



CL4FIRE Listed System: F405-1-1

Ventilation Duct Insulation System

ISO 6944 "Fire resistance tests - Ventilation ducts"
Fire Resistance Ratings of 1 & 2-hours for Stability, Integrity & Insulation

*Note - 1 Hour rating is with seams snugly butted. 2 hour rating is with a 3" overlap at seams.



General Product Assembly:

Maximum Size of Ventilation Air Duct System

- Maximum 13,316 sq. cm. (2064 sq. inch) duct
- Maximum single dimension of 2184mm (86")
- Ductwork can be Rectangular, Square, or Round Air Duct
- Complying with Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) requirements

Support Rods & Cradles

Hanging supports must be installed per SMACNA

- guidelines with the following: Minimum 10mm (3/8") steel threaded rod with either of the following:
 - Steel angle - 51mm x 51mm x 5mm (2" x 2" x 3/16") or Unistrut P2000
 - channel - 51mm x 5mm (2" x 3/16")
- 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 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" wide voids in the insulation seams with minimum of ½" depth of sealant
- Pinning is required on the underside of CL4FIRE exposed ductwork joints for ducts. Pins are required within 1 ½" 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" maximum distance between pins on the bottom of the ductwork and maximum of 12" between the side of the duct and the first row of pins. Note: Maximum 18" 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

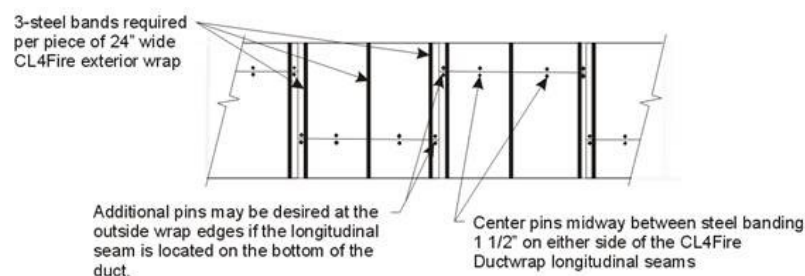


Figure 1: Pinned and Banded Detail

Detail when longitudinal seam located on bottom of duct:

- 1-1/2" long x 1/8" 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" from edge of duct and on maximum 12" centers in 2 rows per 24" 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.

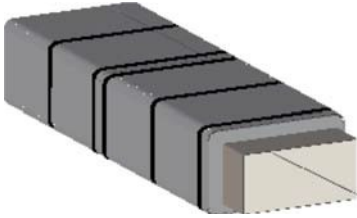
- CL4FIRE insulation to be impaled on pins and held in place with speed clips
- Alternatively, ductwrap may be installed prior to pinning with Cup-Head Weldpins®.
- CL4FIRE ductwrap is held in place by banding the insulation around the duct approx. 1 ½" on both sides of the seam and in the center of the CL4FIRE wrap layer.
- No aluminum tape is required on seams, but it may be used for cosmetic reasons if desired.

Gypsum Shaft Transition (if required)

- Should a transition be required from a gypsum shaft system to a CL4FIRE Fire Protection Thermal Insulation installation the annular space around the duct and the shaft must be filled with a minimum of 102mm (4") depth of CL4FIRE insulation and topped with a 6mm (1/4") depth of sealant flush with the surface of the gypsum.

1-Hour Fire-Rated Ductwrap System

The following CL4FIRE™ ventilation air duct fire protection thermal insulation system achieves a 1 hour fire resistance rating:



Single Layer System with butt joint Installation

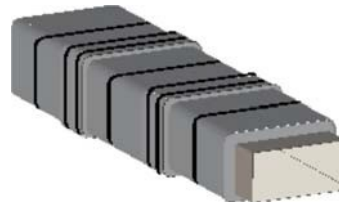
The steel duct shall be wrapped using tightly butted seams (minimum 1/2" total joint compression so 24" wide wrap installs to a maximum dimension of 23 1/2") or alternatively using any 2-hour listed system installation with either CL4FIRE™ Standard or Pinned Only fastening method (shown above). All cut edges and ends shall be sealed with 76 mm (3") wide pressure sensitive aluminum foil tape.

2-Hour Fire-Rated Ductwrap System

The following CL4FIRE™ ventilation air duct fire protection thermal insulation systems achieve a 2 hour fire resistance rating:



Single Layer System with 76mm (3") overlap Installation



Single Layer System with butted joints and 152mm (6") Collar over circumferential butted seam Installation

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-152mm (6") wide collar, with 76 mm (3") transverse and longitudinal overlaps, in accordance with the manufacturer's installation 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 76 mm (3") 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 152mm wide CL4FIRE collar installed over the flange.

Pinned Only Method

- Requires one (1) layer of CL4FIRE ductwrap overlapped a minimum of 3" at the seams for up to a 2-hour ventilation air duct systems and snugly butted at the seams for a 1-hour ventilation air duct systems.
- All cut ends of insulation to be repaired with aluminum tape.
- Seams are installed snugly fitted or by sealing any max. 1/4" wide voids in the seams with a minimum of 1/2" depth of the approved sealants (refer to the Raw Materials Section).

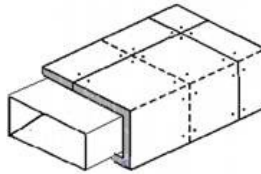
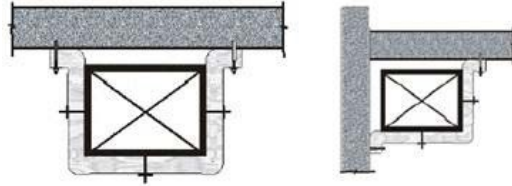


Figure 2: Pinned only Detail

- 1-1/2" long x 1/8" copper coated steel insulation pins or Cup-Head Weldpins®
- Pins are required on all sides of duct at max. 12" centers – max. 6" pin-free space from edge of ductwork is allowed.
- Install Cup-Head Weldpins® on both sides of the CL4FIRE ductwrap seam. Cup-Head Weldpins® must be located 3" apart (1 1/2" on either side of the CL4FIRE ductwrap seams).
- Longitudinal seams of the outside layer of wrap material require CL4FIRE Ductwrap Pinning Only pinning at max 12" centers and max. 2" from each edge the ductwrap material.
- No aluminum tape is required on seams, but it may be used for cosmetic reasons if desired.

**CL4FIRE Ductwrap '2 or 3'
Sided installation: Pinning Only
Method**



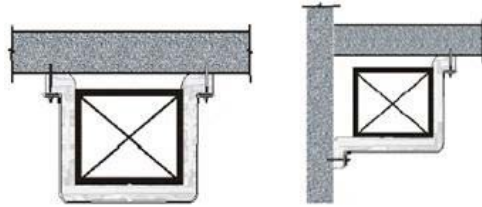
Installation

- Requires the CL4FIRE ductwrap insulation to be installed in accordance with the instructions shown in 'Pinning Only' Method
- Duct to be located a maximum of 4" 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 CL4FIRE ductwrap insulation over concrete by minimum of 3" and fasten using min 1 ¼" OD fender washers over a minimum ¼" diameter steel concrete anchor inserted a minimum of 1 ½" into concrete slab spaced a maximum of 8" 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" 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".
- Anchor with a continuous length of min. 3/16" x 1 ½" wide steel flat bar over flared ends of the wrap material and fasten using min. 1 ¼" OD fender washers over a minimum ¼" diameter steel concrete anchors inserted a minimum of 1 ½" into the concrete slab spaced a maximum of 8" 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 requirements of CL4FIRE 'Standard Banding' Method