

105 SW GIBBS ST DFS-01 C009-158396

DFS 01 CO 09-158396

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MICROFILMED

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Deferred Submittal Requirements and Application

Applicants will provide:

- ☒ A copy of this application
- ☐ Three (3) sets of plans
- ☐ One (1) set of calculations
- ☒ Two (2) sets of product information
- ☐ Drawings and calculations must be stamped and signed by an Engineer registered in Oregon and approved by the Architect/Engineer of record for the building.
- ☐ Permit fee (paid at time of submittal)
- ☐ If the DFS includes exterior elements, plan views and elevations identifying the location(s) as approved by the Architect and Engineer of Record must be submitted.
- ☐ One (1) copy of your main building permit approved plans (NOTE: Approved plans do not need to be submitted if your project has a development liaison assigned)

Contractor submittal information:

Contact name Build Pro, Inc
Address PO BOX 1812
City Clackamas OR State OR Zip Code 97015
Phone 503-407-1766 E-mail vitaly@buildpro.us
Value of deferred submittal 10K Issued main building permit # 09-158396-C0
Description/Scope of work die proofing

Fees

Deferred submittal (DFS) fees are collected in addition to the standard building review fee paid on the main building permit. DFS fees cover the cost of the additional processing and review time associated with the design build element.

The DFS fee for processing and reviewing deferred plan submittals is 10 percent of the building permit fee calculated using the value of the particular deferred portion of the project.

Minimum fee: Residential, one and two family dwelling... \$117 for DFS with valuation of less than or equal to \$222,000

Commercial and all other projects\$292 for DFS with valuation of less than or equal to \$680,000

The Bureau of Development Services (BDS) fee schedule is also available on the BDS web site at www.portlandoregon.gov/bds | select the Fees tab.

Helpful Information

Bureau of Development Services
1900 SW 4th Avenue, Portland, OR 97201

Submit your plans to:

Development Services Center (DSC), First Floor,
Tuesday - Friday:
8:00 am - 12:00 pm
Closed Mondays

Important Telephone Numbers

BDS main number 503-823-7300
DSC automated information line 503-823-7310
Building code information 503-823-1456
BDS 24 hour inspection request line 503-823-7000
Residential information for
one and two family dwellings..... 503-823-7388
City of Portland TTY 503-823-1868

DEFERRED SUBMITTAL REQUIREMENTS AND APPLICATION

SUBMITTAL

Vitaly Onishchenko
Buildpro, Inc.
PO Box 1812
Clackamas, OR 97015

City of Portland
DEPARTMENT OF COMMUNITY DEVELOPMENT
BUREAU OF PERMITS
MAY 04 2012
Permit Number

RE: SW Gibbs St Mixed Use 105 SW Gibbs Ave
(078100) Applied Fireproofing

Vitaly.

We hereby submit for your review and approval the following material and UL Design #s for the application of (078100) Applied Fireproofing.

Substrates that receive Sprayed Fire-Resistive Materials are to be free of oil, grease, rolling compounds, primers, loose mill scale, dirt and other foreign substances capable of impairing bond of fireproofing.

All clips, brackets and hangers shall be installed prior to fireproofing application.

Installation of ducts, piping, conduit, walls etc. to be deferred until fireproofing has been installed and inspected to ensure a uniform coverage of fireproofing.

Material to be:
General Fireproofing: CAFCO Blaze Shield

Brad Hardy
Project Manager

BH/biv

Enclosures:
Fireproofing Thickness Schedule
Blaze Shield II Material Data Sheet
Test Report FSR- 1649
Shop Drawings

Fireproofing UL Design Numbers
Blaze Shield II Application Guide
MSDS

Corporate Office / Spokane
P.O. Box 789, Greenacres, WA 99016
(509) 924-6709 • FAX (509) 924-9045

Portland / Vancouver Office
30011 NE 10th Avenue, Ridgefield, WA 98642
(503) 222-2950 • FAX (503) 222-6332

WA CONTR. REG # ADVANCE 005P5 • OR CONTR. REG # 146432 • MT CONTR. REG # 12751 • ID CONTR. REG # R-1012
 ID PUBLIC WORKS # 10025-B-4107200, 07400, 07809

CONTRACTOR SUBMITTAL REVIEW

Make corrections online
Revised and resubmit

Submit specified item

✓ No objection taken
Delegated

Factors for the listed parties of the following transactions and information given in the change concept given to the Board of Directors of Russia is not only the change in the purpose of the company and circumstances of their affairs, such as the change of location, or for establishing the existence for freedom or performance of equipment or systems, of which each has the responsibility of the Company as required by the General Documents. The Articles of Association and the Constitution of each company are written precisely about by the Articles, the company's organizational means, methods, liabilities, expenses or procedures. The company is not to be established or formed in a manner of which the form is not provided. Questions or comments made on the company during this meeting to complete the Company from compliance with the requirements of the price and the company.

By: _____
AUSTIN ARCHITECT ASSOCIATES, P.C.

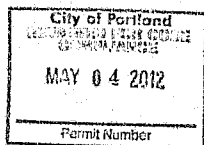
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ADVANCED FIREPROOFING & INSULATION CO.

SW Gibbs St Mixed Use 078100 APPLIED FIREPROOFING THICKNESS SCHEDULE MATERIAL / CAFCO BLAZE SHIELD II

February 24, 2012

Floor Deck is Plywood



1hr Floor Beams / UL Design # X829/X827

Floor Beams	W/D ratio	1hr Fireproofing
W16x100	1.37	1/2
W18x35	0.60	11/16
W18x55	0.85	11/16
W18x65	0.99	5/8
	A/P ratio	
HSS5x5x5/16	0.29	5/8

1hr Wide Flange Columns/ UL Design # X829

Columns	W/D ratio	1hr Fireproofing
W12x152	2.04	3/8

1hr Tube Steel Columns/ UL Design # X827

Columns	A/P ratio	1hr Fireproofing
HSS4x4x1/4	0.23	13/16
HSS6x6x5/16	0.3	5/8
HSS7x5x1/2	0.46	7/16
HSS7x7x1/4	0.24	3/4
HSS8x8x3/8	0.36	1/2

Brad Hardy
PM

BH/bh

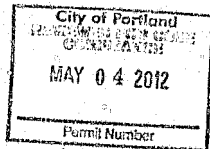
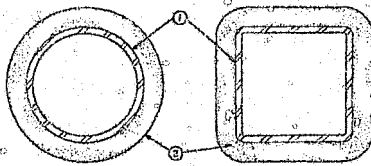
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WA CONTR. REG # ADVANRC005PS • OR CONTR. REG # 146432 • MT CONTR. REG # 12751 • ID CONTR. REG # RCE-1052

ID PUB. C WORKS # 10025-B-4(07200, 07400, 07800)

Design No. X827
Ratings — 1, 1-1/2, 2, 3 and 4 Hr.



1. Steel Pipe or Tube Column — Steel circular pipe (SP) with diameter (ID) ranging from a minimum of 3 in. to a maximum of 32 in. with a minimum wall thickness of 3/16 in. Steel square or rectangular tube (ST) with outside wall dimensions ranging from minimum 3 in. to a maximum of 36 in. and a minimum wall thickness of 3/16 in. The A/P ratio of the steel pipe or tube (see Item 2) shall range from 0.18 to 2.0.
2. Spray-Applied Fire Resistive Materials* — Applied by spraying with water in one or more untamped coats at the thickness shown in the table below to steel surfaces which are free of dirt, oil or scale. Use of adhesive is optional. Min avg untamped density is 13 pcf with min and untamped density of 11 pcf for Types D-C/F or II. Min avg and min and untamped densities of 22 and 17 pcf, respectively, for Type HF. Tamping is optional. For method of density determination refer to Design Information Section. The thickness of sprayed for ratings of 1, 1-1/2, 2, 3, and 4 h of a steel pipe or tube may be determined by the equation:

$$h = \frac{R - 0.35}{3.5A (A/P)}$$

Where:

R = the hourly rating (hrs).

h = the thickness of protection material, min 0.35 - max 3.50 in.

A = the cross sectional area (sq in.)

P = the heated perimeter (in.)

The A/P ratio of a circular pipe is determined by:

$$A/P = \frac{t(d - t)}{d}$$

Where:

d = the outer diameter of the pipe (in.)

t = the wall thickness of the pipe (in.)

The A/P ratio of a rectangular tube is determined by:

$$A/P = \frac{t(a + b - 2t)}{a + b}$$

Where:

a = the outer width of the tube (in.)

b = the outer length of the tube (in.)

t = the wall thickness of the tube (in.)

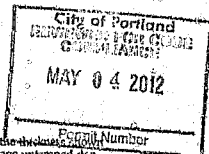
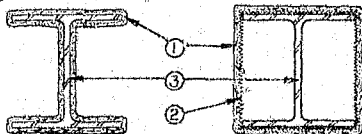
As an alternative to the equation, the minimum thickness of Spray-Applied Fire Resistive Materials required for various fire resistance ratings may be determined from the table below:

Min	A/P	1Hr	1 1/2 Hr	Min Thick.	3Hr	4Hr
Column Size				2Hr		
SP 36x168	0.10	1	1-3/4	2-3/16	—	—
ST 36x168	0.18	1	1-3/4	2-9/16	—	—
SP 48x127	0.22	1 1/2	1-7/16	2-3/16	3-3/8	—
ST 48x127	0.18	1	1-9/16	2-3/16	4	—
ST 48x137 1/2	0.34	9/16	13/16	1-1/4	2-5/16	3-1/4
ST 36x240 1/2	0.49	3/8	7/16	1-1/16	1-1/8	1-5/8

ISO-LATEK INTERNATIONAL —Type HF, D-C/F or II. Type D-C/F, HF or II investigated for interior use. Type EBS or Type X adhesive/sealer optional.

*Bearing the UL Classification Mark

Design No. X029
 Ratings -- 1/2, 1, 1-1/2, 2, 3, 4 Hr



1. **Spray-Applied Fire Resistive Materials*** -- Applied by spraying with water, in one or more untamped coats at the thicknesses listed in the table below to steel surfaces which are free of dirt, oil or scale. Use of adhesive is optional. Minimum average untamped density is 13 pcf with minimum and untamped density of 11 pcf for Types II and D-C/E. Min avg and min and untamped densities of 22 and 19 pcf, respectively, for Type HP. Tamping is optional. For method of density determination refer to Design Information Section. The thickness of Spray-Applied Fire Resistive Materials (Item 1) required for rating periods of 1 h, 1-1/2 h, 2 h, 3 h, 4 h of contour sprayed columns may be determined by the equation:

$$h = \frac{R}{1.01 (W/D) + 0.66}$$

Where:

h=Protection material thickness in the range 0.375-3.75 in.

R=Fire resistance rating in hours (1-4 h).

D=Heated perimeter of steel column in inches.

W=Weight of steel column in lbs per foot.

W/D=0.55 to 7.0

The thickness of Spray-Applied Fire Resistive Materials in the range of 0.375-3.75 in. required for rating periods of 1 h, 1-1/2 h, 2 h, 3 h, 4 h of contour sprayed columns with W/D=0.30-0.55 may be determined by the equation:

$$h = \frac{R}{0.55 (W/D) + 0.45}$$

As an alternative to the equations, the minimum thickness of protection material required for various fire resistance ratings of contour or box sprayed columns may be determined from the table below:

Column Size	W/D	1Hr	1-1/2 Hr	2Hr	3Hr	4Hr
W6X10	0.33	1-1/4	1-13/16	2-5/16	3-7/16	—
W6X16	0.57	11/16	1-1/8	1-9/16	2-7/16	3-1/4
W8X21	0.68	11/16	1-1/8	1-7/16	1-7/8	2-5/16
W10X29	0.83	11/16	1	1-1/4	1-11/16	2-1/8
W12X16	1.46	7/16	3/4	1	1-7/16	1-15/16
W12X23	2.52	5/16	1/2	1/2	13/16	1-5/16
W14X23	4.68	3/8	3/8	3/8	3/8	9/16

* A 1-1/2 Hour Rating may be obtained on a minimum W6X16 column with a minimum 3/8 in. of material.

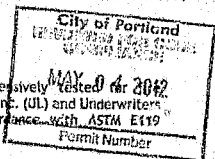
The thicknesses of protection material contained in the table below are applicable when the protection of the contour sprayed column's flange tips are reduced to one-half.

W6X10	0.33	1-3/8	2	2-5/8	—	—
W6X16	0.57	13/16	1-5/16	1-3/4	2-3/4	3-11/16
W8X21	0.68	13/16	1-5/16	1-11/16	2-9/16	2-7/16
W10X29	0.83	13/16	1-1/8	1-9/16	1-13/16	2-7/16
W12X16	1.46	1/2	13/16	1-1/8	1-5/8	2-3/16
W12X23	2.52	7/16	9/16	9/16	1-1/16	1-1/2
W14X23	4.68	3/8	3/8	3/8	1/2	11/16

ISOLATEK INTERNATIONAL -- Type D-C/E, HP or II. Type D-C/E, HP or II investigated for exterior use. Type EDS or Type X adhesive/sealer optional.

2. **Metal Lath** -- (Optional for contour application) -- 3-4 lb/sq yd galvanized or painted expanded steel lath. Lath shall be lapped 1 in. and tied together with No. 12 SWG galvanized steel wire spaced vertically 6 in. O.C. or alternately, stitched with No. 24 MSG spring clips, 1/2 in. wide, pushed onto column flanges, vertically spaced 6 in. O.C.
3. **Steel Column** -- Min. sizes as shown above in Item 1.

*Bearing the UL Classification Mark



** Values represent independent laboratory tests under controlled conditions

SHORT FORM APPLICATION GUIDE CAFCO® BLAZE-SHIELD® II

This is an abbreviated guide and is not intended as a substitute for the CAFCO® Application and Installation Manual. All applicators should thoroughly review the Application and Installation Manual prior to applying this product.

PREFERRED NOZZLE:

2-1/2" (64 mm) I.D. High output Air/Water nozzle manufactured by Hydra-Cone. The use of an expander sleeve is recommended to provide an even spray pattern. A 10 to 20 cfm (280 to 570 liter/min) AIR COMPRESSOR providing 60 psi (4.1 kg/cm²) air pressure at the nozzle is required.

ACCEPTABLE NOZZLES:

2-1/2" (64 mm) I.D. RA-9 Airless or 2" (51 mm) I.D. RA-6 Airless nozzles manufactured by Hydra-Cone. The use of an expander sleeve is recommended to provide an even spray pattern.
2-1/2" (64 mm) I.D. Boss 8 and 6 Jet Airless nozzles manufactured by Contractors Consulting Service.

UNACCEPTABLE NOZZLE:

2" or 2-1/2" (51 or 64 mm) I.D. Hydra-Cone (Center Stem Jet) manufactured by Hydra-Cone.

RECOMMENDED EQUIPMENT:

Unisul - All Pneumatic Fireproofing Machines
Contractors Consulting Service - All BOSS Machines

MACHINE SETTINGS:

Unisul - Carriage boxes or slide gates should be half closed when typically falls between settings 4 - 6 depending on the model of the machine.
BOSS - Discs should be set at position 8.

When feeding material, empty only one bag of material into machine hopper at a time. When the hopper is one quarter full, empty next bag into the hopper.

WATER RATIO:

Approximately 1.2 to 1 water to material ratio, by weight. Water pressure should be a minimum of 65 psi (4.4 kg/cm²) as measured at the nozzle. Refer to the CAFCO BLAZE-SHIELD II Application and Installation Manual for methods to determine water to product ratios.

WATER BOOSTER PUMP:

IT IS MANDATORY THAT A WATER BOOSTER PUMP WITH A 55 GAL. (208 LITER) RESERVOIR TANK BE USED TO INSURE PROPER WATER PRESSURE AND VOLUME.

HOSE SET-UP:

TRANSFER HOSE must be smooth interior, rubber or plastic with a 2-1/2" (64 mm) or 3" (76 mm) Inside Diameter (I.D.). Hose must be reinforced to resist kinking or cracking, and must resist static build up. Flexible hose length should not exceed 250 ft. (76 m). Metal standpipe 2-1/2" - 3" (64-76 mm) I.D. must be used when transfer height exceeds 3 stories or 36 ft (11 m) or when total length (horizontal plus vertical) of material hose were to exceed 250 ft (76 m).

LIGHTWEIGHT FLEX HOSE (WHIP HOSE) must be smooth interior, rubber or plastic with a 2" (51 mm) or 2-1/2" (64 mm) Inside Diameter. Hose must be lightweight and flexible to allow mobility at the nozzle, and must resist static build up. The maximum whip hose length is 25 ft. (8 m).

NOZZLE DISTANCE:

18" to 24" (0.4 to 0.6 m) from the substrate.

APPLICATION TEMPERATURE:

Maintain a minimum substrate and ambient temperature of 40°F (4°C) prior to, during, and a minimum of 24 hours after application.

SURFACE PREPARATION:

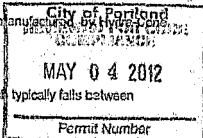
Ensure surfaces are clean and free of dirt, oil, grease, loose mill scale, paints/primers (other than those tested and found acceptable) and any other materials that may impair adhesion. For applications to painted/primered steel, contact the Isoltek International Technical Department.

Note: Some substrates may require the use of CAFCO® BOND-SEAL or metal lath. Refer to the CAFCO BLAZE-SHIELD® II Application and Installation Manual for specific requirements.

VENTILATION:

Provide a minimum of 4 complete air exchanges per hour until the material is dry.

(See reverse side)



WATER OVERSPRAY:

WATER TO FIBER RATIO & PRODUCTIVITY:

IT IS MANDATORY THAT THE BLAZE-SHIELD II BE OVERSPRAYED WITH WATER BEFORE THE END OF THE WORK DAY.

1. DETERMINE THE MAXIMUM WATER OUTPUT.

- Establish the maximum water quantity by opening the water valve to the fully open position and directing the spray into a 5 gallon pail* for 1 minute.
- Measure the height of the water in inches.
- Compare the height of the water in the pail to the chart below and determine the maximum bag per hour rate.

2. DETERMINE THE BLAZE-SHIELD II FEED RATE

- Measure the time it takes to spray one bag. This is done by spraying material until the hopper is nearly empty. Material should be at the level of the top of the auger in hopper bottom.
- Turn feed off, empty one bag into hopper.
- Turn feed on and start stopwatch. When material is at the level of the top of the auger (the initial starting point) stop the stopwatch and record the time. E.G. Assume it takes 2 minutes 30 seconds to spray 1 bag.
1 bag + 2.5 minutes x 60 min./hr. = 24 bags/hr.

3. Adjust the material feed rate to match the water level measured.

- * 5 gal. Pail is the one used for CAFCO BOND-SEAL. It measures 10-7/8" dia. at bottom, 14-3/8" dia. at top and is 16" high. Using any other pail (with different dimensions) will give erroneous results.

Inches of Water/minute	Time to Spray One Bag	Bags/Hour
2.0	10 min.	6.0
2.5	8 min.	7.5
3.0	6 min. 40 sec.	9.0
3.5	5 min. 43 sec.	10.5
4.0	5 min.	12.0
4.5	4 min. 27 sec.	13.5
5.0	4 min.	15.0
5.5	3 min. 38 sec.	16.5
6.0	3 min. 20 sec.	18.0
6.5	3 min. 05 sec.	19.5
7.0	2 min. 51 sec.	21.0
7.5	2 min. 40 sec.	22.5
8.0	2 min. 30 sec.	24.0
8.5	2 min. 21 sec.	25.5
9.0	2 min. 13 sec.	27.0
9.5	2 min. 06 sec.	28.5
10.0	2 min.	30.0

NOTE: Only the listed equipment, nozzles and procedures are approved for applying CAFCO BLAZE-SHIELD II. Deviations from any of these recommendations will result in product not meeting claims as published in Isolafek's literature. For complete details, refer to the CAFCO Application and Installation Manual. This guide is not a substitute for the CAFCO Application and Installation Manual.

The performance data herein reflects our expectations based on tests conducted in accordance with recognized standard methods. Test methods and products shall be subject to the Terms and Conditions of Sale set forth in the Company's invoices.

No agent, employee or representative of the Company, or its subsidiary or affiliated companies, is authorized to modify this statement.

ISOLATEK
INTERNATIONAL

Visit us at www.caeco.com
or contact us at caeco@isolatek.com

41 Furnace Street, Stanhope, NJ 07874

Tel: (973) 347-1200 Fax: (973) 347-6730
BS II-11/00

MAY 04 2012

Permit Number

ICC Evaluation Service, Inc.
www.icc-es.org

Design/Registration Office • 6300 Redwood Mill Road, Walnut, California 92691 • (951) 639-6213
Regional Office • 630 Montclair Road, Suite A, Birmingham, Alabama 35243 • (205) 939-9300
Regional Office • 4851 West Florence Road, Country Club Hills, Illinois 60318 • (708) 769-2300

DIVISION: 07—THERMAL AND MOISTURE PROTECTION
Section: 07810—Applif Fireproofing

REPORT HOLDER:

ISOLATEK INTERNATIONAL
41 FURNACE STREET
STANHOPE, NEW JERSEY 07074
(973) 347-1200
www.cafco.com
rjennand@isolatek.com

EVALUATION SUBJECT:

CAFCO® BLAZE-SHIELD® TYPE II, CAFCO® BLAZE-SHIELD® TYPE DCIF, CAFCO® BLAZE-SHIELD® TYPE HP, CAFCO® TYPE 300, CAFCO® TYPE 300 ES, CAFCO® TYPE 300 SB, CAFCO® TYPE 400, and FENDOLITE® M-II SPRAYED FIRE-RESISTIVE MATERIALS; CAFCO® FIBER-PATCH TYPE P and FENDOLITE TG (TROWEL GRADE) HAND-APPLIED FIRE-RESISTIVE MATERIALS; CAFCO® BOND-SEAL and CAFCO® PRE-COAT TYPE PC ADHESIVES; CAFCO® QWIK-SET FIRE-RESISTIVE MATERIAL ADDITIVE/ACCELERATOR

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 International Building Code® (IBC)
- 1997 Uniform Building Code™ (UBC)

Properties evaluated:

- Fire resistance
- Physical properties
- Durability

2.0 USES

2.1 CAFCO® BLAZE-SHIELD® Type II, CAFCO BLAZE-SHIELD Type DCIF, and CAFCO BLAZE-SHIELD Type HP Sprayed Fire-resistive Materials:

2.1.1 Fire-resistance-rated Assemblies: CAFCO® BLAZE-SHIELD® Type II, CAFCO BLAZE-SHIELD® Type DCIF, and CAFCO BLAZE-SHIELD® Type HP sprayed materials provide fire protection for structural steel columns and beams, steel roof and floor assemblies, steel trusses, concrete pan joists, and cold-formed steel stud walls and partitions that require a fire-resistance rating. These materials are limited to interior exposures.

2.1.2 Use in Ventilation Shafts, Plenums and Elevator Shafts: BLAZE-SHIELD Type II and BLAZE-SHIELD Type HP sprayed fire-resistive materials may be installed in areas of a

building, such as ventilation shafts, plenums and elevator shafts, where the maximum velocity of the air stream is 1,250 feet per minute (381 m/min), provided the in-place dry density of the materials is verified to comply with Section 3.1 of this report.

2.2 CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, and CAFCO Type 400 Sprayed Fire-resistive Materials:

2.2.1 Fire-resistance-rated Assemblies: CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, and CAFCO Type 400 sprayed materials provide fire protection for interior structural steel columns and beams, steel roof and floor assemblies, and steel trusses that require a fire-resistance rating. These materials are limited to interior exposures.

2.2.2 Use in Ventilation Shafts, Plenums and Elevator Shafts: CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, and CAFCO Type 400 sprayed fire-resistive materials may be installed in areas of a building, such as ventilation shafts, plenums and elevator shafts, where the maximum velocity of the air stream is 1,250 feet per minute (381 m/min), provided the in-place dry density of the materials is verified to comply with Section 3.3 of this report.

2.3 CAFCO® Fiber-Patch Type P Fire-resistive Material:

CAFCO FIBER-PATCH Type P is hand- or trowel-applied to patch damaged CAFCO BLAZE-SHIELD Type DCIF, BLAZE-SHIELD Type II, BLAZE-SHIELD Type HP, CAFCO 300, CAFCO 300 ES, CAFCO 300 SB, and CAFCO 400 sprayed fire-resistive materials.

2.4 Fendolite® Type M-II Sprayed Fire-resistive Material and Fendolite TG Trowel-applied Fire-resistive Material:

These materials provide fire protection for structural steel columns and beams, and steel roof and floor assemblies that require a fire-resistance rating. These materials may be used for interior and exterior (exposed to the weather) applications.

2.5 CAFCO BOND-SEAL:

CAFCO BOND-SEAL is used as an adhesive coat where specifically required in this report before application of CAFCO® BLAZE-SHIELD® Type II, CAFCO BLAZE-SHIELD Type DCIF, CAFCO BLAZE-SHIELD Type HP, CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB or CAFCO Type 400 fire-resistive materials.

2.6 CAFCO PRE-COAT Type PC:

CAFCO PRE-COAT Type PC is an adhesive that is used as an adhesive coat where specifically required in this report with cellular steel floor deck units before application of CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB or CAFCO Type 400 fire-resistive materials.

DISCLAIMER: This report is based on the information provided by the report holder and is not to be construed as a representation of the ICC Evaluation Service, Inc. The ICC Evaluation Service, Inc. does not warrant the accuracy of the information provided by the report holder and is not responsible for the consequences of the use of the information provided by the report holder.



CAFCO Qwik-Sets may be added to CAFCO Type 200, CAFCO Type 300 ES, or CAFCO Type 300 SB fire-resistant materials as a fluid-application aid.

3.0 DESCRIPTION

3.1 CAFCO BLAZE-SHIELD:

CAFCO BLAZE-SHIELD Type DCIF, BLAZE-SHIELD Type II, and BLAZE-SHIELD Type HP fire-resistant materials are proprietary formulations of slag wool and inorganic binders containing silicates and calcium sulfates. The BLAZE-SHIELD fire-resistant materials are noncombustible when tested in accordance with ASTM E 136 (UBC Standard 2-1), and have a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 (UBC Standard 8-1).

BLAZE-SHIELD Type DCIF fire-resistant materials must have minimum average and individual in-place dry densities of 13 and 11 pcf (208 and 178 kg/m³), respectively, for the thicknesses specified in Tables 1 through 7 of this report for a given fire-resistance rating.

BLAZE-SHIELD Type II fire-resistant material must have minimum average and individual in-place dry densities of 13 and 11 pcf (208 and 178 kg/m³), respectively, for the thicknesses specified in Tables 1 through 7 of this report for a given fire-resistance rating. When used in ventilation shafts, plenums and elevator shafts, BLAZE-SHIELD Type II fire-resistant material must have minimum average and individual in-place dry densities of 16 and 13 pcf (255 and 208 kg/m³), respectively.

BLAZE-SHIELD Type HP material must have minimum average and individual in-place dry densities of 22 and 19 pcf (352 and 304 kg/m³), respectively, for the thicknesses specified in Tables 1 through 7 of this report for a given fire-resistance rating. When used in ventilation shafts, plenums and elevator shafts, BLAZE-SHIELD Type HP material must have minimum average and individual in-place dry densities of 22 and 19 pcf (352 and 304 kg/m³), respectively.

CAFCO BLAZE-SHIELD Type DCIF, BLAZE-SHIELD Type II, and BLAZE-SHIELD Type HP fire-resistant materials are packaged in 55-pound (25 kg) bags. The shelf life of unopened bags of the material is six months provided the bags are stored on pallets (above ground or floor) in a dry location.

3.2 CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, and CAFCO Type 400:

CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, and CAFCO Type 400 fire-resistant materials are proprietary formulations of inorganic aggregate and binders containing silicates, calcium sulfates and aluminates. The materials have a flame-spread index less than 25 and smoke-developed index less than 450 when tested in accordance with ASTM E 84 (UBC Standard 8-1).

CAFCO Type 300, CAFCO Type 300 ES and CAFCO Type 300 SB materials must have minimum average and individual in-place dry densities of 15.0 and 14.0 pcf (240 and 224 kg/m³), respectively, for the thicknesses specified in Tables 8 through 12 of this report, with the exception of cellular deck in Table 9, for a given fire-resistance rating. Cellular deck in Table 9 requires minimum average and individual in-place densities of 17.5 and 16.0 pcf (280 and 256 kg/m³), respectively. When used in ventilation shafts, plenums and elevator shafts, CAFCO Type 300, CAFCO Type 300 ES and CAFCO Type 300 SB materials must have minimum average and individual in-place dry densities of 15.0 and 14.0 pcf (240 and 224 kg/m³), respectively.

CAFCO Type 400 must have minimum average and individual in-place dry densities of 22.0 and 19.0 pcf (352 and 304 kg/m³), respectively, for the thicknesses specified in Tables 8 through 12 of this report for a given fire-resistance rating. When used in ventilation shafts, plenums, and elevator shafts, CAFCO Type 400 material must have minimum average and individual in-place dry densities of 22.0 and 19.0 pcf (352 and 304 kg/m³), respectively.

CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, and CAFCO Type 400 fire-resistant materials are dry-blended products packaged in 55-pound (25-kg) bags. The shelf life of unopened bags is ten months provided the bags are stored on pallets (above ground or floor) in a dry location.

3.3 CAFCO FIBER-PATCH Type P:

The material, consisting of a proprietary formulation of slag wool and inorganic binders containing silicates and calcium sulfates, is noncombustible when tested in accordance with ASTM E 136 (UBC Standard 2-1), and has a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 (UBC Standard 8-1). CAFCO FIBER-PATCH Type P material must have a minimum individual in-place dry density of 17.5 pcf (280 kg/m³).

CAFCO FIBER-PATCH Type P material is packaged in 25-pound (11.3-kg) bags. The shelf life of unopened bags of the material is six months provided the bags are stored on pallets (above ground or floor) in a dry location.

3.4 Fendolite[®] Type M-II:

Fendolite Type M-II fire-resistant material is a proprietary formulation of portland cement and vermiculite aggregate containing calcium silicates, calcium aluminates, and aluminum silicates. The material is noncombustible when tested in accordance with ASTM E 136 (UBC Standard 2-1), and has a flame-spread index less than 25 and smoke-developed index less than 450 when tested in accordance with ASTM E 84 (UBC Standard 8-1).

Fendolite Type M-II must have minimum average and individual dry in-place densities of 44 and 40 pcf (704 and 640 kg/m³), respectively, for the thicknesses specified in Tables 13 through 17 of this report for a given fire-resistance rating.

Fendolite Type M-II fire-resistant material is packaged in 50-pound (22.7-kg) bags. The shelf life of unopened bags of the material is 24 months, provided the bags are stored on pallets (above ground or floor) in a dry location.

3.5 CAFCO BOND-SEAL:

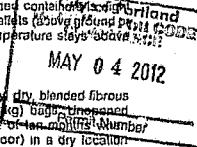
CAFCO BOND-SEAL is a polyvinyl acetate copolymer adhesive that is an off-white liquid, packaged in 5-gallon (19 L) containers. The shelf life of unopened containers is 18 months, provided they are stored on pallets (above ground or floor) in a dry location where the temperature stays above 32°F (0°C).

3.6 CAFL J PRE-COAT Type PC:

CAFCO PRE-COAT Type PC is a grey, dry, blended fibrous powder packaged in 50-pound (22.7 kg) bags. Unopened bags of the material have a shelf life of 18 months when stored on pallets (above ground or floor) in a dry location where the temperature stays above 32°F (0°C).

CAFCO Qwik-Sets:

CAFCO Qwik-Sets is a water-soluble, off-white, inorganic acid-set powder that is packaged in 50-pound (22.7 kg) bags. The shelf life of unopened bags of the material is ten months, provided they are stored on pallets (above ground or floor) in a dry location.



4.0 DESIGN, INSTALLATION, APPLICATION, AND SPECIAL INSPECTION

4.1 Design:

4.1.1 CAFCO BLAZE-SHIELD: The minimum average thicknesses of CAFCO BLAZE-SHIELD Type DCF, BLAZE-SHIELD Type II, and BLAZE-SHIELD Type HP fire-resistive materials for each hourly fire-resistance rating are shown in Table 1 for steel columns, Table 2 for steel decks and beams of (protected) floor assemblies, Table 3 for steel beams of (protected) floor assemblies, Table 4 for concrete floor systems, Table 5 for steel decks and beams of (protected) roof assemblies, Table 6 for steel beams of (unprotected) roof assemblies, and Table 7 for wall assemblies.

The thickness of the fire-resistive material applied to a truss element that can be simultaneously exposed to fire on all sides must be determined on the same basis as for columns, as specified in Table 1. The thickness of the fire-resistive material applied to a truss element that directly supports floor or roof construction must be determined on the same basis as for beams and girders, as specified in Tables 2 or 3 for floor construction and in Tables 5 and 6 for roof construction.

4.1.2 CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, and CAFCO Type 400: The minimum average thicknesses of CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, and CAFCO Type 400 fire-resistive materials for each hourly fire-resistance rating are shown in Table 8 for steel columns, Table 9 for steel decks and beams of (protected) floor assemblies, Table 10 for steel beams of (unprotected) floor assemblies, Table 11 for steel decks and beams of (protected) roof assemblies, and Table 12 for steel beams of (unprotected) roof assemblies.

The thickness of the fire-resistive material applied to a truss element that can be simultaneously exposed to fire on all sides must be determined on the same basis as for columns, as specified in Table 8. The thickness of the fire-resistive material applied to a truss element that directly supports floor or roof construction must be determined on the same basis as for beams and girders, as specified in Tables 9 or 10 for floor construction and in Tables 11 and 12 for roof construction.

4.1.3 Fondolite Type M-II: The minimum average thicknesses of Fondolite Type M-II fire-resistive material for each hourly fire-resistance rating are shown in Table 13 for steel columns, Table 14 for steel decks and beams of (protected) floor assemblies, Table 15 for steel beams of (unprotected) floor assemblies, Table 16 for steel decks and beams of (protected) roof assemblies, and Table 17 for steel beams of (unprotected) roof assemblies.

4.2 Installation:

4.2.1 Site Conditions: When the temperature of the building site is less than 40°F (4.4°C), the temperature of the steel substrate and its surrounding environment must be maintained at 40°F (4.4°C) or higher before, during and a minimum of 24 hours after application of sprayed fire-resistive material. Enclosures with heat must be used to maintain the required substrate and ambient temperatures during this period.

4.2.2 Surface Conditions: Surfaces that receive spray- or trowel-applied fire-resistive material and adhesive must be free of oil, grease, dirt, loose mill scale or any other condition that impairs adhesion.

4.3 Application:

4.3.1 CAFCO BLAZE-SHIELD Type DCF, BLAZE-SHIELD Type II, and BLAZE-SHIELD Type HP Fire-resistive Materials: These materials are pneumatically conveyed in a dry state through the application machine, hose and nozzle

Water is added at the nozzle in accordance with the manufacturer's published instructions, and volume is adjusted to provide for proper spray pattern. Continuous application builds the fire-resistive material to the required thickness in either single or multiple passes. The fire-resistive material must fill all cavities between the upper beam flange and steel floor or roof units. Fire-resistive material rebound may be used for filling the cavities.

4.3.2 CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, CAFCO Type 400 Fire-resistive Materials: These materials are mixed with water in a plaster mixer at the jobsite to a uniform consistency. The mixed materials are pumped through an application machine, hose, and nozzle where air pressure is added at the nozzle to adjust the spray pattern. Continuous application builds the fire-resistive materials to the required thickness in either single or multiple passes. The fire-resistive material must fill all cavities between the upper beam flange and steel floor or roof units. Fire-resistive material rebound may be used for filling the cavities.

4.3.2.1 CAFCO PRE-COAT Type PC; CAFCO PRE-COAT Type PC is applied to steel decking before application of CAFCO Type 300, Type 300 ES, Type 300 SB or Type 400 as noted in Table 9 of this report. One bag of dry material is mixed with 5.5 to 6.0 gallons (20.8 to 22.7 liters) of potable water. The mixture is sprayed at a rate sufficient to provide a minimum 70 percent coverage of deck area. CAFCO Type 300, Type 300 ES, Type 300 SB or Type 400 must be applied before the adhesive mixture dries completely.

4.3.2.2 CAFCO BOND-SEAL; CAFCO BOND-SEAL is field-mixed with potable water at a ratio of 3:1, by volume, and applied at a rate of 450 square feet per gallon (11 m²/liter). The fire-resistive material must be applied to steel surfaces before the adhesive mixture dries completely, which depends on site conditions.

4.3.2.3 CAFCO Qwik-Set; CAFCO Qwik-Set is added to CAFCO Type 300, Type 300 ES or Type 300 SB at or near the application equipment nozzle to reduce the set time of the fire-resistive materials. The solution consists of one 50-pound (22.7 kg) bag of CAFCO Qwik-Set mixed and fully dissolved in 12.5 gallons (47 L) of potable water. The solution is added to the fire-resistive material at a rate that results in a ratio of one bag of CAFCO Qwik-Set to 18 or more bags of CAFCO Type 300, Type 300 ES or Type 300 SB.

4.3.3 Fondolite Type M-II Fire-resistive Material: This material is mixed with potable water in a plaster mixer at the jobsite to a uniform consistency. The mixed material is pumped through an application machine, hose, and nozzle where air pressure is added at the nozzle to adjust the spray pattern. Continuous application builds the fire-resistive material to the required thickness in either single or multiple passes. The fire-resistive material must fill all cavities between the upper beam flange and steel floor or roof units. Fire-resistive material rebound may be used for non-filling the cavities.

4.3.4 Fire-resistive Material Thickness: The average thickness of the sprayed fire-resistive materials applied to structural elements must not be less than the minimum average thickness specified in Tables 1 through 17 of this report. The thickness must be determined in accordance with ASTM E 605 (UBC Standard 7-6). Samples of the sprayed fire-resistive materials must be selected in accordance with Sections 1704.10.3.1 and 1704.10.3.2 of the IBC. Minus and positive thickness tolerance limits are as follows:

4.3.4.1 Minus Tolerance: The thickness of fire-resistive material must be corrected by applying additional material at any location where the calculated average thickness of the

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material is less than that listed in this report, or where an individual measured thickness reading had a minus tolerance greater than $\frac{1}{8}$ inch (3.2 mm) for thicknesses of 1 inch (25.4 mm) or greater, or greater than 25 percent of the required thickness for thicknesses less than 1 inch (25.4 mm).

4.3.4.2 Positive Tolerance: An individual measured thickness, exceeding the thickness specified in this report by $\frac{1}{8}$ inch (3.2 mm) or more, is recorded as the thickness specified in the table plus $\frac{1}{8}$ inch (3.2 mm).

4.3.5 Fire-resistant Material Density: The minimum average and individual in-place dry density of the sprayed fire-resistant materials must not be less than the values specified in Sections 3.1 through 3.4 of this report. Density of the sprayed fire-resistant material must be determined in accordance with ASTM E 605 (UBC Standard 7-6).

4.3.5 Fire-resistant Material Bond Strength: The cohesive/adhesive bond strength of the cured sprayed fire-resistant material applied to steel elements must be at least 150 psi (7.18 kN/m²). The cohesive/adhesive bond strength must be determined in accordance with Section 1704.10.5 of the IBC or with Section 7.5.35 of UBC Standard 7-5, as applicable.

4.3.7 Patching: A maximum area of 432 square inches (278 709 mm²) of a fire-resistance-rated assembly described in this report that specifies CAFCO BLAZE-SHIELD Type DC/F, Type II, or Type HP fire-resistant materials may be patched, provided the following guidelines are met:

- (a) The material used for patching is either the same material designation type as the fire-resistance material being patched or CAFCO FIBER-PATCH Type P material.
- (b) All areas to be patched must be cleaned, down to the substrate, of loose, poorly adhered material, including dirt and any other foreign material.
- (c) The patching material is keyed into the existing material surrounding the patch. The integrity of the surrounding material must be sound. The surrounding material must be pre-wetted before application of the patching material.
- (d) CAFCO BOND-SEAL adhesive is required on steel decking that does not contain concrete (repl decking) and on all cellular decks.
- (e) When the patching material is the same material designation type as the fire-resistance material being patched, the minimum individual in-place dry density, as specified in this report, and the minimum thickness of the material, as specified in the tables of this report, must be maintained.
- (f) Any clips or hangers being patched around must be totally encased in material at the point of attachment to the structural member at a thickness equal to or greater than that being applied to the structural member.

A maximum area of 144 square inches (92 903 mm²) of a fire-resistance-rated assembly described in this report that specifies CAFCO Type 300, Type 300 ES, Type 300 SB, or Type 400 fire-resistant materials may be patched, provided the guidelines (a) through (f) in Section 4.3.7 of this report are met.

A maximum area of 144 square inches (92 903 mm²) of a fire-resistance-rated assembly described in this report that specifies Fendolite Type M-II fire-resistant material may be patched, provided the material used for patching is Fendolite Type M-II, and guidelines (b) through (f) in Section 4.3.7 are met.

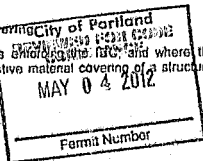
A maximum area of 5 square feet (0.46 m²) of a fire-resistance-rated assembly described in this report that specifies Fendolite Type M-II fire-resistant material may be patched, provided the material used for patching is Fendolite TG (Fiberglass Grade) and guidelines (b) through (f) in Section 4.3.7 are met.

4.3.8 Primed or Painted Surfaces: CAFCO and Fendolite fire-resistant materials may cover primed or painted wide-flange steel members, subject to the following guidelines:

- (a) Beam flange width is a maximum of 12 inches (305 mm).
- (b) Column flange width is a maximum of 16 inches (406 mm).
- (c) Beam or column web depth is a maximum of 16 inches (406 mm).
- (d) Round ~~1-1/2~~ column outer diameter or tube column width is a maximum of 12 inches (305 mm).
- (e) Bond tests of five specimens in accordance with ASTM E 738 are used to verify the bond strength of the fire-resistant material to a primed or painted steel beam or column at the jobsite. The minimum average bond strength shall be 80 percent, or a minimum individual bond strength shall be 50 percent, of the bond strength of the same fire-resistant material applied to bare, clean, $\frac{1}{8}$ -inch-thick (3.2 mm) steel plate. At a minimum, the cohesive/adhesive bond strength of the cured in-place fire-resistant material applied to primed or painted structural elements must not be less than 150 psi (7.18 kN/m²).
- (f) Where bond-strength values are less than the minimum values specified in item (e), above, for fire-resistance-rated assemblies with CAFCO BLAZE-SHIELD Type DC/F, Type II, Type HP, Type 300, Type 300 ES, Type 300 SB, or Type 400 fire-resistant materials, CAFCO BOND-SEAL adhesive must be applied to the primed or painted surfaces, and the bond-strength tests must be repeated.
- (g) Where bond-strength values are less than the minimum values specified in item (e), above, for fire-resistance-rated assemblies with Fendolite Type M-II fire-resistant material, an adhesive recommended by Isolok International is applied to the primed or painted surfaces, and the bond-strength tests are repeated. Regardless of the actual cohesive/adhesive bond strength of the Fendolite Type M-II fire-resistant material, an adhesive must always be applied to steel substrates primed with an alkyl-based primer having a pH between 12.0 and 12.5 before the Fendolite Type M-II fire-resistant material is sprayed to the primed steel.

When beam or column dimensions exceed the values in items (a), (b) or (c) of Section 4.3.8, a mechanical break must be installed on the beam or column to ensure a mechanical bond of the sprayed fire-resistant material. A mechanical break consists of one or more minimum 17-pound-per-square-yard (0.5 kg/m²) metal lath strips, or No. 20 gage galvanized hexagonal wire lath, mechanically fastened to the flange or web, or both, either by weld, screw or powder-actuated fastener. Fasteners must be spaced a maximum of 12 inches (305 mm) on center, on each longitudinal edge of the strip, so that the clear spans do not exceed the limits established in conditions specified in items (a), (b) or (c) of Section 4.3.8. At least 25 percent of the width of the oversized flange or web must be covered by the metal lath that is a minimum of 3/8 inches (9.5 mm) wide.

4.3.9 Protective Coating of Portland
4.3.9.1 IBC: In areas where the IBC, and where the spray-applied fire-resistant material covering of a structural



member is subject to impact damage from moving vehicles, the handling of merchandise or other activity, the fire-resistant material must be protected by corner guards or by a substantial jacket of metal or other noncombustible material to a height adequate to provide full protection, but not less than 5 feet (1524 mm) from the finished floor in accordance with IBC Section 714.4.

4.3.9.2 UBC: In areas enforcing the UBC, the fire-resistant material applied to steel columns, beams and ceilings less than 8 feet (2438 mm) above the finished floor must be protected from damage by encasement in a furled wallboard or cement-plaster/fath enclosure, or by other means approved by the code official.

4.4 Special Inspection:

Special inspections must be provided in accordance with Section 1704.10 of the IBC or Section 1901.4 of the UBC, as applicable.

5.0 CONDITIONS OF USE

The CAFCO® BLAZE-SHIELD® Type II, Type DC/F, and Type HP Fire-resistant Materials; CAFCO Type 300, Type 300 ES, Type 300 SB, and Type 400 Fire-resistant Materials; FENDOLITE® M-II Fire-resistant Material; CAFCO Fiber-Patch Type P and FENDOLITE TG (Trowel Grade) Hand-applied Fire-resistant Materials; CAFCO BOND-SEAL and CAFCO Pre-Coat Type PC Adhesives; and the CAFCO Qwik-Set Fire-resistant Material Additive/Accelerator described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. When the manufacturer's published installation instructions differ from this report, this report governs.

5.2 Use of CAFCO BLAZE-SHIELD Type II, CAFCO BLAZE-SHIELD Type DC/F, CAFCO BLAZE-SHIELD Type HP, CAFCO Type 300, CAFCO Type 300 ES, CAFCO Type 300 SB, and CAFCO Type 400 fire-resistant materials is limited to interior applications.

5.3 Use of FENDOLITE M-II and Type TG fire-resistant materials for interior and exterior (exposed to the weather) applications.

5.4 Minimum thickness and density of applied fire-resistant material must comply with this report.

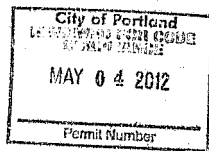
5.5 Special inspection must be provided as set forth in Section 4.4 of this report.

6.0 EVIDENCE SUBMITTED

Data in compliance with the ICC-ES Acceptance Criteria for Spray-applied and Intumescent Mastic Coating Fire-protection Materials (AC208), dated June 2004 (editorially revised January 2008).

7.0 IDENTIFICATION

Bags and containers of the fire-resistant material, adhesives, and fire-resistant material additive/accelerator are labeled with the company name (Isolatak International) and address, product name, storage and shelf life information, and the evaluation report number (ESR-1649).



Effective Date: July 26, 2010
Supersedes: December 28, 2009

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SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME AND ADDRESS:

United States Mineral Products Company
dba Isotek International/CAFCO INDUSTRIES
41 Furnace Street
Stanhope, NJ 07874
973-347-1200

EMERGENCY TELEPHONE NUMBER:

CHIENTREC 703-527-3887

CHEMICAL NAME AND SYNONYM:

Spray-Applied Fire Resistant Materials (SFRMs).

CHEMICAL FAMILY:

Silicates and Calcium Sulfates

FORMULA:

Sing Wool and Inorganic Binders

TRADE NAMES AND SYNONYMS:

CAFCO® BLAZE-SHIELD®, CAFCO BLAZE-SHIELD WHITE, CAFCO BLAZE-SHIELD CHARCOAL,
CAFCO BLAZE-SHIELD II, CAFCO BLAZE-SHIELD II WHITE, CAFCO BLAZE-SHIELD II CHARCOAL,
CAFCO BLAZE-SHIELD HP, CAFCO BLAZE-SHIELD HP WHITE, CAFCO BLAZE-SHIELD HP CHARCOAL,

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

INGREDIENT	CAS NUMBER	OSHA PEL	ACGIH TLV-TWA
Slag W/Coal	65997-17-3	NE	1 fiber/cc
Powdered Binders & Fillers	N/Ap	Total Dust: 15mg/m ³	10mg/m ³
Nuisance Particulates		Respirable fraction: 5mg/m ³	3mg/m ³

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

1. Boiling Point (°F):	N/Ap
2. Vapour Pressure (mm Hg):	N/Ap
3. Vapour Density (Air=1):	N/Ap
4. Solubility in Water:	Negligible
5. Specific Gravity (H ₂ O=1):	>1
6. Melting Point (°F):	>1800
7. Evaporation Rate:	N/Ap
8. Appearance and Odor:	White to charcoal, low odor.
9. Physical State:	Solid

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SECTION IV - FIRE AND EXPLOSION HAZARD DATA

1. Flash Point (Method used):	N/Ap
2. Flammable Limits:	Noncombustible
3. Extinguishing Media:	N/Ap
4. Special Fire Fighting Procedures:	N/Ap
5. Unusual Fire and Explosion Hazards:	None

SECTION V - REACTIVITY DATA

1. Stability:	Stable
Conditions to Avoid:	Contact with strong acids
2. Incompatibility (Materials to Avoid):	Strong Acids
3. Hazardous Decomposition Products:	CO, CO ₂
4. Hazardous Polymerization:	Will not occur
Conditions to Avoid:	N/Ap

NE = Not Established
N/Ap = Not Applicable

SECTION VI - HEALTH HAZARD DATA

Primary Routes of Entry: Inhalation, Skin and Eye Contact, Ingestion.

Acute: Slag wool and other nuisance particulates may cause transitory skin irritation (itching) and possible irritation of eyes and upper respiratory tract.

Carcinogenicity: NTP - NO OSHA - NO IARC - 3 (Not classifiable as to human carcinogenicity)

Medical Conditions Aggravated by Exposure: Any condition, which may be aggravated by mechanical irritants.

Emergency and First Aid Procedures:

Eye Contact:	*Flush with water.
Skin Contact:	*Wash with water. Launder clothing separate from other garments.
Inhalation:	*Remove to fresh air.
Ingestion:	*Do not induce vomiting. Seek immediate medical attention.

*If irritator, isolate, seek medical attention.

USE NORMAL PERSONAL HYGIENE AFTER CONTACT TO REMOVE ANY MATERIAL CONTAMINANTS.

California Proposition 65

Warning: This product contains substances known to the State of California to cause cancer, birth defects, or other reproductive harm.

Chemical Name: Silica, crystalline

CAS # 14808-60-7

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

- Steps to be taken in case material is released or spilled:
Sweep up and place in disposal containers. Avoid inhalation of dust.
- Write Disposal Method: Land Fill - in accordance with local, state, and federal regulations.
- Precautions to be taken in handling and storing:
Avoid inhalation of dust during use. Avoid skin and eye contact. Use normal personal hygiene to remove material contaminants.

SECTION VIII - CONTROL MEASURES

- | | |
|--------------------------------|---|
| 1. Respiratory Protection: | Use NIOSH approved dust mask or equivalent for nuisance dust. |
| 2. Ventilation: | Sufficient to maintain dust levels below TLV. |
| 3. Protective Gloves: | Wear cloth gloves. |
| 4. Eye Protection: | Wear proper eye protection. |
| 5. Other Protective Equipment: | Wear Loose fitting long sleeve shirt and pants. |

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SECTION IX - PREPARATION INFORMATION

Prepared By: Research Department, U.S.A.

Telephone: (973) 347-1200

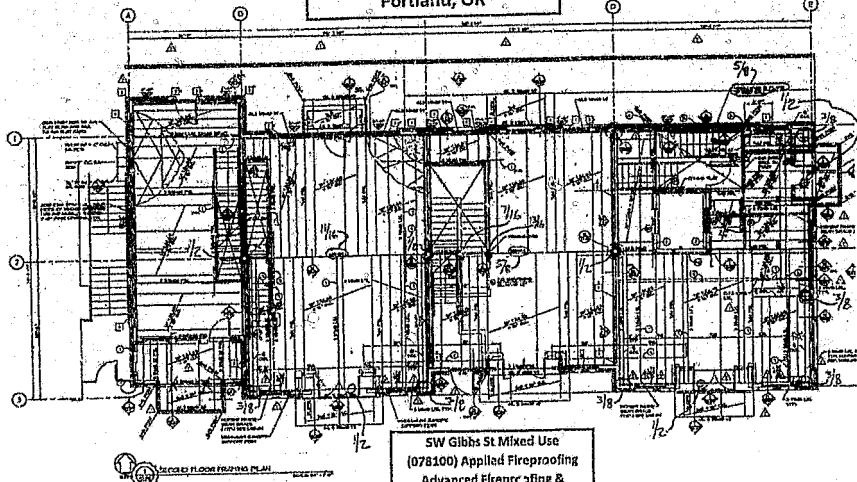
Effective Date: July 26, 2010

Supersedes: December 28, 2009

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. VENDOR SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. In no event shall the vendor be liable for special, indirect or consequential damages.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in this data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes all risks in his use of the material.

SW Gibbs St Mixed Use
Portland, OR

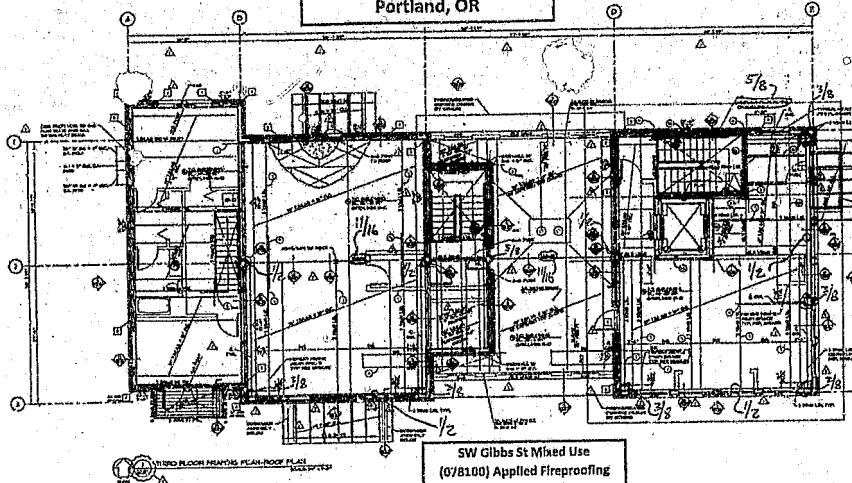


SW Gibbs St Mixed Use
(078100) Applied Fireproofing
Advanced Fireproofing &
Insulation Co.
Shop Drawings February 24, 2012

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SW Gibbs St Mixed Use
Portland, OR

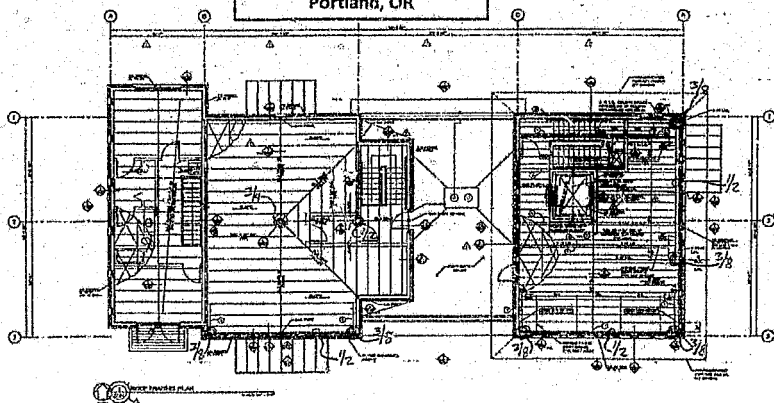


SW Gibbs St Mixed Use
(078100) Applied Fireproofing
Advanced Fireproofing &
Insulation Co.
Shop Drawings February 24, 2012

03

City of Portland
REVIEWED & IN CHARGE
CITY ENGINEER
MAY 04 2012
Permit Number

SW Gibbs St Mixed Use
Portland, OR



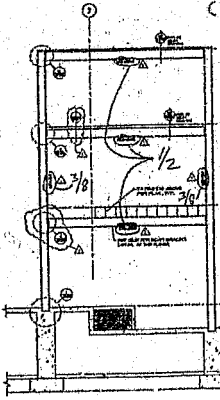
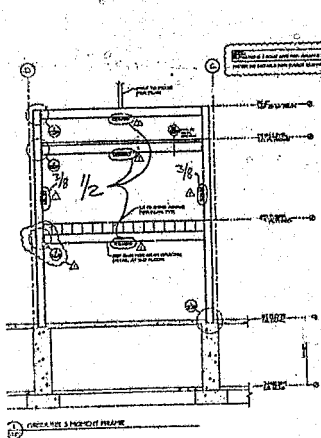
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