulation shall be cut to “stretch-out” dimensions as shown in Table 2 below.
- C. Remove a 2 in. (50mm) piece of insulation from the facing at the end of the piece of duct wrap to form an overlapping stapling and taping flap.
- D. Install duct wrap insulation with foil facing outside so that the tape flap overlaps the insulation and facing at the other end of the piece of duct wrap. Tightly butt adjacent sections of duct wrap insulation with the 2 in. (50mm) stapling and taping flap overlapping. If ducts are rectangular or square, install so insulation is not excessively compressed at corners. Staple seams approximately 6 in. (150mm) on center with 1/2 in. (13mm) (min.) steel outward clinching staples.
- E. Seal seams and joints with pressure-sensitive tape matching the insulation facing (either plain foil, FRK backing stock, or aluminized Mylar) or with glass fabric and mastic. Tightly butt adjacent sections of duct wrap with the 2 in. (50mm) tape flap overlapping.
 - 1. Do not use cloth duct tape of any color or finish, using reclaimed rubber adhesives (example: gray duct tape) is not recommended for use on duct wrap insulation.
 - 2. Do not use adhesives to prevent insulation sagging.
- F. Where rectangular ducts are 24 in. (600mm) in width or greater, also secure duct wrap insulation to the bottom of the duct with mechanical fasteners such as pins and speed clip washers, spaced on 18 in. (425mm) centers (maximum) to prevent sagging of insulation.
- G. Where a vapor retarder is required, seal tears, punctures and other penetrations of the duct wrap facing using one of the above methods to provide a vapor tight system.

3.5 FIELD QUALITY ASSURANCE

- A. Upon completion of insulation work and before operation is to commence, visually inspect the work and verify that it has been correctly installed.
- B. Open all system dampers and turn on fans to blow all scraps and other loose pieces of material out of the duct system. Allow for a means of removal of such material.
- C. Check the duct system to ensure that there are no air leaks through joints.

3.6 PROTECTION

- A. Replace damaged insulation, which cannot be satisfactorily repaired, including insulation with duct liner damage and moisture-saturated insulation.
- B. The insulation contractor shall advise the general and/or the mechanical contractor as to requirements for protection of the insulation work during the remainder of the construction period, to avoid damage and deterioration of the finished insulation work.



APPENDIX

TABLE 1: INSTALLED THICKNESSES AND R-VALUES

NOMINAL THICKNESS, IN. (MM)	INSTALLED OUT-OF-PACKAGE R-VALUE*	THICKNESS, ** IN. (MM) R-VALUE*	INSTALLED
TYPE 75 - 0.75 PCF (12 KG/M3)			
1-1/2 (38)	5.0 (0.88)	1-1/8 (29)	4.2 (0.74)
2 (51)	6.7 (1.18)	1-1/2 (38)	5.6 (0.99)
2.2 (56)	7.4 (1.30)	1-5/8 (41)	6.0 (1.06)
3 (76)	10.0 (1.76)	2-1/4 (57)	8.3 (1.46)
TYPE 100 - 1.00 PCF (16 KG/M3)			
1-1/2 (38)	5.6 (0.99)	1-1/8 (29)	4.5 (0.79)
2 (51)	7.4 (1.30)	1-1/2 (38)	6.0 (1.06)
TYPE 150 - 1.50 PCF (24 KG/M3)			
1-1/2 (38)	6.0 (1.06)	1-1/8 (29)	4.8 (0.85)
2 (51)	8.0 (1.41)	1-1/2 (38)	6.4 (1.13)

* hr·ft²·°F/Btu (m²·°C/W) at 75°F (24°C) mean temperature.

** Assumes 25% compression of insulation.

TABLE 2: MATERIAL REQUIREMENTS TO ACHIEVE INSTALLED R-VALUE

NOMINAL THICKNESS, IN. (MM)	INSTALLED THICKNESS, IN. (MM)	ROUND AND OVAL DUCTS	SQUARE AND RECTANGULAR DUCTS
1-1/2 (38)	1-1/8 (29)	P + 9-1/2 (P + 240)	P + 8 (P + 205)
2 (51)	1-1/2 (38)	P + 12 (P + 305)	P + 10 (P + 255)
2.2 (56)	1-5/8 (41)	P + 13 (P + 330)	P + 11 (P + 280)
3 (76)	2-1/4 (57)	P + 17 (P + 430)	P + 14-1/2 (P + 370)

P = measured duct perimeter

END OF APPENDIX