Firestopping Submittal Package

metacaulk®

Project: Commercial Waterproof Contractors
Architect:
General Contractor:
Installation Contractor:
Distributor (and Contact):

Manufacturer's Representative:

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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
ASTM G21	Testing for mold and mildew growth resistance

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

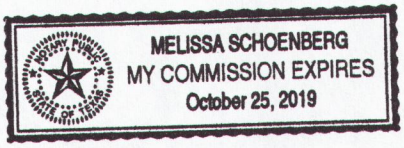
ALL PRODUCTS CONTAIN NO ASBESTOS OR PCB'S AND ARE CONSIDERED V.O.C. COMPLIANT.

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

SAFETY DATA SHEET

METACAULK® 1200

Spray and caulk firestop mastic

Section 1 – Product and Company Information

Product Name
Metacaulk® 1200 Spray

Product Codes
66379, 66527

Chemical Family
Organic/Inorganic

Use
Firestopping sealant

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

Date of Validation
August 21, 2017

Date of Preparation
August 21, 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

MATERIAL SAFETY DATA SHEET

MANUFACTURER: **ROCK WOOL MANUFACTURING COMPANY**
ADDRESS: 1400 7th Ct. (zip: 35094-1504)
P.O. BOX 506
LEEDS, AL 35094-0506 USA

PHONE: For information purposes: 8:00 AM - 5:00 PM
U.S. Central Time Zone; Telephone: 205.699.6121 or US & CAN: 800.874.7625
Facsimile (TeleFax): 205.699.3132
FOR EMERGENCY: (After 5:00 PM - U.S. Central Time Zone)
Telephone : 205.699.6124

DATE of PREPARATION (Revised): June 21 2010
PREPARED BY: Christopher H. Bullock

SECTION I - PRODUCT NAME (s):

1. **DELTA® -?A & -? BOARD, Unfaced Mineral Wool - all densities***
2. **DELTA® -?A & -? FLEX Mineral Wool BLANKET (No Metal Mesh)- all densities**
3. **DELTA®-CW?A BOARD, Unfaced & Faced Mineral Wool - all densities**
4. **DELTA® FACED BOARD, Mineral Wool - all densities***
5. **DELTA® LAMELLA, Mineral Wool - all facings - all densities***
6. **DELTA® -?A & -? MARINE BOARD, unfaced Mineral Wool - all densities***
7. **DELTA® METAL-MESH BLANKET, Mineral Wool - all facings - all densities**
8. **DELTA® SAFING BOARD, Mineral Wool - all thickness(s)**
9. **DELTA® SA-FIRE BOARD, Sound Attenuation Mineral Wool - all thickness(s)**
10. **DELTA® BASEMENT BOARD, Mineral Wool - all thickness(s)**
11. **DELTA® DECK PLUGS, Trapezoid Shaped Mineral Wool Strips**
12. **DELTA® -?A CUT BOARD, Mineral Wool Narrow Strips- all densities**

* See HEAT-UP PRECAUTIONS in SECTION IX

SECTION II - PRODUCT INGREDIENTS

1. Chemical Name: Mineral Wool Fiber
CAS Number: None Assigned
Common Name(s): Rock Wool, Slag Wool, Mineral Wool Batt or Felt

Exposure Limits:	OSHA PEL	ACGIH TLV	OTHER
Total Dust	15mg/M^3	10mg/M^3	N.A.
Respirable Dust	5mg/M^3	5mg/M^3	1 f/cc (Respirable)**
Percent	94% to 99.5%		(Workplace Exposure Guideline)

** Under the acceptance of the Health & Safety Partnership Program, Rock Wool Manufacturing Company recommends a maximum workplace exposure of 1 respirable fiber/ cc.

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2. Chemical Name: Modified Urea extended Phenolic Cured Resin
CAS Number: 25104-55-6
Common Name(s): Binder, Thermal Set Resin, Resin

Exposure Limits:	OSHA PEL	ACGIH TLV	OTHER
	N.A.	N.A.	N.A.
Percent	from 0.08 % to 3 %		

3. Chemical Name: Petroleum Hydrocarbon
CAS Number None Assigned
Common Name(s): Anti-dust Oil, Industrial Oils, Oil

Exposure Limits:	OSHA PEL	ACGIH TLV	OTHER
	N.A.	5mg/M^3 (oil mist	N.A.
Percent ..... 0.01% to 0.5		if generated)	

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4. Chemical Name: Adhesive (Dried);
Applied to Faced Insulations as an adhesive (Except **DELTA®-CW?A BOARD**)
CAS Number: None Assigned, an article
Common Name(s): Solvent Based Adhesive

Exposure Limits:	OSHA PEL	ACGIH TLV	OTHER
	N.A.	N.A.	N.A.

Percent ..... Less than 0.1%

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5. Chemical Name: Continuous filament fibrous glass bonded together with phenolic cured resin; applied with adhesive to various Board Products as a Facing/Substrate.
CAS Number: 65997-17-3
Common Name(s) Fiber Glass Mat, Dura-Glass Laminating Mat

Exposure Limits:	OSHA PEL	ACGIH TLV	OTHER
Total Dust	15mg/M^3 or	10mg/M^3	N.A.
Respirable Dust	5mg/M^3 or	5mg/M^3	1 f/cc**

Percent ..... Less than 1%

** Under the acceptance of the Health & Safety Partnership Program, Rock Wool Manufacturing Company recommends a maximum workplace exposure of 1 respirable fiber/ cc.

5A.-Subpart of Fiber Glass Mat. The following shows ingredients included in the composition of the bonded continuous filament fibrous glass.
Chemical Name: Modified Urea extended Phenolic Thermal Set Cured Resin
CAS Number: 9011-05-6
Common Name(s): Binder, Thermal Setting Resin, Resin

Exposure Limits	OSHA PEL	ACGIH TLV	OTHERS
	N. A.	N.A.	N.A.

Percent ..... Less than 0.2%

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6. Chemical Name: Vapor Retarder Facing for Insulation (Laminated kraft paper, continuous filament fibrous glass, & aluminum foil) including Self-Sealing Lap
CAS Number: None Assigned, "An Article" per CFR 1910.1200
Common Name(s): All Service Jacket (ASJ) Facing, Foil-Scrim-Kraft (FSK) Facing
Percent ..... Less than 1%

6A. Subpart of Vapor Retarder Facing: The following shows ingredients included in the manufacturer of the facings plus self-sealing lap.

Components	CAS No.	OSHA PEL	ACGIH TLV
Filament Fibrous Glass	65997-17-3	N.A.	10mg/M^3
Antimony Tri-Oxide	1309-64-	0.5 mg/M^3	0.5 mg/M^3
Decabromodiphenyloxide	1163-19-5	5 mg/M^3	5 mg/M^3

SECTION III - PHYSICAL DATA

Boiling Point: N.A.
Re-Melting Point (Mineral Wool): >2000°F.
Re-Melting Point (Fil. Fibrous Glass):>1600°F.
Vapor Pressure: N.A.
Solubility in H_20: None

Vapor Density: (air=1) N.A.
Specific Gravity: Variable
Pure/Mixture: Mixture
% Volatile by Volume: N.A.
Evaporation Rate: N.A.

Appearance and Odor: Yellowish in color. No appreciable odor. Some products have a aluminum foil, white kraft paper laminate, glass mat, or metal mesh facing.

SECTION IV - FIRE & EXPLOSION HAZARD DATA

Flash Point (°F.): Incombustible; Resin will pyrolyze at sustained temperatures above 500°F.
Flammability Limits: LEL= N.A. UEL= N.A.
Auto-Ignition Temperature (°F): N.A.
Extinguishing Media: Water, Foam, Dry Chemical, CO_2
Unusual Fire and Explosion Hazards*: No unusual fire and explosion hazards. However, paper and foil facings of some products can burn. Special care should be taken when working close to facings with any type of open flame.
Special Fire Fighting Instructions: Self-contained/ supplied-air breathing apparatus is recommended.

* See **HEAT-UP PRECAUTIONS** in SECTION IX

SECTION V - REACTIVITY DATA

Stability (conditions to avoid): Materials are stable.
Incompatibility (materials to avoid): Aluminum Foil may chemically react to high pH materials such as uncured portland cement with the presents of water.
Hazardous Decomposition Products: Facing, adhesive, and binder (resin) burns or decomposes in a fire causing acrid smoke. Decomposition products are carbon monoxide, carbon dioxide, carbon particulates and water.
Hazardous Polymerization: Will not occur

SECTION VI - HEALTH HAZARD DATA

Primary Route(s) of Entry: Inhalation, skin, and eye contact

Inhalation:

Acute: The release of mineral fibers during normal handling may cause short term irritation to the nose and/or throat.

Chronic: The International Agency for Research on Cancer (IARC), has classified mineral wool as a group 3 ("not classifiable as to carcinogenicity to humans").

Skin Contact:

Acute: May cause transitory mechanical dermatitis. Skin absorption does not occur.
Chronic: None known

Eye Contact:

Acute: Direct contact will cause mechanical irritation.
Chronic: None known

SECTION VI - HEALTH HAZARD DATA (continued...)

Ingestion:

Acute: Unlikely to occur under normal conditions of use. If ingested, it may cause temporary irritation to the gastrointestinal (GI) tract (especially the stomach). Observe individual; if symptom develop, consult a physician.

Chronic: None known

HMIS Rating- Health: 1, Fire: 0, Reactivity: 0, Other: 0

NFPA Rating- Health: 1, Flammability: 0, Reactivity: 0

WHMIS Class- D2D-Irritant Delta products are not controlled products

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Aggravated Medical Conditions: Pre-existing upper respiratory and lung diseases may be aggravated by dust.

The product is a mechanical irritant for skin, eyes, and upper respiratory system

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Carcinogenicity:	NTP Listed	IARC Classified	OSHA Regulated
	No	Yes	No

Emergency & First-Aid Procedures:

Inhalation: Remove from exposure. Drink water to clear throat and blow nose to evacuate fibers.

Skin Contact: Frequent washing of skin surface with water to remove accumulated fibers will minimize irritation. If irritation persists consult a physician. Treat as a mechanical irritant.

Eye Contact: Flush eye with flowing water until irritation stops. If symptoms persist, seek medical attention.

Ingestion: Product in not intended to be ingested or eaten. If this product is ingested, irritation of the GI (gastrointestinal) tract may occur, and should be treated symptomatically. Rinse mouth with water to remove fibers, and drink plenty of water to help reduce the irritation. No chronic effects are expected following ingestion.

SECTION VII - SPILL, LEAK & DISPOSAL PROCEDURES

Action to take for spills: Normal clean-up procedures. Avoid creating dust.

Waste Disposal Method: Mineral wool fiber products are generally classified as a non-hazardous waste and disposal may be in land fill for noncritical materials. Local regulations should be consulted.

EPA Hazardous Waste Number: N.A.

These materials are not regulated under the "RCRA" hazardous waste regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION (During Installation or Removal.)

Ventilation: Use sufficient natural or mechanical ventilation to maintain airborne dust concentration below Threshold Limit Value (TLV).

Respiratory Protection: Should the Permissible Exposure Limits (PEL) of RESPIRABLE fiber or dust in Section II of this MSDS be exceeded, use a NIOSH approved N-95 respirator.

Eye and Face: Safety glasses, goggles or face shields should be worn when materials are being handled, fabricated, or applied especially overhead.

SECTION VIII - SPECIAL PROTECTION INFORMATION (During Installation or Removal)

General: Wear long-sleeved, loose fitting clothing, gloves and head covering. Wash work clothes separately from other clothing to prevent possible mineral wool fiber migration to other clothes. Rinse washer after use.

SECTION IX - SPECIAL PRECAUTIONS AND OTHER COMMENTS

Handling and Storage:

Keep materials under cover, dry and minimize the generation of dust. Care should be taken to protect faced products from open flames and other sources of ignition. Care should be taken to protect hands when handling metal mesh facings with sharp edges.

HEAT-UP PRECAUTIONS: During initial heat-up in excess of 500°F.(260°C.), binder decomposition occurs. Smoke and an acrid odor may be produced. Adequate ventilation must be provided against fumes. If personnel and fumes are present, all areas and adjacent areas must be well ventilated.

SECTION X - Footnotes and ABBREVIATIONS:

ACGIH (U.S.)	American Conference of Governmental Industrial Hygienists
CAS (U.S.)	Chemical Abstract Service
EPA (U.S.)	Environmental Protection Agency
IARC (Int' l.)	International Agency for Research on Cancer
LEL	Lower exposure Limit
N. A.	Not Applicable or Not Assigned
NIOSH	National Institute of Occupational Safety and Health
NTP (U.S.)	National Toxicology Program
OSHA (U.S.)	Occupational Safety and Health Administration
PEL (U.S.)	Permissible Exposure Limit
RCRA (U.S.)	Resource Conservation and Recovery Act
TWA	Time Weighted Average
TLV	Threshold Limit Value
UEL	Upper Exposure Limit

The responsibility to provide a safe workplace remains with the user. As of the date of preparation of this document, the foregoing information is believed to be accurate and is provided in good faith to comply with applicable federal and state law(s). However, THE MANUFACTURER MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

RECTORSEAL
A CSW Industrials Company

PRODUCT DATA SHEET

METACAULK® 1200, 1200SL, 1200 CAULK GRADE

Spray & caulk firestop mastic

1. Product Description

All three grades of Metacaulk® 1200 are a single component, general purpose fire rated sealant 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 three 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 Self-leveling (SL) sealant is made for horizontal applications where quick installation is necessary. 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, applied with a spray pump or poured. Metacaulk® 1200 systems are rated for up to 4 hour conditions in accordance with ASTM E1966/UL 2079 (Tests for Fire Resistance of Building Joint Systems), CAN/ULC-S115 (Fire Tests of Firestop Systems) test standards. Metacaulk® 1200 has been cycled 500 times, meeting the new ASTM E 1399 standard. Also tested in accordance with ASTM E 814 (UL1479) 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.**

Use Metacaulk® 1200 for various applications:

Curtain Wall Joints

HVAC Ductwork

Top of the Wall Construction Joints

Deflection Track Wall Systems

For complete list of product applications or for additional technical information, call RECTORSEAL for the latest updated information.

Metacaulk® 1200 Features

- Sprayable, Brushable, Trowelable, Caulkable or Pourable
- Freeze-thaw
- Water based
- Flexible - Elastomeric
- Paintable
- VOC Compliant
- Excellent Smoke Seal
- Minimum 3 Year Shelf Life

2. Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Application	Spray, Caulk, Brush or Trowel
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 8
Volume Coverage (at 1/8" wet depth):	
Per Square Foot	18 cu. in.
Per 20.2 oz	36 cu. in.
Per 30 oz.	54 cu. in.
Per Quart	58 cu. in.
Per 5 gallon pail	1155 cu. in.
VOC	Negligible

ASTM E 84, UL 723 Tunnel Test

Flame Spread	0
Smoke Index	0

STC Rating **65***

*Tested in a UL 411 wall assembly/section to ASTM E90.

ASTM G21

Testing for mold and mildew growth resistance

Tested by a third party independent laboratory to the ASTM G21-13 standard with Fungal Growth Rating results of zero.

3. 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.

4. Installation Data

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

5. Testing Data

Metacaulk® 1200 has been listed by UL. For UL classified system numbers, see above. Additional listings can be obtained by calling RECTORSEAL. For specific test criteria, refer to the UL Fire Resistence Directory 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.

FBC SYSTEM COMPATIBLE

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.

6. Storage & Handling

Metacaulk® 1200 should be stored in unopened container between 35˚(2˚C) and 120˚F (49˚C) to obtain a minimum 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.

7. Availability

Metacaulk® 1200 is available in 5 gallon pails, 30 oz tube, quart bottles, and 20.2 oz sausage packs.

8. 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). Self Leveling (SL) can not be used on vertical applications.

9. 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.

For additional technical service,
call: 713-263-8001 or 1-800-231-3345
fax: 713-263-7577 or 1-800-452-2824

RECTORSEAL
2601 SPENWICK DRIVE HOUSTON, TEXAS 77055
WWW.RECTORSEAL.COM
WWW.METACAULK.COM

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	77
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

10. 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.

Suggestions and recommendations covering the use of our products are based on our past experience and laboratory findings. However, as we have no control as to the methods and conditions of application, we only assume responsibility for the uniformity of our products within manufacturing tolerances.

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
August 21, 2017

Date of Preparation
August 21, 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) @ 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

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 (UL1479) 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

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®
MEMBER

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

DELTA®

DECK PLUGS

DELTA Deck Plugs are precision-cut from noncombustible UL® classified high-density mineral fiber DELTA Board using our patented V-grooving technology to facilitate compression into the fluted profile of metal decks encountered at top-of-wall joints. DELTA Deck Plugs are available in three (3) standard sizes to closely match the profiles of the most frequently specified metal decks:

For Top-Of-Wall @ Roof Deck Joints:
Type I Profile: 1.5" thick x 3.5"x4.5" width x 36" long

Type V Profile: 1.5" thick x 4.5"x5.5" width x 36" long

For Top-Of-Wall @ Floor Deck Joints:
Type III Profile: 3.0" thick x 5.0"x7.0"x36" long

Special non-standard sized precision-cut by agreement as to dimensions and quantities are available.

Note: Plug cross-sections are slightly over-sized to facilitate a snug compression fit and to overcome small dimensional variations of deck profiles among various metal deck manufacturers. The above dimensions are nominal and refer to the nominal size of the flute for which they are intended. Achieving the actual percentage of compression required by the listing agency the responsibility of the installing contractor.

DELTA Deck Plugs are manufactured in 36" long strips that are easily and precisely field cut to the length required using a suitable knife, i.e. 6" long belting knife. Most listed top-of-wall joint assembly descriptions specify a percentage of compression for the UL® classified mineral fiber forming material to assure that flutes remain fully packed within the dynamic limits anticipated by the joint's design. A suggested sequence for installation is 1) compress DELTA Board between the top-of-wall and the ribs of the metal deck, then 2) compress DELTA Deck Plugs to fit snugly into every flute above the DELTA Board.

Benefits:

• By cutting each DELTA Deck Plug to the precise length required, a smooth substrate over which firestop caulk or sealant can be most cost effectively applied according to the firestop material manufacturer's instructions.
• inspecting fire marshals and building code officials may be more confident that flutes are completely filled with UL® classified mineral fiber forming material.
• Flute-shaped DELTA Deck Plugs reduce the otherwise tedious time and consuming labor needed to cut, fit, completely fill and properly compress high-density mineral fiber board into the irregularly shaped flute openings and gaps between tops of walls and metal decks. Thus, production time can be reduced and critical construction schedules may be more easily met.

Technical Data:
Density: Nominal 7.0 lbs/ft3 (Nominal 112 Kg/m3)
Corrosion [Steel, Aluminum & Copper] per ASTM C 665 …None
Moisture Sorption [Vapor] per ASTM C 1104…… Less than 1%
Water wicking resistant • Non-hygroscopic • Does Not Promote Growth of Fungi or Bacteria

Per Test Method UL®-723:
Flame Spread Index = 0
Smoke Developed Index = 0

When UL® tested in accordance with ASTM E 136-95, DELTA Boards are designated as "noncombustible".

System No. FF-D-0022

May 27, 2014

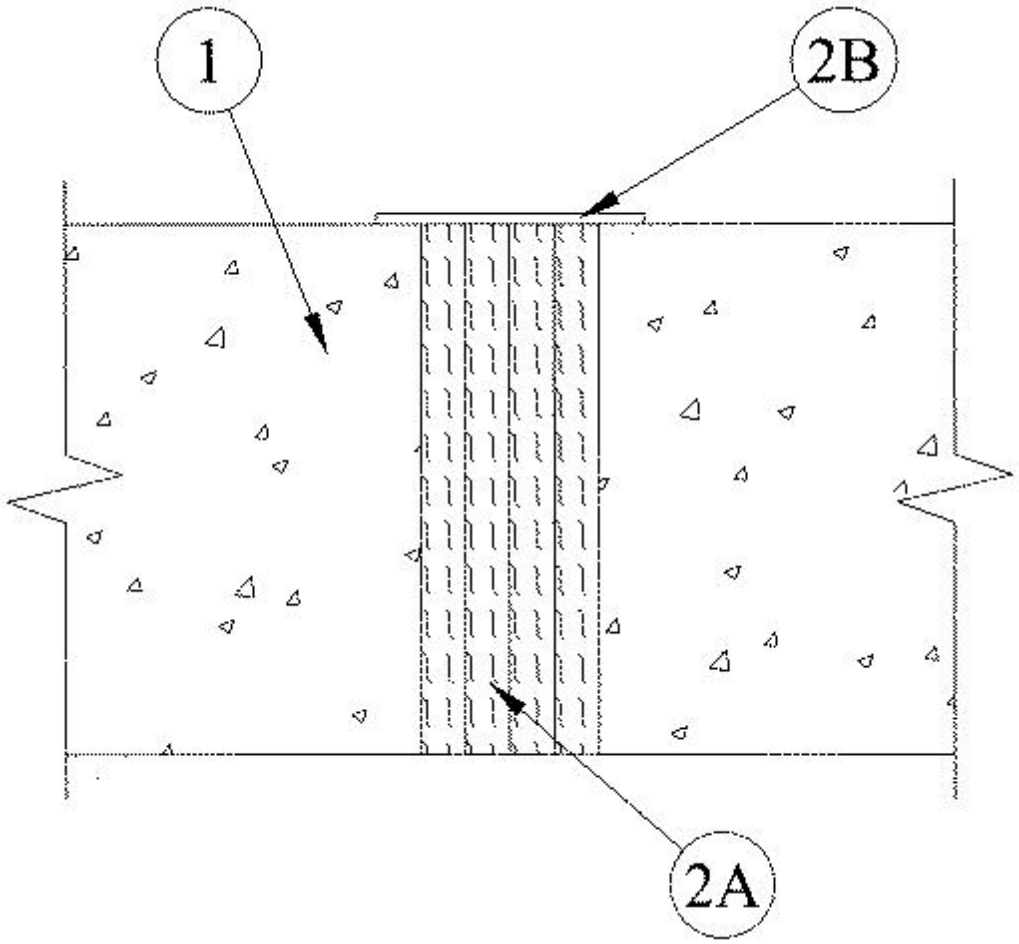
Assembly Rating — 4 Hr

L Rating at Ambient — Less than 1 CFM/Lin Ft

L Rating at 400 F — Less than 1 CFM/Lin Ft

Nominal Joint Width — 2 In.

Class II Movement Capabilities — 12.5% Compression or Extension



1. **Floor Assembly —** Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100 - 150 pcf or1600-2400 kg/m^3) structural concrete.

2. **Joint System — Max width of joint (at time of installation of joint system) is 2 in. The joint system is designed to accommodate a max 12.5 percent compression or extension from it's installed width.** The joint system shall consist of the following:

A. **Forming Material* —** Min 4 pcf (64 kg/m^3) mineral wool batt insulation installed in joint opening as a permanent form. Pieces of batt cut to min width of 6 in. (152 mm) and installed edge-first into joint opening, parallel with joint direction, such that batt sections are compressed min 50 percent in thickness and that the compressed batt sections are flush with from top surface of the floor. Adjoining lengths of batt to be tightly-butted with butted seams spaced min 24 in. (610 mm) apart along the length of the joint.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Insulation

ROCKWOOL MALAYSIA SDN BHD — SAFE Mineral Wool

ROXUL INC — SAFE Mineral Wool

THERMAFIBER INC — SAF Mineral Wool

B. **Fill, Void or Cavity Material* - Spray —** Min 1/8 in. (3.2 mm) wet thickness of fill material applied on top surface of floor to completely cover the mineral wool and overlap a min 1/2 in. (13 mm) onto concrete floor.

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. FF-D-1024

May 27, 2014

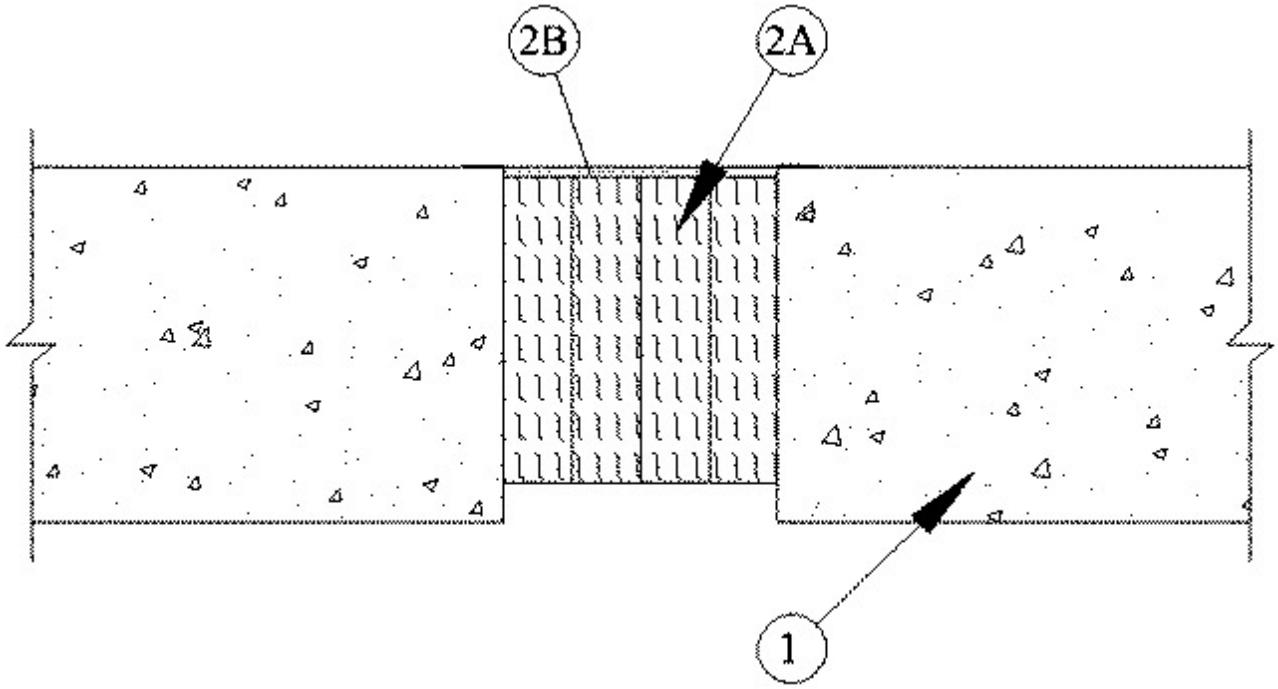
Assembly Rating — 3 Hr

L Rating at Ambient — Less than 1 CFM/Lin Ft

L Rating at 400 F — Less than 1 CFM/Lin Ft

Nominal Joint Width — 2 and 3-1/2 In. (See Item 2A)

Class II Movement Capabilities — 15% Compression or Extension



1. **Floor Assembly —** Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) structural concrete.

2. **Joint System — Max width of joint (at time of installation of joint system) is dependent upon the type and manufacurer of the forming material as shown in Item 2A. The joint system is designed to accommodate a max 15 percent compression or extension from it's installed width.** The joint system shall consist of the following:

A. **Forming Material* —** Min 4 pcf (64 kg/m^3) mineral wool batt insulation installed in joint opening as a permanent form. Pieces of batt cut to min width of 4 in. (102 mm) and installed edge-first into joint opening, parallel with joint direction, such that batt sections are compressed min 42 percent in thickness and that the compressed batt sections are recessed from top surface of the floor as required to accommodate the required thickness of fill material. Adjoining lengths of batt to be tightly-butted with butted seams spaced min 24 in. (610 mm) apart along the length of the joint.

Max width of joint (at time of installation of joint system) is dependent upon the manufacturer and type of forming used within the joint system as shown in the table below:

Manufacturer of Forming Material	Type of Forming Material	Max width of Joint, In. (mm)
FBX Insulation	FBX Safing Insulation	3-1/2 (89)

IIG Minwool L L C	MinWool-1200 Safing	2 (51)
Rock Wool Manufacturing	Delta Safing	2 (51)
Roxul	SAFE Mineral Wool	2 (51)
Thermafiber	SAF Mineral Wool	2 (51)

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Insulation

ROCKWOOL MALAYSIA SDN BHD — SAFE Mineral Wool

ROXUL INC — SAFE Mineral Wool

THERMAFIBER INC — SAF Mineral Wool

B. **Fill, Void or Cavity Material* — Spray —** Min 1/8 in. (3.2 mm) wet thickness of fill material applied within the joint, flush with top surface of floor and lapping a min 1/2 in. (13 mm) onto the top surface of the floor.

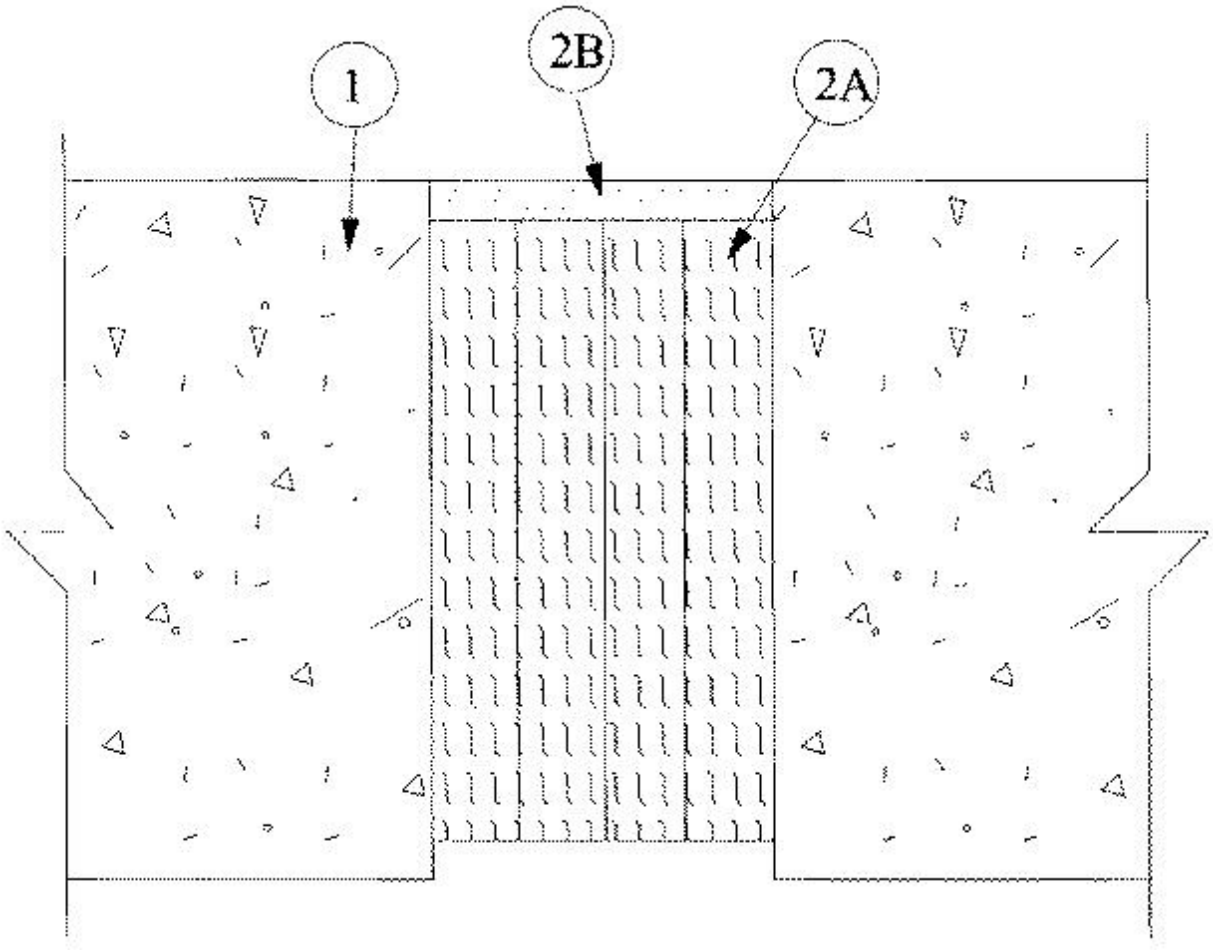
RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

*** 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. FF-D-1027

July 15, 2014

ANSI/UL2079	CAN/ULC S115
Assembly Rating — 3 Hr	F Rating — 3 Hr
Nominal Joint Width - 2 and 3-1/2 In. (See Item 2A)	FT Rating — 3 Hr
Class II Movement Capabilities — 15% Compression or Extension	FH Rating — 3 Hr
	FTH Rating — 3 Hr
	Nominal Joint Width - 2 and 3-1/2 In. (See Item 2A)
	Class II Movement Capabilities — 15% Compression or Extension



1. **Floor Assembly —** Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) structural concrete.

2. **Joint System — Max width of joint (at time of installation of joint system) is dependent upon the type and manufacturer of the forming material as shown in Item 2A . The joint system is designed to accommodate a max 15 percent compression or extension from it's installed width.** The joint system shall consist of the following:

A. **Forming Material* —** Min 4 pcf mineral wool batt insulation installed in joint opening as a permanent form. Pieces of batt cut to min width of 4 in. and installed edge-first into joint opening, parallel with joint direction, such that batt sections are compressed min 42 percent in thickness and that the compressed batt sections are recessed from top surface of the floor as required to accommodate the required thickness of fill material. Adjoining lengths of batt to be

tightly-butted with butted seams spaced min 24 in. apart along the length of the joint. **Max width of joint (at time of installation of joint system) is dependent upon the manufacturer and type of forming used within the joint system as shown in the table below:**

Manufacturer of Forming Material	Type of Forming Material	Max width of Joint, In.
FBX Insulation	FBX Safing Insulation	3-1/2
IIG Minwool L L C	MinWool-1200 Safing	2
Rock Wool Manufacturing	Delta Safing	2
Roxul	SAFE Mineral Wool	2
Thermafiber	SAF Mineral Wool	2

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Insulation

ROCKWOOL MALAYSIA SDN BHD — SAFE Mineral Wool

ROXUL INC — SAFE Mineral Wool

THERMAFIBER INC — SAF Mineral Wool

B. **Fill, Void or Cavity Material* — Sealant —** Min 1/4 in. thickness of fill material applied within the joint, flush with top surface of floor.

RECTORSEAL — FlameSafe 900+ Sealant, Metacaulk MC 150+, or 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. FW-D-0017

May 27, 2014

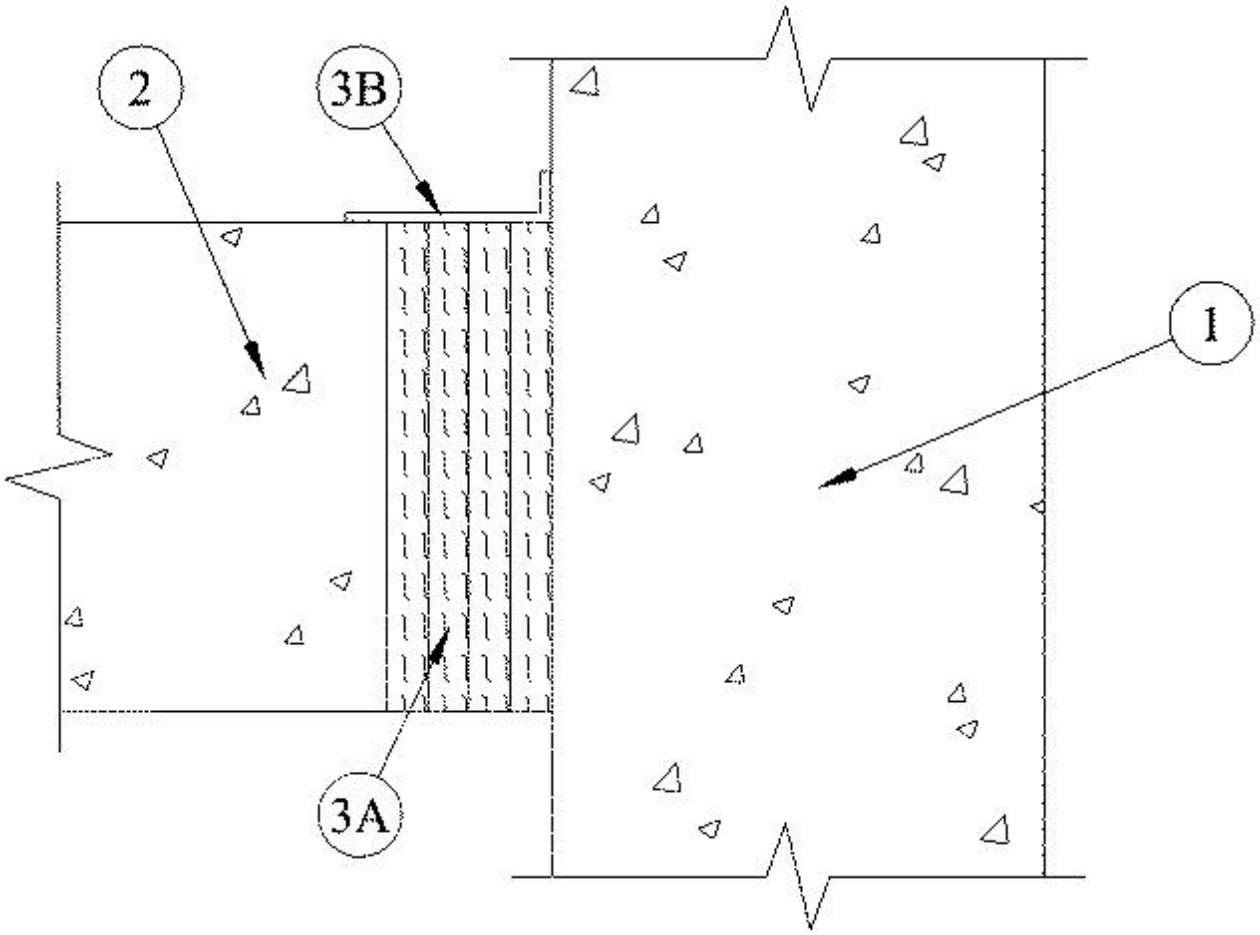
Assembly Rating — 4 Hr

L Rating at Ambient — Less than 1 CFM/Lin Ft

L Rating at 400 F — Less than 1 CFM/Lin Ft

Nominal Joint Width — 2 In.

Class II Movement Capabilities — 12.5% Compression or Extension



1. **Wall Assembly —** Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100 - 150 pcf or 1600-2400 kg/m^3) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***.

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

2. **Floor Assembly —** Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100 - 150 pcf or 1600-2400 kg/m^3) structural concrete.

3. **Joint System — Max separation between edge of floor and face of wall (at time of installation of joint system) is 2 in. The joint system is designed to accommodate a max 12.5 percent compression or extension from it's installed width.** The joint system shall consist of the following:

A. **Forming Material* —** Min 4 pcf (64 kg/m^3) mineral wool batt insulation installed in joint opening as a permanent form. Pieces of batt cut to min width of 6 in. and installed edge-first into joint opening, parallel with joint direction, such that batt sections are compressed min 50

percent in thickness and that the compressed batt sections are flush with top surface of the floor. Adjoining lengths of batt to be tightly-butted with butted seams spaced min 24 in. apart along the length of the joint.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Insulation

ROCKWOOL MALAYSIA SDN BHD — SAFE Mineral Wool

ROXUL INC — SAFE Mineral Wool

THERMAFIBER INC — SAF Mineral Wool

B. **Fill, Void or Cavity Material* - Spray —** Min 1/8 in. (3.2 mm) wet thickness of fill material applied on top surface of floor to completely cover the mineral wool and overlap a min 1/2 in. (13 mm) onto concrete floor and side of wall.

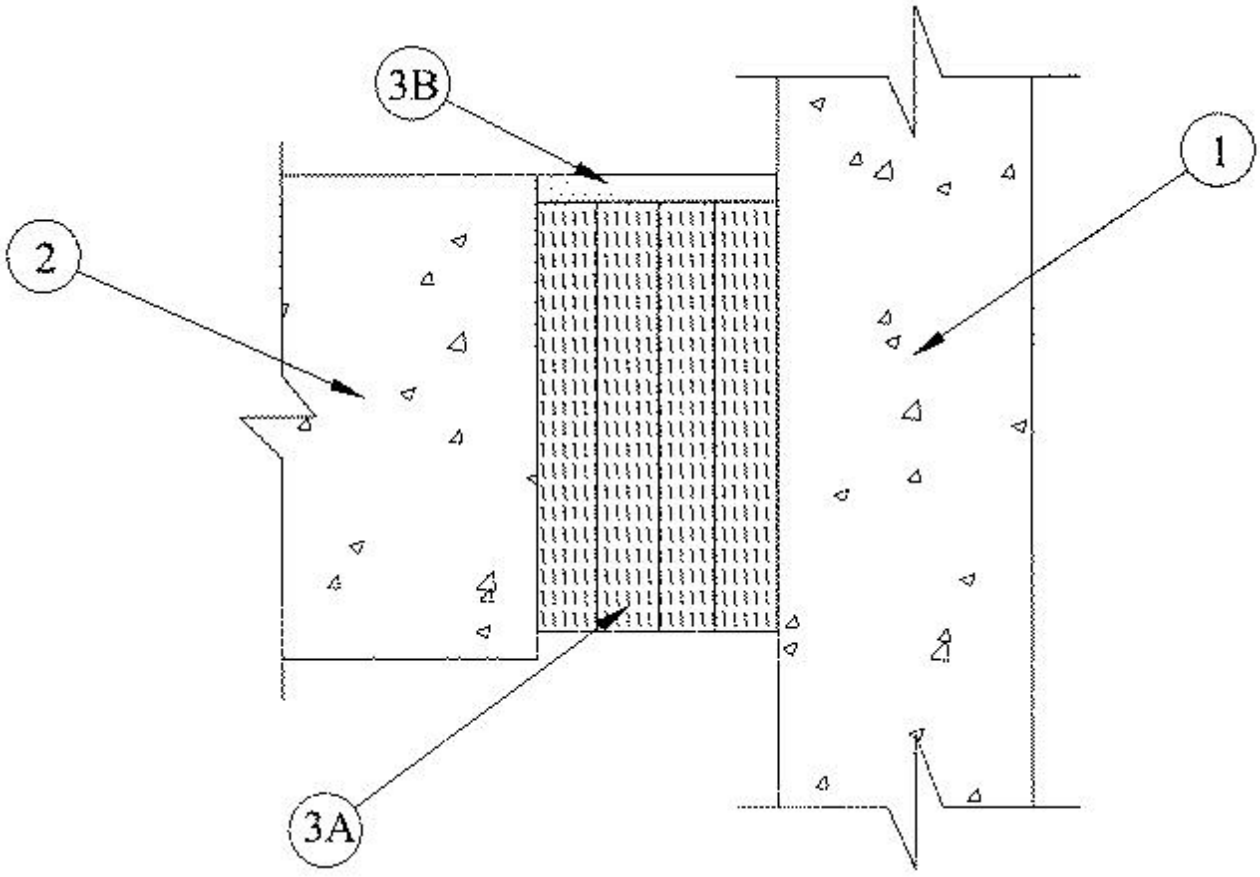
RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

*** 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. FW-D-0018

July 15, 2014

ANSI/UL2079	CAN/ULC S115
Assembly Rating — 4 Hr	F Rating — 4 Hr
Nominal Joint Width - 2 In.	FT Rating — 4 Hr
Class II Movement Capabilities — 12.5% Compression or Extension	FH Rating — 4 Hr
	FTH Rating — 4 Hr
	Nominal Joint Width - 2 In.
	Class II Movement Capabilities — 12.5% Compression or Extension



1. **Wall Assembly —** Min 6 in. thick reinforced lightweight or normal weight (100 - 150 pcf) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***.

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

2. **Floor Assembly —** Min 6 in. thick reinforced lightweight or normal weight (100 - 150 pcf) structural concrete.

3. **Joint System — Max separation between edge of floor and face of wall (at time of installation of joint system) is 2 in. The joint system is designed to accommodate a max 12.5 percent compression or extension from it's installed width.** The joint system shall consist of the following:

A. **Forming Material* —** - Min 4 pcf mineral wool batt insulation installed in joint opening as a permanent form. Pieces of batt cut to min width of 5-1/2 in. and installed edge-first into joint

opening, parallel with joint direction, such that batt sections are compressed min 33 percent in thickness and that the compressed batt sections are recessed from top surface of the floor as required to accommodate the required thickness of fill material. Adjoining lengths of batt to be tightly-butted with butted seams spaced min 24 in. apart along the length of the joint.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Insulation

ROCKWOOL MALAYSIA SDN BHD — SAFE Mineral Wool

ROXUL INC — SAFE Mineral Wool

THERMAFIBER INC — SAF Mineral Wool

B. **Fill, Void or Cavity Material* - Sealant —** Min 1/4 in. thickness of fill material applied within the joint, flush with top surface of floor.

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. FW-D-1020

May 27, 2014

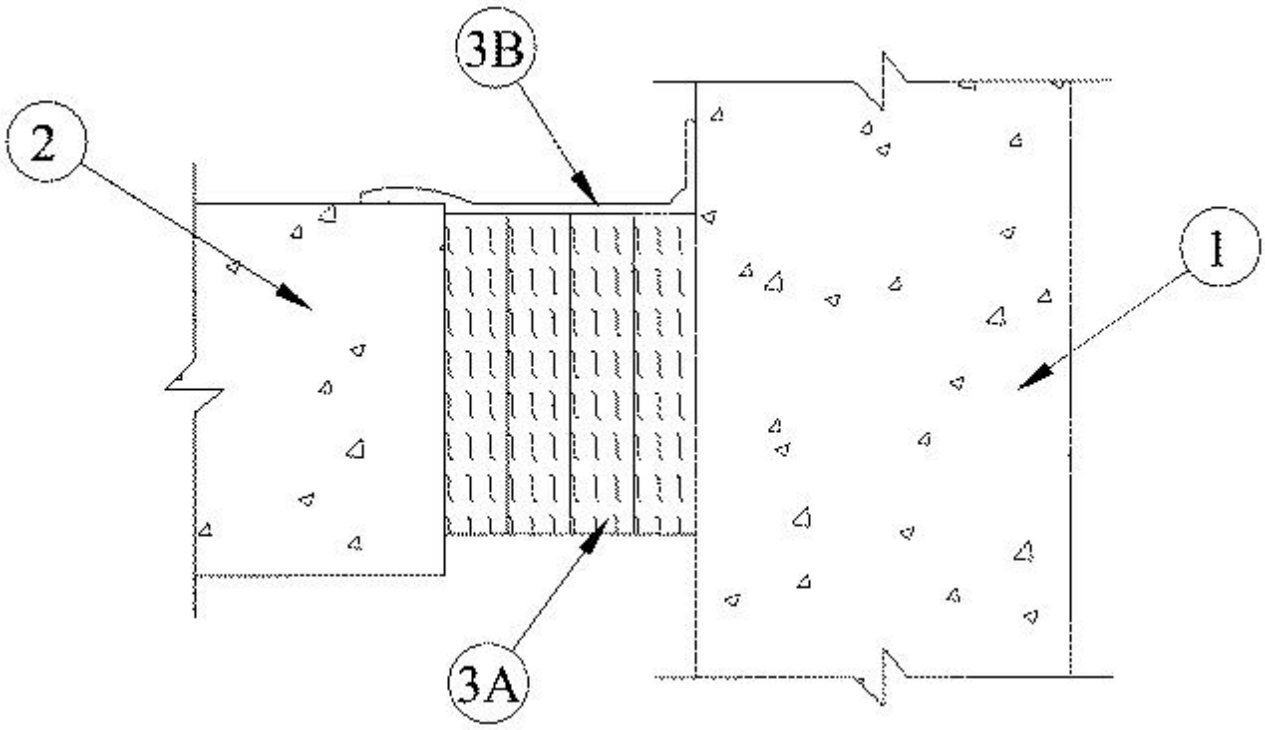
Assembly Rating—3 Hr

L Rating at Ambient — Less than 1 CFM/Lin Ft

L Rating at 400 F — Less than 1 CFM/Lin Ft

Nominal Joint Width—2 and 3-1/2 In. (See Item 3A)

Class II Movement Capabilities—15% Compression or Extension



1. **Wall Assembly —** Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100 - 150 pcf or 1600-2400 kg/m^3) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks*** .

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

2. **Floor Assembly —** Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100 - 150 pcf or 1600-2400 kg/m^3) structural concrete.

3. **Joint System — Max separation between edge of floor and face of wall (at time of installation of joint system) is dependent upon the type and manufacturer of the forming material used within the joint system as shown in Item 3A . The joint system is designed to accommodate a max 15 percent compression of extension from it's installed width.** The joint system shall consist of the following:

A. **Forming Material* —** Min 4 pcf (64 kg/m^3) mineral wool batt insulation installed in joint opening as a permanent form. Pieces of batt cut to min width of 4 in. (102 mm) and installed edge-first into joint opening, parallel with joint direction, such that batt sections are compressed min 42 percent in thickness and that the compressed batt sections are recessed from top surface of the floor as required to accommodate the required thickness of fill material. Adjoining lengths of batt to be tightly-butted with butted seams spaced min 24 in. (610 mm) apart along the length of the joint. **Max width of joint (at time of installation of joint system) is dependent upon the manufacturer and type of forming used within the joint system as shown in the table below:**

Manufacturer of Forming Material	Type of Forming Material	Max width of Joint, In.
FBX Insulation	FBX Safing Insulation	3-1/2
IIG Minwool L L C	MinWool-1200 Safing	2
Rock Wool Manufacturing	Delta Safing	2
Roxul	SAFE Mineral Wool	2
Thermafiber	SAF Mineral Wool	2

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Insulation

ROCKWOOL MALAYSIA SDN BHD — SAFE Mineral Wool

ROXUL INC — SAFE Mineral Wool

THERMAFIBER INC — SAF Mineral Wool

B. **Fill, Void or Cavity Material*— Spray —** Min 1/8 in. (3.2 mm) wet thickness of fill material applied within the joint, flush with top surface of floor and lapping a min 1/2 in. onto the top surface of the floor and side of wall.

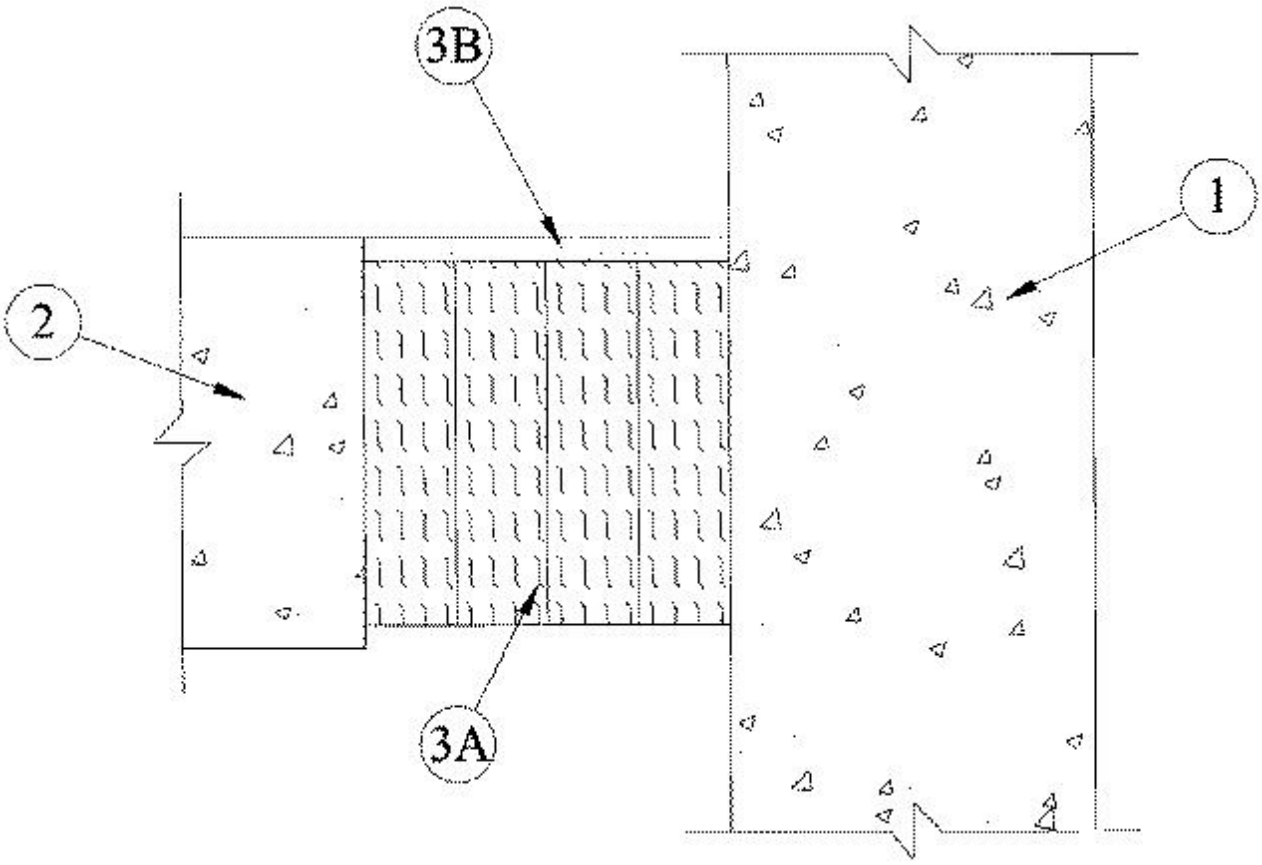
RECTORSEAL — FlameSafe FS3000, Metacaulk 1200, 1500 or Biostop 750, 800 Spray

*** 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. FW-D-1024

July 15, 2014

ANSI/UL2079	CAN/ULC S115
Assembly Rating — 3 Hr	F Rating — 3 Hr
Nominal Joint Width - 2 and 3-1/2 In.	FT Rating — 3 Hr
Class II Movement Capabilities -15% Compression or Extension	FH Rating — 3 Hr
	FTH Rating — 3 Hr
	Nominal Joint Width - 2 and 3-1/2 In.
	Class II Movement Capabilities -15% Compression or Extension



1. **Wall Assembly —** Min 4-1/2 in. thick reinforced lightweight or normal weight (100 - 150 pcf) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks*** .

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

2. **Floor Assembly —** Min 4-1/2 in. thick reinforced lightweight or normal weight (100 - 150 pcf) structural concrete.

3. **Joint System — Max separation between edge of floor and face of wall (at time of installation of joint system) is dependent upon the type and manufacturer of the forming material as shown in Item 3A. The joint system is designed to accommodate a max 15 percent compression or extension from it's installed width.** The joint system shall consist of the following:

A. **Forming Material* —** Min 4 pcf mineral wool batt insulation installed in joint opening as a permanent form. Pieces of batt cut to min width of 4 in. and installed edge-first into joint

opening, parallel with joint direction, such that batt sections are compressed min 42 percent in thickness and that the compressed batt sections are recessed from top surface of the floor as required to accommodate the required thickness of fill material. Adjoining lengths of batt to be tightly-butted with butted seams spaced min 24 in. apart along the length of the joint. **Max width of joint (at time of installation of joint system) is dependent upon the manufacturer and type of forming used within the joint system as shown in the table below:**

Manufacturer of Forming Material	Type of Forming Material	Max width of Joint, In.
FBX Insulation	FBX Safing Insulation	3-1/2
IIG Minwool L L C	MinWool-1200 Safing	2
Rock Wool Manufacturing	Delta Safing	2
Roxul	SAFE Mineral Wool	2
Thermafiber	SAF Mineral Wool	2

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Insulation

ROCKWOOL MALAYSIA SDN BHD — SAFE Mineral Wool

ROXUL INC — SAFE Mineral Wool

THERMAFIBER INC — SAF Mineral Wool

B. **Fill, Void or Cavity Material*—Sealant —** Min 1/4 in. thickness of fill material applied within the joint, flush with top surface of floor.

RECTORSEAL — FlameSafe 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. HW-D-0110

September 08, 2015

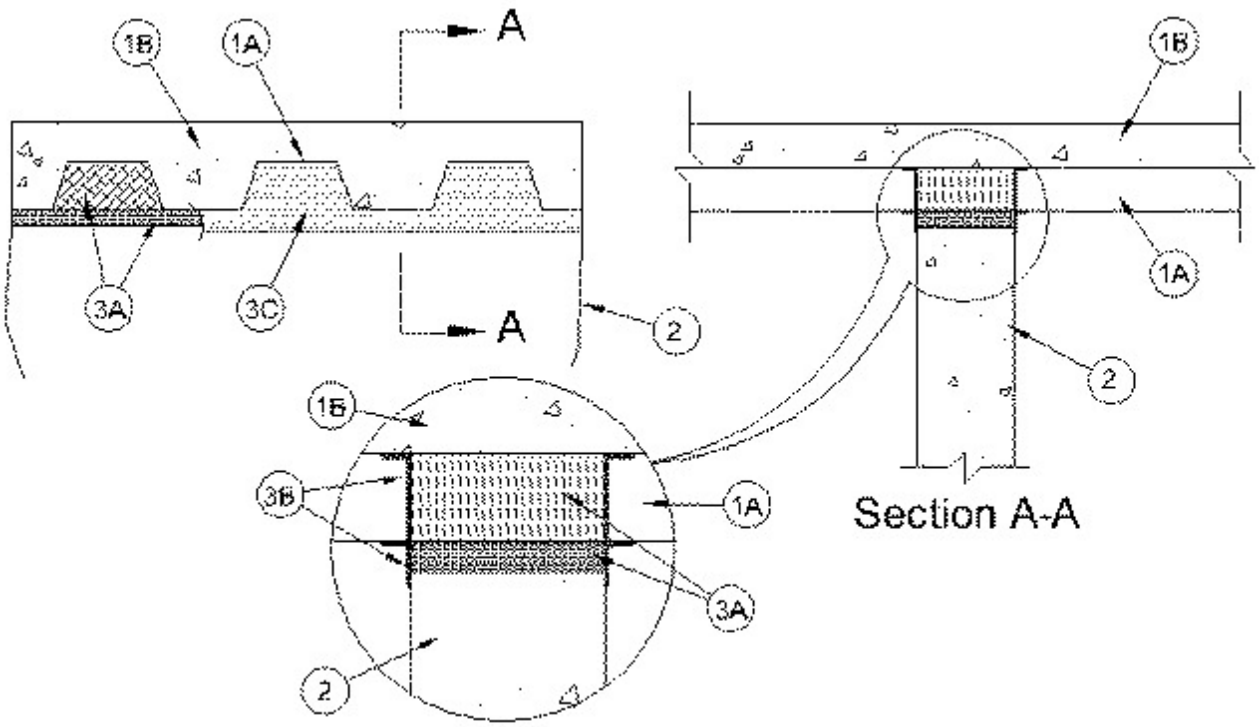
Assembly Ratings - 2 and 3 Hr (See Items B1, 3 and 4)

Nominal Joint Width — 1 and 2 In. (See Item 3)

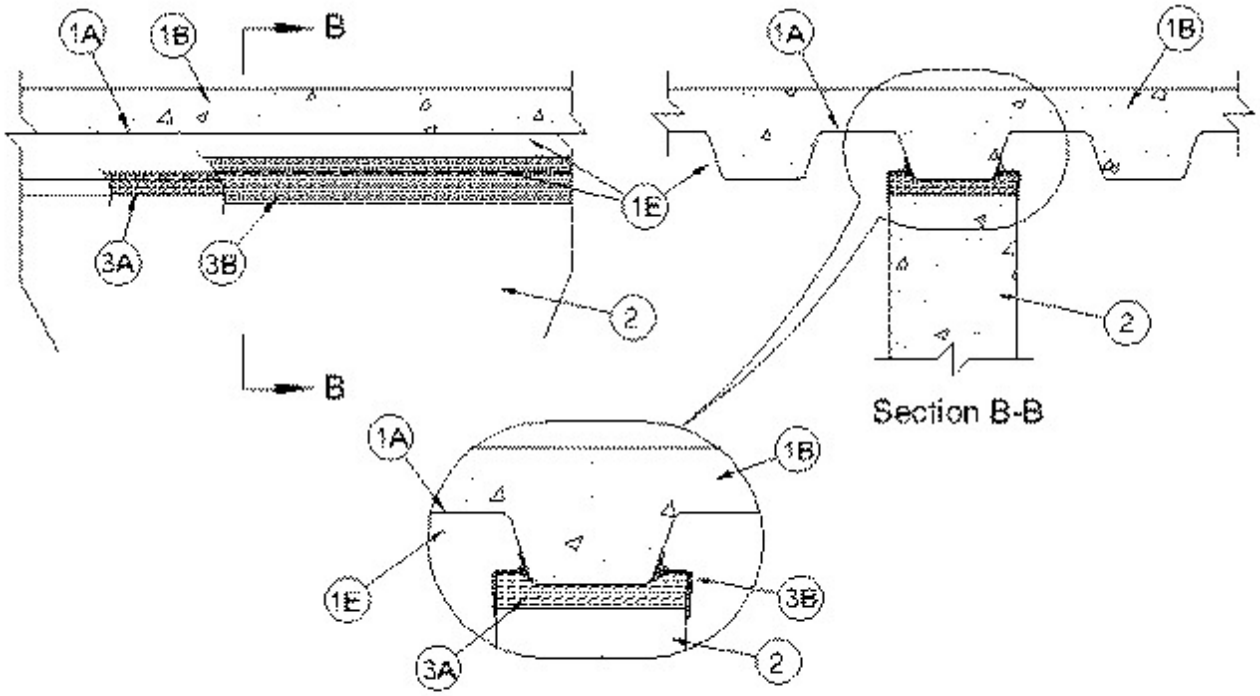
Class II Movement Capabilities — 25% Compression or Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



Joint Configuration A



Joint Configuration B

1. **Floor Assembly —** The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Floor Units* —** Max 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) structural concrete, as measured from the top plane of the floor units.

The hourly fire rating of the floor assembly shall be equal or greater than the hourly fire rating of the wall assembly.

1A. **Floor Assembly —** As an alternate to Item 1,the fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Floor Units* —** Max 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) structural concrete, as measured from the top plane of the floor units.

C. **Spray-Applied Fire Resistive Material* —** Prior to the installation of the joint system (Item 3) all surfaces of the steel floor units to be sprayed with the thickness of material specified in the individual D700 Series Design.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, RG and MK-6S

1B. **Roof Assembly — (Not Shown) —** As an alternate to Items 1 and 1A, a fire-rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:

A. **Steel Roof Deck —** Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. **Roof Insulation —** Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the roof deck.

1C. **Roof Assembly —** As an alternate to Items 1, 1A, and 1B, a fire rated protected fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:

A. **Steel Roof Deck —** Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. **Roof Insulation —** As specified in the individual P700 Series Design.

C. **Spray - Applied Fire Resistive Materials* —** (Not Shown)—Prior to the installation of the joint system (Item 3), the roof assembly shall be sprayed with the type and thickness of fire resistive material indicated in the individual P700 Series design.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, RG and MK-6S.

2. **Wall Assembly —** Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. For Joint Configuration B, wall to be centered beneath valley of fluted steel floor or roof deck.

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

For Joint Configuration A, the hourly assembly rating of the joint system is equal to the hourly fire rating of the wall assembly. For Joint Configuration B, the max assembly rating of the joint system is 2 hr.

3. **Joint System — For unprotected steel floors units or roof decks (D900 or P900 Series Designs), max separation between bottom of floor or roof and top of wall (at time of installation of joint system) is 2 in. (51 mm). For protected steel floors units or roof decks (D700 or P700 Series Designs), max separation between bottom of spray-applied fire resistive material and top of wall (at time of installation of joint system) is 1 in. (25 mm). The joint system is designed to accommodate a max 25 percent compression or extension from it's installed width. The hourly assembly rating of the joint system is dependent upon the joint configuration and the max hourly fire rating of the wall assembly. When Joint Configuration B is used, max Assembly Rating of joint system is 2 hr.** The joint system shall consist of the following:

Joint Configuration A

A. **Forming Material* —** Min 6 or 6-5/8 in. (152 or 168 mm) thickness of 4 pcf (64 kg/m^3) mineral wool batt insulation, for 2 and 3 hr rated assemblies, respectively, cut to the shape of the fluted deck, approx 25 percent larger than the area of the flutes and compressed into the flutes of the steel floor units, roof deck or spray-applied fire resistive material. Additional min 6 or 6-5/8 in. (152 or 168 mm) wide sections of mineral wool batt insulation, for 2 and 3 hr rated assemblies, respectively, are compressed 50 percent in thickness and installed cut edge first to fill the gap between the top of the wall and bottom of the steel floor units, roof deck or spray-applied fire resistive material. The forming material shall be installed flush with both surfaces of the wall.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

A1. **Spray-Applied Fire Resistive Material* (Not Shown) —** As an alternate to the forming material (Item 3A) within the flutes, min 6 or 6-5/8 in. (152 or 168 mm) depth of spray-applied fire resistive material, for 2 and 3 hr rated assemblies, respectively, installed into the flutes of the steel floor, roof deck or spray-applied fire resistive material. Material shall be excluded from the max 2 in. (51 mm) wide joint immediately above the top of the concrete wall. The spray-applied fire resistive material is mixed with water in accordance with the mixing instructions on the bag and is sprayed and/or troweled to completely fill the opening above the wall. The min average density of the spray applied fire resistive material shall be 15 pcf (240 kg/m^3) with a min individual density of 14 pcf (224 kg/m^3). See Design Information of Volume 1 of the Fire Resistance Directory for method of density determination.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, RG, MK-6S, Z-106/G, Z106, Z106-HY and Z-146.

A2. **Forming Material* - Plugs —** (Not Shown) As an alternate to the forming material and spray-applied fire resistive material (Items 3A and 3A1), mineral wool plugs preformed to the shape of the fluted floor units, may be used within the flutes. Plugs shall be friction fitted to completely fill the flutes, flush with wall surfaces. Additional forming material, described in Item 3A, to be used in conjunction with the plugs to fill the gap between the top of concrete wall and bottom of steel floor units, roof deck or spray-applied fire resistive material. **Plugs to be used in max 2 hr fire rated wall assemblies.**

ROCK WOOL MANUFACTURING CO — Delta Deck Plugs

B. **Fill, Void or Cavity Material* — Sealant —** Min 1/8 in. (3 mm) wet thickness of fill material spray or brush applied on each side of the wall in the flutes of the steel floor units or roof deck and between the top of the wall and the bottom of the steel floor units or roof deck and overlap a min 1/2 in. (13 mm) onto concrete wall and steel floor units, roof deck or spray-applied fire resistive material on both sides of wall. When optional through penetrant (Item 4) is used, fill material to overlap a min of 1/2 in. (13 mm) onto conduit or EMT on both sides of wall.

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

Joint Configuration B

A. **Forming Material* —** Min 4 pcf (64 kg/m^3) density mineral wool batt insulation cut into strips with a width equal to the overall thickness of the wall. Strips are compressed 50 percent in thickness and installed cut edge first to fill the gap between the top of the wall and the bottom of the steel floor units, roof deck or spray-applied fire resistive material. The forming material shall be installed flush with both surfaces of the wall.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

B. **Fill, Void or Cavity Material* — Sealant —** Min 1/8 in. (3 mm) wet thickness of fill material spray or brush applied on each side of the wall to completely cover the mineral wool forming material and to overlap a min 1/2 in. (13 mm) onto concrete wall and steel floor units, roof deck or spray-applied fire resistive material on both sides of wall.

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

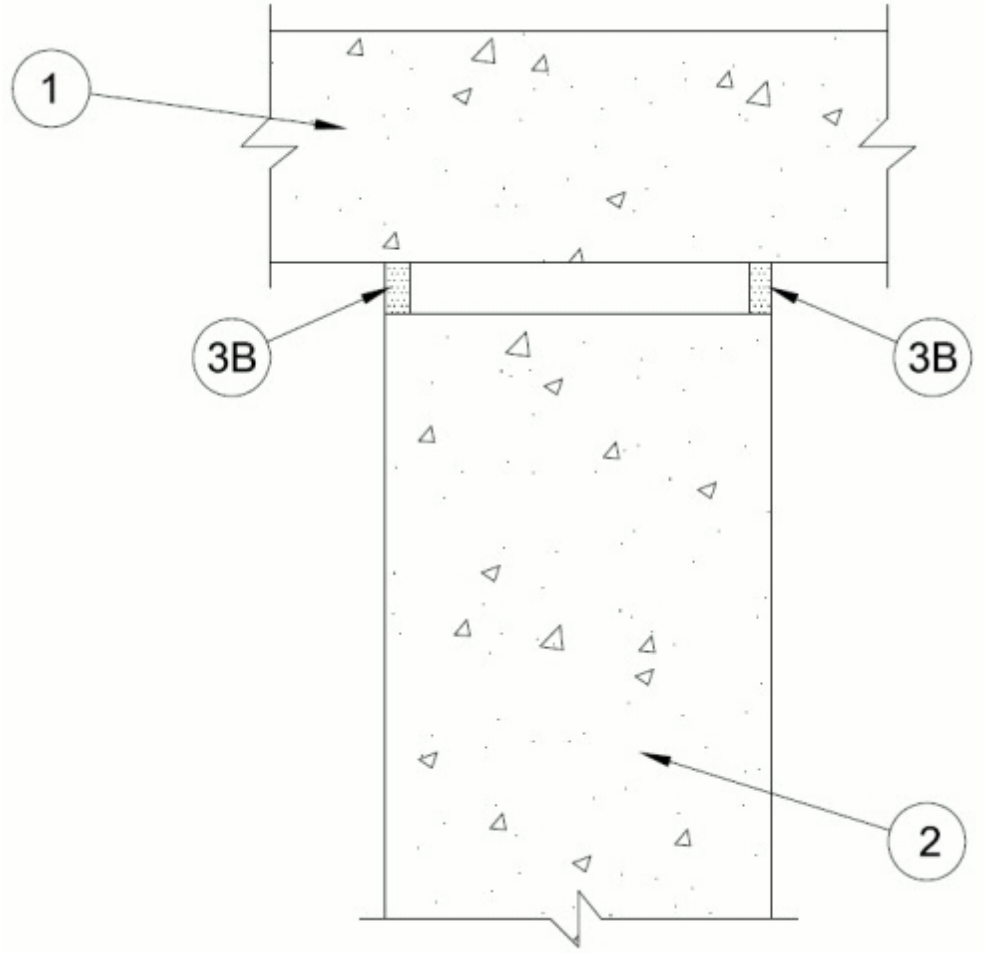
4. **Through Penetrant —** (Optional, Not Shown) — Max 1-1/2 in. (38 mm) diam steel conduit or steel electrical metallic tubing (EMT) may be installed parallel with and within the flutes of the steel floor or roof deck when Joint Configuration A is used. The conduit or EMT shall be located near the mid-depth of the steel deck with a clearance of 1/2 to 1-1/2 in. (13 to 38 mm) between the conduit or EMT and the steel deck. Conduit or EMT to be rigidly supported on both sides of the wall assembly. A max of one conduit or EMT is permitted in an individual flute. **When a conduit or EMT is installed in the flute of the steel deck, the max assembly rating of the joint system is 2 hr.**

*** 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. HW-D-0189

June 07, 2017

ANSI/UL2079	CAN/ULC S115
Assembly Ratings — 2 and 3 Hr (See Item 2)	F Ratings — 2 and 3 Hr (See Item 2)
Nominal Joint Width - 1 In.	FT Ratings — 2 and 3 Hr (See Item 2)
Class II or III Movement Capabilities — 12.5% Compression or Extension	FH Ratings — 2 and 3 Hr (See Item 2)
	FTH Ratings — 2 and 3 Hr (See Item 2)
	Nominal Joint Width - 25 mm
	Class II or III Movement Capabilities — 12.5 % Compression or Extension



1. **Floor Assembly —** Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100 - 150 pcf or 1600-2400 kg/m^3) structural concrete. Floor may also be constructed of any min 6 in. (152 mm) thick UL Classified hollow-core**Precast Concrete Units***.

See **Precast Concrete Units** (CFTV) category in the Fire Resistance Directory for names of manufacturers.

2. **Wall Assembly —** Min 4-1/2 in. (114 mm) or min 8 in. (203 mm) thick reinforced lightweight or normal weight (100 - 150 pcf or 1600-2400 kg/m^3) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***.

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

The hourly ratings are 2 hr for walls less than 8 in. (203 mm), 3 hr for walls 8 in. (203 mm) thick and thicker.

3. **Joint System — Max separation between bottom of floor and top of wall (at time of installation of joint system) is 1 in. (25 mm) The joint system is designed to accommodate a max 12.5 percent compression or extension from its installed width**. The joint system shall consist of the following:

A. **Packing Material —** (Optional, not shown) - Open or closed cell polyurethane foam backer rod used as a form to prevent the leakage of fill material. Packing material to be recessed from both surfaces of the wall as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Material* - Sealant —** Min 1/2 in. (13 mm) thickness of sealant applied within the joint, flush with both surfaces of wall.

RECTORSEAL — FlameSafe FS 900+, FS 1900, Metacaulk 1000, Metacaulk MC 150+, Metacaulk 350i, Metacaulk MC1200, Biostop 350i, Biostop BF 150+, Biostop 500+ or Biostop 750

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

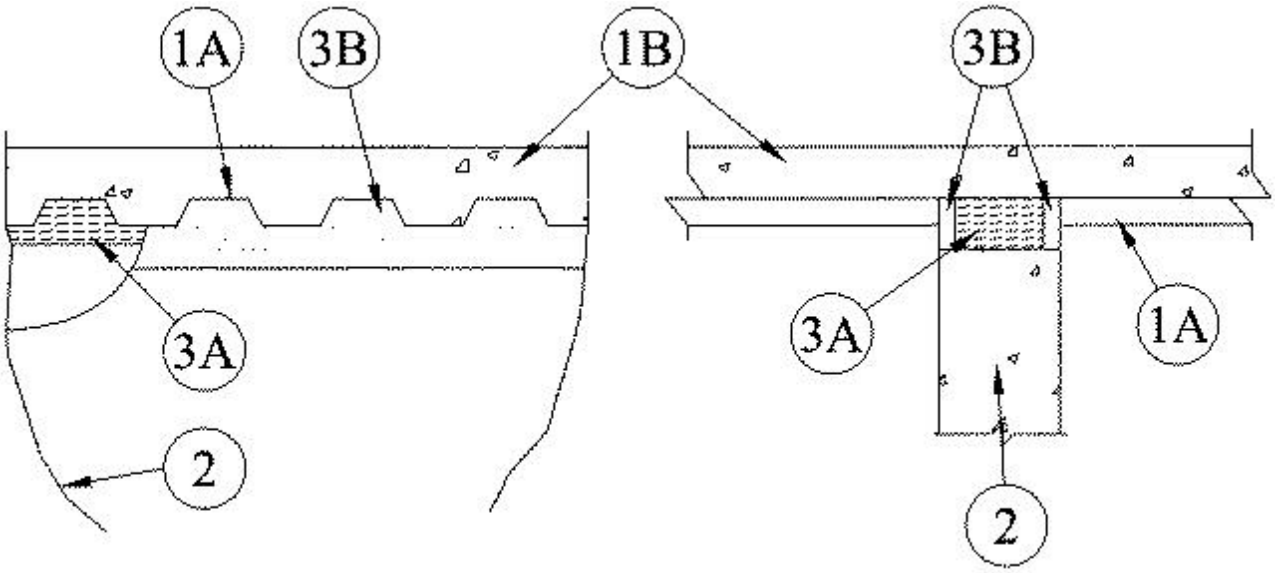
System No. HW-D-0199

December 03, 2001

Assembly Rating — 2 Hr

Nominal Joint Width — 1-1/2 In

Class II and III Movement Capabilities - 20% Compression or Extension



SECTION A-A

1. **Floor Assembly —** The 2 hr fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor And Form Units* —** Max 3 in. deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. thick reinforced concrete, as measured from the top plane of the floor units.

C . **Spray-Applied Fire Resistive Materials* —** (Optional)—(Not Shown)—Prior to the installation of the forming material and fill, void or cavity material (Items 3A, 3B) the steel floor units may be sprayed with a min 5/16 in. to max 1-3/4 in. thickness of fire resistive material.

W R GRACE & CO - CONN — Type MK-6-HY

2. **Wall Assembly —** Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) structural concrete. Wall shall be installed perpendicular to the flutes of the steel floor and form units (Item 1A). Wall may also be constructed of any UL Classified fire rated **Concrete Blocks***. When wall is constructed of concrete blocks, the top course of block shall be filled with concrete, grout or mortar.

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

3. **Joint System —** Max separation between bottom of floor or spray applied fire resistive material if used and top of wall at time of installation of joint system is 1-1/2 in., providing total height from the top of the wall to the top of plane of the floor units or spray applied fire resistive material if used does not exceed 3 in. The joint system is designed to accommodate a max 20 percent compression or extension from its installed width. The joint system consists of a forming material and a fill material, as follows:

A. **Forming Material* —** Min 6 in. thickness of min 4 pcf density mineral wool batt insulation cut to the shape of the fluted steel floor units, approx 33 percent larger than the area of the flutes. Pieces compressed and inserted vertically into the flutes above the top of the wall. The mineral wool is to be flush with each side of the wall. Additional min 6 in. thick pieces of min 4 pcf mineral wool insulation cut into strips having a width 33 percent larger than the gap above the top of the wall, compressed, and firmly packed into the the gap between the top of the wall and the bottom of the steel floor units, flush with both surfaces of the wall.

ROCK WOOL MANUFACTURING CO — Delta Board

B. **Fill, Void or Cavity Material* —** Min 1/8 in. wet thickness of fill material sprayed or troweled on each side of the wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. onto wall and steel deck on both sides of wall.

RECTORSEAL — Metacaulk 1200 Spray, Metacaulk 1200 Caulk Grade

*Bearing the UL Classification Mark

System No. HW-D-0220

September 04, 2015

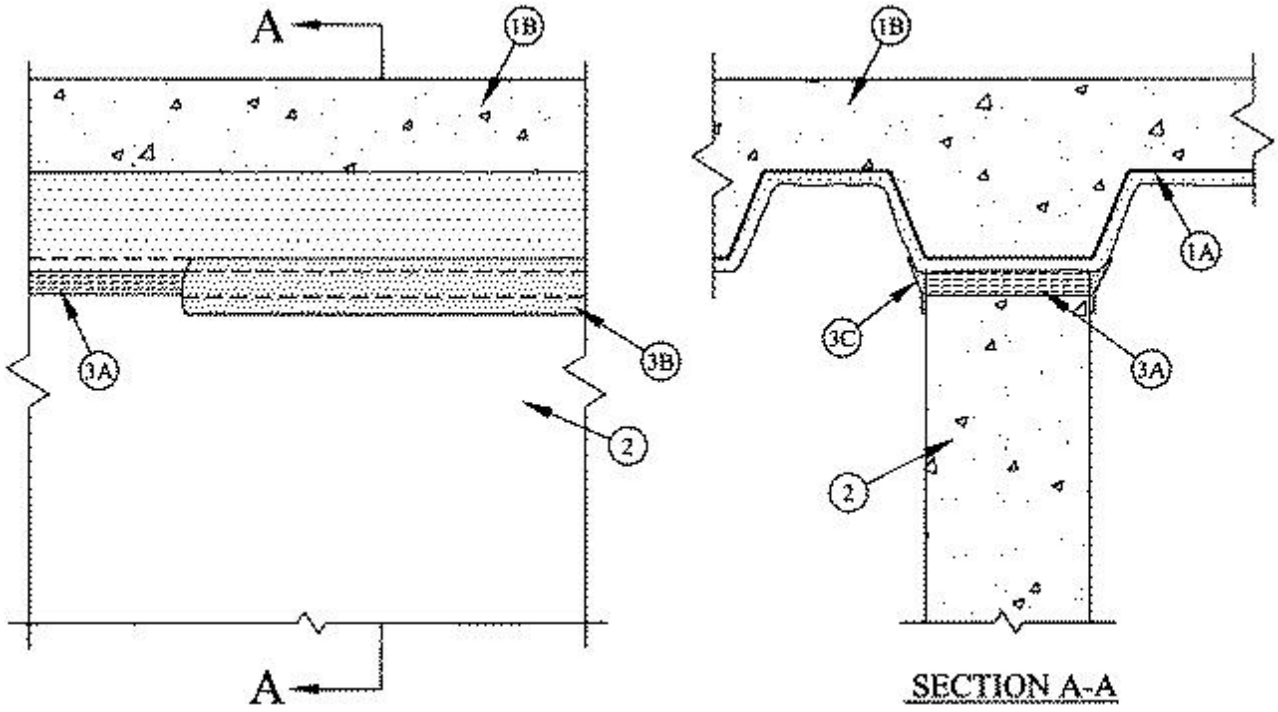
Assembly Rating — 2 Hr

L Rating at Ambient — Less than 1 CFM/Lin Ft

L Rating at 400°F — Less than 1 CFM/Lin Ft

Nominal Joint Width — 1 In.

Class II Movement Capabilities — 25% Compression or Extension



1. **Floor Assembly —** The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Floor Units* —** Max 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete, as measured from the top plane of the floor units.

C. **Spray-Applied Fire Resistive Material* —** Prior to the installation of the Forming Material and Fill, Void or Cavity Materials (Items 3A and 3B), all surfaces of the steel floor units to be sprayed with the thickness of material specified in the individual D700 Series Design.

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, RG and MK-6S.

1A. **Roof Assembly (Not Shown) —** As an alternate to the floor assembly, a fire-rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction details:

A. **Steel Roof Deck —** Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. **Roof Insulation —** As specified in the individual P700 Series Design.

C. **Spray — Applied Fire Resistive Materials* —** Prior to the installation of the Forming Material and Fill, Void or Cavity Materials (Items 3A and 3B, respectively), the steel roof deck shall be sprayed with the thickness of material specified in the individual P700 Series Design.

W R GRACE & CO - CONN — Types MK-6/HY, MK-6/HY ES, RG and MK-6S.

2. **Wall Assembly —** Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100 - 150 pcf or 1600-2400 kg/m^3) structural concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Wall shall be installed parallel to and centered under the valleys of the flutes of the steel floor or roof deck.

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

3. **Joint System — Max separation between bottom of spray-applied steel fire resistive material and top of wall (at time of installation of joint system) is 1 in. The joint system is designed to accommodate a max 25 percent compression or extension from it's installed width.** The joint system shall consist of a forming material and fill material, as follows:

A. **Forming Material* —** Min 4 pcf (64 kg/m^3) mineral wool batt insulation cut into strips with a width equal to the overall thickness of the wall. Strips compressed 50 percent in thickness and inserted into the gap between the top of the wall and the bottom of the spray-applied fire resistive material. Forming material to be installed flush with both surfaces of the wall.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE Mineral Wool

THERMAFIBER INC — SAF

B. **Fill, Void or Cavity Material* — Spray —** Min 1/8 in. (3.2 mm) wet thickness of fill material spray or brush applied on each side of the wall to completely cover the mineral wool forming material and to overlap a min 1/2 in. (13 mm) onto concrete wall and the spray-applied fire resistive material on both sides of 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.**

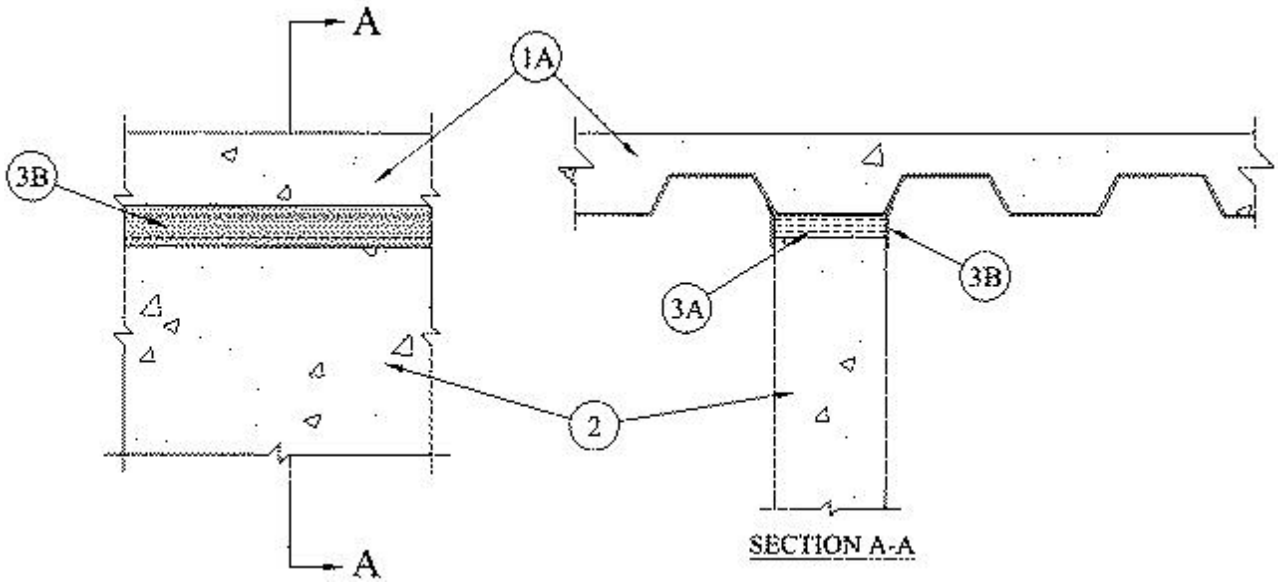
System No. HW-D-0235

May 27, 2014

Assembly Rating — 2 Hr

Nominal Joint Width — 2 In.

Class II Movement Capabilities — 25% Compression or Extension



1. **Floor Assembly —** The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Floor Units* —** Max 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete, as measured from the top plane of the floor units.

1A. **Roof Assembly — (Not Shown) —** As an alternate to the floor assembly, a fire-rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:

A. **Steel Roof Deck —** Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. **Roof Insulation —** Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the roof deck.

2. **Wall Assembly —** Min 6 in. (152 mm) thick steel reinforced lightweight or normal weight (100 to 150 pcf or 1600-2400 kg/m^3) concrete. Wall to be parallel to and centered under the valleys of the steel floor units. Wall may also be constructed of any UL Classified **Concrete Blocks*.**

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

3. **Joint System —** Max separation between bottom of floor and top of wall is 2 in. (51 mm). The joint system is designed to accommodate a max 25 percent compression and extension from its installed width. The joint system consists of a forming material and a fill material, as follows:

A. **Forming Material* —** Min 4 pcf (64 kg/m^3) density mineral wool batt insulation cut into strips with a width equal to the overall thickness of wall. Strips compressed 50 percent in thickness and inserted into gap between the top of the wall and the bottom of the steel floor unit or roof

deck.

B. **Fill, Void or Cavity Material* — Spray —** Min 1/8 in. (3.2 mm) wet thickness of fill material spray or brush applied on each side of the wall to completely cover the mineral wool forming material and to overlap a min 1/2 in. (13 mm) onto concrete wall and the steel floor units or roof deck on both sides of 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. HW-D-0284

September 04, 2015

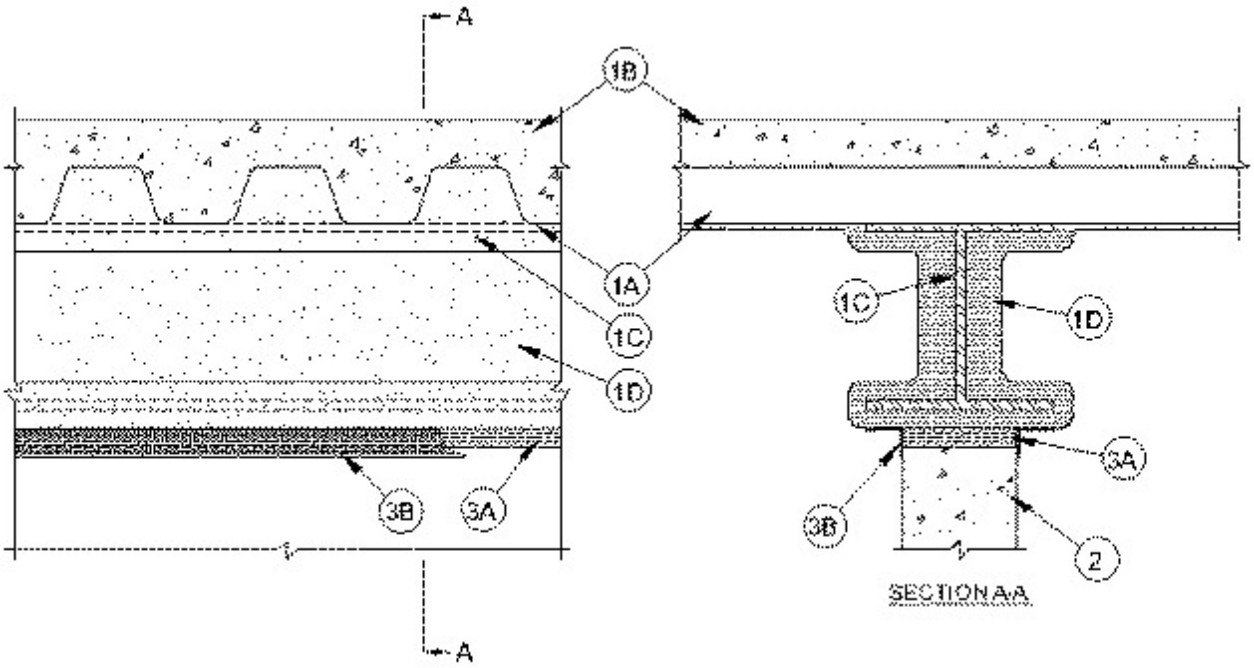
Assembly Ratings - 2 and 3 Hr (See Items 1 and 1A)

Nominal Joint Width - 1 in.

Class II Movement Capabilities - 19 % Compression or Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



1. **Floor Assembly —** The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor And Floor Units* —** Max 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.

C. **Structural Steel Support —** Steel beam, as specified in the individual D700 Series Floor-Ceiling Design, used to support steel floor units. Steel beam centered over and parallel with wall assembly.

D. **Spray-Applied Fire Resistive Material* —** Steel floor units and structural steel support to be sprayed with the min thickness of material specified in the individual D700 Series Design. The flutes of the steel floor units are to be filled with material across the entire top flange of the steel beam. **Additional material shall be applied to the web of the steel beam on each side of the wall. The min total thickness of material applied to each side of the steel beam web shall be 1-3/8 in. (35 mm) and 1-9/16 in. (40 mm) for 2 and 3 hr assembly rating, respectively.**

W R GRACE & CO - CONN — Type MK-6/HY , MK-6/HY ES, RG and MK-6S.

The hourly fire rating of the floor assembly shall be equal to or greater than the hourly fire rating of the wall assembly.

1A. **Roof Assembly — (Not Shown) —** As an alternate to the floor assembly, a fire-rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 or P700 Series Roof-Ceiling Design in the UL Fire Resistance Directory.. The roof assembly shall include the following construction features:

A. **Steel Roof Deck —** Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. **Roof Insulation —** For P900 Series Designs, min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the roof deck. For P700 Series Designs, roof insulation shall be as specified in the individual design.

C. **Structural Steel Support —** Steel beam, as specified in the individual P700 or P900 Series Floor-Ceiling Design, used to support steel floor units. Steel beam centered over and parallel with wall assembly.

D. **Spray-Applied Fire Resistive Material* —** (Not Shown) Prior to the installation of the joint system (Item 3) all surfaces of the roof deck to be sprayed with the thickness of material specified in the individual P700 Series Design. For D900 Series Designs structural steel supports only to be sprayed in accordance with the specifications in the individual P900 Series Design. The flutes of the steel roof deck are to be filled with material across the entire top flange of the steel beam. **Additional material shall be applied to the web of the steel beam on each side of the wall. The min total thickness of material applied to each side of the steel beam web shall be 1-3/8 in (35 mm) and 1-9/16 in. (40 mm) for 2 and 3 hr assembly rating, respectively.**

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, RG and MK-6S.

The hourly fire rating of the roof assembly shall be equal or greater than the hourly fire rating of the wall assembly.

2. **Wall Assembly —** Min 6 in. .(152 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***.

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

The hourly fire rating of the joint system is equal to the hourly rating of the wall assembly.

3. **Joint System — Max separation between spray applied fire resistive material on bottom of structural support member and top of wall (at time of installation of joint system) is 1 in. (25 mm). The joint system is designed to accommodate a max 19 percent compression or extension from it's installed width as measured between bottom plane of the protective material on the steel beam and the top of the wall.** The joint system shall consist of forming and fill materials, as follows:

A. **Forming Material* —** Min 6 in. (152 mm) or 6-5/8 in. (168 mm) wide sections of nom 4 pcf (64 kg/m^3) mineral wool batt insulation, for 2 and 3 hr rated assemblies, respectively, to be compressed 50 percent in thickness and installed cut edge first to completely fill the gap above the top of the concrete wall. The forming material shall be installed flush with both surfaces of wall.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

B. **Fill, Void or Cavity Material* - Sealant —** Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry thickness of fill material spray applied over the forming material on each side of the wall. Fill material to overlap min 1/2 in. (13 mm) onto concrete wall and min 2 in. (51 mm) onto the spray applied material (Item 1D) on the steel beam on both sides of 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. HW-D-0300

September 04, 2015

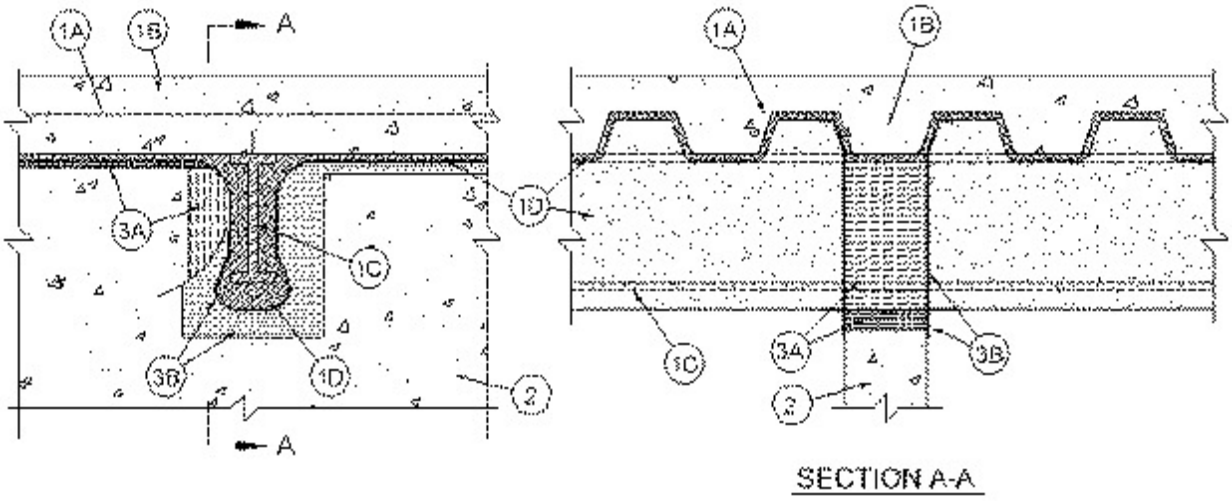
Assembly Ratings — 2 and 3 Hr (See Item 3A)

Nominal Joint Width — 1 and 2 In. (See Item 3)

Class II Movement Capabilities — 25% Compression or Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



1. **Floor Assembly —** The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 Series Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Floor Units* —** Max 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the steel floor units.

C. **Structural Steel Support —** (Optional) - Steel beam or open-web steel joist, as specified in the individual D700 or D900 Series Floor-Ceiling Design, used to support steel floor units. Structural steel support oriented perpendicular to wall assembly. Where open-web steel joists pass through the fire rated wall, 3/8 in. (10 mm) diamond mesh expanded steel lath having a nom weight of 1.7 to 3.4 lb per sq yd (0.9-1.8 kg/m2) shall be secured to one side of each joist with steel tie wire and the lath shall be fully covered with spray-applied fire resistive material with no min thickness requirement.

D. **Spray-Applied Fire Resistive Material* —** Prior to the installation of the Forming Material and Fill, Void or Cavity Material (Items 3A and 3B, respectively), steel floor units and structural steel supports to be sprayed in accordance with the specifications in the individual D700 Series Design. For D900 Series Designs structural steel supports only to be sprayed in accordance with the specifications in the individual D900 Series Design.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, MK-6S and RG

The hourly fire rating of the floor assembly shall be equal to or greater than the hourly rating of the wall assembly.

1A. **Roof Assembly (Not Shown) —** As an alternate to the floor assembly, a fire-rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 and P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction details:

A. **Steel Roof Deck —** Max 2 in. (51 mm) deep galv steel fluted roof deck.

B. **Roof Insulation —** For P900 Series Designs, min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the roof deck. For P700 Series Designs, as specified in the individual P700 Series Design.

C. **Spray-Applied Fire Resistive Materials* —** Prior to the installation of the Forming Material and Fill, Void or Cavity Material (Items 3A and 3B, respectively), the steel roof deck shall be sprayed with the thickness of material specified in the individual P700 Series Design. For P900 Series Designs, structural steel supports only to be sprayed in accordance with the specifications in the individual P900 Series Design.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, MK-6S and RG

The hourly fire rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly.

2. **Wall Assembly —** Min 6 in. (152 mm) thick reinforced light or normal weight (100-150 or 1600-2400 kg/m^3) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. The wall shall consist of a preformed or saw cut opening to accommodate each structural steel support member. A min clearance of 1 in. (25 mm) to a max clearance of 3 in. (76 mm) shall be maintained between the opening and the spray applied fire resistive material on the two sides of the structural support member. The clearance between the opening and the spray applied fire resistive material on the bottom of the structural steel support member shall be max 1 in. (25 mm). For D900 and P900 Series Designs, max separation between bottom of the steel floor units or roof deck and top of concrete wall (at time of installation of joint system) is 2 in. (51 mm). For D700 and P700 Series Designs, max separation between bottom of the spray applied fire resistive material on the steel floor units or roof deck and top of concrete (at time of installation of joint system) is 1 in. (25 mm).

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

The hourly fire rating of the joint system is equal to the hourly fire rating of the wall assembly.

3. **Joint System — Max separation between spray applied fire resistive material on bottom of structural support member and opening in top of wall is 1 in. (25 mm). For D900 and P900 Series Designs, max separation between bottom of the steel floor units or roof deck and top of concrete wall (at time of installation of joint system) is 2 in. (51 mm). For D700 and P700 Series Designs, max separation between bottom of the spray applied fire resistive material on the steel floor units or roof deck and top of wall (at time of installation of joint system) is 1 in. (25 mm). The joint system is designed to accommodate a max 25 percent compression or extension from it's installed width as measured between the spray applied fire resistive material on the steel floor units or roof deck and the top of the wall assembly .** The joint system shall consist of forming and fill materials, as follows:

A. **Forming Material* —** Nom 4 pcf (64 kg/m^3) mineral wool batt insulation cut to min width of 6 or 6-5/8 in. (152 or 168 mm) for 2 and 3 hr rated assemblies, respectively , and inserted cut edge first into the spaces between the spray-applied fire resistive material on the structural steel member and the opening at the top of the wall, flush with the concrete surface on both sides of the wall. The thickness of forming material shall be sufficient to attain a min compression of 33 percent between the sides of the opening and the protected structural steel member and a min compression of 50 percent between the bottom of the opening and the bottom of the protected structural steel member. Additional sections of mineral wool batt insulation are compressed 50 percent in thickness and are installed cut edge first to completely fill the gap above the top of the concrete, flush with both surfaces of wall.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

B. **Fill, Void or Cavity Material* - Sealant —** Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry thickness of fill material sprayed or brushed over the forming material on each side of the wall. Fill material to overlap a min of 1 in. (25 mm) onto the concrete and a min 2 in. (51 mm) onto the spray applied material (Item 1D) on the steel floor unit or roof deck and on the structural steel support member on both sides of 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. HW-D-0328

September 04, 2015

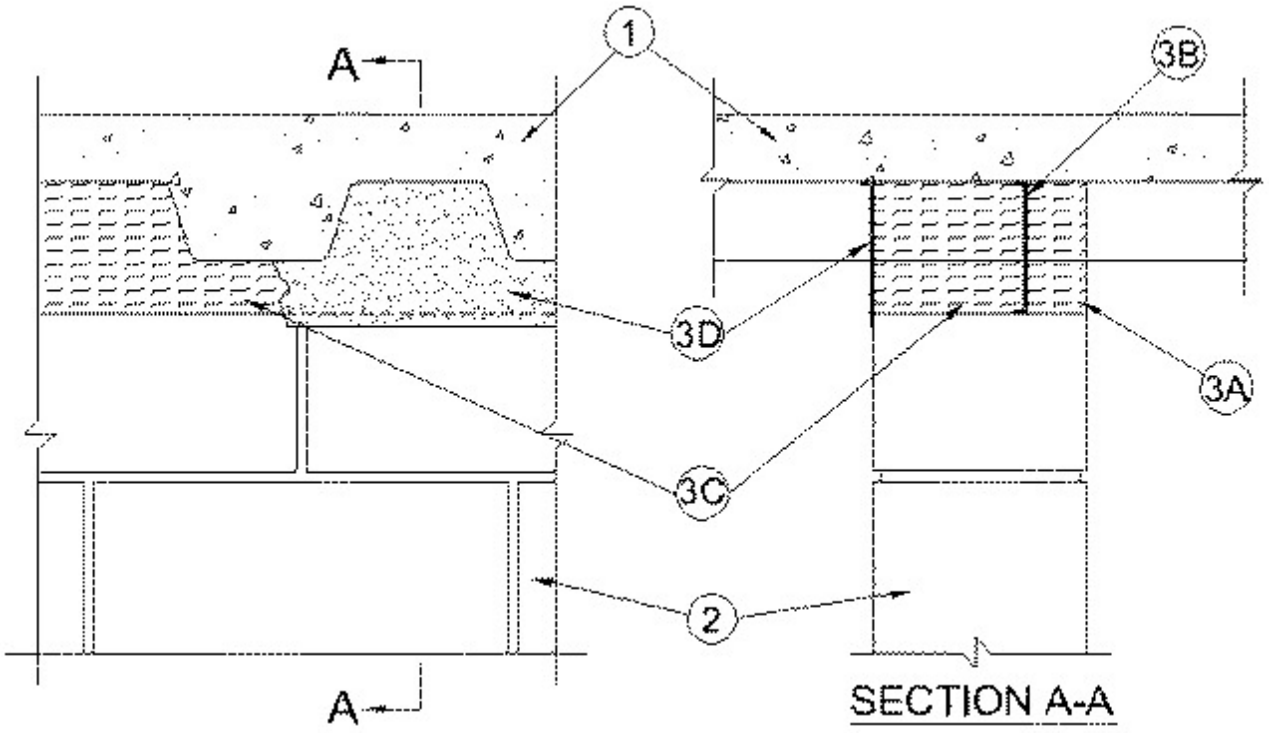
Assembly Rating — 2 and 3 Hr (See Item 3A1)

Nominal Joint Width — 2 In.

Class II Movement Capabilities — 12.5% Compression or Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



1. **Floor Assembly —** The fire rated fluted steel unit/concrete floor assembly shall be constructed of the materials and in a manner described in the individual D900 Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Form Units* —** Max 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced concrete as measured from top plane of the floor units.

1A. **Roof Assembly — (Not Shown) —** As an alternate to the floor assembly, a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials in the manner describe in the individual P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:

A. **Steel Roof Deck —** Max 2 in. (51 mm) deep galv steel fluted roof deck.

B. **Roof Insulation —** Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the floor units.

2. **Wall Assembly —** Min 8 in. (203 mm) thick steel-reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***.

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

3. **Joint System — Max separation between bottom of floor or roof and top of wall at time of installation of joint system is 2 in. (51 mm) The joint system is designed to accommodate a max 12.5 percent compression or extension from its installed width.** The joint system shall consist of the following:

A. **Forming Material —** Nom pcf (64 kg/m^3) mineral wool batt insulation, min 2 in. (51 mm) wide, compressed and firmly packed to fill the flutes and the gap between the top of the wall and bottom of the floor or roof as a permanent form on one side of the wall. Batt insulation cut to the shape of the fluted steel deck, approx 33 percent larger than the flutes. Pieces compressed and installed cut edge first into the flutes above the top of the wall. Additional pieces of batt insulation, min 2 in. (51 mm) wide, installed edge-first into joint opening between bottom of fluted steel deck and top of wall, parallel with joint direction, such that batt sections are compressed min 50 percent in thickness. Compressed batt sections are flush with one surfaces of wall. Adjoining lengths of batt to be tightly butted with butted seams spaced min 48 in. (1.22 m) apart along the length of the joint.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

A1. **Fill, Void or Cavity Material* — Plugs —** (Not Shown) — As an alternate to the forming material (Item 3A), mineral wool plugs preformed to the shape of the fluted floor units, may be used within the flutes. Plugs shall be friction fit to completely fill the flutes above the ceiling channel. The plugs shall project beyond each side of the ceiling runner, flush with wall surfaces. Additional forming material, described in Item 3A, to be used in conjunction with the plugs to fill the gap between the top of gypsum board and bottom of steel floor units or roof deck. **The Assembly Rating is 2 hr when Plugs are used.**

ROCK WOOL MANUFACTURING CO — Delta Deck Plugs

B. **Fill, Void or Cavity Material* —** Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry wet thickness of fill material sprayed or troweled into the joint to completely cover mineral wool forming material and to overlap a min of 1/2 in. (13 mm) onto wall and steel deck, within joint cavity.

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

C. **Forming Material —** Nom pcf (64 kg/m^3) mineral wool batt insulation, min 6 in. (152 mm) wide, compressed and firmly packed to completely fill the flutes and the gap between the top of the wall and bottom of the floor or roof as a permanent form. Batt insulation cut to the shape of the fluted steel deck, approx 33 percent larger than the flutes. Pieces compressed and installed cut edge first into the flutes above the top of the wall. Additional pieces of batt insulation, min 6 in. (152 mm) wide, installed edge-first into joint opening between bottom of fluted steel deck and top of wall, parallel with joint direction, such that batt sections are compressed min 50 percent in. thickness. Compressed batt sections are flush with one surface of wall. Adjoining lengths of batt to be tightly butted with butted seams spaced min 48 in. (1.22 m) apart along the length of the joint.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

D. **Fill, Void or Cavity Material* —** Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry thickness of fill material sprayed or troweled on one side of the wall to completely cover mineral wool forming material and to overlap a min of 1/2 in. (13 mm) onto wall and steel deck on accessible side of 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. HW-D-0331

September 04, 2015

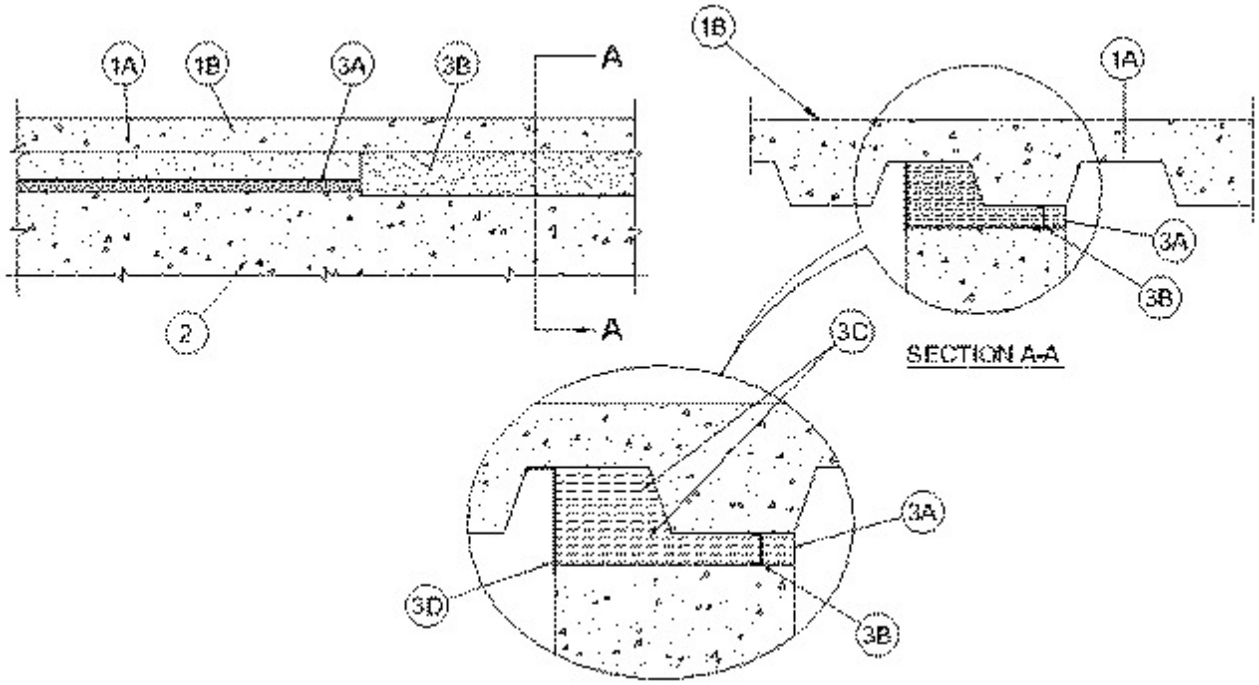
Assembly Rating — 3 Hr

Nominal Joint Width — 2 In.

Class II Movement Capabilities — 12.5% Compression or Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



1. **Floor Assembly —** The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D900 Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Form Units* —** Max 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf of 1600-2400 kg/m^3) concrete, as measured from the top plane of the floor units.

C. **Spray-Applied Fire Resistive Material* (Optional, Not Shown) —** Prior to the installation of the Forming Material and Fill, Void or Cavity Materials (Items 3A through 3D), all surfaces of the steel floor units to be sprayed with the thickness of material specified in the individual D700 Series Design.

W R GRACE & CO - CONN — Types MK-6/HY, MK-6/HY ES, RG and MK-6S

1A. **Roof Assembly - (Not Shown) —** As an alternate to the floor assembly (Item 1), a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly rating of the roof assembly shall be equal to or greater than the hourly rating of the wall assembly. The roof assembly shall include the following construction features:

A. **Steel Roof Deck —** Max 2 in. (51 mm) deep galv steel fluted roof deck.

B. **Roof Insulation —** Min 2-1/4 in. (57 mm) thick poured insulating concrete, as measured from the top plane of the floor units.

C. **Spray-Applied Fire Resistive Materials* (Not Shown, Optional) —** Prior to the installation of Forming Material and Fill, Void or Cavity Material (Items 3A through 3D), the roof assembly shall be sprayed with the type and thickness of fire resistive material indicated in the individual P700 Series design.

W R GRACE & CO - CONN — Types MK-6/HY, MK-6/HY ES, RG and MK-6S

2. **Wall Assembly —** Min 8 in. (203 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) structural concrete. Wall shall be installed parallel with the flutes of the steel floor and roof deck units (Item 1A). Wall may also be constructed of any UL Classified 3 hr fire rated **Concrete Blocks***. When wall is constructed of concrete blocks, the top course of block shall be filled with concrete, grout or mortar.

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

3. **Joint System — Max separation between bottom of steel floor units, roof deck or spray-applied fire resistive material (if used) and top of the wall at time of installation of joint system is 2 in. (51 mm). The joint system is designed to accommodate a max 12.5 percent compression or extension from its installed width.** The joint system consists of the following:

A. **Forming Material* —** Min 4 pcf (64 kg/m^3) mineral wool batt insulation cut into strips min 2 in. (51 mm) wide compressed 50 percent in thickness and inserted into the gap between the top of the wall and the bottom of the steel floor units, roof deck or sprayed-applied fire resistive material (if used) flush with one surface of the wall.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

B. **Fill, Void or Cavity Material* —** Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry thickness of fill material sprayed or troweled into joint to completely cover mineral wool forming material and to overlap a min of 1/2 in. (13 mm) onto wall and steel deck, roof deck or sprayed-applied fire resistive material (if used) within joint cavity.

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

C. **Forming Material —** Min 4 pcf (64 kg/m^3) mineral wool batt insulation cut into strips min 6 in. wide, compressed 50 percent in thickness and inserted into the gap between he top of the wall and the bottom of the steel floor units, roof deck or sprayed-applied fire resistive material (if used) butting edge of the installed forming material Item 3A. When the void beneath the steel floor unit or roof deck is located entirely above the wall, the void shall be completely filled with mineral wool insulation compressed 50 percent in thickness. When void beneath the steel deck is located in part above the wall, that portion of the void above the wall shall be packed with additional strips of mineral wool batt insulation compressed 50 percent in thickness flush with the surface of the wall.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

D. **Fill, Void or Cavity Material* —** Min 1/8 in. (3.2 mm) thickness or 1/16 in. (1.6 mm) dry wet thickness of fill material sprayed or troweled to completely cover mineral wool forming material and to overlap a min of 1/2 in. (13 mm) onto wall and steel floor unit, roof deck or sprayed-applied fire resistive material (if used) on accessible side 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. HW-D-0391

September 08, 2015

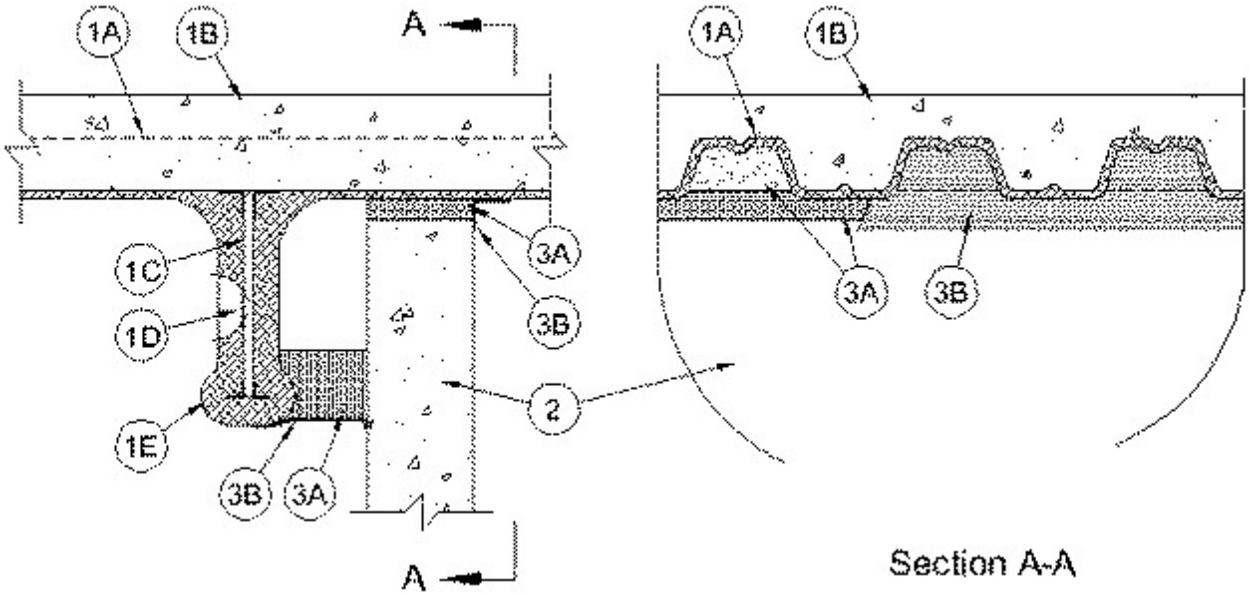
Assembly Rating — 2 Hr

Nominal Joint Width - 1 In.

Class II Movement Capabilities - 12.5% Compression or Extension

L Rating At Ambient - Less Than 1 CFM/Lin Ft

L Rating At 400 F - Less Than 1 CFM/Lin Ft



1. **Floor Assembly —** The fire-rated fluted steel deck/concrete floor assembly shall be constructed of the materials and in the manner described in the individual D700 or D900 Series Floor-Ceiling Design in the UL Fire Resistance Directory. The hourly fire rating of the floor assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The floor assembly shall include the following construction features:

A. **Steel Floor and Floor Units* —** Max 3 in. (76 mm) deep galv steel fluted floor units.

B. **Concrete —** Min 2-1/2 in. (64 mm) thick reinforced concrete, as measured from the top plane of the floor units.

C. **Structural Steel Support —** Steel beam or open-web steel joist, as specified in the individual D700 or D900 Series Floor-Ceiling Design, used to support steel floor units. Structural steel support oriented parallel to and min 2 in. (51 mm) to max 6 in. (152 mm) from wall assembly.

D. **Steel Lath —** When structural steel support (Item 1C) consists of open-web steel joists, 3/8 in. (10 mm) diamond mesh expanded steel lath having a nom weight of 1.7 to 3.4 lb per sq yd (0.9 to 1.8 kg/m^2) shall be installed to completely cover one side of each joist which is located within 6 in. (152 mm) of wall assembly. The lath shall be secured with steel tie wire and shall be fully covered with spray applied fire resistive material.

E. **Spray-Applied Fire Resistive Material* —** Steel floor units and structural steel supports to be sprayed with the thickness of material specified in the individual D700 or D900 Series Design. The flutes of the steel floor units above the structural steel supports shall be filled with spray-applied fire resistive material. The spray-applied fire resistive material in the flutes above the wall shall be applied to follow the contour of the steel floor units.

1A. **Roof Assembly —** (Not Shown) — As an alternate to the floor assembly (Item 1), a fire rated fluted steel deck roof assembly may be used. The roof assembly shall be constructed of the materials and in the manner described in the individual P700 or P900 Series Roof-Ceiling Design in the UL Fire Resistance Directory. The hourly fire rating of the roof assembly shall be equal to or greater than the hourly fire rating of the wall assembly. The roof assembly shall include the following construction features:

A. **Steel Roof Deck —** Max 3 in. (76 mm) deep galv steel fluted roof deck.

B. **Roof Insulation —** For P700 Series Designs, min 3/4 in. (19 mm) thick **Mineral and Fiber Board*** insulation applied in one or more layers directly over steel roof deck or over gypsum board sheathing laid atop steel roof deck as specified in the individual design. For P900 Series Designs, min 2-1/4 in. thick poured insulating concrete, as measured from the top plane of the roof deck as specified in the individual design.

C. **Roof Covering* —** Hot-mopped or cold-application materials compatible with mineral and fiber board insulation.

D. **Structural Steel Support —** Steel beam or open-web steel joist, as specified in the individual P700 or P900 Series Roof-Ceiling Design, used to support steel floor units. Structural steel support oriented parallel to and min 2 in. (51 mm) to max 6 in. (152 mm) from wall assembly.

E. **Steel Lath —** When structural steel support (Item 1D) consists of open-web steel joists, 3/8 in. (10 mm) diamond mesh expanded steel lath having a nom weight of 1.7 to 3.4 lb per sq yd (0.9 to 1.8 kg/m^2) shall be installed to completely cover one side of each joist which is located within 6 in. (152 mm) of wall assembly. The lath shall be secured with steel tie wire and shall be fully covered with spray applied fire resistive material.

F. **Spray-Applied Fire Resistive Material* —** Steel roof deck and structural steel supports to be sprayed with a thickness of spray applied fire resistive material as specified in the individual P700 Series Roof-Ceiling design. The flutes of the steel deck above the structural steel supports shall be filled with spray-applied fire resistive material. The spray-applied fire resistive material in the flutes above the wall shall be applied to follow the contour of the steel roof deck.

ISOLATEK INTERNATIONAL — Type 300

W R GRACE & CO - CONN — Type MK-6/HY, MK-6/HY ES, MK-6s, RG

2. **Wall Assembly —** Min 6 in. (152 mm) thick steel-reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) structural concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***.

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

3. **Joint System —** Max separation between bottom plane of steel deck or spray-applied fire resistive material on the steel deck and the top of the concrete or concrete block wall (at time of installation of joint system) is 1 in. (25 mm). Separation distance between spray applied fire resistive material on structural support member and surface of wall is min 1 in. (25 mm) to max 4 in. (102 mm). The joint system is designed to accommodate a max 12.5 percent compression or extension from its installed width as measured between the bottom plane of the steel deck or the spray-applied fire resistive material on the steel deck and the top of the concrete or concrete block wall. The joint system shall consist of forming and fill materials, as follows:

A. **Forming Material* —** Nom 4 pcf (64 kg/m^3) density mineral wool batt insulation. Sections of mineral wool batt cut to a width of 4 in. (102 mm) and stacked to attain a thickness which is 50 percent greater than the width of the linear gap between the spray applied fire resistive material on the structural steel member and the surface of the wall assembly. Stacked sections of mineral wool compressed 33 percent in thickness and installed cut edge first into linear gap until the bottom edge is flush with the bottom surface of the spray applied fire resistive material on the structural steel member. On the opposite side of the wall, sections of mineral wool batt insulation cut to the width of the wall inserted edge-first between the top of the wall and the steel deck or the spray-applied fire resistive material on the valleys of the steel deck, compressed approx 50 percent in thickness beneath each valley and flush with the wall surface.

Additional pieces of mineral wool batt cut to the shape of the steel deck flute, stacked to a min 6 in. (152 mm) thickness and installed in the flutes above the wall flush with the wall surface.

IIG MINWOOL L L C — MinWool-1200 Safing

ROCK WOOL MANUFACTURING CO — Delta Safing Board

ROCKWOOL MALAYSIA SDN BHD — SAFE

ROXUL INC — SAFE

THERMAFIBER INC — SAF

A1. **Forming Material* - Plugs —** (Not Shown) — As an alternate to the forming material (Item 3A), mineral wool plugs preformed to the shape of the fluted floor units, may be used within the flutes. Plugs shall be friction fit to completely fill the flutes above the ceiling channel. The plugs shall project beyond each side of the ceiling runner, flush with wall surfaces. Additional forming material, described in Item 3A, to be used in conjunction with the plugs to fill the gap between the top of gypsum board and bottom of steel floor units or roof deck.

ROCK WOOL MANUFACTURING CO — Delta Deck Plugs

B. **Fill, Void or Cavity Material* — Sealant —** Min 1/8 in. (3.2 mm) wet thickness or 1/16 in. (1.6 mm) dry thickness of fill material spray or brush applied over the forming material on each side of the wall. Fill material to overlap a min of 1/2 in. (13 mm) onto the steel deck or the spray-applied fire resistive material on the steel deck and on the spray-applied fire resistive material on the structural steel support member on each side 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.**