

*NIU Design and Construction Standards*

*Division 23 0713 – Ductwork Insulation*

November 2013, Rev 00

**23 0713 – Ductwork Insulation**

PART 1.

1.01

GENERAL

Section Includes

A. Ductwork Insulation

B. Insulation Jackets

1.02

References

A.

IECC; International Energy Conservation Code 2012, C403.2.7

B.

ASHRAE Standard 90.1, 2010 – Energy Standard for Buildings; Tables 6.8.2A and 6.8.2B

C.

ANSI/ASTM C553 - Mineral Fiber Blanket and Felt Insulation.

D.

ANSI/ASTM C612 - Mineral Fiber Block and Board Thermal Insulation.

E.

ASTM E84 - Surface Burning Characteristics of Building Materials.

F.

ASTM E136 - Standard Test Method for the Behavior of Materials in a Vertical Tube Furnace at 750º C.

G.

ASTM E814 - Fire Tests of Through Penetrations Firestops.

H.

ASTM E2336-04 – Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems.

I.

National Commercial & Industrial Insulation Standards - 1999 Edition - as published by Midwest Insulation Contractors Association and endorsed by National Insulation Contractors Association.

J.

NFPA 96 - Standard for the Installation of Equipment for Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment.

K.

NFPA 255 - Surface Burning Characteristics of Building Materials.

L.

UL - XHEZ - Through Penetration Firestop Systems.

M.

UL 263 - Full Scale External Fire Tests with Hose Stream.

N.

UL 723 - Surface Burning Characteristics of Building Materials.

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O. UL 1479 - Fire Tests of Through Penetrations Firestops.

1.03

Quality Assurance

A.

Applicator: Company specializing in ductwork insulation application with five years minimum experience. When requested, installer shall submit manufacturer’s certificate indicating qualifications.

B.

Materials: UL listed in Category HNKT; flame spread/smoke developed rating of 25/50 in accordance with ASTM E84, NFPA 255, or UL 723.

C.

Adhesives: UL listed, meeting NFPA 90A/90B requirements.

1.04

Submittals

A. Submit shop drawings including product description, list of materials and thickness for each service, and location.

B. Submit manufacturer's installation instructions.

PART 2.

PRODUCTS

2.01

Materials

A. Type A: Flexible Fiberglass - Outside Wrap; ANSI/ASTM C553; commercial grade; 0.28 maximum 'K' value at 75°F; foil scrim Kraft facing, 1.0 lb./cu. ft. density. Type 100, ASTM C 1136, Type II, AP (all Purpose) Facing, or FSK (Foil-Scrim-Kraft) Facing.

B. Type B: Semi-rigid Fiberglass Board Wrap – Outside Application; ANSI/ASTM C612, Class 1; 0.25 maximum ‘K’ value at 75ºF; 3lb/cubic ft. density. FSK or ASJ as specified by A&E Services.

2.02

Jackets

A. Vapor Barrier Jackets: Kraft reinforced foil scrim vapor barrier with self-sealing adhesive joints. Beach puncture resistance ratio of at least 25 units. Tensile strength: 35 psi minimum. Single, self-seal acrylic adhesive on longitudinal jacket laps and butt strips.

PART 3.

EXECUTION

3.01

Installation

A. Install materials in accordance with manufacturer's instructions, codes, and industry standards.

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B.

Install materials after ductwork has been tested.

C.

Clean surfaces for adhesives.

D.

Provide insulation with vapor barrier when air conveyed may be below ambient temperature.

E.

Exterior Duct Wrap - Flexible, Type A:

1.

2.

Apply with edges tightly butted.

Cut slightly longer than perimeter of duct to insure full thickness at corners. Do not wrap excessively tight.

Seal butt joints with adhesive backed tape.

Apply so insulation conforms uniformly and firmly to duct.

Provide high-density insulation inserts at trapeze duct hangers and straps to prevent crushing of insulation. Maintain continuous vapor barrier through the hanger.

Tape all joints with Royal Tapes #RT 350 (216-439-7229), Venture Tape 1525CW, or Compac Type FSK. No substitutions will be accepted without written permission from the Architect/Engineer.

Press tape tightly to the duct covering with a squeegee for a tight continuous seal. Fish mouths and loose tape edges are not acceptable.

All laps must be stapled or stitched and covered with tape. Vapor barrier must be continuous.

Mechanically fasten on 12" centers at bottom of ducts over 24" wide and on all sides of vertical ducts.

3.

4.

5.

6.

7.

8.

9.

10.

F. Continue insulation with vapor barrier through penetrations unless code prohibits.

G. Provide 2" wide, 24" high, 26 gauge, galvanized sheet metal corner protection angles for all externally insulated ductwork extending to a floor or curb.

3.02

Duct and Plenum Insulation schedule, IECC C403.2.7

A. Provide duct insulation on new and existing remodeled ductwork in the following schedule as approved by A&E Services:

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**Service**

**Insulation Type**

**Jacket**

**“R” Value**

**Insulation Thickness**

Outside Air duct

Rigid fiberglass

FSK/ASJ

R-8

2”

Mixed Air duct

Rigid fiberglass

FSK/ASJ

R-6

2”

Exposed Supply duct

Rigid fiberglass

FSK/ASJ

R-6

2”

Concealed Supply duct

Rigid fiberglass

FSK/ASJ

R-6

2”

Exhaust and relief ducts

Rigid fiberglass

FSK/ASJ

R-6

2”



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End of Division 23 0713

**This section of the NIU Design and Construction Standards establishes minimum**

**requirements only.**

**It should not be used as a complete specification.**

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Heat Recovery units

Rigid fiberglass

FSK/ASJ

R-6

2”

Circular duct, hidden

Flexible

FSK only

R-6

2”