Firestopping Submittal Package

metacaulk®

Project: Commercial Plumbing Contractors (Steel & Cast Iron)
Architect:
General Contractor:
Installation Contractor:
Distributor (and Contact):

Manufacturer's Representative:

Table of Contents

APPROVALS FOR METACAULK® PRODUCTS

Below is a list of Model Building Codes requiring the use of firestop products in various types of constructions and occupancies. Most local codes are derived from one or more of these model codes. Metacaulk® products and systems meet the through-penetration firestopping requirements of all of these codes.

ICC	International Code Council; International Building Code
ICBO	International Code of Building Officials; Uniform Building Code
SBCCI	Southern Building Code Congress International; Standard Building Code
BOCA	Building Official and Code Administrators International; National Building Code
CABO	Council of American Building Officials (coordinating agency between ICBO, SBCCI and BOCA)
NBCC	National Building Code of Canada
NFPA 101 . .	National Fire Protection Association Life Safety Code
IRC	International Residence Code

Certain cities, counties and states have written their own code requirements which may supersede or supplement model building codes, check with these authorities for approvals.

Metacaulk® Products are UL Classified and conform to the codes and test requirements shown below.

UL 1479	Fire Tests of Through-Penetration Firestops
UL 2079	Tests for Fire Resistance of Building Joint Systems
ASTM E 1966	Standard Test Method for Fire Resistive Joint Systems
ASTM E 814	Methods for Fire Tests of Through-Penetration Fire Stops
NFPA 101	National Fire Protection Association Life Safety Code
ASTM E 84 (UL 723) . .	Test Method for Surface Burning Characteristics of Building Materials
ASTM E 119 (UL 263) . .	Method for Fire Tests of Building Construction and Materials
ULC CAN4-S115M	Standard Method of Fire Tests of Firestop Systems
B.S. 476/ pr EN 1366.3 .	European/ British Standards
AS 1530.4	Part 4: Fire Resistance Tests of Elements of Building Construction
AS 4072.1	Part 1: Service Penetration and Control Joint

For Questions or Additional Information call Technical Service 1-800-231-3345 • 1-713-263-8001
Fax 1-800-441-0051 • 1-713-263-7577

A CSW Industrials Company

GENERAL CERTIFICATE OF COMPLIANCE

DESCRIPTION: METACAULK® FIRESTOPPING PRODUCTS

METACAULK® MC 150+ FIRESTOP SEALANT
METACAULK® 350i FIRESTOP SEALANT
METACAULK® 835+ SILICONE SEALANT
METACAULK® 950 FIRESTOP SEALANT
METACAULK® 1000 FIRESTOP SEALANT
METACAULK® 1200
METACAULK® BLAZESEAL™
METACAULK® BOX GUARD™
METACAULK® COMPOSITE SHEET
METACAULK® COVER GUARD™
METACAULK® FIRE-RATED MORTAR
METACAULK® FIRESTOP PILLOW
METACAULK® INDUSTRIAL CABLE COATING
METACAULK® INTUMESCENT SLEEVE
METACAULK® JOINT STRIP
METACAULK® PASS-THRU DEVICE
METACAULK® PIPE COLLAR
METACAULK® PUTTY STICK & PUTTY PAD
METACAULK® WRAP STRIP
FLAMESAFE® BAGS
FLAMESAFE® FS 900+ SEALANT
RECTORSEAL® SMOKE AND ACOUSTIC SEALANT
RECTORSEAL® TRACK-SAFE™

THESE PRODUCTS ARE TESTED ACCORDING TO ONE OR MORE OF THE FOLLOWING STANDARDS:

U.L. 263 - FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIALS
U.L. 1479 - FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS
U.L. 2079 - TESTS FOR FIRE RESISTANCE OF BUILDING JOINT SYSTEMS
ASTM E-84 (UL 723) - SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS
ASTM E-814 - FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS
ASTM E-2307 - METHOD FOR DETERMINING FIRE RESISTANCE OF PERIMETER FIRE BARRIERS
IEEE 1202 - FLAME-PROPAGATION TESTING OF WIRE & CABLE

RectorSeal 2601 Spenwick Drive, Houston, Texas 77055 Phone 800.231.3345 rectorseal.com

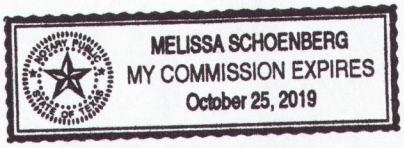
ALL PRODUCTS CONTAIN NO ASBESTOS OR PCB'S AND ARE CONSIDERED V.O.C. COMPLIANT.

EVA ACKERMAN PH.D
VICE PRESIDENT OF RESEARCH & TECHNOLOGY

TERRY GOSSETT
TECHNICAL SERVICES

SUBSCRIBED AND SWORN TO BEFORE ME THIS 1ST DAY OF OCTOBER 2015.

MELISSA SCHOENBERG
NOTARY IN AND FOR THE STATE OF TEXAS
COUNTY OF HARRIS
MY COMMISSION EXPIRES: OCTOBER 25, 2019



A CSW Industrials Company

December 18, 2017

To whom it may concern:

RectorSeal's Warranty statement for firestop is contingent upon actual storage conditions and proper installation.

If RectorSeal® firestop products are correctly installed in accordance with our stated Manufacturers instructions and according to the UL tested systems, our products comply with UL 1479 "Fire Tests of Through-Penetration Firestops" standard requirements for Environmental Exposure Tests. This test relates to the performance of firestop products as originally installed, and compares to the performance testing after exposure to extreme temperatures and high humidity for an extended period of time.

If properly stored, our products have a minimum shelf life of three years, subject to inspection with the exception of our fire rated mortar and silicone products which have a two year shelf life.

The Rectorseal Corporation, manufacturer of Metacaulk® Fire Stop products, has always been concerned about the long-term performance of our products. We implemented a testing program prior to the UL 1479 requirement for "Fire Tests of Through-Penetration Firestops". We burned materials in our UL sanctioned fire test facility to measure the performance of RectorSeal® products after extended periods of time as in accordance with current standards. Some of the tested materials exceed 15 years in age. Assuming that the substrate area surrounding the actual penetration has not been damaged, we warrant that Metacaulk® products will perform satisfactorily for the sustainable life of the building.

Repectfully,

Terry L. Gossett

Terry L. Gossett
Technical Service

A CSW Industrials Company

March 3, 2016

To Whom It May Concern:

RectorSeal's Warranty Statement for our Smoke and Acoustical sealant is contingent upon actual storage conditions and proper installation.

If properly stored, our RectorSeal® Smoke and Acoustic Sealant has a minimum shelf life of two years, subject to inspection. Assuming that the substrate area surrounding the actual penetration/joint has not been damaged, we warrant that the RectorSeal® Smoke and Acoustic Sealant product, when fully cured will perform satisfactorily for the sustainable life of the building.

If there are any additional questions, do not hesitate to call our office at 800-231-3345.

Respectfully,
RECTORSEAL

Terry Gossett

Terry Gossett
Technical Services

RECTORSEAL
A CSW Industrials Company

2601 Spenwick Dr
Houston, TX 77055

ph: 713-263-8001
fax: 713-263-7577

May 9, 2012

RE: Metacaulk® Firestopping Materials
LEED® Product Information

TO: Whom It May Concern

This letter will detail the contribution of Metacaulk® firestopping materials to the LEED Green Building Rating System in accordance with LEED-NC, CS, CI and School Rating Systems.

MR Credit 2.1: Construction Waste Management, Divert 50% form Disposal
MR Credit 2.2: Construction Waste Management, Divert 75% from Disposal
In areas where facilities exist, the following Metacaulk® materials are recyclable and can contribute to earning Materials and Resources Credit 2.1 or Credit 2.2.

•	Carton	Cardboard	2 lbs / carton
•	10.3 oz caulk tube	HDPE	40 g. / tube
•	20.2 oz foil pack	Mylar	5 g. / pack
•	30 oz caulk tube	HDPE	98 g. / tube
•	quart bottle	HDPE	57 g. / bottle
•	5 gallon pail	HDPE	934 g. / pail
•	Wooden pallet	wood	45 lbs. / pallet

MR Credit 5.1: Regional Materials, 10% Extracted, Processed & Manufactured Regionally
MR Credit 5.2: Regional Materials, 20% Extracted, Processed & Manufactured Regionally
Metacaulk® firestopping materials are manufactured in one location Houston, Texas. If these locations fall within a 500-mile radius of the project site and the location the raw materials used to make the finished product are extracted, recovered or harvested within a 500-mile radius of the project, then these materials or a portion of the materials can contribute to earning Materials and Resources Credit 5.1 and Credit 5.2.

The following are the locations of the Metacaulk® firestopping materials manufacturing plants:

Metacaulk® Product	Location
All Metacaulk® Products	Houston, Texas

Please contact your local Metacaulk® Representative to request a project specific letter pertaining to Credit 5.1 and Credit 5.2. The letter will provide the location where the raw materials are extracted, recovered or harvested in relation to the location of the project.

EQ Credit 4.1: Low Emitting Materials, Adhesives & Sealants
EQ Credit 4.2: Low Emitting Materials, Paints & Coatings
The volatile organic content (VOC) of Metacaulk® firestopping materials is listed below for those products that are lower than the minimum LEED requirements for low-emitting materials. These materials can help contribute to earning Indoor Environmental Quality EQ Credit 4.1 and 4.2.

Metacaulk Product	EQ Credit	VOC Content (g/l)
Metacaulk® 1000	4.1	10
Metacaulk® 950	4.1	10
Metacaulk® 835+	4.1	10
Metacaulk® MC 150+	4.1	10
Metacaulk® 350i	4.1	10
Metacaulk® Putty pads & Sticks	4.1	10
Metacaulk® 1100	4.2	10
Metacaulk® 1200	4.2	10
Metacaulk® Joint Strip	4.1	10
Metacaulk® Wrap Strip	4.1	10
Metacaulk® 1500	4.1	10
Metacaulk® Industrial Cable Coating	4.2	10
Metacaulk® Pipe Collar	4.1	10
Metacaulk® Intumescent Sleeve	4.1	10
Metacaulk® Fire Rated Mortar	4.1	10
Metacaulk® Firestop Pillows	4.1	10
Metacaulk® Cast-In-Place (CID)	4.1	10

Please feel free to contact me with any additional questions or information.

Sincerely,

Terry Gossett
Technical Service

A CSW Industrials Company

SAFETY DATA SHEET

METACAULK® MC 150+

General purpose firestop sealant

Section 1 – Product and Company Information

Product Name
Metacaulk® MC 150+

Product Codes
66382, 66383, 66385, 66389, 66648

Chemical Family
Organic/Inorganic

Use
Firestopping sealant

Manufacturer's Name
The RectorSeal Corporation
2601 Spenwick Drive
Houston, Texas 77055 USA

Date of Validation
January 23, 2015

Date of Preparation
March 21, 2011

HMIS Codes

Health	1
Flammability	0
Reactivity	0
PPI	B

Emergency Telephone No.
Chemtrec 24 Hours
(800)-424-9300 USA
(703)-527-3887 International

Technical Service Telephone No.
(800)-231-3345 or (713)-263-8001

Section 2 – Hazards Identification

GHS CLASSIFICATION

Physical Hazards:
None

Health Hazards

Acute Toxicity:
Oral: Not Classified
Dermal: Not Classified
Inhalation: Not Classified
Skin Corrosion/Irritation: Not Classified
Serious Eye Damage/Eye Irritation: Not Classified
Respiratory or Skin Sensitization: Not Classified
Germ Cell Mutagenicity: Not Classified
Carcinogenicity: Not Classified
Reproductive Toxicology: Not Classified
Target Organ Systemic Toxicity - Single Exposure: Not Classified
Target Organ Systemic Toxicity - Repeated Exposure: Not Classified

Aspiration Toxicity: Not Classified

ENVIRONMENTAL HAZARDS

Hazardous to the Aquatic Environment: Not Classified
Acute aquatic toxicity: Not Classified
Chronic aquatic toxicity: Not Classified
Bioaccumulation potential: Not Classified
Rapid degradability: Not Classified

GHS Label elements, including precautionary statements

Pictogram: None

Signal Word: None

Hazard Statements:
None

Precautionary Statements:
P102 - Keep out of reach of children.
P264 - Wash hands thoroughly after handling.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Labeling Symbols: None

Risk R-Phrases: None

Safety S-Phrases:
S2: Keep out of the reach of children.

Summary Of Acute Hazards

May cause skin irritation.

Route Of Exposure, Signs And Symptoms

INHALATION
Not a respiratory irritant.

EYE CONTACT
Contact may cause eye irritation.

SKIN CONTACT
Contact may cause skin irritation.

INGESTION
Possible irritation to mucous membranes of the mouth, throat, and stomach.

SUMMARY OF CHRONIC HAZARDS
None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Persons with pre-existing skin conditions or chemical allergies may be more susceptible to contact effects of the cured elastomer.

Section 3 – Composition/Information on Ingredients

% by WT	CAS No.	INGREDIENT	UNITS

None as defined by OSHA Hazard Communication Standard 29 CFR 1910.1200.

Section 4 – First Aid Measures

If inhaled:	Not a respiratory irritant.
If on skin:	Wash with soap and water. If irritation occurs, seek medical attention.
If in eyes:	Immediately flush with large amounts of water. If irritation occurs, seek medical attention.
If swallowed:	If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Section 5 – Fire Fighting Measures

Extinguishing Media
Foam, dry chemical, carbon dioxide or water fog.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and other protective clothing. Hazardous decomposition products possible (see Section 10).

Unusual Fire And Explosion Hazards: Heat may build up and rupture closed containers.

Section 6 – Accidental Release Measures

Steps To Be Taken In Case Material Is Released Or Spilled: Wipe up spills to prevent footing hazard. Avoid flushing into sewers, drains, waterways and soil. Wear protective clothing during clean up.

Section 7 – Handling and Storage

Precautions To Be Taken In Handling And Storing: Keep container closed and upright when not in use. To prevent freezing and possible rupture of container, do not store below 35°F.

Other Precautions: Avoid prolonged or repeated contact with skin or clothing. Empty containers may contain residues and vapors; treat as if full and observe all product precautions. Do not reuse empty containers.

KEEP OUT OF REACH OF CHILDREN.

Section 8 – Exposure Controls/Personal Protection

Respiratory Protection (Specify Type): None required.

Ventilation – Local Exhaust: N/A

Special: N/A

Mechanical (General): N/A

Other: N/A

Protective Gloves: None required.

Eye Protection: None required.

Other Protective Clothing Or Equipment: None required.

Work/Hygienic Practices: Where use can result in skin contact, wash exposed areas thoroughly before eating, drinking, smoking, or leaving work area. Launder contaminated clothing before reuse.

Section 9 – Physical and Chemical Properties

Boiling point:	212°F (100°C) @ 760mm Hg
Specific gravity (H20 = 1):	1.5
Vapor pressure (mmHg):	17 @ 68°F (20°C)
Melting point:	N/A
Vapor Density (Air = 1):	N/A
Evaporation rate (Ethyl Acetate = 1):	> 1
Appearance/Odor:	Red paste/Mild odor
Solubility in water:	Soluble
Volatile Organic Compounds (VOC) Content (theoretical percentage by weight):	< 1% or (< 10 g/L)
Flash point:	None
Lower explosion limit:	None
Upper explosion limit:	None

Section 10 – Stability and Reactivity

Stability: Stable

Conditions To Avoid: None.

Incompatibility (Materials To Avoid): None known.

Hazardous Decomposition Products: CO, CO_2 and fragmented hydrocarbons.

Hazardous Polymerization: Will not occur.

Section 11 – Toxicology Information

Chronic Health Hazards

No ingredient in this product is an IARC, NTP or OSHA Lister carcinogen.

Toxicology Data

Ingredient Name

None

Section 12 – Ecological Information

Ecological Data

Ingredient Name:	**None**
Food Chain Concentration Potential:	N/A
Waterfowl Toxicity:	N/A
BOD:	N/A
Aquatic Toxicity:	N/A

Section 13 – Disposal Considerations

Waste Classification: Non-regulated solid waste

Disposal Method: Approved landfill

Waste from this product is not considered hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Dispose of in accordance with federal, state, and local regulation regarding pollution.

Section 14 – Transportation Information

DOT:	Non-regulated
Ocean (IMDG):	Non-regulated
Air (IATA):	Non-regulated
WHMIS (Canada):	Non-regulated

Section 15 – Regulatory Information

Regulatory Data

Ingredient Name:	**None**
SARA 313	N/A
TSCA Inventory	All components listed
CERCLA RQ	N/A
RCRA Code	N/A

Section 16 – Other Information

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). The information herein is given in good faith, but no warranty, expressed or implied is made.

Consult RectorSeal for further information: (713) 263-8001

SAFETY DATA SHEET

METACAULK® 1200

Spray and caulk firestop mastic

Section 1 – Product and Company Information

Product Name

Metacaulk® 1200 All Varieties

Product Codes

66015, 66292, 66294, 66379, 66386,66387, 66525, 66527, 66529

Chemical Family

Organic/Inorganic

Use

Firestopping sealant

Manufacturer's Name

RectorSeal LLC
2601 Spenwick Drive
Houston, Texas 77055 USA

Date of Validation

July 11, 2017

Date of Preparation

August 23, 2017

HMIS Codes

Health	1
Flammability	0
Reactivity	0
PPI	B

Emergency Telephone No.

Chemtrec 24 Hours
(800)-424-9300 USA
(703)-527-3887 International

Technical Service Telephone No.

(800)-231-3345 or (713)-263-8001

Section 2 – Hazards Identification

GHS CLASSIFICATION

Physical Hazards:

None

Health Hazards

Acute Toxicity:

Oral: Not Classified
Dermal: Not Classified
Inhalation: Not Classified
Skin Corrosion/Irritation: Not Classified
Serious Eye Damage/Eye Irritation: Not Classified
Respiratory or Skin Sensitization: Not Classified
Germ Cell Mutagenicity: Not Classified
Carcinogenicity: Not Classified
Reproductive Toxicology: Not Classified
Target Organ Systemic Toxicity - Single Exposure: Not Classified
Target Organ Systemic Toxicity - Repeated Exposure: Not Classified

Aspiration Toxicity: Not Classified

ENVIRONMENTAL HAZARDS

Hazardous to the Aquatic Environment: Not Classified
Acute aquatic toxicity: Not Classified
Chronic aquatic toxicity: Not Classified
Bioaccumulation potential: Not Classified
Rapid degradability: Not Classified

GHS Label elements, including precautionary statements

Pictogram: None

Signal Word: None

Hazard Statements:
None

Precautionary Statements:
P102 - Keep out of reach of children.
P264 - Wash hands thoroughly after handling.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Labeling Symbols: None

Risk R-Phrases: None

Safety S-Phrases:
S2: Keep out of the reach of children.

Summary Of Acute Hazards

May cause skin irritation.

Route Of Exposure, Signs And Symptoms

INHALATION
Not a respiratory irritant.

EYE CONTACT
Contact may cause eye irritation.

SKIN CONTACT
Contact may cause skin irritation.

INGESTION
Possible irritation to mucous membranes of the mouth, throat, and stomach.

SUMMARY OF CHRONIC HAZARDS
None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Persons with pre-existing skin conditions or chemical allergies may be more susceptible to contact effects of the cured elastomer.

Section 3 – Composition/Information on Ingredients

% by WT	CAS No.	INGREDIENT	UNITS

None as defined by OSHA Hazard Communication Standard 29 CFR 1910.1200.

Section 4 – First Aid Measures

If inhaled:	Not a respiratory irritant.
If on skin:	Wash with soap and water. If irritation occurs, seek medical attention.
If in eyes:	Immediately flush with large amounts of water. If irritation occurs, seek medical attention.
If swallowed:	If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Section 5 – Fire Fighting Measures

Extinguishing Media
Foam, dry chemical, carbon dioxide or water fog.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and other protective clothing. Hazardous decomposition products possible (see Section 10).

Unusual Fire And Explosion Hazards: Heat may build up and rupture closed containers.

Section 6 – Accidental Release Measures

Steps To Be Taken In Case Material Is Released Or Spilled: Wipe up spills to prevent footing hazard. Avoid flushing into sewers, drains, waterways and soil. Wear protective clothing during clean up.

Section 7 – Handling and Storage

Precautions To Be Taken In Handling And Storing: Keep container closed and upright when not in use. To prevent freezing and possible rupture of container, do not store below 35°F.

Other Precautions: Avoid prolonged or repeated contact with skin or clothing. Empty containers may contain residues and vapors; treat as if full and observe all product precautions. Do not reuse empty containers.

KEEP OUT OF REACH OF CHILDREN.

Section 8 – Exposure Controls/Personal Protection

Respiratory Protection (Specify Type): None required.

Ventilation – Local Exhaust: N/A

Special: N/A

Mechanical (General): N/A

Other: N/A

Protective Gloves: None required.

Eye Protection: None required.

Other Protective Clothing Or Equipment: None required.

Work/Hygienic Practices: Where use can result in skin contact, wash exposed areas thoroughly before eating, drinking, smoking, or leaving work area. Launder contaminated clothing before reuse.

Section 9 – Physical and Chemical Properties

Boiling point:	212°F (100°C) @ 760 mmHg
Specific gravity (H20 = 1):	1.1
Vapor pressure (mmHg):	17 @ 68°F (20°C)
Melting point:	N/A
Vapor Density (Air = 1):	N/A
Evaporation rate (Ethyl Acetate = 1):	> 1
Appearance/Odor:	Red or white paste/Mild odor
Solubility in water:	Soluble
Volatile Organic Compounds (VOC) Content (theoretical percentage by weight):	< 1% or < 10 g/L
Flash point:	None
Lower explosion limit:	None
Upper explosion limit:	None

Section 10 – Stability and Reactivity

Stability: Stable

Conditions To Avoid: None.

Incompatibility (Materials To Avoid): None known.

Hazardous Decomposition Products: CO, CO_2 and fragmented hydrocarbons.

Hazardous Polymerization: Will not occur.

Section 11 – Toxicology Information

Chronic Health Hazards

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Toxicology Data

Ingredient Name

None

Section 12 – Ecological Information

Ecological Data

Ingredient Name:	**None**
Food Chain Concentration Potential:	N/A
Waterfowl Toxicity:	N/A
BOD:	N/A
Aquatic Toxicity:	N/A

Section 13 – Disposal Considerations

Waste Classification: Non-regulated solid waste

Disposal Method: Approved landfill

Waste from this product is not considered hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Dispose of in accordance with federal, state, and local regulation regarding pollution.

Section 14 – Transportation Information

DOT:	Non-regulated
Ocean (IMDG):	Non-regulated
Air (IATA):	Non-regulated
WHMIS (Canada):	Non-regulated

Section 15 – Regulatory Information

Regulatory Data

Ingredient Name:	**None**
SARA 313	N/A
TSCA Inventory	All components listed
CERCLA RQ	N/A
RCRA Code	N/A

Section 16 – Other Information

Labeling Symbols: None

Risk R-Phrases: None

Safety S-Phrases:
S2: Keep out of the reach of children.

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). The information herein is given in good faith, but no warranty, expressed or implied is made.

Consult RectorSeal for further information: (713) 263-8001

RECTORSEAL

A CSW Industrials Company

PRODUCT DATA SHEET

METACAULK® 150+

General Purpose Firestop Sealant

Description

Metacaulk 150+ is a one component, general purpose fire rated sealant, acoustic sealant and smoke seal for construction joints and through-penetrations. Metacaulk 150+ is a water based, non-sag caulking grade sealant that is easy to apply as well as retrofit. It cures to an elastomeric seal that is suitable where dynamic movement is expected. In the event of a fire, Metacaulk 150+ will prevent the spread of flames, smoke, hot gases and water through joint openings and through-penetrations. No dilution or mixing is required for use. No special skills are necessary for installation. Metacaulk 150+ is applied with a conventional caulking gun, bulk loading gun or can be troweled from the pail. For large applications, it can be pumped directly from the pail. Metacaulk 150+ systems are rated for up to 4 hours in accordance with ASTM E814 (UL 1479) and ASTM E1966 (UL 2079) test standards. Metacaulk 150+ is protected in a wet stage as well as in a dry stage against mold growth with a combination of biocides.

Applications

Metacaulk 150+ can be used in interior applications as a general purpose fire rated sealant, acoustic sealant and smoke seal for construction joints on both vertical and horizontal surfaces. Metacaulk 150+ is also an excellent fire rated acoustical sealant and can be used in areas under constant vibration or movement. Metacaulk 150+ can also be used on various penetrations such as EMT, telephone & power cables in concrete floors and walls, gypsum walls as well as wood floors. Use Metacaulk 150+ to prevent the spread of fire and smoke through joints in fire rated gypsum wallboard partitions, concrete block or concrete walls and/or concrete or corrugated steel deck floor/ceiling assemblies.

Characteristics | Features

- Water based
- Excellent freeze-thaw
- Flexible set
- Paintable
- VOC compliant
- Safe and easy to use
- 3 Year shelf life
- STC rating 65

Packaging

Code	Size	Qty. per Case	Dimensions (in)	Cubic Feet
66648	10.3 oz cartridge	12	8x6x12	.34
66385	20.2 oz foil pack	12	9x14x7	.51
66383	30 oz. cartridge	12	11x9x17	.97
66389	5 Gallon	1	13 dia x14	1.08

Installation Data

Install Metacaulk 150+ using standard caulking techniques or trowel from pails. Metacaulk MC 150+ may also be pumped from the pails. When damming materials are needed, use only materials approved for the specific application.

TYPICAL GYPSUM WALLBOARD INSTALLATION

Step 1 Cut opening in wall.

Step 2 Clean penetration opening and surfaces from loose debris, dirt, oil and wax.

Step 3 If required, install sleeve or wire mesh and backing material.

Step 4 Gun the sealant as required to the specified depth. Trowel surface flush with wall.

Consult UL Product iQ for complete instructions and system listings.

Testing Data

For specific test criteria, refer to UL's Fire Resistance Directory or call RectorSeal.

Metacaulk 150+ was tested at positive pressure with a minimum 0.01 inches of water (2.5 Pa) and in accordance with ASTM E814 (UL 1479), ASTM E1966 (UL 2079).

Sound Transmission Class (STC) 65 - The test was performed in accordance with ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

Tested by a third party independent laboratory to the ASTM G21 standard with Fungal Growth Rating results of zero.

FBC™ System Compatible indicates that this product has been tested, and is monitored on an on-going basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® pipe and fittings.

Inspection & Repair

RectorSeal recommends that a firestop system inspection be conducted during installation of the material in accordance with ASTM E2174 and ASTM E2393. In the event post-installation inspection and destructive sampling is necessary, RectorSeal advises repairing the damaged firestop system by replacing any material that was removed or damaged with the same product originally installed, and ensuring the assembly matches the original firestop listing. RectorSeal advises, that due to the chemical nature of firestop products and sealants, material depth should be determined by measuring the points of adhesion at the substrate bond area as sealants may decrease in size during the curing process.

Storage & Handling

Metacaulk 150+ should be stored between 35˚F (2˚C) and 120˚F (49˚ C) to obtain a 3 year shelf life.

NOTE: Do not dilute, no mixing is required. Best if protected from freezing. If freezing occurs, thaw completely before using. Keep products stored under protective cover in original containers.

Limitations

Metacaulk 150+ is not designed to be used in areas under continuous immersion or in areas which would be continuously wet. Metacaulk 150+ should not be used against hot uninsulated surfaces above 300˚F (149˚C).

Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Application	Caulking Gun or Towel
Application Temperature between	40˚F - 120˚F 4˚C - 49˚C
Color	Red
Cure Time	3 to 4 weeks (at 77˚F/25˚C)
Density	12.5 lbs/gal
Elastomeric	Yes
Freeze/Thaw	Excellent
Skin Over Time	30 min. (at 77˚F/25˚C)
pH Value	7 to 8

Volume Coverage:	
for 10.3 oz. tube	(304 ml) 18 cu. in.
for 20.2 oz. foil packs	(597 ml) 36 cu. in (
for 30 oz. tube	(887 ml) 54 cu. in.
for 5 gallon	(18.9 liter) 1155 cu. in..

VOC	Negligible

ASTM E84, UL 723 Tunnel Test	
Flame Spread	10
Smoke Index	0

Cautions

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC-DAY OR NIGHT 1-800-424-9300.

PRECAUTIONS: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation if prolonged or repeated contact occurs. Wash after handling. **FIRST AID:** For any overexposure, get immediate medical attention after first aid is given. **EYES-**Flush 15 minutes with clean water. **SKIN-**Wash with soap and water. **INHALATION-**Remove to fresh air. **INGESTION-**Only if conscious, give large amounts of water and INDUCE VOMITING. **FIRE AND SPILLS:** Use water fog, CO_2, foam, or dry chemicals. Wipe up spills to prevent footing hazard. Clean up with scrapers and water. **STORAGE AND HANDLING:** Store away from heat sources. Keep container closed. Do not reuse empty container. **KEEP OUT OF REACH OF CHILDREN.**

For additional information, refer to Safety Data Sheet.

Limited Warranty

RectorSeal, LLC makes the Limited Express Warranty that when the instructions for storage and handling of our products are followed we warrant our products to be free from defects. THIS LIMITED EXPRESS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION ON THE PART OF RectorSeal, LLC. The sole remedy for breach of the Limited Express Warranty shall be the refund of the purchase price. All other liability is negated and disclaimed, and RectorSeal, LLC shall not be liable for incidental or consequential damages.

IFC INTERNATIONAL FIRESTOP COUNCIL
THE Source of Firestop Expertise®
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Manufactured by **RectorSeal, LLC • 2601 Spenwick Drive, Houston, TX 77055, USA • 800-231-3345 • Fax 800-441-0051 • RectorSeal.com**

RECTORSEAL

A CSW Industrials Company

PRODUCT DATA SHEET

METACAULK® 1200
1200 CAULK GRADE

Spray & Caulk Firestop Sealant

Description

Both grades of Metacaulk 1200 are a single component, general purpose fire rated sealants for construction joints such as top of the wall, curtain wall perimeter, expansion, control, etc. and for general construction gaps and voids. Metacaulk 1200 is a water based sealant that comes in two different grades. Metacaulk 1200 mastic grade is designed for spray applications and provides a fast, economical means of installation on long joint runs. Metacaulk 1200 caulk grade is a non-sag sealant that is easy to apply from a caulk gun or troweled. It cures to an elastomeric membrane seal that is suitable where dynamic movement is expected. In the event of a fire, Metacaulk 1200 will prevent the spread of flames, smoke, hot gases and water through the joint openings. No dilution or mixing is required for use. Metacaulk 1200 can be caulked from a tube, brushed or troweled from the pail, or applied with a spray pump. Metacaulk 1200 systems are rated for up to 3 hour conditions in accordance with ASTM E1966 (UL 2079) (Tests for Fire Resistance of Building Joint Systems), test standards. Metacaulk 1200 has been cycled 500 times, in accordance with the new ASTM E1399 standard. Also tested in accordance with ASTM E814 (UL 1479) for systems up to 4 hours. Metacaulk 1200 is protected in a wet stage as well as in a dry stage against mold growth with a combination of biocides.

Applications

Metacaulk 1200 can be used as a general purpose fire rated sealant and smoke seal for construction joints on both vertical and horizontal surfaces. Metacaulk 1200 is also an excellent fire rated acoustical sealant and can be used in areas under constant vibration or movement.

Characteristics | Features

- Sprayable, Brushable, Trowelable, or Caulkable
- Freeze-thaw capable
- Water based
- Flexible - Elastomeric
- Paintable
- VOC compliant
- Excellent smoke seal
- 3 Year shelf life

Packaging

Code	Size	Qty. per Case	Dimensions (in)	Cubic Feet
Red				
66292	20.2 oz. foil pack	12	9x14x17	.51
66015	30 oz cartridge	12	11x9x17	.97
66379	5 Gallon	1	13 dia x14	1.08
66529	5 Gal. spray	1	13 dia x 14	1.08
66387	5 Gallon caulk grade	1	13 diax14	1.08
White				
66525	30 oz. cartridge	12	11x9x17	.97
66527	5 Gal. Spray	1	13 dia x 14	1.08
66526	5 Gal. Spray	1	13 dia x14	1.08
66386	5 Gallon caulk grade	1	13 diax14	1.08
66294	20.2 oz. foil pack	12	9x14x7	.51

Installation Data

Tightly pack with the appropriate backing material as listed in the selected UL Tested System design. There should be no loose insulation, voids or gaps present. Apply the required coating thickness to completely cover backing material.

Consult UL Product iQ for complete instructions and system listings. For Metacaulk 1200 spray application, use recommended spray equipment. Contact Technical Service at 1-800-231-3345 for current recommendations.

When system clean up is needed, follow manufacturer's instructions for specific equipment used.

NOTE: SPRAY EQUIPMENT CAN BE DANGEROUS! USE ONLY BY PROPERLY TRAINED PERSONNEL. FOLLOW ALL SAFETY AND OPERATION INSTRUCTIONS AND PROCEDURES.

Spray application of Metacaulk 1200 Spray requires airless spray equipment meeting the following specifications:

Working Pressure: Min. 2500 PSI (172 Bar)

Delivery: Min. .72 U.S. gpm (2.7 l/min.)

Recommended Spray Tip Orifice: 0.021 to 0.025 in. (0.53 to 0.64 mm)

Recommended Wetted Parts All seals and contact surfaces suitable for contact with latex emulsions.

A minimum 3/8" (9.5 mm) fluid line is required, a 1/2" (13 mm) line is preferred. Consult pump manufacturer for long hose runs or lifts to higher elevations. A reversible spray tip is recommended. A 6" (152 mm) fan pattern is suggested to minimize overspray. The following airless spray equipment has demonstrated suitability for application of this product.

Manufacturer Model Number & Description
Titan Tool Inc. 740ix Electric Airless Sprayer
Graco Inc. Ultra Max II 695 Electric Airless Sprayer

Testing Data

Metacaulk 1200 is classified by Underwriters Laboratories Inc. For specific test criteria, refer to the UL Product iQ or call RectorSeal.

Metacaulk 1200 was tested at positive pressure with a minimum 0.01 inches (2.5 Pa) water and in accordance with UL 2079 test standards.

Sound Transmission Class (STC) 65 - The test was performed in accordance with ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

Tested by a third party independent laboratory to ASTM G21 with Fungal Growth Rating results of zero.

FBC System Compatible indicates that this product has been tested, and is monitored on an ongoing basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® pipe and fittings.
FBC, FlowGuard Gold®, BlazeMaster® and Corzan® are licensed trademarks of The Lubrizol Corporation.

Inspection & Repair

RectorSeal recommends that a firestop system inspection be conducted during installation of the material in accordance with ASTM E2174 and ASTM E2393. In the event post-installation inspection and destructive sampling is necessary, RectorSeal advises repairing the damaged firestop system by replacing any material that was removed or damaged with the same product originally installed, and ensuring the assembly matches the original firestop listing. RectorSeal advises, that due to the chemical nature of firestop products and sealants, material depth should be determined by measuring the points of adhesion at the substrate bond area as sealants may decrease in size during the curing process.

Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Application	Spray, Caulking Gun or Towel
Application Temperature between	40˚F - 120˚F 4˚C - 49˚C

Color	Red or White
Cure Time	5 to 7 days (1/8" at 77˚F/25˚C)
Density	~10.5 lbs/gal
Flexible	Yes
Skin Over Time	30-45 min. (at 77˚F/25˚C)
pH Value	7 to 9

Volume Coverage:	
per 20.2 oz	36 cu. in
per 30 oz	54 cu. in
per 5 gallon pail	1155 cu. in.

VOC	Negligible

ASTM E84, UL 723 Tunnel Test	
Flame Spread	0
Smoke Index	0

Storage & Handling

Metacaulk 1200 should be stored in unopened container between 35˚(2˚C) and 120˚F (49˚C) to obtain a 3 year shelf life.

NOTE: Do not dilute; no mixing is required. Best if protected from freezing. If freezing occurs, thaw completely before use. Keep products stored under protective cover in original containers.

Limitations

Metacaulk 1200 is not designed to be used in areas under continuous immersion or in areas which would be continuously wet. Metacaulk 1200 should not be used on hot uninsulated surfaces above 200˚F (93˚C).

Cautions

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRES, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300.

PRECAUTIONS: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation. Wear gloves and safety glasses. Wash after handling. **FIRST AID:** For any overexposure or if skin irritation develops get immediate medical attention. **EYES-**Flush 15 minutes with clean water. **SKIN-**Wash with soap and water. **INGESTION-**Call physician immediately **SPILLS:** Clean up immediately with scrapers and water. **STORAGE AND HANDLING:** Keep container upright and tightly closed. Do not reuse empty container. **KEEP OUT OF REACH OF CHILDREN.**

For additional information, refer to Safety Data Sheet.

METACAULK 1200 COVERAGE RATE:

NOTE: Coverage rates as given are mathematical calculations. Allow for application losses, opening size variations and applied thickness variations. (Verify all calculations)

Based on 3" fluted metal deck with 3/4" relief joint.

Opening Width (inches)	*Coverage Rate in Lineal Feet Per Gallon at Application Thickness of 1/8 inch
1/2	102
3/4	88
1 1/2	61
2	51
2 1/2	44
3	38
3 1/2	34
4	30
5	25
6	22

*Calculation includes 1/2" overlap along both edges of opening

Limited Warranty

RectorSeal, LLC makes the Limited Express Warranty that when the instructions for storage and handling of our products are followed we warrant our products to be free from defects. THIS LIMITED EXPRESS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION ON THE PART OF RectorSeal, LLC. The sole remedy for breach of the Limited Express Warranty shall be the refund of the purchase price. All other liability is negated and disclaimed, and RectorSeal, LLC shall not be liable for incidental or consequential damages.

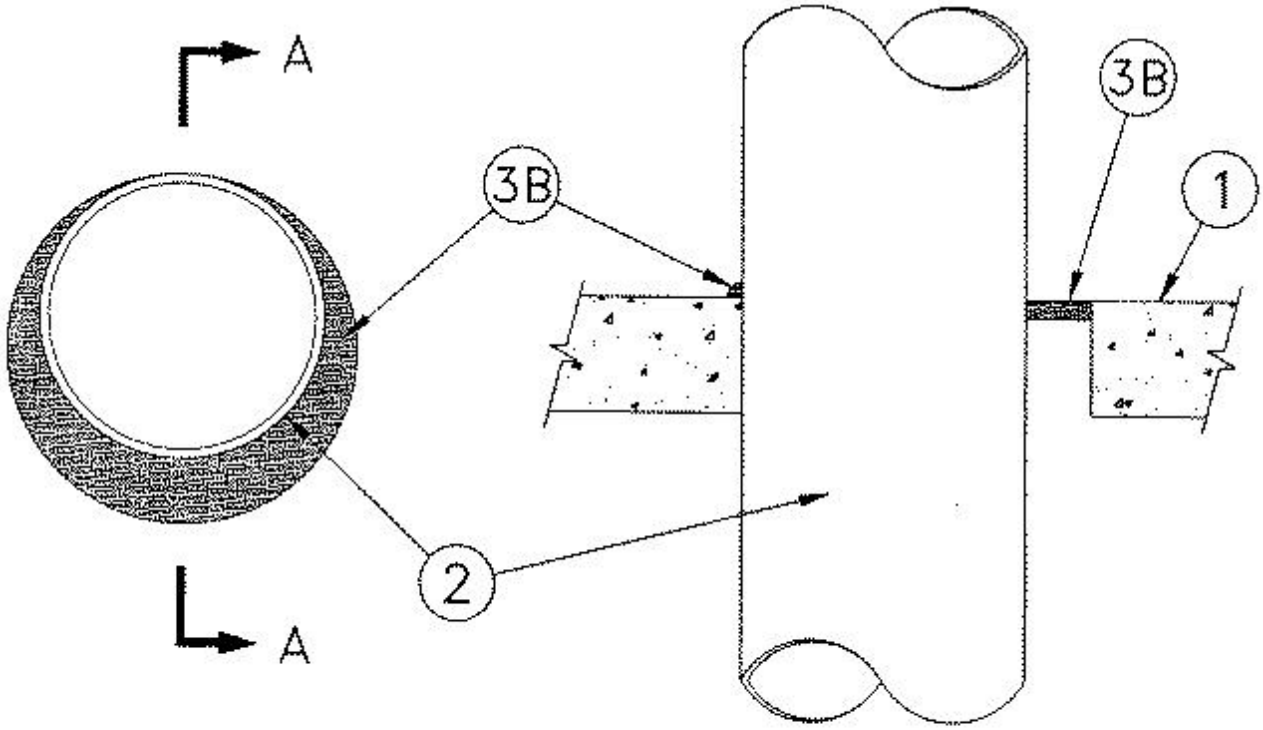
IFC INTERNATIONAL FIRESTOP COUNCIL THE Source of Firestop Expertise® MEMBER

Manufactured by **RectorSeal LLC • 2601 Spenwick Drive, Houston, TX 77055, USA • 800-231-3345 • Fax 800-441-0051 • RectorSeal.com**

System No. C-AJ-1235

July 15, 2014

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 and 3 Hr (See Item 3B)	F Rating — 2 and 3 Hr (See Item 3B)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 and 3 Hr (See Item 3B)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — Less Than 1 CFM/sq ft



SECTION 'A-A'

1. **Floor or Wall Assembly —** Min 4-1/2 in. (114 mm) thick reinforced normal weight (140-150 pcf or 2200-2400 kg/m3) concrete. Floor may also be constructed of any min 6 in. (152 mm) thick UL Classified hollow-core **Precast Concrete Units*. Wall may also be constructed of any UL Classified Concrete Blocks*.** Max diam of opening is 26 in. (660 mm). If the firestop system is installed within a hollow-core hollow-core precast concrete unit, max diam of opening shall be 7 in. (178 mm).

See **Concrete Block** (CAZT) and **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

1A. **Metallic Sleeve —** (Not shown, Optional) — Nom 8 in. (203 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces. The use and the max diam of the steel sleeve is dependent upon the type and max diam of the through penetrant (Item 3) and type and min fill material thickness as tabulated in Item 3B.

2. **Through Penetrants —** One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe, conduit or tubing and the periphery of the opening shall be min 0 in. (point contact) to a max 1-7/8 in. (48 mm). Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe —** Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 24 in. (610 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT) or nom 6 in. (152 mm) diam (or smaller) steel conduit.

D. **Copper Tubing —** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

E. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material —** Min 4 pcf (64 m^3) mineral wool batt insulation firmly packed into opening or min 1 in. (25 mm) diam backer rod friction fitted into the opening as a form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material. When the floor is constructed of hollow-core precast concrete units, packing material shall be recessed from both surfaces of floor to accommodate the required thickness of fill materials. In floors, the packing material may be removed after the fill material cures.

B. **Fill, Void or Cavity Material* — Sealant —** Fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. At the point contact location between through penetrant and concrete, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the concrete/through penetrant interface on the top surface of floor and on both surfaces of wall. When the floor is constructed of hollow-core precast concrete units, fill material shall be installed symmetrically on both sides of floor, flush with both floor surfaces. The F Rating of the firestop system is dependent upon the use and the max diam of the steel sleeve, type and max diam of the through penetrant and type and min fill material thickness as tabulated below:

Use of Steel Sleeve	Max Diam of Steel Sleeve In.	Type of Through Penetrant	Max Diam of Through Penetrant In.	Type of Fill Mtl	Min Fill Mtl Thkns In.	F Rating Hr
Not permitted	-	Steel or Iron Pipe	24 (610)	FS1900, Metacaulk 1000, Metacaulk 350i, Biostop 350i or Biostop 500+	1 (25)	3
Permitted	8 (203)	Steel or Iron Pipe	6 (152)	FS1900, Metacaulk 1000, Metacaulk 350i, Biostop 350i or Biostop 500+	1 (25)	3
Permitted	8 (203)	Copper Pipe,	6 (152)	FS1900, Metacaulk 1000, Metacaulk 350i, Biostop 350i or Biostop 500+	1 (25)	3
		Copper Tube or				
		Steel Conduit				
Permitted	6 (152)	Steel EMT	4 (102)	FS1900, Metacaulk	1 (25)	3

				1000, Metacaulk 350i, Biostop 350i or Biostop 500+		
Permitted	6 (152)	Steel or Iron Pipe	4 (102)	FS1900, Metacaulk 1000, Metacaulk 350i, Biostop 350i or Biostop 500+	1/2 (13)	2
Permitted	6 (152)	Copper Pipe,	4 (102)	FS1900, Metacaulk 1000, Metacaulk 350i, Biostop 350i or Biostop 500+	1/2 (13)	2
		Copper Tube or				
		Steel Conduit				
Permitted	6 (152)	Steel EMT	4 (102)	FS1900, Metacaulk 1000, Metacaulk 350i, Biostop 350i or Biostop 500+	1/2 (13)	2
Not permitted	-	Steel or Iron Pipe	24 (610)	FS900/FS900+, Biostop BF 150+, Metacaulk MC 150+	1/2 (13)	3
Permitted	8 (203)	Steel or Iron Pipe	6 (152)	FS900/FS900+, Biostop BF 150+, Metacaulk MC 150+	1/2 (13)	3
Permitted	8 (203)	Copper Pipe,	6 (152)	FS900/FS900+, Biostop BF 150+, Metacaulk MC 150+	1/2 (13)	3
		Copper Tube or				
		Steel Conduit				
Permitted	6 (152)	Steel EMT	4 (102)	FS900/FS900+, Biostop MC 150+, Metacaulk MC 150+	1/2 (13)	3

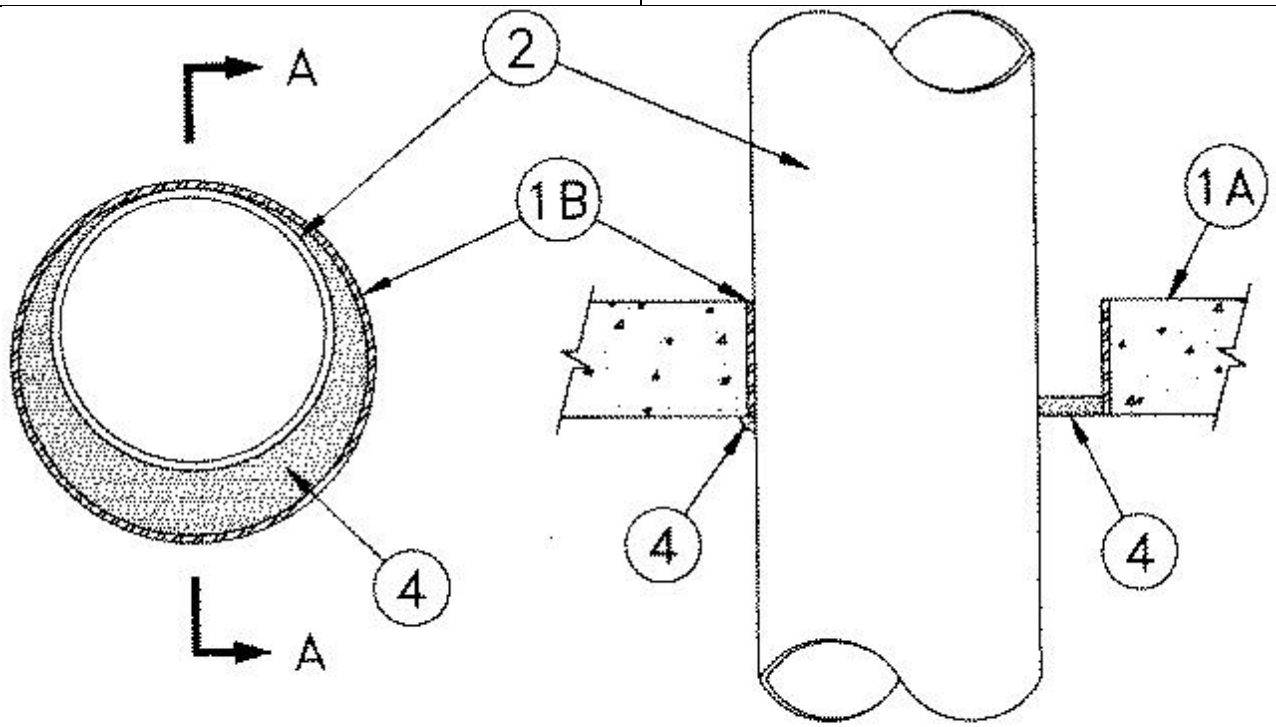
RECTORSEAL — FlameSafe® FS1900, Flamesafe® FS900, FlameSafe® FS900+, Metacaulk MC 150+, Metacaulk 1000, Metacaulk 350i, Biostop BF 150+, Biostop 350i or Biostop 500+..

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

System No. C-AJ-1403

July 15, 2014

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 and 3 Hr (See Item 4)	F Rating — 2 and 3 Hr (See Item 4)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 and 3 Hr (See Item 4)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — Less Than 1 CFM/sq ft



SECTION 'A–A'

1A. **Floor or Wall Assembly —** Min 4-1/2 in. (114 mm) thick reinforced light weight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Floor may also be constructed of any 6 in. (152 mm) thick UL Classified hollow core **Precast Concrete Units**. Max diam of opening is 9-5/8 in. (254 mm). When precast concrete units are used the max diam of opening is 7 in. (178 mm).

See **Concrete Blocks** (CAZT) and **Precast Concrete Units*** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

1B. **Metallic Sleeve —** (Optional) - Nom 5 in. (127 mm) (or smaller), Schedule 10 (or heavier) steel pipe sleeve, cast or grouted into floor or wall assembly. Sleeve to be flush with floor or wall surfaces.

2. **Through Penetrants —** One metallic pipe or tubing to be installed concentrically or eccentrically into opening such that the annular space between the pipe and the periphery of the opening is min 0 in. (point of contact) to max value shown in table below. Pipe to be firmly supported on both sides of opening. The following types and sizes of pipes may be used:

A. **Steel Pipe —** Nom 8 in. (203 mm) diam (or smaller) Schedule 40 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing or nom 6 in. (152 mm) diam (or smaller) steel conduit.

D. **Copper Tubing —** Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.

E. **Copper Pipe —** Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Packing Material —** (not shown) Min 1 in. (25 mm) diam backer rod firmly pressed into opening as a permanent form. Forming material to be recessed by min depth of 1/2 in. (13 mm) from floor surface or both surfaces of wall.

4. **Fill, Void, or Cavity Materials* - Caulk —** Fill material applied within the annulus, flush with either the bottom or top surface of floor or one surface of the wall. When wall is constructed of concrete blocks, fill material shall be installed within the annular space on both sides of wall. A min 3/8 in. (10 mm) bead of the caulking material shall be applied, on the same side of the sealant in the annular space, at the point of contact of pipe and periphery of opening at bottom or top floor surface or at wall surface. In floors of precast concrete units, fill material shall be installed on the bottom side of the floor. For 3 Hr F and FH-ratings (see table below), an additional 1/4 in. (6 mm) of the caulk specified shall be applied around the entire circumference of the penetrant at the bottom or top floor surface or at wall surface. The fill material thickness is dependent on the hourly F and FH-ratings, the type and size of penetrant and type of fill material as tabulated below:

Type of Penetrant	Max Diam of Penetrant In. (mm)	Max Annular Space(In.)	Type of Fill Material	Thickness of Fill Material In. (mm)	F and FH-Ratings Hr
Steel or Iron Pipe	8 (203)	1 (25)	FS900+	1/2 (13)	2
Copper Pipe, Copper Tube, Conduit	4 (102)	1 (25)	FS900+	1/2 (13)	2
Steel or Iron Pipe	4 (102)	1/2 (13)	FS1900 Metacaulk 1000, Metacaulk 350i, Biostop 350i or Biostop 500+	3/4 (19)	2
Steel or Iron Pipe	8 (203)	1 (25)	FS900+	1 (25)	3
Copper Pipe, Copper Tube, Conduit	4 (102)	1 (25)	FS900+	1 (25)	3

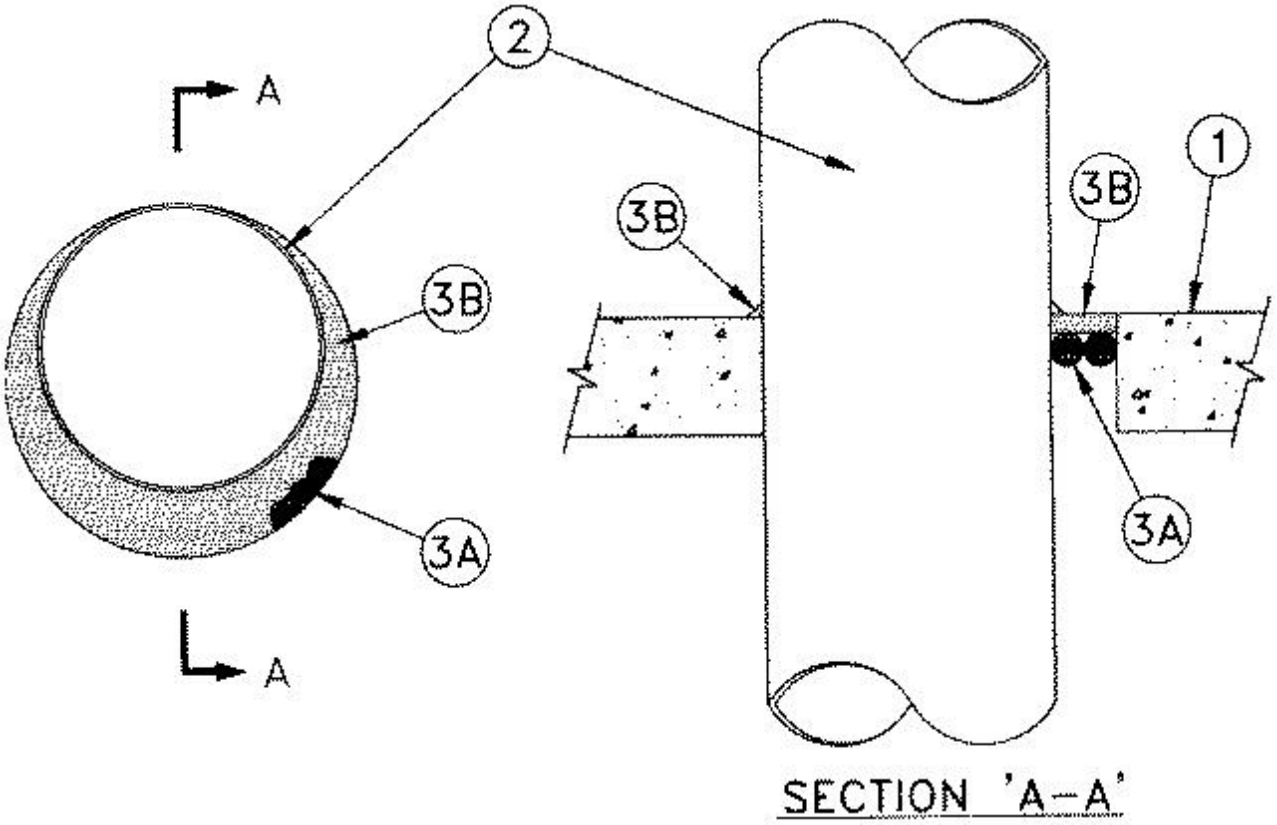
RECTORSEAL — FlameSafe® FS900+, FlameSafe FS1900, Metacaulk MC 150+, Metacaulk 1000, Metacaulk 350i, Bionstop BF 150+, Biostop 350i or Biostop 500+

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

System No. C-AJ-1404

July 15, 2014

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 0 Hr
	FTH Rating — 0 Hr



1. **Floor or Wall Assembly —** Min 2-1/2 in. (64 mm) thick reinforced light weight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Floor may also be constructed of any 6 in. thick UL Classified hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 24-7/8 in. (632 mm). When precast concrete units are used the max diam of opening is 7 in. (178 mm).

See **Concrete Blocks** (CAZT) and **Precast Concrete Units*** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

2. **Through Penetrants —** One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The annular space shall be min 0 in. to max 7/8 in. (22 mm) The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe —** Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 24 in. (610 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 6 in. (152 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.

D. **Copper Tubing —** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

E. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material —** Foam backer rod firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall, as required to accommodate the required thickness of fill material.

B. **Fill, Void, or Cavity Materials* - Sealant —** Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor, or with both surfaces of wall. Min 1/4 (6 mm) in. thick crown of the fill material shall be applied around the entire circumference of the penetrant at the top surface of floor or both surfaces of wall. In floors of precast concrete units, material shall be installed symmetrically on both sides of the floor.

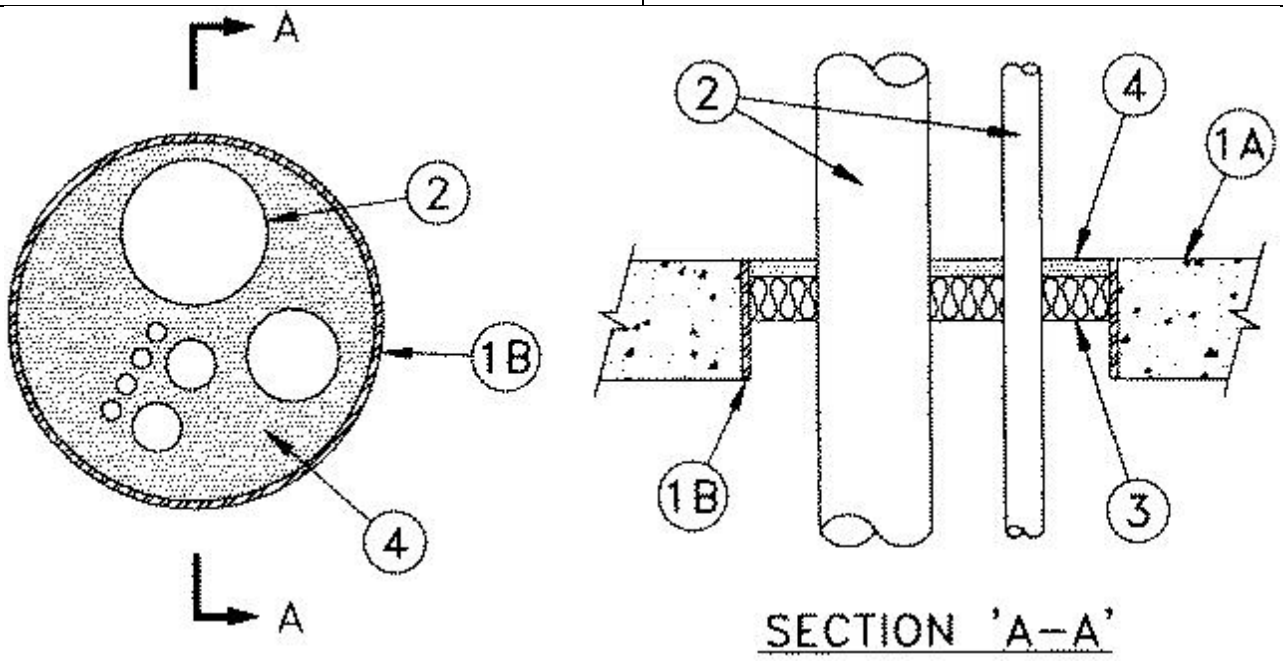
RECTORSEAL — FlameSafe® FS900+, FlameSafe FS1900, Metacaulk MC 150+, Metacaulk 1000, Metacaulk 350i, Biostop BF 150+, Biostop 350i or Biostop 500+

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

System No. C-AJ-1406

July 15, 2014

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 2 Hr
	FTH Rating — 0 Hr
L Rating at Ambient - Less than 1 CFM/sq ft	L Rating at Ambient - Less than 1 CFM/sq ft
L Rating at 400° F - Less than 1 CFM/sq ft	L Rating at 400° F - Less than 1 CFM/sq ft



1A. **Floor or Wall Assembly —** Min 2-1/2 in (64 mm) thick floor or 3 in. (76 mm) thick wall of reinforced light weight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 15-1/4 in. (387 mm).

See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

1B. **Metallic Sleeve (Optional) —** Nom 15-1/4 in. (387 mm) diam (or smaller), Schedule 30 (or heavier) steel pipe sleeve, cast or grouted into floor or wall assembly, flush with floor or wall surfaces.

2. **Through Penetrants - —** A max of eight pipes, conduits or tubing to be installed within the opening. The space between pipes, conduits or tubing shall be min ½ in. (13 mm) to max 3 in. (76 mm). The space between pipes, conduits or tubing and periphery of opening shall be min ½ in. (13 mm) to max 5 in. (127 mm). Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe —** Nom 6 in. (152 mm) diam (or smaller) Schedule 40 (or heavier) steel pipe.

B. **Conduit —** Nom 2 in. (51 mm) diam (or smaller) electrical metallic tubing.

C. **Copper Tubing —** Nom 3/4 in. (19 mm) diam (or smaller) Type L (or heavier) copper tubing.

D. **Copper Pipe —** Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Packing Material —** Min 2 in. (51 mm) thick mineral wool insulation of min 4 pcf (64 kg/m^3) firmly pressed into opening as a permanent form. Insulation material to be recessed by min depth of 1/2 in. (13 mm) from top surface of floor or both surfaces of wall.

4. **Fill, Void, or Cavity Materials* - Caulk —** Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or both surfaces of wall.

RECTORSEAL — FlameSafe® FS900+, Metacaulk MC 150+ and Biostop BF 150+

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

System No. C-AJ-1426

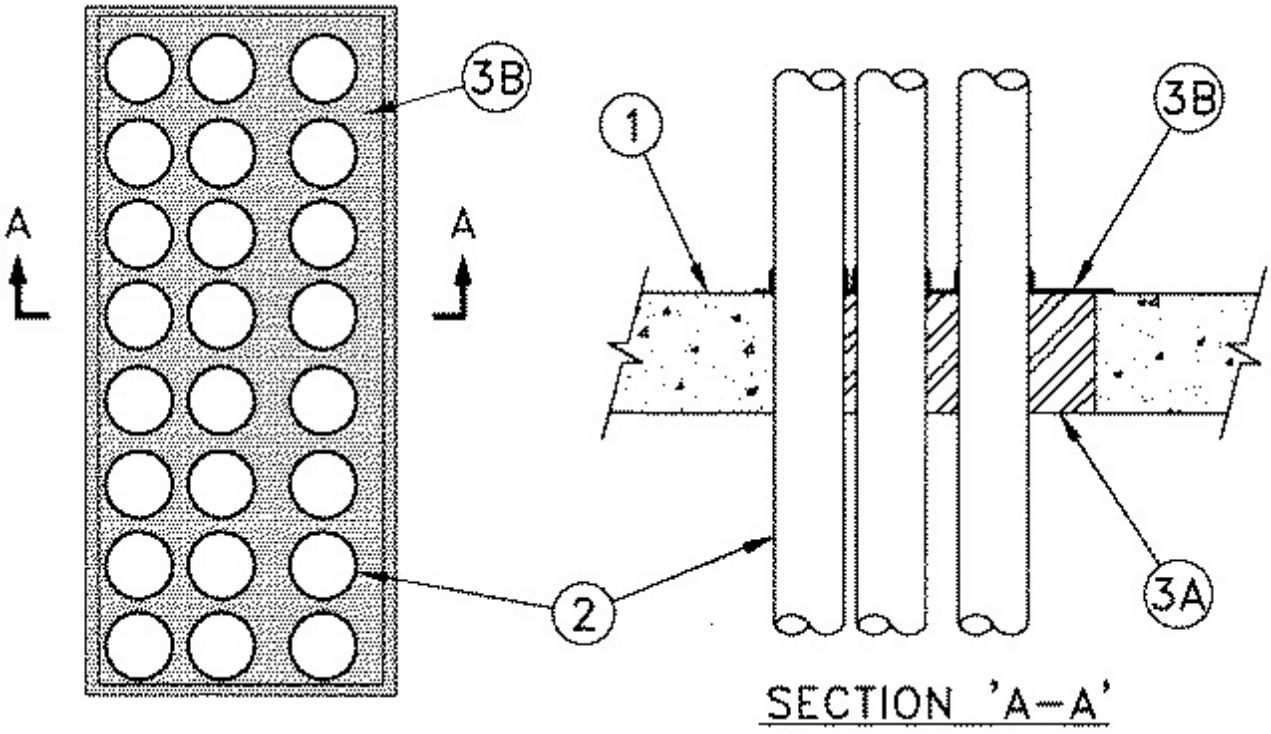
May 27, 2014

F Rating — 2 Hr

T Rating — 0 Hr

L Rating At Ambient — Less Than 1 CFM/sq ft (See Item 2)

L Rating At 400 F — Less Than 1 CFM/sq ft (See Item 2)



1. **Floor or Wall Assembly —** Min 4-1/2 in. (114 mm) thick reinforced light weight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max area of opening is 864 sq. in. (0.56 m^2) with max dimension of 48 in. (1.22 m).

See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. **Through Penetrants —** A max of twenty-four pipes, conduit or tubing to be installed within the opening. The space between the pipes, conduit or tubing shall be within the range of 5/16 in. (8 mm) to 2-1/2 in. (64 mm). The space between pipes, conduit or tubing and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). **L Ratings apply only when the min annular space between the through penetrants and the edge of the opening is equal to or greater than 1/4 in. (6 mm).** Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe —** Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing or steel conduit.

D. **Copper Tubing —** Nom 1-1/2 in. (38 mm) diam (or smaller) Type L (or heavier) copper tubing.

3. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material —** Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening and in between the penetrants as a permanent form. Packing material to be installed flush with top surface of floor or with both surfaces of wall .

B. **Fill, Void, or Cavity Materials* —** Min 1/8 in. (3.2 mm) wet thickness of fill material applied to completely cover the mineral wool packing material and to lap min 1/2 in. (13 mm) onto the top surface of floor or onto both surfaces of wall. Spray to lap a min of 1/2 in. (13 mm) onto penetrant surfaces on the top surface of the floor or on both surfaces of the wall .

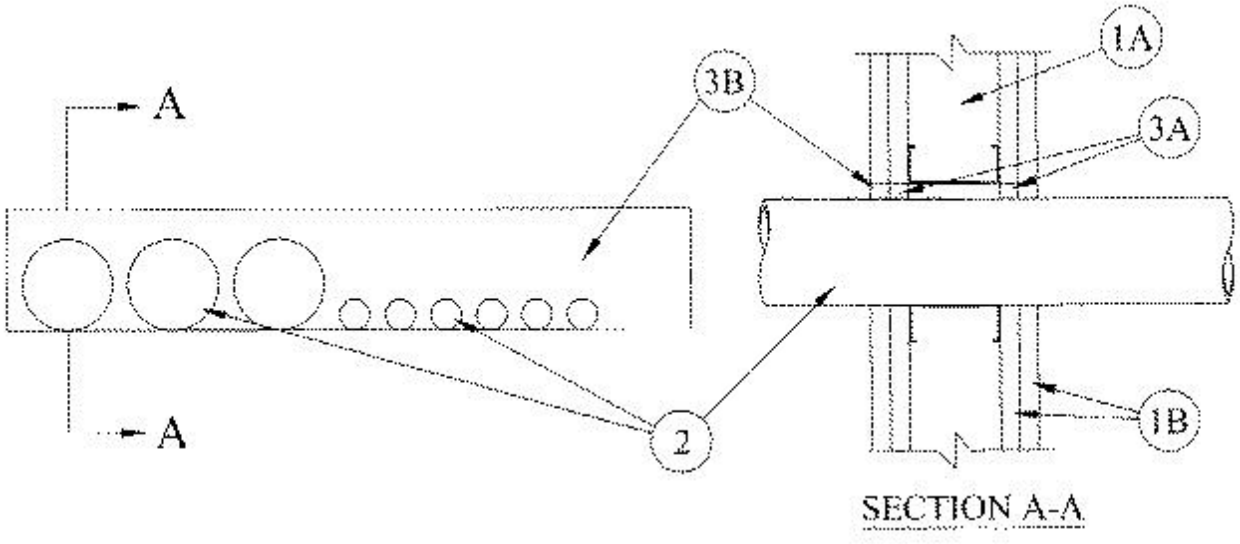
RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

System No. W-L-1207

July 16, 2014

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1B)	F Ratings - 1 and 2 Hr (See Item 1B)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC. Additional framing members to be installed in stud cavity containing the through penetrants to form a rectangular box around the through penetrants.

B. **Gypsum Board* —** /8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max area of opening is 90-1/2 sq in. (584 cm^2) with max dimensions of 22-5/8 in. (575 mm) for steel stud walls. Max area of opening is 58 sq in. (374 cm^2) with max dimensions of 14-1/2 in. (368 mm) for wood stud walls.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrants —** One or more through penetrants to be installed within the opening. Only three through penetrants shall have a nom diam greater than 1 in. (25 mm). The space between the through penetrants shall be a nom 1/2 in. (13 mm). The annular space between through penetrants and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. (13 mm) for through penetrants having a nom diam greater than 1 in. (25 mm). The annular space between through penetrants and periphery of opening shall be min 0 in. (point contact) to max 2-7/8 in. (73 mm) for through penetrants having a nom diam 1 in. (25 mm) or less. The through penetrants to be rigidly supported on both sides of wall assembly. The following types and sizes of through penetrants may be used:

A. **Steel Pipe —** Nom 3 in. (76 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 3 in. (76 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 3 in. (76 mm) diam (or smaller) steel electrical metallic tubing or galv steel conduit.

3. **Firestop System —** The firestop system shall consist of the following:

A. **Forms —** (Optional) Used to prevent the leakage of fill material during installation in 2 hr fire-rated assemblies. Forms to be rigid sheet material or polyurethane backer rod, cut to fit the contour of the through penetrant and friction fitted into the opening on both sides of wall. Forms to be recessed from both surfaces of wall to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrants and gypsum board, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall.

RECTORSEAL — FS900+, FS929+, FS901+CG, FS905+CG and FS955+CG, Metacaulk MC 150+, Biostop BF 150+

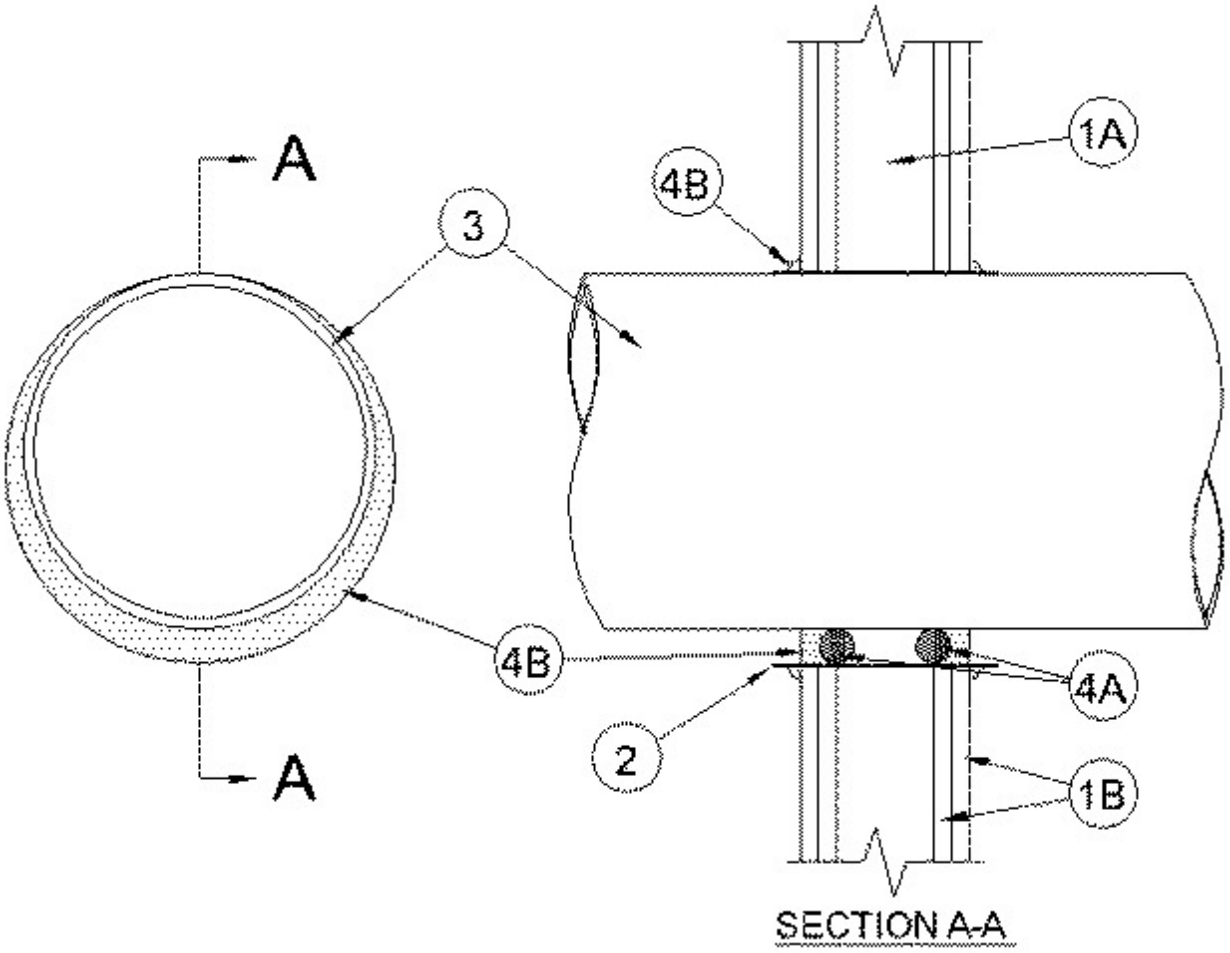
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

System No. W-L-1325

December 03, 2003

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 0 Hr



1. **Wall Assembly —** The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel channel studs to be min 3-1/2 in. wide and spaced max 24 in. OC.

B. **Gypsum Board* —** One or two layers of nom 5/8 in. thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 14-1/2 in.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly.

2. **Metallic Sleeve —** (Optional) — Cylindrical sleeve fabricated from min No. 26 gauge galv sheet steel and having a min 1 in. overlap along the longitudinal seam. Ends of sleeve to be flush with or extend a max 1 in. beyond each surface of wall.

3. **Through Penetrants —** One metallic pipe, conduit or tubing to be installed concentrically or eccentrically within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduit or tubing may be used:

A. **Steel Pipe —** Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe. An annular space of 0 in. (point contact) to 1-3/4 in. is required within the firestop system.

B. **Iron Pipe —** Nom 12 in. diam (or smaller) Schedule 10 (or heavier) cast iron pipe. An annular space of 0 in. (point contact) to 1-3/4 in. is required within the firestop system.

C. **Copper Tubing —** Nom 4 in diam (or smaller) Type L (or heavier) copper tube. An annular space of 0 in. (point contact) to 1-7/8 in. is required within the firestop system.

D. **Copper Pipe —** Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe. An annular space of 0 in. (point contact) to 1-7/8 in. is required within the firestop system.

E. **Conduit —** Nom 6 in. (or smaller) steel conduit or or nom 4 in. diam (or smaller) steel electrical metallic conduit. An annular space of 0 in. (point contact) to 1-7/8 in. is required within the firestop system.

4. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material —** In 2 hr wall assemblies, foam backer rod firmly packed into opening as a permanent form. Packing material to be recessed from each surface of the wall to accommodate the required thickness of fill material.

B. **Fill Void or Cavity Materials* - Caulk —** Min 1/2 in. thickness of fill material applied within the annulus on both surfaces of the wall assembly. When steel sleeve is not used or when steel sleeve is flush with the wall surfaces, a min 1/2 in. diam bead of caulk shall be applied to the penetrant /gypsum board interface at the point contact location on both sides of wall. When steel sleeve is used, a bead of caulk is applied to the steel sleeve/gypsum board interface on both sides of wall.

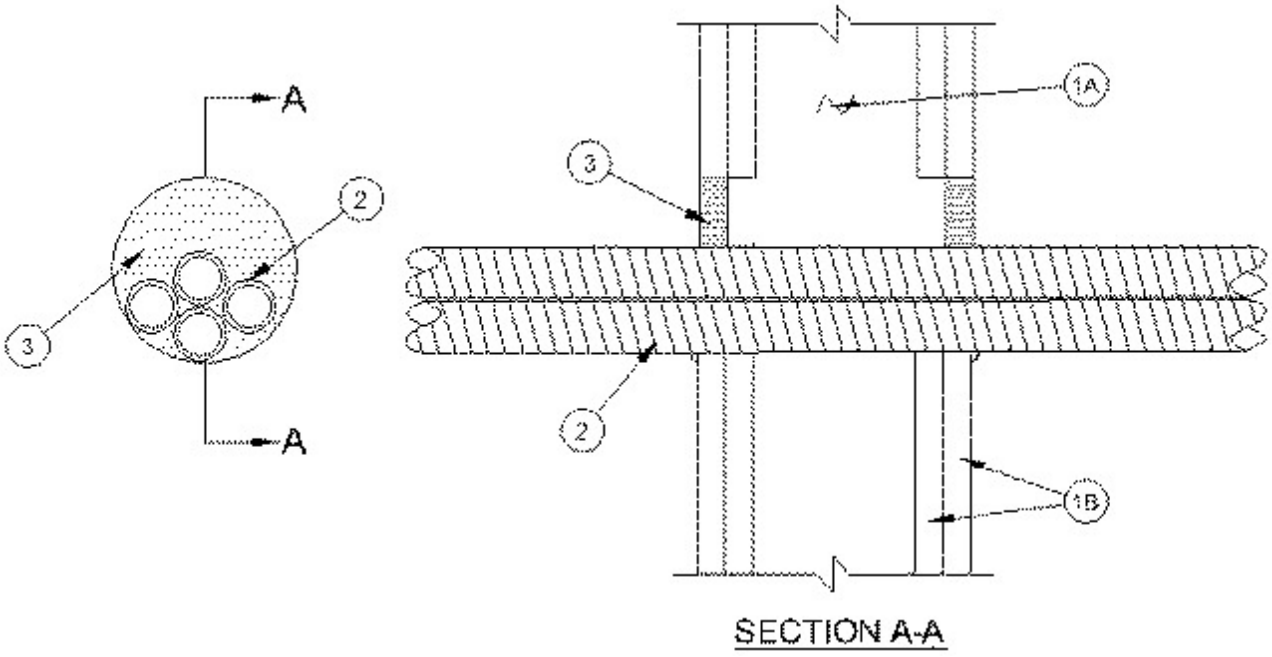
RECTORSEAL — MC 150+ Caulk, Metacaulk 1000

*Bearing the UL Classification Mark

System No. W-L-1343

July 16, 2014

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - 1.7 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - 1.7 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (406 mm) OC.

B. **Gypsum Board* —** 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 6 in. (152 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrants —** One or more nom 1-1/2 in. (38 mm) diam (or smaller) flexible steel conduits bundled together and installed within the opening. Max diam of through penetrant bundle shall be 4 in. (102 mm). The space between the through penetrants shall be a min of 0 in. (point contact) to a max of 2 in. (51 mm). The annular space between the through penetrants and periphery of opening shall be min 0 in. (point contact) to max 2 in. (51 mm). Conduit to be rigidly supported on both sides of wall assembly.

See **Flexible Metal Conduit** (DXUZ) category in the Electrical Construction Materials Directory for names of manufacturers.

3. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrants and gypsum board, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall. Additional sealant shall be forced into interstices of through penetrants to max extent possible.

RECTORSEAL — FS 900+ Sealant, Metacaulk MC 150+, Biostop BF 150+

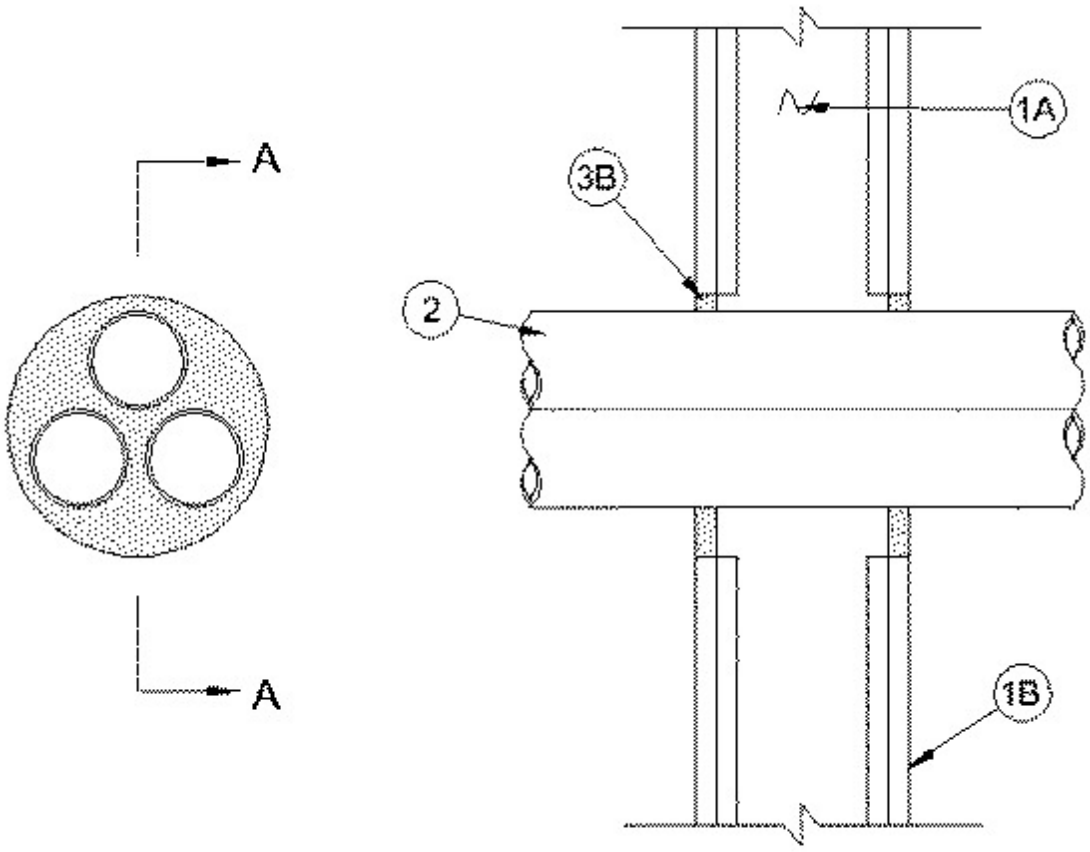
*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

System No. W-L-1362

August 31, 2004

F Ratings — 1 and 2 Hr (See Item 1)

T Rating — 3/4 Hr



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel channel studs to be min 3-1/2 in. wide and spaced max 24 in. OC.

B. **Gypsum Board* —** One or two layers of nom 5/8 in. thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 8 in.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly.

2. **Through Penetrants —** A max of three pipes, conduits or tubes to be installed within the opening. Annular space between the penetrants and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. A min 1/4 in. space must be maintained between penetrants. Penetrants to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe —** Nom 3 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 3 in. diam (or smaller) Schedule 10 (or heavier) cast iron pipe.

C. **Copper Tubing —** Nom 2 in diam (or smaller) Type L (or heavier) copper tube.

D. **Copper Tubing —** Nom 2 in. diam (or smaller) Regular (or heavier) copper pipe.

E. **Conduit —** Nom 3 in. (or smaller) steel conduit or nom 3 in. diam (or smaller) steel electrical metallic conduit.

3. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material —** (Optional) — In 2 hr wall assemblies, foam backer rod firmly packed into opening as a permanent form. Packing material to be recessed from each surface of the wall to accommodate the required thickness of fill material.

B. **Fill Void or Cavity Materials* - Caulk —** Min 5/8 in. thickness of fill material applied within the annulus on both surfaces of the wall assembly. Min 1/2 in. diam bead of caulk shall be applied to the penetrant /gypsum board interface at the point contact location on both sides of wall.

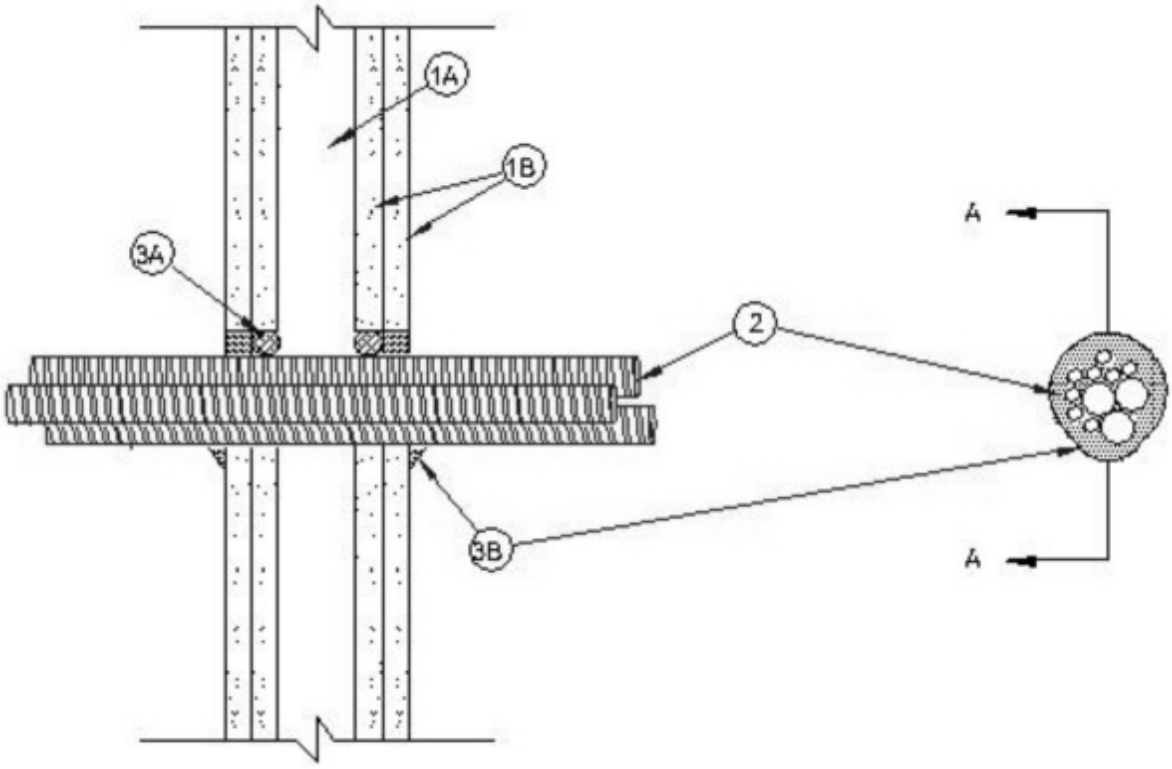
RECTORSEAL — MC 150+ Caulk

*Bearing the UL Classification Mark

System No. W-L-1427

July 16, 2014

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating — 3/4 and 1-1/2 Hr (See Item 1)	FT Rating — 3/4 and 1-1/2 Hr (See Item 1)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 1 and 2 Hr (See Item 1)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Rating — 3/4 and 1-1/2 Hr (See Item 1)



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory. Max diam of opening is 6 in. (152 mm).

The hourly F and T Rating of the firestop system are dependent on the hourly fire rating of the wall assembly in which it is installed as shown in the table below:

Rating of Wall, Hr	F Rating, Hr	T Rating, Hr
2	2	1-1/2

1	1	3/4

2. **Through Penetrating Product*-Flexible Metal Piping —** One or more nom 1-1/4 in. (32 mm) diam (or smaller) flexible metal pipes installed concentrically or eccentrically within opening. Annular space between penetrants and periphery of opening to be min 0 in. (0 mm) to max 2 in. (51 mm). Space between penetrants shall be min 0 in. (0 mm) to max 2 in. (51 mm). Penetrants to be rigidly supported on both sides of wall.

OMEGA FLEX INC

GASTITE, DIV OF TITEFLEX — CSST or FlashShield CSST

WARD MFG L L C

3A. **Packing Material —** In 2 Hr rated walls assemblies, foam backer rod firmly packed into opening as permanent form. Packing material to be recessed from both wall surfaces as required in accommodate the required thickness of fill material.

3B. **Fill, Void or Cavity Materials* — Caulk or Sealant —** Min 5/8 in. (16 mm) thickness of caulk applied within annulus, flush with both surfaces of wall. Min 1/2 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall.

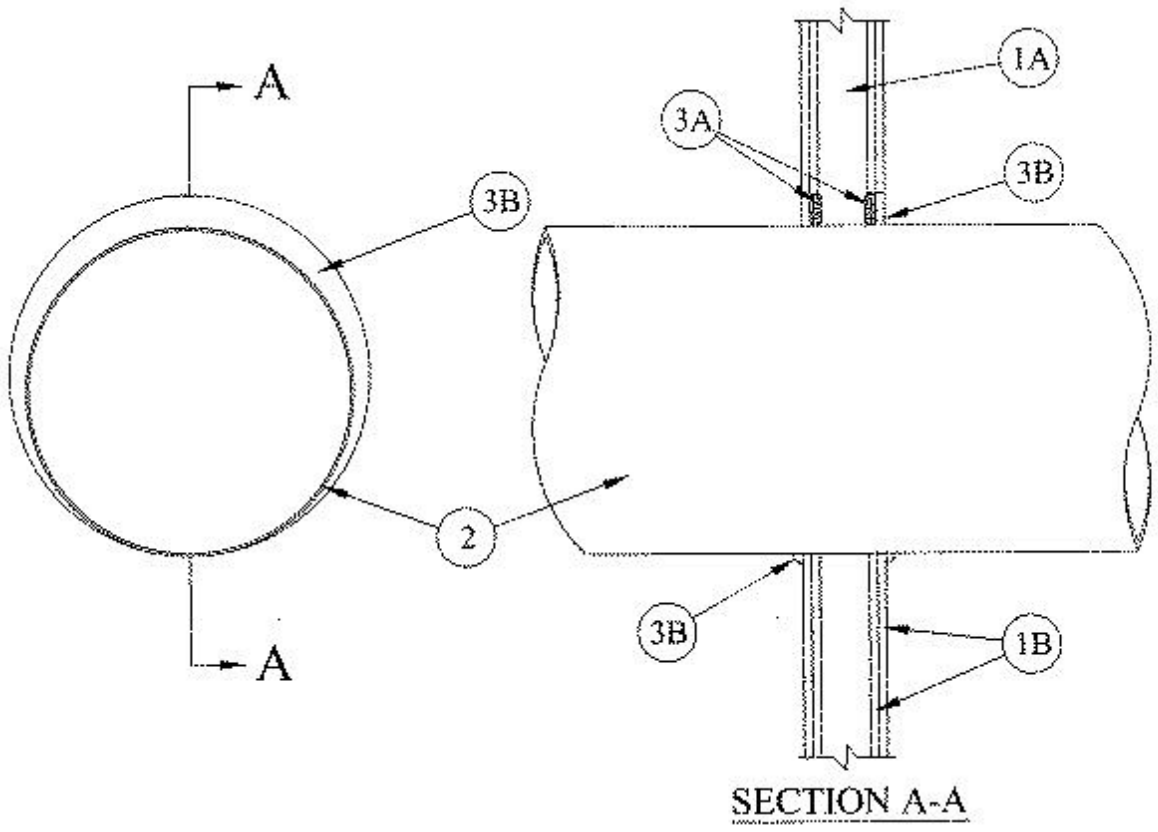
RECTORSEAL — FlameSafe® FS900+, FS1900, Metacaulk MC 150+, Metacaulk 1000, Metacaulk 350i, Biostop BF 150+, Biostop 350i or Biostop 500+

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

System No. W-L-1152

July 16, 2014

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 1 and 2 Hr (See Item 1)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing in all four sides.

B. **Gypsum Board* —** 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges.

The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Design in the UL Fire Resistance Directory. Max diam of opening is 26-3/8 in. (670 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.

The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrant —** One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 in. (point contact) to max 2-3/8 in. (60 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduit or tubing may be used:

A. **Steel Pipe —** Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 24 in. (610 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or nom 6 in. diam (or smaller) steel conduit.

D. **Copper Tubing —** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

E. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Firestop System —** The firestop system shall consist of the following:

A. **Forms —** Use to prevent the leakage of fill material during installation in 2 hr fire-rated assemblies. Forms to be rigid sheet material or polyurethane backer rod, cut to fit the contour of the through penetrant and friction fitted into the opening on both sides of wall. Forms to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Material* — Sealant —** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrant and gypsum board, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall.

RECTORSEAL — FlameSafe FS900, FS900+, FS1900, Metacaulk MC 150+, Metacaulk 1000, Metacaulk 350i, Biostop BF 150+, Biostop 350i or Biostop 500+

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**