

SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.1 DESCRIPTION

- A. Closures of openings in walls, floors, and roof decks against penetration of flame, heat, and smoke or gases in fire resistant rated construction.
- B. Closure of openings in walls against penetration of gases or smoke in smoke partitions.
- C. Firestop Systems to be HILTI.

1.2 RELATED WORK

1.3 SUBMITTALS

- A. Manufacturers literature, data, and installation instructions for types of firestopping and smoke stopping used.
- B. List of FM, UL, or WH classification number of systems installed.
- C. Certified laboratory test reports for ASTM E814 tests for systems not listed by FM, UL, or WH proposed for use.

1.4 DELIVERY AND STORAGE

- A. Deliver materials in their original unopened containers with manufacturer's name and product identification.
- B. Store in a location providing protection from damage and exposure to the elements.

1.5 WARRANTY

Firestopping work subject to the terms of the Article "Warranty of Construction", FAR clause 52.246-21, except extend the warranty period to five years.

1.6 QUALITY ASSURANCE

FM, UL, or WH or other approved laboratory tested products will be acceptable.

1.7 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):

E84-10.....Surface Burning Characteristics of Building
Materials

E814-11.....Fire Tests of Through-Penetration Fire Stops

C. Factory Mutual Engineering and Research Corporation (FM):

Annual Issue Approval Guide Building Materials

D. Underwriters Laboratories, Inc. (UL):

Annual Issue Building Materials Directory

Annual Issue Fire Resistance Directory

1479-10.....Fire Tests of Through-Penetration Firestops

E. Warnock Hersey (WH):

Annual Issue Certification Listings

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. HILTI Firestop Systems, Inc.

2.2 FIRESTOP SYSTEMS

A. Use either factory built (Firestop Devices) or field erected (through-Penetration Firestop Systems) to form a specific building system maintaining required integrity of the fire barrier and stop the passage of gases or smoke.

B. Through-penetration firestop systems and firestop devices tested in accordance with ASTM E814 or UL 1479 using the "F" or "T" rating to maintain the same rating and integrity as the fire barrier being sealed. "T" ratings are not required for penetrations smaller than or equal to 100 mm (4 in) nominal pipe or 0.01 m² (16 sq. in.) in overall cross sectional area.

C. Products requiring heat activation to seal an opening by its intumescence shall exhibit a demonstrated ability to function as designed to maintain the fire barrier.

D. Firestop sealants used for firestopping or smoke sealing shall have following properties:

1. Contain no flammable or toxic solvents.
2. Have no dangerous or flammable out gassing during the drying or curing of products.
3. Water-resistant after drying or curing and unaffected by high humidity, condensation or transient water exposure.

4. When used in exposed areas, shall be capable of being sanded and finished with similar surface treatments as used on the surrounding wall or floor surface.
- E. Firestopping system or devices used for penetrations by glass pipe, plastic pipe or conduits, unenclosed cables, or other non-metallic materials shall have following properties:
 1. Classified for use with the particular type of penetrating material used.
 2. Penetrations containing loose electrical cables, computer data cables, and communications cables protected using firestopping systems that allow unrestricted cable changes without damage to the seal.
 3. Intumescent products which would expand to seal the opening and act as fire, smoke, toxic fumes, and, water sealant.
- F. Maximum flame spread of 25 and smoke development of 50 when tested in accordance with ASTM E84.
- G. FM, UL, or WH rated or tested by an approved laboratory in accordance with ASTM E814.
- H. Materials to be asbestos free.

I. Firestop Selection Charts:

Through-Penetration

Base material	Penetrating item	Fire rating (F rating)	Hilti product used	System number	Maximum annular space	See page
> Blank Openings						
C	Blank Opening (Max. 6" diameter opening) (optional sleeve)	2 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-0090	*	58
G	Cable bundle (various cables) (0 to 100% visual fill)	1 or 2 hr	CP 653 Speed Sleeve	W-L-3334	*	135
> Metal Pipe						
C	Max. 10" steel or cast iron, max. 4" copper, steel conduit or EMT (includes Hollow Core Concrete)	3 hr	FS-ONE Intumescent Firestop Sealant (Top or underside)	C-AJ-1184	3-1/4"	60
C	Max. 30" steel, cast iron, max. 6" copper, steel conduit, or max. 4" EMT (optional sleeve)	3 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-1226	1-7/8"	61
C	Max. 4" steel, cast iron, copper, steel conduit, or EMT (optional sleeve)	2 or 3 hr	FS-ONE Intumescent Firestop Sealant or CP 604 Self-Leveling Firestop Sealant	C-AJ-1421	5-3/8"	62
C	Max. 30" steel, cast iron, max. 6" copper, steel conduit, or max. 4" EMT	3 hr	CP 604 Self-Leveling Firestop Sealant	C-AJ-1425	1-7/8"	63
C	Max. 8" steel or cast iron pipe, max. 4" copper pipe or tubing, max 6" steel conduit or max. 4" EMT (optional sleeve)	2 hr	CP 601S Elastomeric Firestop Sealant	C-AJ-1498	2"	64
C	Max. 6" steel, cast iron, copper, steel conduit, or max. 4" EMT (includes Concrete over Metal Deck)	2 hr	CP 680-P/M Cast-In Device	F-A-1016	*	90
C	Max. 30" steel, cast iron, max. 6" copper, steel conduit, or max. 4" EMT	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-J-1067	2-1/4"	113
G	Max. 30" steel, cast iron, max. 6" copper, steel conduit, or max 4" EMT	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-1054	2-1/4"	122
G	Max. 30" steel, cast iron, max. 6" copper, steel conduit, or max. 4" EMT (sleeved)	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-1164	1-7/8"	123
G	Max. 8" steel, cast iron, max. 6" steel conduit, max 4" copper or EMT (Shaft Wall)	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-1206	1-7/8"	124
W	Max. 6" steel, cast iron, steel conduit, max. 4" EMT, or max. 2" flexible steel conduit (Chase Wall Optional)	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	F-C-1059	3/4"	104
W	Max. 4" steel, cast iron, copper, conduit, or EMT	1 hr	CP 606 Flexible Firestop Sealant	F-C-1106	7/8"	105

* Refer to UL System.
C Concrete or concrete block
G Gypsum
W Wood

Base material	Penetrating Item	Fire rating (F rating)	Hilti product used	System number	Maximum annular space	See page
> Plastic and Glass Pipe						
C	Max. 10" PVC, CPVC, max. 6" FRPP or ABS (closed or vented) (optional sleeve)	2 or 3 hr	CP 643N/644 Firestop Collar	C-AJ-2109	*	65
C	Max. 4" PVC, ABS, CPVC or FRPP (closed or vented) (optional pipe coupling)	3 hr	CP 648-E Firestop Wrap Strip with Retaining Collar	C-AJ-2336	1/2"	67
C	Max. 3" PVC, ABS, or CPVC (closed or vented)	3 hr	CP 648-E/S Firestop Wrap Strip	C-AJ-2342	*	69
C	Max. 2" PVC, CPVC, rigid non-metallic conduit (RNC) or cross-linked polyethylene (PEX) tubing (closed or vented) (optional sleeve)	2 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-2567	*	71
C	Max. 6" PVC, CPVC, FRPP or ABS (closed or vented) (Hollow Core Concrete)	2 hr	CP 643N Firestop Collar	C-BJ-2021	1/2"	89
C	Max. 6" PVC, CPVC, FRPP, or ABS (closed or vented) (Concrete over Metal Deck)	2 hr	CP 643N Firestop Collar	F-A-2025	1-1/2"	93
C	Max. 6" PVC or CPVC (closed or vented) (includes Concrete over Metal Deck)	2 hr	CP 680-P Cast-In Device	F-A-2053	*	95
C	Max. 2" PVC or CPVC (closed or vented) (includes Concrete over Metal Deck)	2 hr	FS-ONE Intumescent Firestop Sealant	F-A-2058	1"	97
G	Max. 10" PVC, CPVC, ABS, FRPP, or max. 4" PVDF (closed or vented)	1 or 2 hr	CP 643N / CP 644 Firestop Collar	W-L-2078	1/2"	127
G	Max. 2" PVC, CPVC (or vented) (optional sleeve)	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-2128	11/16"	129
G	Max. 4" PVC, CPVC, ABS or FRPP (closed or vented) (optional pipe coupling)	1 or 2 hr	CP 648-E Firestop Wrap Strip	W-L-2411	1/2"	130
W	Max. 2" ABS, PVC or CPVC	1 hr	FS-ONE Intumescent Firestop Sealant	F-C-2142	5/8"	106
W	Max. 4" PVC, CPVC (closed or vented)	1 hr	CP 648-E Firestop Wrap Strip with Retaining Collar or CP 643N Firestop Collar	F-C-2232	1/2"	107
> Cables/Cable Trays						
C	Cable bundle (various cables) (optional sleeve)	3 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-3095	*	72
C	Cable bundle (various cables) (optional sleeve)	3 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-3180	*	73
C	Cable bundle (various cables) (optional sleeve)	3 hr	CP 606 Flexible Firestop Sealant	C-AJ-3181	1-7/8"	74
C	Cable bundle (various cables) (optional steel or PVC sleeve)	3 hr	CP 618 Firestop Putty Stick	C-AJ-3208	1"	75
C	Cable bundle (various cables) (optional sleeve)	2 hr	CP 658T Firestop Plug	C-AJ-3216	3"	76
C	Cable Trays (various cables)	3 hr	FS 657 Fire Block	C-AJ-4035	4"	77
C	Cable Tray (various cables)	2 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-4071	6"	78
C	Cable bundle (various cables) (concrete floor or concrete over metal deck)	3 hr	CP 680-P/M Cast-In Device	F-A-3033	*	98
C	Cable bundle (various cables) (optional sleeve)	2 hr	FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CP 601S Elastomeric Firestop Sealant or CP 618 Firestop Putty Stick	W-J-3060	1"	115
C	Cable bundle (various cables) (optional sleeve)	2 hr	CP 658T Firestop Plug	W-J-3143	1"	116
G	Cable bundle (various cables) (optional sleeve)	1 or 2 hr	FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CP 601S Elastomeric Firestop Sealant or CP 618 Firestop Putty Stick	W-L-3065	1"	132

* Refer to UL System.

C Concrete or concrete block

G Gypsum

W Wood

Base material	Penetrating item	Fire rating (F rating)	Hilti product used	System number	Maximum annular space	See page
> Cables/Cable Trays (continued)						
G	Cable bundle (various cables) (0 to 100% visual fill)	1 or 2 hr	CP 653 Speed Sleeve	W-L-3334	*	135
G	Cable tray (various cables)	1 or 2 hr	FS 657 Fire Block	W-L-4011	4"	137
G	Cable tray (various cables)	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-4060	3"	138
W	Cable bundle (various cables) (chase wall optional)	1 hr	CP 606 Flexible Firestop Sealant	F-C-3074	1"	109
> Insulated Metal Pipe						
C	Max. 2" steel with max. 1" glass fiber insulation	2 hr	FS-ONE Intumescent Firestop Sealant, CP 601S Elastomeric Firestop Sealant, CP 606 Flexible Firestop Sealant, or CP 604 Self-Leveling Firestop Sealant	C-AJ-5048	3-1/16"	79
C	Max. 4" steel or copper with max. 3/4" AB/PVC insulation	3 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-5090	1-1/2"	80
C	Max. 12" steel, max. 6" copper with nom. 2" glass fiber or max. 2" calcium silicate	2 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-5091	2-1/4"	81
C	Max. 4" steel or copper pipe with nom. 3/4" or 1" AB/PVC insulation (includes Concrete over Metal Deck)	2 hr	CP 680-P/M Cast-In Device	F-A-5015	*	99
C	Max. 4" steel or copper pipe with 1", 1-1/2" or 2" glass fiber insulation (includes Concrete over Metal Deck)	2 hr	CP 680-P/M Cast-In Device	F-A-5017	*	100
C	Max. 4" steel, EMT, or steel conduit, max. 2" Copper with 3/4" AB/PVC insulation	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-J-5041	1-1/2"	117
C	Max. 12" steel, max. 6" copper, max. 4" steel conduit, EMT with maximum 2" glass-fiber insulation	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-J-5042	1-1/2"	118
G	Max. 4" steel, steel conduit, EMT, or max. 2" copper with 3/4" AB/PVC insulation	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-5028	1-1/2"	139
G	Max. 12" steel, max. 6" copper, max. 4" steel conduit or EMT with 1", 1-1/2" or 2" glass fiber insulation or max. 2" calcium silicate insulation	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-5029	1-7/8"	140
G	Max. 10" steel, max. 4" copper pipe with max. 2" glass fiber insulation	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-5096	*	141
G	Max. 2" steel, cast iron, ductile iron pipe or copper pipe or tubing with 2" glass-fiber pipe insulation (sleeved) (shaft wall)	2 hr	CP 648-E Firestop Wrap Strip	W-L-5244	13/16"	142
G	Max. 4" steel, cast iron, ductile iron pipe or copper pipe or tubing with 1-1/2" glass-fiber pipe insulation	1 or 2 hr	FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant or CP 601S Elastomeric Firestop Sealant	W-L-5257	7/8"	144
W	Max. 4" steel, cast iron, or copper with 3/4" AB/PVC insulation (chase wall optional)	1 hr	CP 606 Flexible Firestop Sealant	F-C-5065	7/8"	110
W	Max. 4" steel, cast iron, or copper with 3/4" glass fiber insulation (chase wall optional)	1 hr	CP 606 Flexible Firestop Sealant	F-C-5066	7/8"	111
> Electrical Busways						
C	Electrical Busway	3 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-6017	2"	82
C	Electrical Busway	2 hr	CP 604 Self Leveling Firestop Sealant	F-A-6002	6-1/2"	101


* Refer to UL System.
C Concrete or concrete block
G Gypsum
W Wood

Base material	Penetrating item	Fire rating (F rating)	Hilti product used	System number	Maximum annular space	See page
> Metal Ducts / Mechanical Support						
C	Max. 20" spiral wound duct (min. 24 ga.) without damper or max. 12" spiral wound duct (min. 28 ga.) without damper	2 hr	CP 601S Elastmeric Firestop Sealant, CP 606 Flexible Firestop Sealant, CP 604 Self Leveling Firestop Sealant, or FS-ONE Intumescent Firestop Sealant	C-AJ-7084	1-1/2"	83
C	Max. 30" x 30" sheet metal duct (without damper)	2 hr	FS-One Intumescent Firestop Sealant	C-AJ-7111	1-3/4"	84
G	Max. 100" x 100" sheet metal duct (without damper)		FS ONE Intumescent Firestop Sealant or CP 606 Flexible Firestop Sealant	W-J-7109	2"	120
W	Max. 4" sheet metal duct without damper (chase wall optional)	1 hr	CP 606 Flexible Firestop Sealant	F-C-7025	1"	112
> Insulated Metal Ducts						
C	Max. 100" x 100" sheet metal with 1-1/2" or 2" thick glass fiber duct insulation	2 hr	FS-ONE Intumescent Firestop Sealant	W-J-7112	2"	121
G	Max. 100" x 100" sheet metal duct (without damper) with 1-1/2" or 2" thick glass fiber duct insulation	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-7156	2"	147
> Large Opening/Multiple Penetrations						
C	Max. 12" steel, max. 4" copper, steel conduit or EMT	3 hr	CP 637 Firestop Mortar	C-AJ-1140	*	59
C	Non-Insulated steel, cast iron, copper, steel conduit or EMT, fiber optic raceways, or cable conduittrays	3 hr	FS 657 Fire Block	C-AJ-8110	*	85
C	Multiple insulated or non-insulated metallic pipes, conduits and cables (single or bundled)	2 hr	FS-ONE Intumescent Firestop Sealant	C-AJ-8143	12"	87
C	Max. 2" or 3" steel conduits, cast iron, steel or copper pipe or EMT (includes Concrete over Metal Deck) (max. penetrants = 2)	3 hr	CP 680-P/M Cast-In Device	F-A-1023	2"	92
C	Insulated or non-insulated metallic pipes, conduits and cables (single or bundled) in max. 30" x 48" opening	2 hr	CP 604 Self Leveling Firestop Sealant	F-A-8012	12"	102
G	Multiple max. 2" steel pipe, steel conduit or EMT	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-1389	*	125
G	Multiple max. 4" steel pipe, steel conduit or EMT	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-1408	*	126
G	Max. 2" steel, cast iron, conduit, EMT, flexible gas piping, or ENT, max. 4" cable bundle	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-8071	*	148
G	Insulated or non-insulated metallic, non-metallic pipes, and cable bundle	1 or 2 hr	FS-ONE Intumescent Firestop Sealant	W-L-8079	*	150
G	Insulated or non-insulated metallic, non-metallic, cable bundles	1 or 2 hr	FS 657 Fire Block	W-L-8087	*	152
> Wall Opening Protective Materials						
G	UL listed metallic or non-metallic outlet boxes	1 or 2 hr	CP 617 Firestop Putty Pads	CLIV	*	155

* Refer to UL System.
C Concrete or concrete block
G Gypsum
W Wood




Joint								
Base material	Type of joint — description	Fire rating (F rating)	Max. joint width (inches)	Movement capability	Hilti product used	System number	Sealant depth (inches)	See page
> Floor to floor, wall to floor and wall to wall joints								
C	Concrete floor to floor joint	2 hr	3-1/2"	14%	CFS-SP WB/ CP 672	FF-D-1013	1/8"	157
C	Concrete or block wall to concrete over metal deck with optional use of spray-on fireproofing (parallel) (top-of-wall)	2 hr	1"	12.50%	CFS-SP WB/ CP 672	HW-D-0181	1/8"	164
C	Concrete or block wall to concrete floor or hollow core floor (Sealant only) (top of wall)	2 hr	1"	12.50%	CP 606	HW-D-0268	1/2"	168
C	Concrete or block wall perpendicular to concrete over metal deck with optional use of spray-on fireproofing (top of wall)	2 hr	3-1/2"	14%	CFS-SP WB/ CP 672	HW-D-1037	1/8"	170
C	Concrete or block wall to concrete floor	3 hr	3-1/4"	25%	CFS-SP WB/ CP 672	HW-D-1058	1/8"	171
C	Concrete or block wall to wall joint	2 hr	2"	12.50%	CFS-SP WB/ CP 672	WW-D-0017	1/8"	173
C	Concrete or block wall to wall joint (sealant only)	2 hr	1"	12.50%	CP 606	WW-D-0032	1/2"	174
G	Gypsum wall perpendicular to concrete over metal deck with optional use of spray-on fireproofing (includes roof deck) (top-of-wall)	1 or 2 hr	1"	50%	CFS-SP WB/ CP 672	HW-D-0042	1/8"	159
G	Gypsum wall perpendicular to concrete over metal deck (includes roof deck) (top-of-wall)	1 or 2 hr	3/4"	33%	CP 606	HW-D-0045	1/2"	161
G	Gypsum wall parallel to concrete over metal deck with optional use of spray-on fireproofing (includes roof deck) (top-of-wall)	1 or 2 hr	1"	50%	CFS-SP WB/ CP 672	HW-D-0049	1/8"	162
G	Gypsum wall parallel to concrete over metal deck with optional use of spray-on fireproofing (includes roof deck) (top-of-wall) (sealant only)	1 or 2 hr	3/4"	17%	CP 606	HW-D-0184	5/8"	165
G	Gypsum wall to underside of steel beam and concrete over metal deck with spray-on fireproofing (top-of-wall)	1 or 2 hr	1"	50%	CFS-SP WB/ CP 672	HW-D-0259	1/8"	166
G	Gypsum wall (cut to profile) perpendicular to concrete over metal deck with optional use of spray-on fireproofing (sealant only)(top-of-wall)	1 or 2 hr	3/4"	17%	CP 606	HW-D-0324	5/8"	169
G	Gypsum wall to underside of flat concrete	1 or 2 hr	2-1/2"	40%	CFS-SP WB/ CP 672	HW-D-1068	1/8"	172
G	Gypsum wall to wall joint	1 or 2 hr	2"	12.50%	CP 606	WW-D-0067	1/2"	175

* Refer to U.L. System.
C Concrete or concrete block
G Gypsum
W Wood

Base material	Type of joint — description	Fire rating (F rating)	Max. joint width (inches)	Movement capability	Hilti product used	System number	Sealant depth (inches)	See page
> Curtain Wall Joints								
	Glass spandrel with aluminum framing	2 hr	6"	-	CFS-SP WB*/ CP 672/ CP 672 FC	HI/JS 20-05 (CEJ-127-P)	1/8"	176
	Concrete floor to glass or aluminum spandrel with aluminum framing	3 hr	8"	11.25% & 5%	CFS-SP WB*/ CP 672/ CP 672 FC	HI/BP 180-01 (CEJ-307-P)	1/8"	179
	Gypsum exterior with various façades with steel framing	2 hr	9"	0%	CFS-SP WB*/ CP 672/ CP 672 FC	HI/BP 120-03 (CEJ-421-P)	1/8"	183
	Concrete floor to glass, aluminum, or granite spandrel with aluminum framing	2 hr	8"	5%	CP 604	CW-D-2026	1/4"	187
	Glass Spandrel with Aluminum framing (vision glass at floor)	2-1/2 hr	8"	12.5% & 6.25%	CFS-SP WB*/ CP 672/ CP 672 FC	HI/BP 150-01	1/8"	190

*At time of publication, CFS-SP WB systems were pending. Please visit www.us.hilti.com/firestop or call 1-800-879-8000 for more information.

* Refer to UL System.

-  Concrete or concrete block
-  Gypsum
-  Wood

J. Engineering Judgements - For situations where custom drawings for firestopping assemblies are required to accommodate particular conditions/applications not identified in the HILTI Firestop Systems Installers Guide U.S. Volume 12, contractor to complete documentation on page 270 of the guide to request an engineering judgement from HILTI. Completed form(s) to be faxed to 918-254-1679.

2.3 SMOKE STOPPING IN SMOKE PARTITIONS

- A. Use silicone sealant in smoke partitions as specified in Section 07 92 00, JOINT SEALANTS.
- B. Use mineral fiber filler and bond breaker behind sealant.
- C. Sealants shall have a maximum flame spread of 25 and smoke developed of 50 when tested in accordance with E84.
- D. When used in exposed areas capable of being sanded and finished with similar surface treatments as used on the surrounding wall or floor surface.

PART 3 - EXECUTION

3.1 EXAMINATION

Submit product data and installation instructions, as required by article, submittals, after an on site examination of areas to receive firestopping.

3.2 PREPARATION

- A. Remove dirt, grease, oil, loose materials, or other substances that prevent adherence and bonding or application of the firestopping or smoke stopping materials.
- B. Remove insulation on insulated pipe for a distance of 150 mm (six inches) on either side of the fire rated assembly prior to applying the firestopping materials unless the firestopping materials are tested and approved for use on insulated pipes.

3.3 INSTALLATION

- A. Do not begin work until the specified material data and installation instructions of the proposed firestopping systems have been submitted and approved.
- B. Install firestopping systems with smoke stopping in accordance with FM, UL, WH, or other approved system details and installation instructions.
- C. Install smoke stopping seals in smoke partitions.

3.4 CLEAN-UP AND ACCEPTANCE OF WORK

- A. As work on each floor is completed, remove materials, litter, and debris.
- B. Do not move materials and equipment to the next-scheduled work area until completed work is inspected and accepted by the Resident Engineer.
- C. Clean up spills of liquid type materials.

- - - E N D - - -