



CL4FIRE Listed System: F405-1-4

Double layer Grease Duct Insulation System

ASTM E2336 - 04(2013) Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems

Noncombustibility Test (ASTM E 136) - Pass

Fire Resistance Test (ASTM E 119) - 2hr

Durability Test (ASTM C 518) - Pass

Internal Fire Test - 4 hr @ 500°F and 30 minutes @ 2000°F - Pass

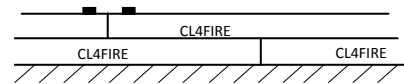
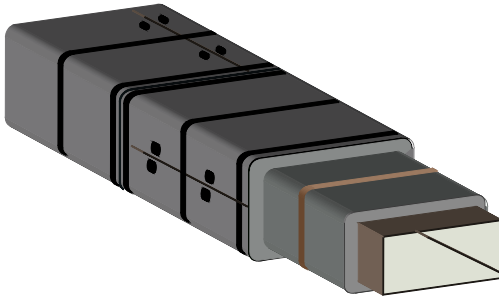
Fire-Engulfment Test (ASTM E 119 Exposure) - 2hr

CAN/ULC S144 "Standard Method of Fire Resistance Test -Grease Duct Assemblies"

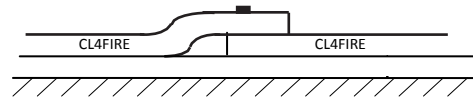
ISO-6944 Duct 'A' Standard

Fire Resistance Ratings of 1 & 2-hours for Stability, Integrity & Insulation

Rated for 0 inch clearance to combustibles



Duct Side (Butted Seam Detail)



Duct Side (Outside Layer Overlap Detail)

Product: CL4FIRE 6 pcf. density, 2-layers of of 38mm (1 1/2") for an overall thickness of 76mm (3") thick

Product Assembly:

Minimum 16 ga. Rectangular, Square or Round Steel Duct Complying with NFPA-96 requirements. Maximum 9663 sq. cm. (1296 sq. inch) duct with maximum single dimension of 983mm (36")

Support Rods & Cradles

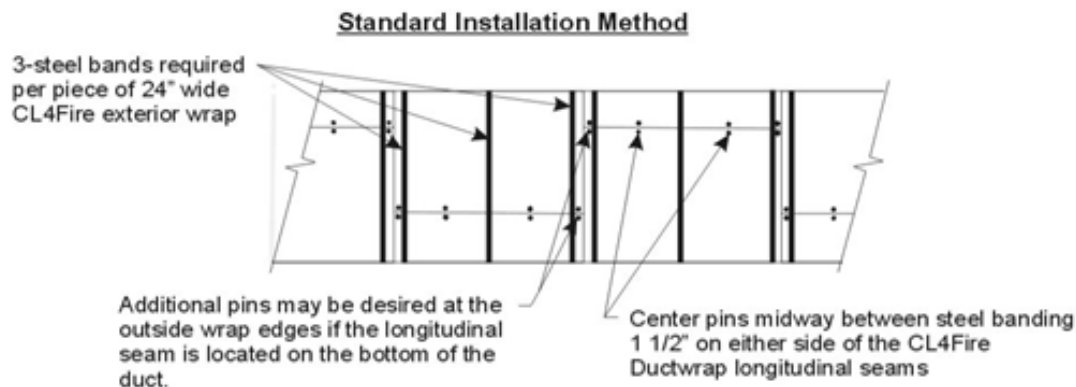
Hanging supports must be installed per SMACNA guidelines with the following:

- 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.

CL4FIRE Listed System: F405-1-4 for Double Layer Grease Ductwork Standard Banding Fastening 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. Alternately, seams on outside layer can be installed using 3" overlaps if desired.
- Pinning is required on the underside of CL4FIRE exposed ductwork joints for square or rectangular ducts 24" or larger. 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
- 1/2" wide banding to be installed within 1 1/2" on both sides of a circumferential butted seam or centred on an overlapped seam. Banding to be stainless steel for up to a 2-hour fire rating or carbon steel for up to a 1- hour fire rating. Banding to be spaced a maximum of 12" apart.
- 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.



Detail when longitudinal seam located on bottom of duct:

- 3" 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).

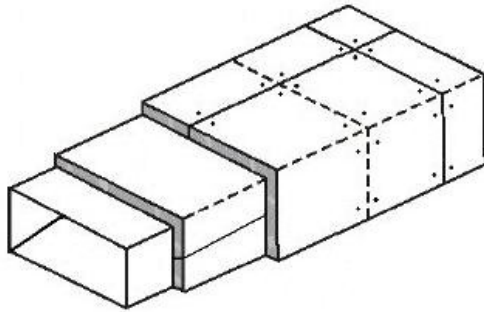
Note: No pins are required between the circumference seaming bands other than at the longitudinal joint. Additional pins may be installed to enhance the integrity of the CL4Fire duct wrap installation.

- 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. 1½" 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.

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.

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4-Sided Pinning Only Method



- All cut ends of insulation to be repaired with aluminum tape.
- Seams are installed snugly fitted or by sealing any max. ¼" wide voids in the seams with a minimum of ½" depth of the approved sealants (refer to the approved sealants Section).
- 3" 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 (1½" 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.

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.

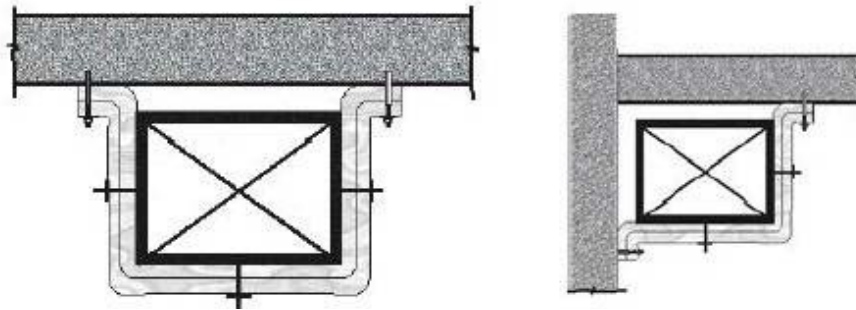
Approved Sealants:

- 3M Fire Barrier 1000 Silicone
- AD Fire Barrier Silicone
- Passive Fire Protection Partners 4800DW Sealant
- STi SIL300 Silicone Firestop Sealant
- STi SpecSeal® Series SSS Latex Intumescent Sealant
- STi SpecSeal® Series LCI Intumescent Sealant

Note: Equivalent sealants are acceptable, if they are tested and listed to CAN/ULC S115, ASTM E814-02 and UL 1479.

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



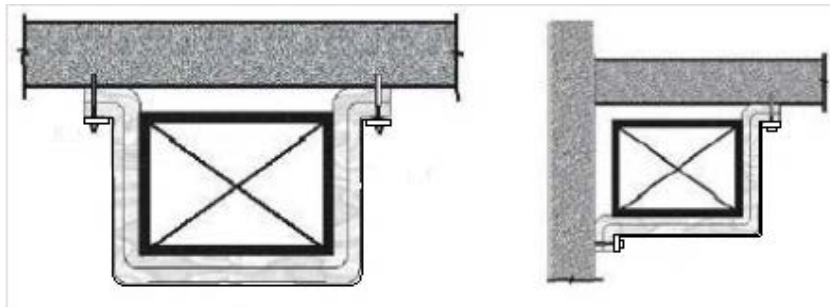
Installation

- 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 both layers of CL4FIRE ductwrap insulation over concrete by minimum of 3" and fasten using min 1 1/4" OD fender washers over a minimum 1/4" diameter steel concrete anchor inserted a minimum of 1 1/2" into concrete slab spaced a maximum of 8" apart.

CL4FIRE Ductwrap '2 or 3' Sided installation: 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 1/2" wide steel flat bar over flared ends of the wrap material and fasten using min. 1 1/4" OD fender washers over a minimum 1/4" diameter steel concrete anchors inserted a minimum of 1 1/2" 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 banding method.