

BUILDING PRODUCTS LISTING PROGRAM

Class: Mineral-fiber Fireproofing Materials – Ventilation Ducts

Customer: CL4 Inc.
Location: Kemptville, Ontario Canada
Website: <https://www.cl4fire.com>
Listing No. F405-1-1
Effective Date: January 6, 2012
Last Revised: January 30, 2021
Expires: N/A

Products: CL4Fire Blue Label Mineral-fiber Fireproofing Insulation
 CL4Fire Red Label & CL4Fire Code 96 Mineral-fiber Fireproofing Insulation

Standard(s): CAN/ULC S102 “Standard Method of Test for Surface Burning Characteristics of building Materials and Assemblies.”
 ISO 6944 “Fire Resistance Tests – Ventilation Ducts”

Model/Ratings: CL4Fire products have surface burning characteristics determined in accordance with CAN/ULC S102 as outlined below.

Product	Thickness Inches (mm)	Nominal Density lbs/ft ³ (kg/m ³)	Flame Spread Index	Smoke Developed Index
CL4Fire Blue Label	1 ½ (38 mm)	8 (128)	10	10
CL4Fire Red Label	1 ½ (38 mm)	6 (96)	10	10
CL4FIRE Code 96*	1 ½ (38 mm)	6 (96)	10	10

Note: CL4Fire Code 96 follows all the same installation requirements as CL4Fire Red Label but has an integral wire mesh per NFPA 96 4.2.3.2 for added support.

CL4Fire Ventilation Duct Ratings for Use in ISO 6944 Required Assemblies

Design:	Product	Installation	Minimum Thickness inches (mm)	Nominal Density lbs/ft ³ (kg/m ³)	Fire Rating Achieved Hours
F405-1B1.5-FRD-60	CL4Fire Blue Label	1 Layer Compressed Butt Joint	1 ½ (38)	8 (128)	1
F405-1B1.5-FRD-120		1 Layer Minimum 3 inch (76 mm) Joint Overlap	1 ½ (38)	8 (128)	2
F405-1R1.5-FRD-60	CL4Fire Red Label & CL4Fire Code 96	1 Layer Compressed Butt Joint	1 ½ (38)	6 (96)	1
F405-1R1.5-FRD-120		1 Layer Minimum 3 inch (76 mm) Joint Overlap	1 ½ (38)	6 (96)	2

Limitations:

CL4Fire is limited for use to ventilation ducts of the following:

- Maximum Duct Size: 2064 in² (13,316 cm²) with maximum 86 in. (218 cm) dimension.
- Minimum duct gauge of 22 gauge (0.64 mm).
- Ducting is limited to rectangular, square or circular cross-section.
- Ducting is to conform to Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) requirements.
- Product is to be installed per this listing.

Label(s):

Each product of CL4Fire is ink stamped with the following information:

- QAI Logo with “c” and “us” indicators.
- Manufacturer’s name or trademark.
- Country of manufacture.
- QAI file number (F405-1).
- Traceability information.

CL4FIRE

Fire Protection Thermal Insulation



QAI Listings
F405-1

**Installation:****Support Rods & Cradles:**

Hanging supports must be installed per SMACNA guidelines with the following:

Minimum ½ inch. (13 mm) steel threaded rod with either of the following:

- Steel angle – 2 inch x 2 inch x 3/16 inch (51 mm x 51 mm x 5 mm).
- Unistrut P2000 channel – 2 inch x 3/16 inch (51 mm x 5 mm).

Support rods to be anchored to concrete using pass thru method with a nut & washer on the top of the concrete slab, or by using suitable carbon or stainless steel masonry anchors penetrating a minimum 50mm (2”) depth into the concrete slab.

No additional protection is required for hanger systems

*NOTE: If desired, it is acceptable to encase the cradle support assembly along with the duct within the *CL4Fire (blue) or *CL4FIRE (red) insulation (i.e.: cocoon wrap) during*

the installation. A slit is allowed in the duct wrap in order to position around the threaded rod. Slit must be repaired and sealed using a minimum depth of 6mm sealant with a bead also placed around the circumference of the support rod.

Fastening Methods:

Standard Banding Method:

- All cut ends of insulation to be repaired with aluminum tape.
- Seams installed either by snugly fitting the seams together or by sealing any maximum ¼ inch (6 mm) wide voids in the insulation seams with minimum of ½ in (13 mm) depth of sealant.
- Pinning is required on the underside of CL4FIRE exposed ductwork joints for duct. Pins are required within 1 ½ inch (38 mm) from both sides of CL4FIRE longitudinal seam.
- Additional pins may be added to increase the integrity of the installation.
- Center pins between steel banding with a 12 inch (305 mm) maximum distance between pins on the bottom of the ductwork and maximum of 12 inch (305 mm) between the side of the duct and the first row of pins. Note: Maximum 18 inch (460 mm) space is allowed between the edge of the duct and the first row of pins when not located on the bottom side of a horizontal duct.

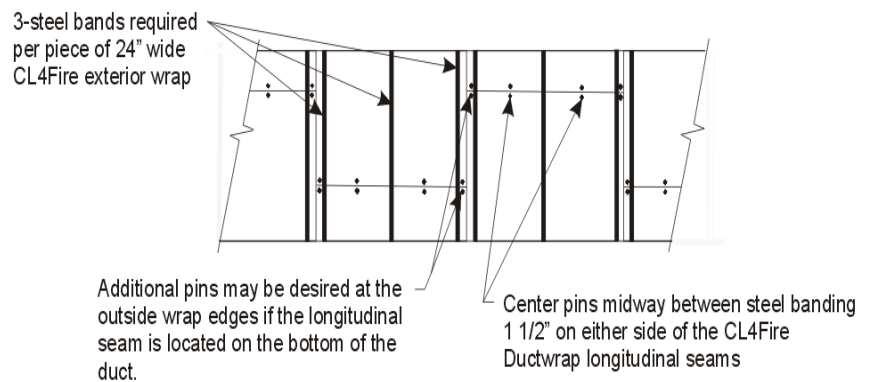


Figure 1: Pinned and Banded Detail

Detail when longitudinal seam is located on bottom of duct:

- 1-1/2 inch (38 mm) long x 1/8 (3 mm) copper coated steel insulation pins or Cup-Head Weldpins® required to be stud welded on bottom side of a horizontal duct. Pins are to be located a maximum 8 inches (203 mm) from edge of duct and on maximum 12 inch (305 mm) centers in 2 rows per 24 (610 mm) wide CL4FIRE installed section. Pins are centered between banding on each individual wrap section – See standard installation method pinning detail).

Note: No pins are required between the circumference seaming bands other than at the longitudinal joint. Additional pins may be installed to enhance the integrity of the CL4FIRE duct wrap installation.

CL4FIRE insulation to be impaled on pins and held in place with speed clips.

Alternatively, ductwrap may be installed prior to pinning with Cup-Head Weldpins®.

CL4FIRE ductwrap is held in place by banding the insulation around the duct approximate

1½ inch (38 mm) on both sides of the seam and in the center of the CL4FIRE wrap layer.

Approved aluminum tape along seams is optional.

Pinned Only Method:

Requires one (1) layer of CL4FIRE ductwrap:

- At seams a minimum overlap of 3 inches (76 mm) are required where 2-hour ventilation air duct systems are needed.
- At seams, compressed seams are required where 1-hour ventilation air duct systems are needed.

All cut ends of insulation are required to be repaired with approved aluminum tape.

Seams are installed snugly fitted or by sealing any max. ¼ inch (6 mm) wide voids in the seams with a minimum of ½ inch (13 mm) depth of the approved sealants (refer to the Raw Materials Section).

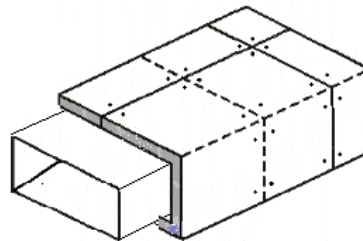


Figure 2: Pinned only Detail

Detail when longitudinal seam is located on bottom of duct:

- 1-1/2 inch (38 mm) long x 1/8 (3 mm) copper coated steel insulation pins or Cup-Head Weldpins® required to be stud welded on bottom side of a horizontal duct. Pins are to be located a maximum 8 inches (203 mm) from edge of duct and on maximum 12 inch (305 mm) centers in 2 rows per 24 (610 mm) wide CL4FIRE installed section. Pins are centered between banding on each individual wrap section – See standard installation method pinning detail).

Note: No pins are required between the circumference seaming bands other than at the longitudinal joint. Additional pins may be installed to enhance the integrity of the CL4Fire duct wrap installation.

CL4FIRE insulation to be impaled on pins and held in place with speed clips.

Alternatively, ductwrap may be installed prior to pinning with Cup-Head Weldpins®.

CL4FIRE ductwrap is held in place by banding the insulation around the duct approximately 1½ inch (38 mm) on both sides of the seam and in the center of the CL4FIRE wrap layer.

Approved aluminum tape along seams is optional.

Gypsum Shaft Transitions (if required):

Should a transition be required from a gypsum shaft system to a CL4FIRE ventilation assembly, the annular space around the duct and the shaft must be filled with a

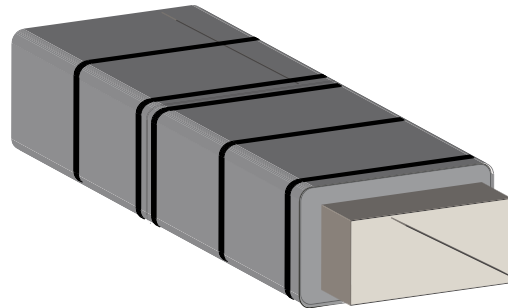
minimum of 4 inches (100 mm) depth of CL4FIRE insulation, and topped with a ¼ inch (6 mm) depth of approved sealant flush with the surface of the gypsum.

DESIGN NUMBER:

**F405-B1.5-FRD-60
F405-R1.5-FRD-60
1-Hour ISO 6944 Rated Ventilation System**

The following CL4FIRE™ ventilation air duct fire protection thermal insulation system maintained 1 hour resistance for use with ventilation ducts per ISO 6944:

- One-layer of CL4FIRE™ ‘Blue’ Label – 8 PCF - 1-1/2”
- One-layer of CL4FIRE™ ‘Red’ Label – 6 PCF - 1-1/2”



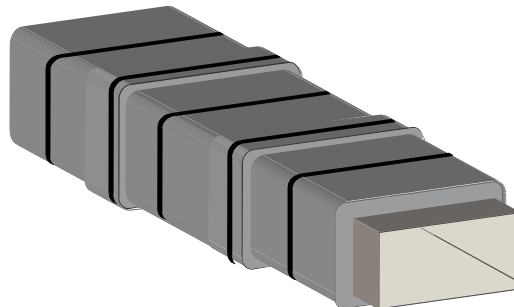
Single Layer System with butt joint Installation

The steel duct shall be wrapped using tightly butted seams, with minimum ½ inch (13mm) total joint compression, totaling for 24 inches width wrap an installed width of 23.5 inch (597 mm).

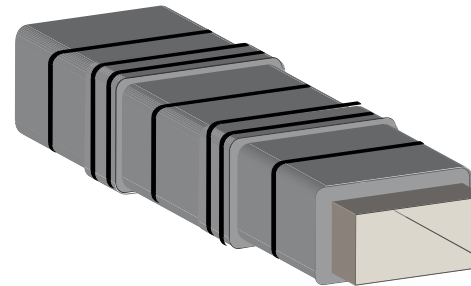
Alternatively, Designs F405-B1.5-FRD-120 and F405-R1.5-FRD-120 can be used where 1 hour endurance per ISO 6944 is required.

**F405-B1.5-FRD-120
F405-R1.5-FRD-120
2-Hour ISO 6944 Rated Ventilation System**

The following CL4FIRE™ ventilation air duct fire protection thermal insulation system maintained 1 hour resistance for use with ventilation ducts per ISO 6944:



Single Layer System with 3 inch (76 mm) Seam Overlap Installation



Single Layer System with 6 inch (152 mm) Collar and

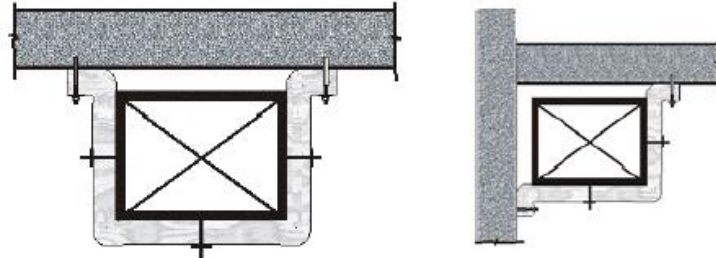
The steel duct shall be wrapped with any of the above noted 2 hour duct wrap systems installed in a telescope, checkerboard, or butt-joint-and-6 inch (152 mm) wide collar, with (76 mm) transverse and longitudinal overlaps, in accordance with the manufacturer's inste

instructions. Product can be fastened with either CL4FIRE™ Standard or Pinned Only fastening method (shown above). All cut edges and ends shall be sealed with approved 3 (76 mm) wide pressure sensitive aluminum foil tape.

Note: When encountering ductwork flanges using the butt seam and collar method it is not required to have the base layer of CL4FIRE insulation cover the top of the flange. It is only required that ductwork flange locations have the base layer of CL4FIRE insulation snugly butted against both sides of the flange and the 6 inch (152 mm) wide CL4FIRE collar installed over the flange.

CL4FIRE 2 or 3 Sided Installation:

Pinning Only Method



Installation

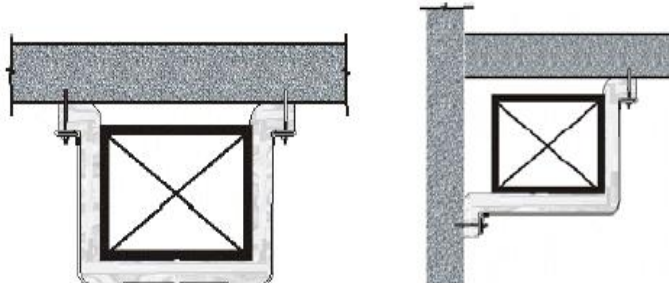
- Requires CL4FIRE ductwrap insulation to be installed in accordance with the instructions shown in 'Pinning Only' Method.
- Duct to be located a maximum of 4 inches (102 mm) from the floor or wall assembly.

Fastening

Install Pinning only pins (or alternatively pin both sides of seam as outlined in CL4FIRE 'Pinning Only' Method) on exposed sides of duct and install CL4FIRE insulation using instructions shown in 'Pinning Only' Method.

Overlap both layers of CL4FIRE ductwrap insulation over concrete by minimum of 3 inch (76 mm) and fasten using min 1 ¼ inches (32 mm) OD fender washers over a minimum ¼ inch (6 mm) diameter steel concrete anchor inserted a minimum of 1 ½ inch (38 mm) in concrete slab spaced a maximum of 8 inches (203 mm) apart.

Banding Method



Installation

Requires the CL4FIRE ductwrap insulation to be installed in accordance with the instructions shown in 'Standard Banding' Method

Duct to be located a maximum of 4 inches (100 mm) from the floor or wall assembly.

Fastening

Install pins on exposed sides of duct (if required) and install CL4FIRE insulation using instructions shown in CL4FIRE 'Standard Banding' Method.

Overlap CL4FIRE insulation over the concrete by a minimum of 3 inches (76 mm).

Anchor with a continuous length of minimum 3/16 inches (5 mm) x 1 1/2 inches (38 mm) w steel flat bar over flared ends of the wrap material and fasten using min. 1 1/4 inches (32 mm OD fender washers over a minimum 1/4" diameter steel concrete anchors inserted a minimum of 1 1/2 inches (38 mm) into the concrete slab spaced a maximum of 8 inches (203 mm) apart.

Banding to be installed over the wrapped duct with ends looped around the steel flat bars, tightened and clipped as required.

CL4FIRE fire protection thermal insulation is to be installed essentially to the requirement: CL4FIRE 'Standard Banding' Method.

CL4FIRE Ductwrap through wall penetration:

See listing F405-1-3 for Through Penetration Firestop Systems approved for use with CL4Fire products.

NOTES:

Final acceptance of the product in the intended application is to be determined by the authority having jurisdiction.

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