



**Carboline**

2150 Schuetz Road  
St. Louis, MO 63146  
Main: 314-644-1000  
Fireproofing Tech:  
314-665-3291  
[www.carboline.com](http://www.carboline.com)

**SOUTHWEST TYPE 5MD™**  
Gypsum Based SFRM  
**Spray-applied Fire Resistive Material**

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## SELECTION & SPECIFICATION DATA

<b>Generic Type</b>	A gypsum based Spray-applied Fire Resistive Material (SFRM) designed for the fire protection of interior structural steel. Formulated and applied to meet the minimum bond strength requirements of the IBC Code listed in the "High Rise Building Section" for buildings up to and greater than 420' (128 m).
<b>Description</b>	A medium density SFRM intended for the fire protection of interior structural columns, beams, joists, decks, walls, roofs, girders, floors and pre-cast concrete units. It is tested and certified for fire resistance ratings up to 4 hours.
<b>Features</b>	<ul style="list-style-type: none"> <li>• Durable cementitious formulation</li> <li>• Noncombustible</li> <li>• Can be injected with Accelerator A-20 for fast set and increased yield (optional)</li> <li>• Asbestos-free – compliant with EPA and OSHA</li> <li>• Mineral Wool free – no airborne fibers</li> <li>• Styrene free – no toxic decomposition gases</li> <li>• Design flexibility with over 100 UL/cUL designs</li> </ul>
<b>Color</b>	Non-Uniform Tan
<b>Finish</b>	Textured
<b>Primer</b>	Primers are not required or recommended. If a primer is specified or steel is primed, bond strength must meet minimum UL criteria. TC-55 Sealer is used as a primer/bonding agent to meet this requirement where specified. Southwest Type DK3 (spatter coat) must be used as a primer/bonding agent on cellular decks and roof decks per UL design requirements. Contact Carboline Technical Service for further information. Southwest Fireproofing materials neither promote nor prevent corrosion. Fireproofing should not be considered part of the corrosion protection system.
<b>Application Thickness</b>	1/2" - 5/8" (12.7 - 15.9 mm) on initial pass
<b>Limitations</b>	Not intended for permanent direct exposure to weather or excessive physical abuse beyond normal construction cycles. Not recommended for use as refractory cement or where operating temperatures exceed 200°F (93°C).
<b>Topcoats</b>	Generally not required. In severely corrosive atmospheres, consult Carboline Technical Service for selection of coating most suitable for the operating environment.

## SUBSTRATES & SURFACE PREPARATION

<b>General</b>	Prior to application, all substrates must be clean and free of loose scale, dirt, oil, grease, condensation, or any other substance that would impair adhesion. Contact Carboline Technical Service for further information. Fireproofing shall be applied to the underside of roof deck assemblies only after all roofing work has been completed, and all roof traffic has ceased. When applying to flexible roof systems, it is required that Southwest Type DK3 (spatter coat) is used. Also be sure that all roof work is completed and water tight before commencing installation of fire protection. Roof traffic shall be limited to maintenance after fire protection is applied and cured. No fireproofing shall be applied prior to completion of concrete work on steel floor decking.
<b>Galvanized Steel</b>	Prior to application, all substrates must be clean and free of loose scale, dirt, oil, grease, condensation, or any other substance that would impair adhesion. For certain designs, mechanical attachment or the application of Southwest Type DK3 (spatter coat) may be required. Contact Carboline Technical Service for further information.

# SOUTHWEST TYPE 5MD™

## PRODUCT DATA SHEET



### SUBSTRATES & SURFACE PREPARATION

<b>Painted/Primed Steel Decks</b>	Apply to painted/primed steel decking only if permitted by the UL design. If the painted/primed deck is not an approved substrate, metal lath must be secured to deck surfaces in accordance with UL design.
<b>Painted/Primed Steel Joists</b>	Painted steel joists do not require adhesive, lath or fastening devices. It is acceptable to apply directly to steel joists.
<b>Painted/Primed Structural Steel</b>	Painted/primed structural steel is generally not approved by UL as an acceptable substrate for SFRMs unless the paint or primer was included in the fire test and/or UL listed for SFRM applications to structural steel. UL has established conditions that must be satisfied for application to primed or painted structural steel, including: minimum bond strength criteria; dimensional limitations for the structural members; use of a bonding agent or adhesive such as TC-55 Sealer; use of metal lath to provide a mechanical bond; or, use of mechanical breaks of metal lath strips or steel pins and disks. Refer to the UL Fire Resistance Directory-Volume 1 for details or contact Carboline Technical Service before applying to any painted/primed steel beams or columns.

### PERFORMANCE DATA

**All test data was generated under laboratory conditions. Field testing results may vary.**

<b>Product Performance Sheets</b>	Product Performance Sheets can be obtained by contacting your local Carboline representative or Carboline Technical Service. All test data was generated under controlled laboratory conditions and may exceed Carboline's recommended minimum values. Actual results in the field may vary depending on field conditions and application methods.
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### MIXING & THINNING

<b>Mixer</b>	<ol style="list-style-type: none"><li>1. Use a minimum 12-16 cubic foot (340-453 liter) heavy-duty mortar mixer capable of rotating at 40 rpm with rubber tipped blades that wipe the sides.</li><li>2. Use continuous feed mixer. Contact Carboline Technical Service for recommendation. Densities may vary when using this type of mixing equipment.</li></ol>
<b>Mixing</b>	Always mix with clean potable water. The mixer shall be kept clean and free of any previously mixed materials which may cause premature setting of product. A 2 bag mix is recommended for paddle type mixers. Mix time should be approximately 2 minutes at 40 rpm. Do not over mix. The material volume should not go over center bar of mixer. Use 8 to 10 gallons (30.3 to 37.8 liters) of water per 50 lb. (22.7 kg) bag. Add water to the mixer first with blades stopped. With mixer turned on, add material to the water and begin mixing.
<b>Density</b>	Wet density measurement methods can be found in the Southwest Fireproofing Application Manual. Adjustment factors for different cup sizes can be found in the Wet Density Adjustment Guide. Both are available on our website. For information and recommendations to obtain the proper density and yield, contact the local Carboline representative or Carboline Fireproofing Technical Service.

### APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

<b>Pump</b>	This material can be pumped with a wide range of piston, rotor stator and squeeze pumps designed to pump cement & plaster materials including: Essick - model# FM9/FM5E (Rotor Stator/2L4) Putzmeister - model# S5EV (Rotor Stator/2L6)
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## APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

	<p>Hy-Flex - model# 321E (Piston)          Hy-Flex - model# HZ-30E (Rotor Stator/2L6)          Hy-Flex - model# H320E (Piston)          Strong Mfg. - model# Spraymate 60 (Rotor Stator/2L6)          Airtech - model# Swinger (Piston)          Mayco - model# PF30 (Dual Piston)          Thomsen - model# PTV 700 (Dual Piston)          Graco - model# F340e (Piston)          Graco - model# F800e (Dual Piston)</p> <p>Marvel kit must be removed from piston pumps.</p>
<b>Ball Valves</b>	Ball valves should be located at the manifold and at the end of the surge hose to facilitate cleaning of the pump and/or hoses.
<b>Material Hose</b>	<p>Use 2" transfer hose for maximum practical length to spray area. Follow with a 16" (406 mm) tapered fitting to a 1-1/2" (38.1 mm) I.D. hose for 50' (15.2 m). Then taper to 1-1/4" (31.8 mm) for 25'. Then taper to a 1" (25 mm) whip hose for 15' to 20' (4.6 m - 6.1 m).</p> <p>All connections should have conical tapered fittings.</p>
<b>Standpipe</b>	Use 2" (50.8 mm) I.D. aluminum tubing with quick external disconnections. Elbows should be 2" (50.8 mm) I.D. with minimum 36" (0.9 m) lengths.
<b>Nozzle/Gun</b>	Use a minimum 1" (25 mm) I.D. plaster type nozzle with shut off valve, swivel and air shut off valve.
<b>Orifice Size and Shields</b>	9/16" to 5/8" (9.5 mm - 15.9 mm) I.D. "blow-off" tips (mini shields optional)
<b>Compressor</b>	Compressor on pump must be capable of maintaining minimum 30 psi (206 kPa) and 9 to 11 cfm at the nozzle.
<b>Air Line</b>	Use 5/8" (15.9 mm) I.D. hose with a minimum bursting pressure of 100 psi (689 kPa).

## APPLICATION PROCEDURES

<b>General</b>	A thicknesses of 1/2" - 5/8" (12.7 - 15.9 mm) can be applied on the initial pass. 3/4" (19 mm) or less can be applied in subsequent passes. When additional coats are required to reach specified thickness, apply subsequent coats after prior coat has set. If preceding coat has dried, dampen the surface with water prior to application of additional coats. Material can be injected with Accelerator A-20 solution to decrease set time and increase yield. Refer to the Southwest Type 5MD application procedures for detailed instructions. Type DK3 (spatter coat) shall be applied to all cellular floor units and to all roof deck systems where indicated by the UL design. For complete application instructions, refer to the Southwest Fireproofing Application Manual.
<b>Finishing</b>	Normally left as a sprayed texture finish.
<b>Field Tests</b>	Test for thickness and density in accordance with the applicable building code, AWCI Technical Manual 12-A (Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials, an Annotated Guide), and ASTM E605 (Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Materials Applied to Structural Members).

# SOUTHWEST TYPE 5MD™

## PRODUCT DATA SHEET



### APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	40°F (4°C)	40°F (4°C)	40°F (4°C)	0%
Maximum	100°F (38°C)	125°F (52°C)	110°F (43°C)	95%

Air and substrate temperatures shall be maintained 24 hours before, during and 24 hours after application. Gypsum based products are susceptible to water and must be protected accordingly. Contact Carboline Fireproofing Technical Service for recommendations.

### CURING SCHEDULE

Surface Temp.	Dry to Recoat
77°F (25°C)	4 Hours

Recoat times will vary based upon ambient conditions and air movement. Material can be injected with Accelerator A-20 for fast set time and increased yield. When injecting with Accelerator A-20, the product can be recoated after 15-20 minutes.

### TESTING / CERTIFICATION / LISTING

**Underwriters  
Laboratories, Inc.**

Tested in accordance with ASTM E119/UL 263/ULC S101 at Underwriter's Laboratories, Inc. and listed by UL and ULC in the following designs (most commonly used in bold):

**Protected Floor/Ceiling:**

**D739, D788 (Restrained/Unrestrained)**

Additional designs: A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D725, D726, D727, D728, D729, D730, D740, D742, D743, D744, D745, D746, D747, D748, D750, D751, D752, D753, D754, D756, D758, F817, F818

**Unprotected Floor/Ceiling:**

**D949 (Restrained/Unrestrained)**

Additional designs: D905, D907, D909, D910, D916, D917, D920, F906

**Concrete Floor/Roof:**

**J718 (Restrained/Unrestrained)**

Additional designs: G701, G702, G703, J701, J704, J705, J706, J709, J919, J957, J966

**Beam/Joist:**

**N791, S740 (Restrained/Unrestrained)**

Additional designs: N401, N404, N706, N708, N732, N736, N754, N756, N791, S701, S702, S715, S739

**Protected Roof/Ceiling:**

**P741 (Restrained/Unrestrained)**

Additional designs: P675, P676, P701, P708, P709, P710, P711, P714, P717, R705

**Unprotected Roof/Ceiling:**

**P921 (Restrained)**

Additional designs: P901, P902, P907, P919, P920, P923, P937

**Metal Wall Assembly:**

**U703 (Restrained/Unrestrained)**

**Columns:**

**X771, Y725**

Additional designs: X527, X701, X704, X722, X723, X772, X751, X752, X808, X813, X819, X820, X821, X822, Z805, Z806, Z807, Z810

**City of New York**

MEA No. 55-04-M Vol. II (Wall)

MEA No. 56-04-M Vol. II (Beam and Floor/Ceiling)

MEA No. 409-02-M Vol. III (Columns and Roof/Ceiling)

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## CLEANUP & SAFETY

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<b>Cleanup</b>	Pump, mixer and hoses should be cleaned with potable water. Sponges should be run through the hoses to remove any material remaining in the hoses. Wet overspray must be cleaned up with clean, potable water. Cured overspray material may be difficult to remove and may require chipping or scraping to remove.
<b>Safety</b>	Read and follow all caution statements on this product data sheet and on the SDS for this product. Employ normal workmanlike safety precautions. Use adequate ventilation. Keep container closed when not in use.
<b>Overspray</b>	Adjacent surfaces shall be protected from damage and overspray. Sprayed fireproofing materials may be difficult to remove from surfaces and may cause damage to architectural finishes.
<b>Ventilation</b>	When used in enclosed areas, thorough air circulation must be used during and after application until the product is dry.

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## PACKAGING, HANDLING & STORAGE

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<b>Packaging</b>	50 lb. (22.7 kg) bags
<b>Shelf Life</b>	12 months
<b>Storage</b>	Store indoors in a dry environment between 32°F - 125°F (0°C - 52°C) Material must be kept dry or clumping of material may occur.
<b>Shipping Weight (Approximate)</b>	50 lb. (22.7 kg)

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## WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.



## Safety Data Sheet

Prepared in Accordance with HCS 29  
C.F.R. 1910.1200

### 1. Identification of the Substance/Mixture and the Company/Undertaking

- 1.1 Product Identifier** 25ADS1NL **Revision Date:** 12/05/2022  
**Product Name:** SOUTHWEST TYPE **Supersedes Date:** 05/24/2021  
 5MD
- 1.2 Relevant identified uses of the substance or mixture and uses advised against** Fireproofing material.
- 1.3 Details of the supplier of the safety data sheet**
- Manufacturer:** Carboline Global Inc.  
 2150 Schuetz Road  
 St. Louis, MO USA 63146
- Regulatory / Technical Information:  
 Contact Carboline Technical Services at  
 1-800-848-4645
- Datasheet Produced by:** Schlereth, Ken - regulatory@carboline.com
- 1.4 Emergency telephone number:** CHEMTREC 1-800-424-9300 (Inside US)  
 CHEMTREC +1 703 5273887 (Outside US)  
 HEALTH - Pittsburgh Poison Control 1-412-681-6669

### 2. Hazard Identification

**2.1 Classification of the substance or mixture**

Carcinogenicity, category 1A

**2.2 Label elements**

**Symbol(s) of Product**



**Signal Word**

Danger

**Named Chemicals on Label**

MICROCRYSTALLINE SILICA



**HAZARD STATEMENTS**

Carcinogenicity, category 1A H350-1A May cause cancer.

**PRECAUTION PHRASES**

P201 Obtain special instructions before use.  
 P202 Do not handle until all safety precautions have been read and understood.  
 P284 Wear respiratory protection.  
 P308+313 IF exposed or concerned: Get medical advice/attention

**2.3 Other hazards**

No Information

**Results of PBT and vPvB assessment:**

The product does not meet the criteria for PBT/VPvB in accordance with Annex XIII.

**3. Composition/Information On Ingredients****3.2 Mixtures****Hazardous ingredients**

<u>Name According to EEC</u>	<u>EINEC No.</u>	<u>CAS-No.</u>	<u>%</u>	<u>Classifications</u>
CALCIUM SULFATE HEMIHYDRATE		10034-76-1	50 - <75	H302
MICROCRYSTALLINE SILICA	238-878-4	14808-60-7	2.5 - <10	H350-372 Carc. 1A, STOT RE 1
LIMESTONE	215-279-6	1317-65-3	1.0 - <2.5	H315-319 Eye Irrit. 2, Skin Irrit. 2

<u>CAS-No.</u>	<u>M-Factors</u>
10034-76-1	0
14808-60-7	0
1317-65-3	0

**Additional Information:** The text for GHS Hazard Statements shown above (if any) is given in Section 16.

**4. First-aid Measures****4.1 Description of First Aid Measures**

**AFTER INHALATION:** Remove person to fresh air. If signs/symptoms continue, get medical attention.

**AFTER SKIN CONTACT:** Wash off with soap and plenty of water.

**AFTER EYE CONTACT:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**AFTER INGESTION:** Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If swallowed, call a poison control centre or doctor immediately.

**4.2 Most important symptoms and effects, both acute and delayed**

Irritating to respiratory system.

**4.3 Indication of any immediate medical attention and special treatment needed**

No Information

**5. Fire-fighting Measures****5.1 Extinguishing Media:**

Carbon Dioxide, Dry Chemical, Foam, Water Fog

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** No Information

**FOR SAFETY REASONS NOT TO BE USED:** No Information

**5.2 Special hazards arising from the substance or mixture**

No Information

**5.3 Advice for firefighters**

SPECIAL FIREFIGHTING PROCEDURES: The product is not flammable.

SPECIAL FIREFIGHTING PROTECTION EQUIPMENT: No Information

## 6. Accidental Release Measures

**6.1 Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Sweep up to prevent slipping hazard. Forms slippery/greasy layers with water.

**6.2 Environmental precautions**

No Information

**6.3 Methods and material for containment and cleaning up**

No Information

**6.4 Reference to other sections**

No Information

## 7. Handling and Storage

**7.1 Precautions for safe handling**

**INSTRUCTIONS FOR SAFE HANDLING :** Avoid breathing dust. Do not breathe vapours or spray mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

**PROTECTION AND HYGIENE MEASURES :** Handle in accordance with good industrial hygiene and safety practice. Do not breathe dust. Wash hands before eating, drinking, or smoking.

**7.2 Conditions for safe storage, including any incompatibilities**

**CONDITIONS TO AVOID:** Exposure to moisture.

**STORAGE CONDITIONS:** Keep containers tightly closed in a dry, cool and well-ventilated place.

**7.3 Specific end use(s)**

No Information

## 8. Exposure Controls/Personal Protection

**8.1 Control parameters**

**Ingredients with Occupational Exposure Limits (US)**

<u>Name</u>	<u>CAS-No.</u>	<u>ACGIH TWA</u>	<u>ACGIH STEL</u>	<u>ACGIH Ceiling</u>
CALCIUM SULFATE HEMIHYDRATE	10034-76-1	10 MGM3	N/E	N/E
MICROCRYSTALLINE SILICA	14808-60-7	0.025 MGM3	N/E	N/E
LIMESTONE	1317-65-3	N/E	N/E	N/E

<u>Name</u>	<u>CAS-No.</u>	<u>OSHA PEL</u>	<u>OSHA STEL</u>
CALCIUM SULFATE HEMIHYDRATE	10034-76-1	N/E	N/E

MICROCRYSTALLINE SILICA	14808-60-7	0.05 MGM3	N/E
LIMESTONE	1317-65-3	5 MGM3 15 MGM3 5 MGM3 15 MGM3 5 MGM3 15 MGM3	N/E

**FURTHER ADVICE:** No Information

## 8.2 Exposure controls

### Personal Protection

**RESPIRATORY PROTECTION:** Effective dust mask. Use NIOSH approved respiratory protection. Wear NIOSH-approved respiratory protection (generally a N-95 dust mask is appropriate) to prevent employee exposures from exceeding the limits specified in Section 2. Once the product has been wetted, the potential for silica dust exposure is essentially eliminated.

**EYE PROTECTION:** Safety glasses with side-shields.

**HAND PROTECTION:** For prolonged or repeated contact use protective gloves.

**OTHER PROTECTIVE EQUIPMENT:** None.

**ENGINEERING CONTROLS:** Avoid dust accumulation in enclosed space.

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

<b>Appearance:</b>	Grey Powder Mixture
<b>Physical State</b>	Solid
<b>Odor</b>	Low Odor
<b>Odor threshold</b>	N/D
<b>pH</b>	6 - 8 (in water)
<b>Melting point / freezing point (°C)</b>	N/A
<b>Boiling point/range (°C)</b>	212 F (100 C) - 662 F (350 C)
<b>Flash Point (°C)</b>	None
<b>Evaporation rate</b>	N/A
<b>Flammability (solid, gas)</b>	Not determined
<b>Upper/lower flammability or explosive limits</b>	N/A - N/A
<b>Vapour Pressure, mmHg</b>	N/A
<b>Vapour density</b>	N/A
<b>Relative density</b>	Not determined
<b>Solubility in / Miscibility with water</b>	Slight
<b>Partition coefficient: n-octanol/water</b>	Not determined
<b>Auto-ignition temperature (°C)</b>	Not determined
<b>Decomposition temperature (°C)</b>	Not determined
<b>Viscosity</b>	Unknown
<b>Explosive properties</b>	Not determined
<b>Oxidising properties</b>	Not determined

### 9.2 Other information

VOC Content g/l:	0
Specific Gravity (g/cm3)	1.92

## 10. Stability and Reactivity

### 10.1 Reactivity

No Information

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Hazardous polymerisation does not occur.

### 10.4 Conditions to avoid

Exposure to moisture.

### 10.5 Incompatible materials

Strong oxidizing agents.

### 10.6 Hazardous decomposition products

None known.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

#### Acute Toxicity:

Oral LD50: N/D

Inhalation LC50: N/D

Irritation: Unknown

Corrosivity: Unknown

Sensitization: Unknown

Repeated dose toxicity: Unknown

Carcinogenicity: Carcinogenicity, category 1A

Mutagenicity: Unknown

Toxicity for reproduction: Unknown

STOT-single exposure: Unknown

STOT-repeated exposure: Unknown

Aspiration hazard: Unknown

If no information is available above under Acute Toxicity then the acute effects of this product have not been tested.  
Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>	<u>Gas LC50</u>	<u>Dust/Mist LC50</u>
10034-76-1	CALCIUM SULFATE HEMIHYDRATE	>1587 mg/kg, oral, rat	Not Available	Not Available	0.000	0.000
14808-60-7	MICROCRYSTALLINE SILICA	22500 mg/kg	Not Available	Not Available	0.000	0.000
1317-65-3	LIMESTONE	Not Available	Not Available	5,000 mg/kg, rat, oral	0.000	0.000

**Additional Information:**

Constituents of this product may include crystalline silica which, if inhalable, may cause silicosis, a form of progressive pulmonary fibrosis. Inhalable crystalline silica is listed by IARC as a group 1 carcinogen (lung) based on sufficient evidence in occupationally exposed humans and sufficient evidence in animals. Crystalline silica is also listed by the NTP as a known human carcinogen. This classification is relevant when exposed to Quartz (silicon dioxide) in dust or powder form only, including cured product that is subject to sanding, grinding, cutting, or other surface preparation activities. Constituents may also include abestiform or non-abestiform tremolite or other silicates as impurities, and above the minimum exposure to these impurities in inhalable form may be carcinogenic or cause other serious lung problems.

## 12. Ecological Information

**12.1 Toxicity:**

EC50 48hr (Daphnia):	Unknown
IC50 72hr (Algae):	Unknown
LC50 96hr (fish):	Unknown

**12.2 Persistence and degradability:** Unknown

**12.3 Bioaccumulative potential:** Unknown

**12.4 Mobility in soil:** Unknown

**12.5 Results of PBT and vPvB assessment:** The product does not meet the criteria for PBT/vPvB in accordance with Annex XIII.

**12.6 Other adverse effects:** Unknown

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>EC50 48hr</u>	<u>IC50 72hr</u>	<u>LC50 96hr</u>
10034-76-1	CALCIUM SULFATE HEMIHYDRATE	No information	No information	(Fathead minnow) 1970 mg/L
14808-60-7	MICROCRYSTALLINE SILICA	No information	No information	No information
1317-65-3	LIMESTONE	1,000 mg/l	200 mg/l	10,000 mg/l

## 13. Disposal Considerations

**13.1 WASTE TREATMENT METHODS:** Dispose of in accordance with local regulations.

## 14. Transport Information

14.1 UN number	None
14.2 UN proper shipping name	Not Regulated
Technical name	N/A
14.3 Transport hazard class(es)	None
Subsidiary shipping hazard	N/A
14.4 Packing group	N/A
14.5 Environmental hazards	No
14.6 Special precautions for user	Unknown
EmS-No.:	None
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code	Unknown

## 15. Regulatory Information

15.1 Safety, health and environmental regulations/legislation for the substance or mixture:

### U.S. Federal Regulations: As follows -

#### CERCLA - Sara Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Carcinogenicity

#### Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>%</u>
ZINC DIMETHYLDITHIOCARBAMATE	137-30-4	0.024022
CHLOROTHALONIL (ISO)	1897-45-6	0.0218574

#### Toxic Substances Control Act:

All components of this product are either listed on the TSCA Inventory or are exempt.

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

### U.S. State Regulations: As follows -

#### New Jersey Right-to-Know:

The following materials are non-hazardous, but are among the top five components in this product.

<u>Chemical Name</u>	<u>CAS-No.</u>
VERMICULITE	1318-00-9
No Chemical Name Found	65996-61-4

#### Pennsylvania Right-To-Know

The following non-hazardous ingredients are present in the product at greater than 3%.

<u>Chemical Name</u>	<u>CAS-No.</u>
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VERMICULITE

1318-00-9

**CALIFORNIA PROPOSITION 65**WARNING: Cancer and Reproductive Harm -- [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**International Regulations: As follows -****\* Canadian DSL:**

All chemical ingredients included on inventory (DSL)

**15.2 Chemical Safety Assessment:**

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

**16. Other Information****Text for GHS Hazard Statements shown in Section 3 describing each ingredient:**

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H350	May cause cancer.
H372	Causes damage to organs through prolonged or repeated exposure.

**Reasons for revision**

No Information

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

## SELECTION & SPECIFICATION DATA

<b>Description</b>	Accelerator A-20 is a powder mixed with water and injected into gypsum based fireproofing materials to reduce the set time and increase production rates. Also, Accelerator A-20 can be injected into portland cement-based fireproofing materials to reduce the set time. Accelerator A-20 can be used with Southwest Type 5GP, 5MD and 7GP materials.
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## MIXING & THINNING

<b>Mixing</b>	<p><b>CAUTION:</b> The Accelerator A-20 solution is acidic and can irritate or injure skin, eyes and lungs. All personnel should wear proper protection when mixing or spraying with Accelerator A-20. Gloves, coveralls, respirator and goggles are required to avoid injury. Avoid contact to bare skin. The fumes from the Accelerator A-20 solution are irritating. Review Accelerator A-20 SDS prior to use. When injecting Southwest Type 5GP or Southwest Type 5MD to achieve a 15 lbs. per cubic foot density (pcf), the standard mix is one 50 lbs. bag of Accelerator A-20 with 8.5 gallons of clean potable water, or four bags of Accelerator A-20 with 34 gallons of water. The total solution volume will be 46 gallons. When injecting Southwest Type 5MD to achieve a 22 lbs. per cubic foot density (pcf), the standard mix is one 50 lbs. bag of Accelerator A-20 with 12.5 gallons of clean potable water, or three bags of Accelerator A-20 with 37.5 gallons of water. The total solution volume will be 45 gallons. When injecting Southwest Type 7GP to decrease the set time, the standard mix is one 50 lbs. bag of Accelerator A-20 with 8.5 gallons of clean potable water, or four bags of Accelerator A-20 with 34 gallons of water. The total solution volume will be 46 gallons. Continue mixing until Accelerator A-20 powder is dissolved completely. A longer mix time will be required to dissolve Accelerator A-20 in colder temperatures. After mixing, allow bubbles to come out of the solution.</p> <p>When injecting Southwest Type 5MD to achieve a 22 lbs. per cubic foot density, a more dilute mixture of 12.5 gallons of water per 50 lbs. bag of Accelerator A-20 is used. Refer to the Southwest Type 5MD application procedures for detailed procedures.</p>
<b>Set up</b>	<p>Open valve at base of tank to allow solution to flow to the injector pump. Close valve to injection hose. Open bypass valve and turn on injector pump to re-circulate Accelerator A-20 solution back into the mixing tank for 5 minutes. The Accelerator A-20 solution concentration can be checked with a hydrometer or by weight of a known volume. By hydrometer measurement, please refer to the Southwest Type 5GP, Southwest Type 5MD or Southwest Type 7GP simplified yield charts for target specific gravity.</p> <p>Next, fill the alum hose with solution. Close the valve on the end of the hose near the injection housing. Close the bypass valve and open the injector pump valve to alum hose. With the end of the alum hose going back into the mixing tank, open the valve to allow solution to flow through the hose. Continue pumping back into the tank until all air bubbles are out of the solution. Adjust the injector knob to increase or decrease the flow rate of the Accelerator A-20 solution to be injected. Refer to the Southwest Type 5GP, Southwest Type 5MD and Southwest Type 7GP application procedures to set the injection flow rate to the level required to achieve the desired density.</p>

## APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

<b>Pump</b>	Use an alum injection pump with a minimum 600 psi pressure capacity. Contact Carboline technical service for more information. Use 55 gallon plastic drum(s) with 110 volt electric mixer for each drum.
<b>Valves</b>	A backflow valve must be used at the injection point to prevent the Accelerator A-20 from dripping and setting up the material in the off position. The flow of Accelerator A-20 must be turned off and flushed out of conveyance line before stopping the conveyance pump.



# Accelerator A-20

## PRODUCT DATA SHEET



### APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

**Material Hose** | 3/8" hose set up with the backflow valve and an injection module placed at 25 foot back from the nozzle. A 15 foot 3/4" I.D. material whip hose can be used.

**Nozzle/Gun** | Use a minimum 1" I.D. plaster type nozzle with shut off valve, swivel and air shut off valve.

**Orifice Size and Shields** | 9/16" to 5/8" I.D. minimum. Use mini-shields or super-shields depending on project conditions.

### APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	40°F (4°C)	40°F (4°C)	40°F (4°C)	0%

Air and substrate temperatures shall be 40°F minimum, and shall be maintained 24 hours before, during and for 24 hours after spraying occurs.

### CURING SCHEDULE

Surface Temp.	Dry to Recoat	Final Cure
70°F (21°C)	20 Minutes	28 Days

Newly installed Southwest Type 5 materials must be protected from rain and running water for 24 hours. Injected material will have reduced set time, and will be ready to recoat in 15-20 minutes at 70°F. Colder temperatures will require more time. Material must be set and firm before receiving the next coat. Material requires 28 days to reach full cure.

### CLEANUP & SAFETY

**Cleanup** | Pump, mixer and hoses should be flushed with potable water. Cured overspray material may be difficult to remove and may require chipping or scraping to remove. Read and abide by the SDS. Do not breathe dust. Use OSHA approved dust mask. Safety goggles or glasses should be worn.

**Safety** | For eye contact, flush with copious amount of water in accordance with OSHA instructions. Wash skin with clean water to prevent irritation. Follow equipment manufacturers' recommendations regarding safety and maintenance.

**Overspray** | Adjacent surfaces shall be protected from damage and overspray. Sprayed fireproofing materials may be difficult to remove from surfaces and may cause damage to architectural finishes.

**Ventilation** | Ventilation in enclosed areas is very important, to assist products to set and dry properly. Total air exchange should be at least 4 times per hour.

### PACKAGING, HANDLING & STORAGE

**Packaging** | 50 lbs. bags

**Shelf Life** | 24 months

**Storage** | Material should be kept dry, covered, and off the ground between -20°F to 150°F (-29°C to 66°C).

**Shipping Weight (Approximate)** | Bag Weight is 50 lbs (22.7 kg)

## WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.



## Safety Data Sheet

Prepared in Accordance with HCS 29  
C.F.R. 1910.1200

### 1. Identification of the Substance/Mixture and the Company/Undertaking

- 1.1 Product Identifier** 50ADS1NL **Revision Date:** 04/25/2023  
**Product Name:** Accelerator A-20 **Supersedes Date:** 06/22/2021
- 1.2 Relevant identified uses of the substance or mixture and uses advised against** Component of multicomponent industrial coatings - Industrial use.
- 1.3 Details of the supplier of the safety data sheet**
- Manufacturer:** Carboline Global Inc.  
2150 Schuetz Road  
St. Louis, MO USA 63146
- Regulatory / Technical Information:  
Contact Carboline Technical Services at  
1-800-848-4645
- Datasheet Produced by:** Schlereth, Ken - regulatory@carboline.com
- 1.4 Emergency telephone number:** CHEMTREC 1-800-424-9300 (Inside US)  
CHEMTREC +1 703 5273887 (Outside US)  
HEALTH - Pittsburgh Poison Control 1-412-681-6669

### 2. Hazard Identification

#### 2.1 Classification of the substance or mixture

Acute Toxicity, Oral, category 4  
Eye Irritation, category 2

#### 2.2 Label elements

##### Symbol(s) of Product



##### Signal Word

Warning

##### Named Chemicals on Label

ALUMINUM SULFATE

**HAZARD STATEMENTS**

Acute Toxicity, Oral, category 4	H302	Harmful if swallowed.
Eye Irritation, category 2	H319	Causes serious eye irritation.

**PRECAUTION PHRASES**

P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+351+338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.

**2.3 Other hazards**

No Information

**Results of PBT and vPvB assessment:**

The product does not meet the criteria for PBT/VPvB in accordance with Annex XIII.

**3. Composition/Information On Ingredients****3.1 Substances****Hazardous ingredients**

<u>Name According to EEC</u>	<u>EINEC No.</u>	<u>CAS-No.</u>	<u>%</u>	<u>Classifications</u>
ALUMINUM SULFATE	233-135-0	10043-01-3	75 - 100	H302-319

<u>CAS-No.</u>	<u>M-Factors</u>
10043-01-3	0

**Additional Information:** The text for GHS Hazard Statements shown above (if any) is given in Section 16.**4. First-aid Measures****4.1 Description of First Aid Measures****AFTER INHALATION:** Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.**AFTER SKIN CONTACT:** Wash off with soap and plenty of water. If skin irritation persists, call a physician.**AFTER EYE CONTACT:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.**AFTER INGESTION:** Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If swallowed, call a poison control centre or doctor immediately.**4.2 Most important symptoms and effects, both acute and delayed**

Irritating to respiratory system.

**4.3 Indication of any immediate medical attention and special treatment needed**

No Information

**5. Fire-fighting Measures****5.1 Extinguishing Media:**

Carbon Dioxide, Dry Chemical, Foam, Water Fog

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** None known.**FOR SAFETY REASONS NOT TO BE USED:** No Information

**5.2 Special hazards arising from the substance or mixture**

No Information

**5.3 Advice for firefighters**

SPECIAL FIREFIGHTING PROCEDURES: Evacuate personnel to safe areas. Use NIOSH approved respiratory protection. Use water spray to cool unopened containers.

SPECIAL FIREFIGHTING PROTECTION EQUIPMENT: None.

**6. Accidental Release Measures****6.1 Personal precautions, protective equipment and emergency procedures**

Wear personal protective equipment.

**6.2 Environmental precautions**

No Information

**6.3 Methods and material for containment and cleaning up**

No Information

**6.4 Reference to other sections**

No Information

**7. Handling and Storage****7.1 Precautions for safe handling**

**INSTRUCTIONS FOR SAFE HANDLING :** Keep containers dry and tightly closed to avoid moisture absorption and contamination. Prepare the working solution as given on the label(s) and/or the user instructions. Do not get in eyes, on skin, or on clothing. Use only with adequate ventilation/personal protection. Wash thoroughly after handling.

**PROTECTION AND HYGIENE MEASURES :** Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. When using, do not eat, drink or smoke.

**7.2 Conditions for safe storage, including any incompatibilities**

**CONDITIONS TO AVOID:** Exposure to moisture.

**STORAGE CONDITIONS:** Keep container closed when not in use.

**7.3 Specific end use(s)**

No Information

**8. Exposure Controls/Personal Protection****8.1 Control parameters**

**Ingredients with Occupational Exposure Limits (US)**

<u>Name</u>	<u>CAS-No.</u>	<u>ACGIH TWA</u>	<u>ACGIH STEL</u>	<u>ACGIH Ceiling</u>
ALUMINUM SULFATE	10043-01-3	2 MG/M3	N/E	N/E

<u>Name</u>	<u>CAS-No.</u>	<u>OSHA PEL</u>	<u>OSHA STEL</u>
ALUMINUM SULFATE	10043-01-3	2 MG/M3	N/E

**FURTHER ADVICE:** No Information

**8.2 Exposure controls****Personal Protection**

**RESPIRATORY PROTECTION:** Dust safety masks are recommended when the dust concentration is more than 10 mg/m<sup>3</sup>. In order to avoid inhalation of spray-mist and sanding dust, all spraying and sanding must be done wearing adequate respirator.

**EYE PROTECTION:** Safety glasses with side-shields.

**HAND PROTECTION:** Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Impervious gloves. Request information on glove permeation properties from the glove supplier. Lightweight protective clothing

**OTHER PROTECTIVE EQUIPMENT:** Eye wash bottle with pure water.

**ENGINEERING CONTROLS:** Use with adequate ventilation.

## 9. Physical and Chemical Properties

**9.1 Information on basic physical and chemical properties**

<b>Appearance:</b>	White Granules
<b>Physical State</b>	Solid
<b>Odor</b>	None
<b>Odor threshold</b>	N/D
<b>pH</b>	N/D
<b>Melting point / freezing point (°C)</b>	N/D
<b>Boiling point/range (°C)</b>	N/A - N/A
<b>Flash Point (°C)</b>	None
<b>Evaporation rate</b>	Slower Than Ether
<b>Flammability (solid, gas)</b>	Not determined
<b>Upper/lower flammability or explosive limits</b>	N/A - N/A
<b>Vapour Pressure, mmHg</b>	N/D
<b>Vapour density</b>	Heavier than Air
<b>Relative density</b>	Not determined
<b>Solubility in / Miscibility with water</b>	50% @ 0C
<b>Partition coefficient: n-octanol/water</b>	Not determined
<b>Auto-ignition temperature (°C)</b>	Not determined
<b>Decomposition temperature (°C)</b>	Not determined
<b>Viscosity</b>	Unknown
<b>Explosive properties</b>	Not determined
<b>Oxidising properties</b>	Not determined

**9.2 Other information**

<b>VOC Content g/l:</b>	0
<b>Specific Gravity (g/cm<sup>3</sup>)</b>	1.610

## 10. Stability and Reactivity

### 10.1 Reactivity

No Information

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Hazardous polymerisation does not occur.

### 10.4 Conditions to avoid

Exposure to moisture.

### 10.5 Incompatible materials

No Information

### 10.6 Hazardous decomposition products

None known.

## 11. Toxicological Information

### 11.1 Information on toxicological effects

#### Acute Toxicity:

Oral LD50: N/D

Inhalation LC50: N/D

Irritation: Unknown

Corrosivity: Unknown

Sensitization: Unknown

Repeated dose toxicity: Unknown

Carcinogenicity: Unknown

Mutagenicity: Unknown

Toxicity for reproduction: Unknown

STOT-single exposure: No Information

STOT-repeated exposure: No Information

Aspiration hazard: No Information

If no information is available above under Acute Toxicity then the acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>	<u>Gas LC50</u>	<u>Dust/Mist LC50</u>
10043-01-3	ALUMINUM SULFATE	1930 mg/kg, oral, rat		Not Available	0.000	0.000

**Additional Information:**

No Information

**12. Ecological Information****12.1 Toxicity:**

EC50 48hr (Daphnia):	Unknown
IC50 72hr (Algae):	Unknown
LC50 96hr (fish):	Unknown

**12.2 Persistence and degradability:** Unknown

**12.3 Bioaccumulative potential:** Unknown

**12.4 Mobility in soil:** Unknown

**12.5 Results of PBT and vPvB assessment:** The product does not meet the criteria for PBT/VPvB in accordance with Annex XIII.

**12.6 Other adverse effects:** Unknown

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>EC50 48hr</u>	<u>IC50 72hr</u>	<u>LC50 96hr</u>
10043-01-3	ALUMINUM SULFATE	No information	No information	No information

**13. Disposal Considerations**

**13.1 WASTE TREATMENT METHODS:** Dispose of in accordance with local regulations.

**14. Transport Information**

<b>14.1 UN number</b>	None
<b>14.2 UN proper shipping name</b>	Not Regulated
<b>Technical name</b>	N/A
<b>14.3 Transport hazard class(es)</b>	None
<b>Subsidiary shipping hazard</b>	N/A
<b>14.4 Packing group</b>	N/A
<b>14.5 Environmental hazards</b>	Unknown
<b>14.6 Special precautions for user</b>	Unknown
<b>EmS-No.:</b>	None
<b>14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code</b>	Unknown

**15. Regulatory Information**

**15.1 Safety, health and environmental regulations/legislation for the substance or mixture:**

**U.S. Federal Regulations: As follows -**

**CERCLA - Sara Hazard Category**



This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Acute Toxicity (any route of exposure), Serious eye damage or eye irritation

#### **Sara Section 313:**

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No SARA 313 substances exist in this product above de minimis concentrations.

#### **Toxic Substances Control Act:**

All components of this product are either listed on the TSCA Inventory or are exempt.

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

#### **U.S. State Regulations: As follows -**

##### **New Jersey Right-to-Know:**

The following materials are non-hazardous, but are among the top five components in this product.

No NJ Right-To-Know components exist in this product.

##### **Pennsylvania Right-To-Know**

The following non-hazardous ingredients are present in the product at greater than 3%.

No PA Right-To-Know components exist in this product.

##### **CALIFORNIA PROPOSITION 65**

WARNING: Cancer and Reproductive Harm -- [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

#### **International Regulations: As follows -**

##### **\* Canadian DSL:**

No Information

#### **15.2 Chemical Safety Assessment:**

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

### **16. Other Information**

**Text for GHS Hazard Statements shown in Section 3 describing each ingredient:**

H302	Harmful if swallowed.
H319	Causes serious eye irritation.

**Reasons for revision**

No Information

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.



## SELECTION & SPECIFICATION DATA

<b>Generic Type</b>	A cementitious, spray applied spatter coat.
<b>Description</b>	A cement and vermiculite based, spray applied spatter coat designed to be used in conjunction with Southwest fireproofing materials to enhance bonding properties on cellular steel decking and roof deck systems.
<b>Features</b>	<ul style="list-style-type: none"> <li>• Excellent bonding properties</li> <li>• Fast overcoat time</li> <li>• Noncombustible</li> <li>• Asbestos-free – complies with EPA and OSHA regulations.</li> <li>• Mineral Wool free – no airborne fibers.</li> <li>• Styrene free – no toxic decomposition gases.</li> </ul>
<b>Color</b>	<p>Gray</p> <p>Product color may vary due to variations in color of Portland cement.</p>
<b>Finish</b>	Textured
<b>Primer</b>	<p>Primers are not required or recommended. If a primer is specified or steel is primed, bond strength must meet minimum UL criteria. Contact Carboline Technical Service for further information.</p> <p>Southwest Fireproofing materials neither promote nor prevent corrosion. Fireproofing should not be considered part of the corrosion protection system.</p>
<b>Theoretical Coverage Rates</b>	<p>600-800 ft<sup>2</sup> (55-74 m<sup>2</sup>) per bag</p> <p>Apply product so that coverage does not exceed 70% of the surface area. Adjust spray pattern so that material does "spatter" from nozzle. 30% of the deck surface must be visible after material is applied to achieve correct coverage.</p>
<b>Limitations</b>	Not intended for permanent direct exposure to weather or excessive physical abuse beyond normal construction cycles. Not recommended for use as refractory cement or where operating temperatures exceed 200°F (93°C).

## SUBSTRATES & SURFACE PREPARATION

<b>General</b>	<p>Prior to application, all substrates must be clean and free of loose scale, dirt, oil, grease, condensation, or any other substance that would impair adhesion. Material shall be applied to the underside of roof deck assemblies only after all roofing work has been completed, and all roof traffic has ceased. Also be sure that all roof work is completed and water tight before commencing installation of fire protection. Roof traffic shall be limited to maintenance after fire protection is applied and cured. No fireproofing shall be applied prior to completion of concrete work on steel floor decking.</p>
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## MIXING & THINNING

<b>Mixer</b>	<ol style="list-style-type: none"> <li>1. Use a minimum 12-16 cubic foot (340-453 liter) heavy-duty mortar mixer capable of rotating at 40 rpm with rubber tipped blades that wipe the sides.</li> <li>2. Use continuous feed mixer. Contact Carboline Technical Service for recommendation. Densities may vary when using this type of mixing equipment.</li> </ol>
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# SOUTHWEST TYPE DK3™

## PRODUCT DATA SHEET



### MIXING & THINNING

<b>Mixing</b>	Always mix with clean potable water. The mixer shall be kept clean and free of any previously mixed materials which may cause premature setting of product. A 2 bag mix is recommended for paddle type mixers. Mix time should be approximately 2 minutes at 40 rpm. Do not over mix. The material volume should not go over center bar of mixer. Use 9 to 10 gallons (34.1 to 37.8 liters) of water per 50 lb. (22.7 kg) bag. Add water to the mixer first with blades stopped. With mixer turned on, add material to the water and begin mixing. The mix will appear wet. Agitate occasionally if left standing so that mixture does not settle. If material is sandwiched between Southwest Type 5 mixes (in the same mixing equipment), the Type 5 batches before and after must have retarder blend added (usually 2 batches before and after is sufficient). Use 2.5 oz. (70.9 g) of retarder per batch of Type 5. Retarder is not required for Southwest Type 7 applications.
<b>Pot Life</b>	2 hours at 75°F (24°C) Pot life of material will be shorter at higher temperatures.
<b>Density</b>	For information and recommendations to obtain the proper density and yield, contact the local Carboline representative or Carboline Fireproofing Technical Service.

### APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

<b>Pump</b>	This material can be pumped with a wide range of piston, rotor stator and squeeze pumps designed to pump cement & plaster materials including: Essick - model# FM9/FM5E (Rotor Stator/2L4) Putzmeister - model# S5EV (Rotor Stator/2L6) Hy-Flex - model# 321E (Piston) Hy-Flex - model# HZ-30E(Rotor Stator/2L6) Hy-Flex - model# H320E (Piston) Strong Mfg. - model# Spraymate 60 (Rotor Stator/2L6) Airtech - model# Swinger (Piston) Mayco - model# PF30 (Dual Piston) Thomsen - model# PTV 700 (Dual Piston) Graco - model# F340e (Piston) Graco - model# F800e (Dual Piston)  Marvel kit must be removed from piston pumps.
<b>Ball Valves</b>	Ball valves should be located at the manifold and at the end of the surge hose to facilitate cleaning of the pump and/or hoses.
<b>Material Hose</b>	Use 2" transfer hose for maximum practical length to spray area. Follow with a 16" (406 mm) tapered fitting to a 1-1/2" (38.1 mm) I.D. hose for 50' (15.2 m). Then taper to 1-1/4" (31.8 mm) for 25'. Then taper to a 1" (25 mm) whip hose for 15' to 20' (4.6 m - 6.1 m).  All connections should have conical tapered fittings.
<b>Standpipe</b>	Use 2" (50.8 mm) I.D. aluminum tubing with quick external disconnections. Elbows should be 2" (50.8 mm) I.D. with minimum 36" (0.9 m) lengths.
<b>Nozzle/Gun</b>	Use a minimum 1" (25 mm) I.D. plaster type nozzle with shut off valve, swivel and air shut off valve.
<b>Orifice Size and Shields</b>	9/16" to 5/8" (14.3 mm - 15.9 mm) I.D. "blow-off" tips (mini shields optional)

## APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

- Compressor** | Compressor on pump must be capable of maintaining minimum 30 psi (206 kPa) and 9 to 11 cfm at the nozzle.
- Air Line** | Use 5/8" (15.9 mm) I.D. hose with a minimum bursting pressure of 100 psi (689 kPa).

## APPLICATION PROCEDURES

- General** | Thicknesses of 3/8" (9.5 mm) or less can be applied in one pass. Material is applied in one monolithic coat. Type DK3 (spatter coat) shall be applied to all cellular floor units and to all roof deck systems where indicated by the UL design. Allow material to set for a minimum of 30 minutes before applying fireproofing materials. It is acceptable to apply Type DK3 (spatter coat) the prior day, but it is not recommended to exceed 24 hours before fireproofing is applied. Do not start work if ambient temperature is expected to drop or remain below 32°F (0°C) for 48 hours after application. For complete application instructions, refer to the Southwest Fireproofing Products Field Application Manual.
- Finishing** | Normally left as a sprayed texture finish.
- Field Tests** | Test for thickness and density in accordance with the applicable building code, AWCI Technical Manual 12-A (Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials, an Annotated Guide), and ASTM E605 (Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Materials Applied to Structural Members).

## APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	40°F (4°C)	40°F (4°C)	40°F (4°C)	0%
Maximum	100°F (38°C)	125°F (52°C)	110°F (43°C)	95%

Air and substrate temperatures shall be maintained 24 hours before, during and 24 hours after application. Contact Carboline Fireproofing Technical Service for recommendations.

## CLEANUP & SAFETY

- Cleanup** | Pump, mixer and hoses should be cleaned with potable water. Sponges should be run through the hoses to remove any material remaining in the hoses. Wet overspray must be cleaned up with soapy or clean, potable water. Cured overspray material may be difficult to remove and may require chipping or scraping to remove.
- Safety** | Follow all safety precautions on the Safety Data Sheet. It is recommended that personal protective equipment be worn, including spray suits, gloves, eye protection and respirators.
- Overspray** | Adjacent surfaces shall be protected from damage and overspray. Sprayed fireproofing materials may be difficult to remove from surfaces and may cause damage to architectural finishes.
- Ventilation** | When used in enclosed areas, thorough air circulation must be used during and after application until the product is dry.

# SOUTHWEST TYPE DK3™

## PRODUCT DATA SHEET



### PACKAGING, HANDLING & STORAGE

**Packaging** | 50 lb. (22.7 kg) bags

**Shelf Life** | 12 months

**Storage** | Store indoors in a dry environment between  
32°F - 125°F (0°C - 52°C)

Material must be kept dry or clumping of material may occur.

**Shipping Weight  
(Approximate)** | 50 lb. (22.7 kg)

### WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.



## Safety Data Sheet

Prepared in Accordance with HCS 29  
C.F.R. 1910.1200

### 1. Identification of the Substance/Mixture and the Company/Undertaking

- 1.1 Product Identifier** 28ADS1NL **Revision Date:** 12/05/2022
- Product Name:** SOUTHWEST TYPE **Supersedes Date:** 06/22/2021  
DK3
- 1.2 Relevant identified uses of the substance or mixture and uses advised against** Fireproofing material.
- 1.3 Details of the supplier of the safety data sheet**
- Manufacturer:** Carboline Global Inc.  
2150 Schuetz Road  
St. Louis, MO USA 63146
- Regulatory / Technical Information:  
Contact Carboline Technical Services at  
1-800-848-4645
- Datasheet Produced by:** Schlereth, Ken - regulatory@carboline.com
- 1.4 Emergency telephone number:** CHEMTREC 1-800-424-9300 (Inside US)  
CHEMTREC +1 703 5273887 (Outside US)  
HEALTH - Pittsburgh Poison Control 1-412-681-6669

### 2. Hazard Identification

#### 2.1 Classification of the substance or mixture

Carcinogenicity, category 1A  
Skin Corrosion, category 1  
Skin Sensitizer, category 1



## 2.2 Label elements

### Symbol(s) of Product



### Signal Word

Danger

### Named Chemicals on Label

CALCIUM OXIDE, MICROCRYSTALLINE SILICA, PORTLAND CEMENT

### HAZARD STATEMENTS

Skin Corrosion, category 1	H314-1	Causes severe skin burns and eye damage.
Skin Sensitizer, category 1	H317	May cause an allergic skin reaction.
Carcinogenicity, category 1A	H350-1A	May cause cancer.

### PRECAUTION PHRASES

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	Wear respiratory protection.
P301+310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P301+330+331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+352	IF ON SKIN: Wash with plenty of soap and water.
P304+340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+351+338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
P308+313	IF exposed or concerned: Get medical advice/attention
P333+313	If skin irritation or rash occurs: Get medical advice/attention.
P363	Wash contaminated clothing before reuse.

### 2.3 Other hazards

No Information

#### Results of PBT and vPvB assessment:

The product does not meet the criteria for PBT/VPvB in accordance with Annex XIII.

## 3. Composition/Information On Ingredients

### 3.2 Mixtures

#### Hazardous ingredients

<u>Name According to EEC</u>	<u>EINEC No.</u>	<u>CAS-No.</u>	<u>%</u>	<u>Classifications</u>	
PORTLAND CEMENT	266-043-4	65997-15-1	50 - <75	H315-317-318	Eye Dam. 1, Skin Irrit. 2, Skin Sens. 1
VERMICULITE		1318-00-9	10 - <25		

CELLULOSE		9004-34-6	2.5 - <10		
CALCIUM OXIDE		1305-78-8	2.5 - <10	H315-318-335	Eye Dam. 1, Skin Irrit. 2, STOT SE 3 RTI
LIMESTONE	215-279-6	1317-65-3	2.5 - <10	H315-319	Eye Irrit. 2, Skin Irrit. 2
MICROCRYSTALLINE SILICA	238-878-4	14808-60-7	0.1 - <1.0	H350-372	Carc. 1A, STOT RE 1

<u>CAS-No.</u>	<u>M-Factors</u>
65997-15-1	0
1318-00-9	0
9004-34-6	0
1305-78-8	0
1317-65-3	0
14808-60-7	0

**Additional Information:** The text for GHS Hazard Statements shown above (if any) is given in Section 16.

## 4. First-aid Measures

### 4.1 Description of First Aid Measures

**AFTER INHALATION:** Remove person to fresh air. If signs/symptoms continue, get medical attention.

**AFTER SKIN CONTACT:** Wash off with soap and plenty of water.

**AFTER EYE CONTACT:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**AFTER INGESTION:** Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If swallowed, call a poison control centre or doctor immediately.

### 4.2 Most important symptoms and effects, both acute and delayed

Irritating to respiratory system.

### 4.3 Indication of any immediate medical attention and special treatment needed

No Information

## 5. Fire-fighting Measures

### 5.1 Extinguishing Media:

Carbon Dioxide, Dry Chemical, Foam, Water Fog

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** No Information

**FOR SAFETY REASONS NOT TO BE USED:** No Information

### 5.2 Special hazards arising from the substance or mixture

No Information

### 5.3 Advice for firefighters

**SPECIAL FIREFIGHTING PROCEDURES:** The product is not flammable.

**SPECIAL FIREFIGHTING PROTECTION EQUIPMENT:** No Information

## 6. Accidental Release Measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Sweep up to prevent slipping hazard. Forms slippery/greasy layers with water.

### 6.2 Environmental precautions

No Information

### 6.3 Methods and material for containment and cleaning up

No Information

**6.4 Reference to other sections**

No Information

**7. Handling and Storage****7.1 Precautions for safe handling**

**INSTRUCTIONS FOR SAFE HANDLING :** Avoid breathing dust. Do not breathe vapours or spray mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.  
**PROTECTION AND HYGIENE MEASURES :** Handle in accordance with good industrial hygiene and safety practice. Do not breathe dust. Wash hands before eating, drinking, or smoking.

**7.2 Conditions for safe storage, including any incompatibilities**

**CONDITIONS TO AVOID:** Exposure to moisture.  
**STORAGE CONDITIONS:** Keep containers tightly closed in a dry, cool and well-ventilated place.

**7.3 Specific end use(s)**

No Information

**8. Exposure Controls/Personal Protection****8.1 Control parameters****Ingredients with Occupational Exposure Limits (US)**

<u>Name</u>	<u>CAS-No.</u>	<u>ACGIH TWA</u>	<u>ACGIH STEL</u>	<u>ACGIH Ceiling</u>
PORTLAND CEMENT	65997-15-1	1 MGM3	N/E	N/E
VERMICULITE	1318-00-9	N/E	N/E	N/E
CELLULOSE	9004-34-6	N/E	N/E	N/E
CALCIUM OXIDE	1305-78-8	2 MGM3	N/E	N/E
LIMESTONE	1317-65-3	N/E	N/E	N/E
MICROCRYSTALLINE SILICA	14808-60-7	0.025 MGM3	N/E	N/E

<u>Name</u>	<u>CAS-No.</u>	<u>OSHA PEL</u>	<u>OSHA STEL</u>
PORTLAND CEMENT	65997-15-1	5 MGM3 15 MGM3	N/E
VERMICULITE	1318-00-9	N/E	
CELLULOSE	9004-34-6	N/E	
CALCIUM OXIDE	1305-78-8	5 MGM3	N/E
LIMESTONE	1317-65-3	5 MGM3 15 MGM3 5 MGM3 15 MGM3 5 MGM3 15 MGM3	N/E
MICROCRYSTALLINE SILICA	14808-60-7	0.05 MGM3	N/E

**FURTHER ADVICE:** No Information**8.2 Exposure controls****Personal Protection**

**RESPIRATORY PROTECTION:** Effective dust mask. Use NIOSH approved respiratory protection.  
**EYE PROTECTION:** Safety glasses with side-shields.

**HAND PROTECTION:** For prolonged or repeated contact use protective gloves.

**OTHER PROTECTIVE EQUIPMENT:** None.

**ENGINEERING CONTROLS:** Avoid dust accumulation in enclosed space.

## 9. Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

<b>Appearance:</b>	Grey Powder Mixture
<b>Physical State</b>	Solid
<b>Odor</b>	Low Odor
<b>Odor threshold</b>	N/D
<b>pH</b>	7 to 9
<b>Melting point / freezing point (°C)</b>	N/A
<b>Boiling point/range (°C)</b>	N/A - N/A
<b>Flash Point (°C)</b>	None
<b>Evaporation rate</b>	N/A
<b>Flammability (solid, gas)</b>	Not determined
<b>Upper/lower flammability or explosive limits</b>	N/A - N/A
<b>Vapour Pressure, mmHg</b>	N/A
<b>Vapour density</b>	N/A
<b>Relative density</b>	Not determined
<b>Solubility in / Miscibility with water</b>	Slight
<b>Partition coefficient: n-octanol/water</b>	Not determined
<b>Auto-ignition temperature (°C)</b>	Not determined
<b>Decomposition temperature (°C)</b>	Not determined
<b>Viscosity</b>	Unknown
<b>Explosive properties</b>	Not determined
<b>Oxidising properties</b>	Not determined

### 9.2 Other information

<b>VOC Content g/l:</b>	0
<b>Specific Gravity (g/cm<sup>3</sup>)</b>	1.92

## 10. Stability and Reactivity

### 10.1 Reactivity

No Information

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Hazardous polymerisation does not occur.

### 10.4 Conditions to avoid

Exposure to moisture.

**10.5 Incompatible materials**

Strong oxidizing agents.

**10.6 Hazardous decomposition products**

None known.

**11. Toxicological Information****11.1 Information on toxicological effects****Acute Toxicity:**

Oral LD50: N/D

Inhalation LC50: N/D

Irritation: Unknown

Corrosivity: Skin Corrosion, category 1

Sensitization: Skin Sensitizer, category 1

Repeated dose toxicity: Unknown

Carcinogenicity: Carcinogenicity, category 1A

Mutagenicity: Unknown

Toxicity for reproduction: Unknown

STOT-single exposure: Unknown

STOT-repeated exposure: Unknown

Aspiration hazard: Unknown

If no information is available above under Acute Toxicity then the acute effects of this product have not been tested.  
Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>	<u>Gas LC50</u>	<u>Dust/Mist LC50</u>
65997-15-1	PORTLAND CEMENT	Not Available		Not Available	0.000	0.000
1318-00-9	VERMICULITE	Not Available		Not Available	0.000	0.000
9004-34-6	CELLULOSE	Not Available		Not Available	0.000	0.000
1305-78-8	CALCIUM OXIDE	Not Available		Not Available	0.000	0.000
1317-65-3	LIMESTONE	Not Available	Not Available	5,000 mg/kg, rat, oral	0.000	0.000
14808-60-7	MICROCRYSTALLINE SILICA	22500 mg/kg	Not Available	Not Available	0.000	0.000

**Additional Information:**

The cement contained within this product may cause dermal sensitization due to the potential presence of trace amounts of hexavalent chromium. Constituents of this product may include crystalline silica which, if inhalable, may cause silicosis, a form or progressive pulmonary fibrosis. Inhalable crystalline silica is listed by IARC as a group 1 carcinogen (lung) based on sufficient evidence in occupationally exposed humans and sufficient evidence in animals. Crystalline silica is also listed by the NTP as a known human carcinogen. This classification is relevant when exposed to Quartz (silicon dioxide) in dust or powder form only, including cured product that is subject to sanding, grinding, cutting, or other surface preparation activities. Constituents may also include abestiform or non-abestiform tremolite or other silicates as impurities, and above dei minimus exposure to these impurities in inhalable form may be carcinogenic or cause other serious lung problems.

## 12. Ecological Information

**12.1 Toxicity:**

EC50 48hr (Daphnia):	Unknown
IC50 72hr (Algae):	Unknown
LC50 96hr (fish):	Unknown

**12.2 Persistence and degradability:** Unknown

**12.3 Bioaccumulative potential:** Unknown

**12.4 Mobility in soil:** Unknown

**12.5 Results of PBT and vPvB assessment:** The product does not meet the criteria for PBT/VPvB in accordance with Annex XIII.

**12.6 Other adverse effects:** Unknown

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>EC50 48hr</u>	<u>IC50 72hr</u>	<u>LC50 96hr</u>
65997-15-1	PORTLAND CEMENT	No information	No information	No information
1318-00-9	VERMICULITE	No information	No information	No information
9004-34-6	CELLULOSE	No information	No information	No information
1305-78-8	CALCIUM OXIDE	No information	No information	No information
1317-65-3	LIMESTONE	1,000 mg/l	200 mg/l	10,000 mg/l
14808-60-7	MICROCRYSTALLINE SILICA	No information	No information	No information

## 13. Disposal Considerations

**13.1 WASTE TREATMENT METHODS:** Dispose of in accordance with local regulations.

## 14. Transport Information

14.1	UN number	None
14.2	UN proper shipping name	Not Regulated
	Technical name	N/A
14.3	Transport hazard class(es)	None
	Subsidiary shipping hazard	N/A
14.4	Packing group	N/A
14.5	Environmental hazards	No
14.6	Special precautions for user	Unknown
	EmS-No.:	None
14.7	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code	Unknown

## 15. Regulatory Information

15.1 Safety, health and environmental regulations/legislation for the substance or mixture:

### U.S. Federal Regulations: As follows -

#### CERCLA - Sara Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Carcinogenicity, Skin Corrosion or Irritation, Respiratory or Skin Sensitization

#### Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>%</u>
----------------------	----------------	----------

No SARA 313 substances exist in this product above de minimis concentrations.

#### Toxic Substances Control Act:

All components of this product are either listed on the TSCA Inventory or are exempt.

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

### U.S. State Regulations: As follows -

#### New Jersey Right-to-Know:

The following materials are non-hazardous, but are among the top five components in this product.

<u>Chemical Name</u>	<u>CAS-No.</u>
CALCIUM SULFATE	13397-24-5

#### Pennsylvania Right-To-Know

The following non-hazardous ingredients are present in the product at greater than 3%.

<u>Chemical Name</u>	<u>CAS-No.</u>
CALCIUM SULFATE	13397-24-5
VINYL ACETATE	TRADE SECRET

**CALIFORNIA PROPOSITION 65**

WARNING: Cancer and Reproductive Harm -- [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

**International Regulations: As follows -****\* Canadian DSL:**

All chemical ingredients included on inventory (DSL)

**15.2 Chemical Safety Assessment:**

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

**16. Other Information****Text for GHS Hazard Statements shown in Section 3 describing each ingredient:**

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H350	May cause cancer.
H372	Causes damage to organs through prolonged or repeated exposure.

**Reasons for revision**

No Information

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.







## **LEED® v4 Technical Bulletin Building Design + Construction**

### **Background**

This document outlines Carboline's contributions towards available LEED v4 credits. Carboline is committed to developing and manufacturing environmentally compliant coatings and fire protection products. Carboline fireproofing products can contribute towards points under the LEED Green Building Rating System. The LEED Green Building Rating System does not certify construction products and materials. Instead, entire projects are certified on the basis of the environmental impact of the building materials employed and the overall building design.

### **What is LEED?**

Leadership in Energy and Environmental Design (LEED) is the most widely used green building rating system in the world. LEED was developed by the United States Green Building Council (USGBC) to evaluate the environmental performance of buildings and promote sustainable design methods. LEED certification provides independent verification of environmental features which allow for efficient, high performance, cost-effective building design and construction. There are four levels of certification that can be reached for LEED v4 which are awarded based on achieving a minimum number of points (Certified, Silver, Gold and Platinum).

**Carboline products can contribute toward the following LEED v4 credit categories:**

### **Energy & Atmosphere**

- ✓ EA Prerequisite – Minimum Energy Performance
- ✓ EA Credit – Optimize Energy Performance

### **Materials and Resources**

#### **Materials and Resources**

- ✓ MR Prerequisite: Construction and Demolition Waste Management Planning
- ✓ MR Credit: Building Life Cycle Impact Reduction
- ✓ MR Credit: Building Product Disclosure and Optimization – Sourcing of Raw Materials
- ✓ MR Credit: Building Product Disclosure and Optimization – Material Ingredients

### **Indoor Environmental Quality**

- ✓ EQ Credit: Low-Emitting Materials

## Energy and Atmosphere

### EA Prerequisite: Minimum Energy Performance

**Intent:** To reduce the environmental and economic harm of excessive energy use by achieving a minimum level of energy efficiency for the building and its systems.

**Requirements:** Follow the criteria in the LEED New Construction Energy Design Guide as specified in LEED v4 (page 66).

**Carboline Contributions:** Carboline wet mix materials provide thermal resistance and noise reduction coefficient values. This will reduce the amount of energy needed for climate control and any added materials needed for soundproofing. This credit only applies to Carboline materials when used within the building envelope.

**Carboline Products That Contribute:** Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5GP, Southwest™ Type 5MD, Southwest™ Type 5EF, Southwest™ Type 1XR, Southwest™ Type 7GP, Southwest™ Type 7HD, Southwest™ Type 7TB, Southwest™ Type DK 3 Spattercoat, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500

### EA Credit: Optimize Energy Performance (1-18 points)

**Note:** This credit requires that an energy analysis be done that includes all energy costs within and associated with the building project. Points for this credit are assigned from 1-18 based on the percentage of energy cost savings the building materials or systems will provide.

**Intent:** Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

**Requirements:** Follow the criteria in EA Prerequisite Minimum Energy Performance to demonstrate a percentage improvement in the proposed building performance rating compared with the baseline. Points are awarded according to Table 1 in LEED v4 (page 75). Demonstrate a percentage improvement in the proposed building performance rating compared to the baseline building.

**Carboline Contributions:** Carboline wet mix materials provide thermal resistance and noise reduction coefficient values. This will reduce the amount of energy needed for climate control and reduce any added materials needed for soundproofing. This credit only applies to Carboline materials when used within the building envelope.

**Carboline Products That Contribute:** Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5GP, Southwest™ Type 5MD, Southwest™ Type 5EF, Southwest™ Type 1XR, Southwest™ Type 7GP, Southwest™ Type 7HD, Southwest™ Type 7TB, Southwest™ Type DK 3 Spattercoat, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500

## Materials and Resources

### MR Prerequisite: Construction and Demolition Waste Management Planning

**Intent:** To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.

**Requirements:**

**Option 1** (page 106) Diversion (1–2 points)

Path1: Divert 50% and Three Material Streams (1 point)

Divert at least 50% of the total construction and demolition material; diverted materials must include at least three material streams.

OR

Path 2: Divert 75% and Four Material Streams (2 points)

Divert at least 75% of the total construction and demolition material; diverted materials must include at least four material streams. The minimum percentage debris to be recycled or salvaged for each point threshold is as follows: 50%: 1 point, 75%: 2 points

**Carboline Contributions:** Carboline products are supplied in paper bags, plastic pails or metal pails which can be recycled. The pallets used for shipment are also recyclable.

**Carboline Products That Contribute:** Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5GP, Southwest™ Type 5MD, Southwest™ Type 5EF, Southwest™ Type 1XR, Southwest™ Type 7GP, Southwest™ Type 7HD, Southwest™ Type 7TB, Southwest™ Type DK 3 Spattercoat, A/D Type TC-55, Pyroprime® 775 WB, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500, A/D Firefilm® III, A/D Firefilm® III C, Firefilm® IV, Thermo-Sorb®, Thermo-Sorb® VOC, Thermo-Sorb® E, Thermo-Sorb® 263, Thermo-Lag® 3000, Thermo-Lag® E100, Thermo-Lag® E100 S

### MR Credit: Building Life-Cycle Impact Reduction (2-5 points)

**Intent:** To encourage adaptive reuse and optimize the environmental performance of products and materials.

**Requirements:** Reuse or salvage building materials from offsite or onsite as a percentage of the surface area as listed in Table 1 (page 91). Include structural elements (e.g., floors, roof decking), enclosure materials (e.g., skin, framing), and permanently installed interior elements (e.g., walls, doors, floor coverings, ceiling systems). Exclude from the calculation window assemblies and any hazardous materials that are remediated as a part of the project.

Materials contributing toward this credit may not contribute toward MR Credit Material Disclosure and Optimization.

Percentage of completed project surface area reused	Points BD&C	Points BD&C (Core and Shell)
25%	2	2
50%	3	3
75%	4	5

**Carboline Contributions:** Carboline wet mix and intumescent materials are utilized for retrofit and rehab construction. These materials provide fire resistance ratings to unprotected structural members which will bring the existing building up to code. This will eliminate the need to replace the structural elements that were not code compliant.

**Carboline Products That Contribute:** Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5GP, Southwest™ Type 5MD, Southwest™ Type 5EF, Southwest™ Type 1 XR, Southwest™ Type 7GP, Southwest™ Type 7HD, Southwest™ Type 7TB, Southwest™ Type DK3 Spattercoat, A/D Type TC-55, Pyroprime® 775 WB, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500, A/D Firefilm® III, A/D Firefilm® III C, Firefilm® IV, Thermo-Sorb®, Thermo-Sorb® VOC, Thermo-Sorb® E, Thermo-Sorb® 263, Thermo-Lag® 3000, Thermo-Lag® E100, Thermo-Lag® E100 S

### **MR Credit: Building Product Disclosure and Optimization-Sourcing of Raw Materials (1-2 points)**

**Intent:** To encourage the use of products and materials for which life cycle information is available and that have environmentally, economically, and socially preferable life cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.

#### **Requirements:**

##### **Option 1** (page 95) Raw Material Source and Extraction Reporting (1 point)

Use at least 20 different permanently installed products from at least five different manufacturers that have publicly released a report from their raw material suppliers which include raw material supplier extraction locations, a commitment to long-term ecologically responsible land use, a commitment to reducing environmental harms from extraction and/or manufacturing processes, and a commitment to meeting applicable standards or programs voluntarily that address responsible sourcing criteria

**Carboline Contributions:** Carboline has publicly released reports from their raw material suppliers which include raw material supplier extraction locations for our wet mix and intumescent materials fire resistive materials.

**Carboline Products That Contribute:** Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5GP, Southwest™ Type 5MD, Southwest™ Type 5EF, Southwest™ Type 1XR, Southwest™ Type 7GP, Southwest™ Type 7HD, Southwest™ Type 7TB, Southwest™ Type DK 3 Spattercoat, A/D Type TC-55, A/D Firefilm® III, A/D Firefilm® III C, Firefilm® IV, Thermo-Sorb®, Thermo-Sorb® VOC, Thermo-Sorb® E, Thermo-Sorb® 263, Thermo-Lag® 3000, Thermo-Lag® E100, Thermo-Lag® E100 S

##### **Option 2** (page 95). Leadership Extraction Practices (1 point)

Use products that meet at least one of the responsible extraction criteria below for at least 25%, by cost, of the total value of permanently installed building products in the project.

**Recycled content:** Recycled content is the sum of postconsumer recycled content plus one-half the preconsumer recycled content, based on cost. Products meeting recycled content criteria are valued at 100% of their cost for the purposes of credit achievement calculation.

**Carboline Contributions:** Carboline wet-mix products are manufactured with post-consumer recycled materials.

**Carboline Products That Contribute:** Southwest™ Type 5GP (10% recycled content), Southwest™ Type 5MD (10% recycled content), Southwest™ Type 5EF (10% recycled content).

**MR Credit: Building Product Disclosure and Optimization-Material Ingredients (1-2 points)**

**Intent:** To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.

**Requirements:**

**Option 1** (Page 97) Material Ingredient Reporting (1 point)

Use at least 20 different permanently installed products from at least five different manufacturers that use any of the following programs to demonstrate the chemical inventory of the product.

**Carboline Contributions:** Carboline wet mix and intumescent products have complete Declare Health Product Declaration: The end use product has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open standard.

**Carboline Products That Contribute:** Southwest™ Type 5GP, Southwest™ Type 5MD, Southwest™ Type 7GP, Southwest™ Type 7HD, Southwest™ Type 7TB, Southwest™ Type DK 3 Spattercoat, A/D Type TC-55, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 241, A/D Firefilm® III, A/D Firefilm® III C, Firefilm® IV, Thermo-Sorb® VOC, Thermo-Sorb® E, Thermo-Sorb® 263, Thermo-Lag® 3000, Thermo-Lag® E100, Thermo-Lag® E100 S

**MR Credit: Construction and Demolition Waste Management (1-2 points)**

**Intent:** To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.

**Requirements:**

**Option 1** (page 106) Diversion (1–2 points)

Path 1: Divert 50% and Three Material Streams (1 point)

Divert at least 50% of the total construction and demolition material; diverted materials must include at least three material streams.

OR

Path 2: Divert 75% and Four Material Streams (2 points)

Divert at least 75% of the total construction and demolition material; diverted materials must include at least four material streams. The minimum percentage debris to be recycled or salvaged for each point threshold is as follows: 50%: 1 point, 75%: 2 points

**Carboline Contributions:** Carboline products are supplied in paper bags, plastic pails or metal pails which can be recycled. The pallets used for shipment are also recyclable.

**Carboline Products That Contribute:** Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5GP, Southwest™ Type 5MD, Southwest™ Type 5EF, Southwest™ Type 1XR, Southwest™ Type 7GP, Southwest™ Type 7HD, Southwest™ Type 7TB, Southwest™ Type DK 3 Spattercoat, A/D Type TC-55, Pyroprime® 775 WB, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500, A/D Firefilm® III, A/D Firefilm® III C, Firefilm® IV, Thermo-Sorb®, Thermo-Sorb® VOC, Thermo-Sorb® E, Thermo-Sorb® 263, Thermo-Lag® 3000, Thermo-Lag® E100, Thermo-Lag® E100 S

## Indoor Environmental Quality

### EQ Credit: Low Emitting Materials (1-3 points)

**Intent:** To reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

**Requirements:** This credit includes requirements for product manufacturing as well as project teams. It covers volatile organic compound (VOC) emissions in the indoor air and the VOC content of materials as well as the testing methods by which indoor VOC emissions are determined. Different materials must meet different requirements to be considered compliant for this credit. The building interior and exterior are organized in seven categories, each with different thresholds of compliance. The building interior is defined as everything within the waterproofing membrane. The building exterior is defined as everything outside and inclusive of the primary and secondary weatherproofing system such as waterproofing membranes and air- and water-resistive barrier materials.

#### Option 1 (Page 118) Product Category Calculations (1-3 points)

Achieve the threshold level of compliance with emissions and content standards for the number of product categories listed in Table 2 (page 118).

Category	Threshold	Emission & Content Requirements
Interior paints and coatings applied onsite	At least 90% by volume for emissions, 100% for VOC content	<ul style="list-style-type: none"> <li>General Emissions Evaluation for paints and coatings applied to walls, floors and ceilings</li> <li>VOC content requirements for wet applied products</li> </ul>
Interior adhesives and sealants applied onsite	At least 90% by volume, for emissions 100% for VOC content	<ul style="list-style-type: none"> <li>General Emissions Evaluation</li> <li>VOC content requirements for wet applied products</li> </ul>
Ceilings, walls, thermal and acoustic insulation	100%	<ul style="list-style-type: none"> <li>General Emissions Evaluation</li> <li>Healthcare, schools only</li> </ul>
Healthcare and schools projects only: Exterior applied products	At least 90% by volume	<ul style="list-style-type: none"> <li>General Emissions Evaluation</li> <li>Exterior applied products</li> </ul>

#### Emissions and Content Requirements

To demonstrate compliance, a product or layer must meet all of the following requirements, as applicable.

**Inherently non-emitting sources:** Products that are inherently non-emitting sources of VOCs (stone, ceramic, powder-coated metals, plated or anodized metal, glass, concrete, clay brick, and unfinished or untreated solid wood flooring) are considered fully compliant without any VOC emissions testing if they do not include integral organic-based surface coatings, binders, or sealants.

**General emissions evaluation:** Building products must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.1–2010, using the applicable exposure scenario. The default scenario is the private office scenario. The manufacturer’s or third-party certification must state the exposure scenario used to determine compliance. Claims of compliance for wet-applied products must state the amount applied in mass per surface area.

Manufacturers’ claims of compliance with the above requirements must also state the range of total VOCs after 14 days (336 hours), measured as specified in the CDPH Standard Method v1.1:

- 0.5 mg/m<sup>3</sup> or less;
- between 0.5 and 5.0 mg/m<sup>3</sup>; or
- 5.0 mg/m<sup>3</sup> or more.

**Additional VOC content requirements for wet-applied products:** In addition to meeting the general requirements for VOC emissions (above), on-site wet-applied products must not contain excessive levels of VOCs, for the health of the installers and other trade workers who are exposed to these products. To demonstrate compliance, a product or layer must meet the following requirements, as applicable. Disclosure of VOC content must be made by the manufacturer. Any testing must follow the test method specified in the applicable regulation.

- All paints and coatings wet-applied on site must meet the applicable VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011.
- All adhesives and sealants wet-applied on site must meet the applicable chemical content requirements of SCAQMD Rule 1168, July 1, 2005, Adhesive and Sealant Applications as analyzed by the methods specified in Rule 1168. The provisions of SCAQMD Rule 1168 do not apply to adhesives and sealants subject to state or federal consumer product VOC regulations.
- For projects outside the U.S., all paints, coatings, adhesives, and sealants wet-applied on site must either meet the technical requirements of the above regulations or comply with applicable national VOC control regulations such as the European Decopaint Directive (2004/42/EC), the Canadian VOC Concentration Limits for Architectural Coatings, or the Hong Kong Air Pollution Control (VOC) Regulation.

As there is no fireproofing category in the LEED v4, the SCAQMD regulations are commonly used to designate specialty coatings classifications for LEED applications. The SCAQMD (Rule #1113) outlines the current VOC limits as of January 1, 2014 for several categories of specialty coatings as follows:

Specialty Coating Type	Current VOC Limit (g/l)
Concrete surface retarders	50
Driveway Sealers	50
Faux finishing coatings	200
<b>Fireproofing coatings</b>	<b>150</b>
Graphic art coatings	150
Mastic coatings	100
Metallic pigmented coatings	150
Anti-graffiti coatings	50



The following Carboline products meet current VOC requirements:

<b>Carboline Compliant Fireproofing Products</b>	<b>VOC Limit (EPA Method 24) (g/l)</b>
A/D Firefilm® III	20 g/l
A/D Firefilm® III C	20 g/l
Firefilm® IV	4 g/l
Thermo-Sorb® VOC	142 g/l
Thermo-Sorb® E	147 g/l
Thermo-Sorb® 263	148 g/l
Thermo-Lag® E100	13 g/l
Thermo-Lag® E100 S	64 g/l
Thermo-Lag® 3000 A	13 g/l
Thermo-Lag® 3000 SA	64 g/l
A/D Type TC-55	0 g/l
Pyroprime® 775 WB	81 g/l
Southwest™ Series	0 g/l
Pyrolite® Series	0 g/l
Pyrocrete® Series	0 g/l

**Carboline**

**Contributions:** Carboline has wet mix and intumescent materials that meet the required VOC limits and VOC emissions requirements for this credit.

**Carboline Products That Contribute:** Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5GP, Southwest™ Type 5MD, Southwest™ Type 5EF, Southwest™ Type 1XR, Southwest™ Type 7GP, Southwest™ Type 7HD, Southwest™ Type 7TB, Southwest™ Type DK 3 Spattercoat, A/D Type TC-55, Pyroprime® 775 WB, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500, A/D Firefilm® III, A/D Firefilm® III C, Firefilm® IV, Thermo-Sorb® VOC, Thermo-Sorb® E, Thermo-Sorb® 263, Thermo-Lag® 3000, Thermo-Lag® E100, Thermo-Lag® E100 S

## **Manufacturing Locations**

### **Products manufactured in Louisa, VA:**

Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5GP, Southwest™ Type 5MD, Southwest™ Type 5EF, Southwest™ Type 1XR, Southwest™ Type 7GP, Southwest™ Type 7HD, Southwest™ Type 7TB, Southwest™ Type DK 3 Spattercoat, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500

### **Products manufactured in Green Bay, WI:**

Pyroprime® 775, Thermo-Sorb® E, Thermo-Sorb® 263,

### **Products manufactured in Dayton, NV:**

Thermo-Sorb®, Thermo-Sorb® VOC, Thermo-Sorb® E, Thermo-Sorb® 263, Thermo-Lag® 3000, Thermo-Lag® E100, Thermo-Lag® E100 S

### **Products manufactured in Lake Charles, LA:**

A/D Firefilm® III, A/D Firefilm® III C, Firefilm® IV, A/D Type TC-55, Thermo-Sorb®, Thermo-Sorb® VOC, Thermo-Sorb® E, Thermo-Sorb® 263, Thermo-Lag® 3000, Thermo-Lag® E100, Thermo-Lag® E100 S

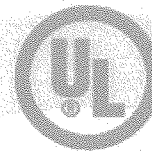
## **Raw Material Extraction Locations**

**NOTE:** For raw material extraction locations and distance to manufacturing plants, please contact your local Carboline technical sales representative or Carboline fireproofing technical service.

# Certificate of Compliance

Certificate Number 5620070208-R8213C  
Report Reference 2007 February 8  
Issue Date 2007 February 8

Page 1 of 2



**Underwriters  
Laboratories Inc.**

*Issued to:*

**Southwest Fireproofing Products Co.**

5119 Edith Blvd NE, Po Box 6287  
Albuquerque, NM 87197

*This is to certify that  
representative samples of*

**Spray-applied Fire Resistive Materials**  
Type 5MD

*Have been investigated by Underwriters Laboratories Inc.® (UL) or any authorized licensee of UL in accordance with the Standard(s) indicated on this Certificate.*


*Standard(s) for Safety:*

UL 263 Fire Tests of Building Construction and Materials  
ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials

*Additional Information:*

See addendum for system listings

Only those products bearing the UL Classification Mark should be considered as being covered by UL's Classification and Follow-Up Service.

The UL Classification Mark includes: UL in a circle symbol:  with the word "CLASSIFIED" (as shown); a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and, the product category name (product identity) as indicated in the appropriate UL Directory.

**Look for the UL Classification Mark on the product**

Issued by:

*Mona Couloute*  
Mona Couloute

Underwriters Laboratories Inc.

Reviewed by:

*Fred Hervey*  
Fred Hervey

Underwriters Laboratories Inc.

# Certificate of Compliance

Certificate Number 5620070208-R8213C

Report Reference 2007 February 8

Issue Date 2007 February 8

Page 2 of 2



**Underwriters  
Laboratories Inc.**

This is to verify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Type 5MD Spray-Applied Fire Resistive Materials for use in

Beam Design Nos. N401, N404, N706, N708, N732, N736, N754, N756, N791, S701, S702, S715, S739, S740.

Column Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772, Y725.

Floor-Ceiling Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D725, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D748, D750, D751, D752, D753, D754, D756, D758, D788, D905, D907, D909, D910, D916, D917, D920, D949, G701, G702, G703, J701, J704, J705, J706, J709, J718, J919, J957, J966.

Roof-Ceiling Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P741, P901, P902, P907, P908, P919, P920, P921, P923, P937.

Wall-Partition Design No. U703.

Issued by:

*Mona Couloute*  
Mona Couloute

Underwriters Laboratories Inc.

Reviewed by:

*Fred Hervey*  
Fred Hervey

Underwriters Laboratories Inc.



## CHPX.R8213 Spray-applied Fire-resistive Materials

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### Spray-applied Fire-resistive Materials

[See General Information for Spray-applied Fire-resistive Materials](#)

#### **SOUTHWEST FIREPROOFING PRODUCTS CO**

R8213

5119 Edith Blvd NE  
PO Box 6287  
Albuquerque, NM 87197-6287 USA

Type 4 Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. [N401](#), [N404](#), [N706](#), [N708](#), [N732](#), [N736](#), [N754](#), [N791](#), [S701](#), [S702](#), [S715](#), [S739](#), [S740](#).

**Column** Design Nos. [X527](#), [X701](#), [X704](#), [X722](#), [X723](#), [X751](#), [X752](#), [X771](#), [X772](#), [Y725](#).

**Floor-Ceiling** Design Nos. [A702](#), [D701](#), [D703](#), [D704](#), [D705](#), [D706](#), [D708](#), [D709](#), [D710](#), [D711](#), [D712](#), [D715](#), [D716](#), [D722](#), [D723](#), [D726](#), [D727](#), [D728](#), [D729](#), [D730](#), [D739](#), [D740](#), [D742](#), [D743](#), [D744](#), [D745](#), [D746](#), [D747](#), [D750](#), [D751](#), [D752](#), [D753](#), [D754](#), [D758](#), [D788](#), [D905](#), [D907](#), [D910](#), [D916](#), [D917](#), [D920](#), [D949](#), [D973](#), [D974](#), [D976](#), [D977](#), [G701](#), [G702](#), [G703](#), [J701](#), [J704](#), [J705](#), [J709](#), [J718](#), [J919](#), [J957](#).

**Roof-Ceiling** Design Nos. [P675](#), [P676](#), [P701](#), [P708](#), [P709](#), [P710](#), [P711](#), [P714](#), [P717](#), [P741](#), [P901](#), [P902](#), [P907](#), [P908](#), [P919](#), [P920](#), [P921](#), [P923](#), [P937](#).

**Wall-Partition** Design No. [U703](#).

Type 5 Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. [N401](#), [N404](#), [N706](#), [N708](#), [N732](#), [N736](#), [N754](#), [N756](#), [N791](#), [S701](#), [S702](#), [S715](#), [S739](#), [S740](#).

**Column** Design Nos. [X527](#), [X701](#), [X704](#), [X722](#), [X723](#), [X751](#), [X752](#), [X771](#), [X772](#), [Y725](#).

**Floor-Ceiling** Design Nos. [A702](#), [D701](#), [D703](#), [D704](#), [D705](#), [D706](#), [D708](#), [D709](#), [D710](#), [D711](#), [D712](#), [D715](#), [D716](#), [D722](#), [D723](#), [D726](#), [D727](#), [D728](#), [D729](#), [D730](#), [D739](#), [D740](#), [D742](#), [D743](#), [D744](#), [D745](#), [D746](#), [D747](#), [D750](#), [D751](#), [D752](#), [D753](#), [D754](#), [D758](#), [D788](#), [D905](#), [D907](#), [D910](#), [D916](#), [D917](#), [D920](#), [D949](#), [D973](#), [D974](#), [D976](#), [D977](#), [G701](#), [G702](#), [G703](#), [J701](#), [J704](#), [J705](#), [J709](#), [J718](#), [J919](#), [J957](#).

**Roof-Ceiling** Design Nos. [P675](#), [P676](#), [P701](#), [P708](#), [P709](#), [P710](#), [P711](#), [P714](#), [P717](#), [P741](#), [P901](#), [P902](#), [P907](#), [P908](#), [P919](#), [P920](#), [P921](#), [P923](#), [P937](#).

**Wall-Partition** Design No. [U703](#).

Type 5GP/AR Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. [N791](#), [S715](#), [S739](#), [S740](#).

**Column** Design Nos. [X771](#), [Y725](#).

**Floor-Ceiling** Design Nos. [D739](#), [D743](#), [D752](#), [D754](#), [D788](#), [D949](#), [J718](#).

**Roof-Ceiling** Design Nos. [P741](#), [P937](#).

Type 5EF/AR Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. [N791](#), [S715](#), [S739](#), [S740](#).

**Column** Design Nos. [X771](#), [Y725](#).

**Floor-Ceiling** Design Nos. [D739](#), [D743](#), [D752](#), [D754](#), [D788](#), [D949](#), [J718](#).

**Roof-Ceiling** Design Nos. [P741](#), [P937](#).

Type 5MD/AR Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. [N791](#), [S715](#), [S739](#), [S740](#).

**Column** Design Nos. [X771](#), [Y725](#).

**Floor-Ceiling** Design Nos. [D739](#), [D743](#), [D752](#), [D754](#), [D788](#), [D949](#), [J718](#).

**Roof-Ceiling** Design Nos. [P741](#), [P937](#).

Type DK Spray-Applied Fire Resistive Materials for use in

**Floor-Ceiling** Design Nos. D701, D703, D704, D705, D706, D708, D709, D711, D712, D716, D722, D723, D730, D739, D743, D758, D752, D754.

**Roof-Ceiling** Design Nos. P717, P741.

Type DK2 Spray-Applied Fire Resistive Materials for use in **Floor-Ceiling** Design Nos. D701, D703, D704, D705, D706, D708, D709, D711, D712, D716, D722, D723, D730, D739, D743, D758, D752, D754, **Roof-Ceiling** Design No. P741.

Type DK3 Spray-Applied Fire Resistive Materials for use in **Floor-Ceiling** Design Nos. D701, D703, D704, D705, D706, D708, D709, D711, D712, D716, D722, D723, D730, D739, D743, D758, D752, D754 and **Roof-Ceiling** Design No. P741.

Type 5GP Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N732, N736, N754, N791, S701, S702, S715, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772, Y725.

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D920, D949, D973, D974, G701, G702, J701, J704, J705, J709, J718, J919, J957, and K912.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P901, P902, P907, P908, P919, P920, P921, P923 and P937.

**Wall-Partition** Design No. U703.

Type 5EF Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N732, N736, N754, N756, N791, S701, S702, S715, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772 and

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D949, D973, D974, D976, D977, G701, G702, G703, J701, J704, J705, J709, J718, J919, J957.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P741, P901, P902, P907, P908, P919, P920, P921, P923, P937.

**Wall-Partition** Design No. U703.

Type 5MD Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N732, N736, N754, N756, N791, S701, S702, S715, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772, Y725.

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D920, D949, D973, D974, D976, D977, G701, G702, G703, J701, J704, J705, J709, J718, J919, J957, and K912.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P741, P901, P902, P907, P908, P919, P920, P921, P923, P937.

**Wall-Partition** Design No. U703.

Type 5AR Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N791, S715, S739, S740.

**Column** Design Nos. X771, Y725.

**Floor-Ceiling** Design Nos. D739, D743, D752, D754, D788, D949, J718.

**Roof-Ceiling** Design Nos. P741, P937.

Type 8GP Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N732, N736, N754, N791, S701, S702, S715, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772, Y725.

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D920, D949, D973, D974, D976, D977, G701, G702, J701, J704, J705, J709, J718, J919, J957.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P901, P902, P907, P908, P919, P920, P921, P923, P937.

**Wall-Partition** Design No. U703.

Type 8EF Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N732, N736, N754, N756, N791, S701, S702, S715, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772, Y725.

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D949, D973, D974, G701, G702, G703, J701, J704, J705, J709, J718, J919, J957.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P741, P901, P902, P907, P908, P919, P920, P921, P923, P937.

**Wall-Partition** Design No. U703.

Type 8MD Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N732, N736, N754, N756, N791, S701, S702, S715, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772, Y725.

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D920, D949, D973, D974, D976, D977, G701, G702, G703, J701, J704, J705, J709, J718, J919, J957.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P741, P901, P902, P907, P908, P919, P920, P921, P923, P937.

**Wall-Partition** Design No. U703.

Type 9GP Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N732, N736, N754, N791, S701, S702, S715, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772, Y725.

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D920, D949, D973, D974, D976, D977, G701, G702, J701, J704, J705, J709, J718, J919, J957.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P741, P901, P902, P907, P908, P919, P920, P921, P923, P937.

**Wall-Partition** Design No. U703.

Type 9EF Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N732, N736, N754, N756, N791, S701, S702, S715, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772, Y725.

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D949, D973, D974, D976, D977, G701, G702, G703, J701, J704, J705, J709, J718, J919, J957.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P741, P901, P902, P907, P908, P919, P920, P921, P923, P937.

**Wall-Partition** Design No. U703.

Type 9MD Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N732, N736, N754, N756, N791, S701, S702, S715, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X751, X752, X771, X772, Y725.

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D920, D949, D973, D974, D976, D977, G701, G702, G703, J701, J704, J705, J709, J718, J919, J957.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P741, P901, P902, P907, P908, P919, P920, P921, P923, P937.

**Wall-Partition** Design No. U703.

Type 7GP and 7HD Spray-Applied Fire Resistive Materials for use in

**Beam** Design Nos. N401, N404, N706, N708, N720, N732, N736, N763, N754, N756, N791, S701, S702, S715, S725, S739, S740.

**Column** Design Nos. X527, X701, X704, X722, X723, X738, X751, X752, X771, X772, X794, Y725.

**Floor-Ceiling** Design Nos. A702, D701, D703, D704, D705, D706, D708, D709, D710, D711, D712, D715, D716, D722, D723, D726, D727, D728, D729, D730, D739, D740, D742, D743, D744, D745, D746, D747, D750, D751, D752, D753, D754, D758, D788, D905, D907, D910, D916, D917, D949, D973, D974, D976, D977, G701, G702, G703, J701, J704, J705, J709, J718, J919, J957, and K912.

**Roof-Ceiling** Design Nos. P675, P676, P701, P708, P709, P710, P711, P714, P717, P741, P901, P902, P907, P908, P919, P920, P921, P923, P937.

Wall-Partition Design No. U703.

Type 7TB Spray-Applied Fire Resistive Materials for use in

**Column** Design No. X737 .

Types 7HX, Aerex-S Spray-Applied Fire Resistive Materials for use in Design No. XR708 .

Type FP-1A, TS-40, 1AX, FP-2B, TS-40G or 1BX Spray-Applied Fire Resistive Materials, investigated for exterior use, for use in

**Beam** Design No. N733.

**Column** Design Nos. X731, X739, X756, X757.

**Roof-Ceiling** Design No. P712.

Type FP-1A, TS-40G or 1BX Spray-Applied Fire Resistive Materials, investigated for exterior use, for use in

**Beam** Design Nos. N730, S707.

Type FP-1B, TS-40G or 1BX Spray-Applied Fire Resistive Materials, investigated for exterior use, for use in Design Nos. N731, P729, S708.

Types FP-1XR or 1XR Spray-Applied Fire Resistive Materials, investigated for exterior use, for use in

**Beam** Design Nos. N730, N731, N733, S707, S708.

**Column** Design Nos. X739, XR710.

**Roof-Ceiling** Design No. P729.

Type FP-2 or 7MP Spray-Applied Fire Resistive Materials for use in

**Beam** Design No. N709.

**Column** Design Nos. X717, X718, X796, X797.

**Floor-Ceiling** Design No. D923.

**Roof-Ceiling** Design No. P730.

**Type 5 of Type 5GP** for use in Joint System Nos. HW-D-0099 and HW-D-0252.

The thickness of Types 4, 5, 5GP, 5EM, 5MD, 7GP, 7HD, 8GP, 8EF, 8MD, 9GP, 9EF, and 9MD spray-applied fire resistive material for application to individual steel truss members or individual steel joist members may be determined based upon the following equation:

$$H = \frac{R}{0.9994 (W/D) + 0.9438}$$

Where:

H = thickness (inches)

R = rating (hours)

W = weight of steel member per lineal foot (lb/ft)

D = heated perimeter of steel member (inches)

$H_{\min} = 0.25$  inch  $H_{\max} = 3.875$  inch

$W/D_{\min} = 0.33$   $W/D_{\max} = 6.62$

#### **Other Conditions of Use**

The following conditions of use apply only to the conditions described and apply only to the UL Classified Southwest Fireproofing Products Co. spray-applied fire-resistive materials (SFRM) listed. For further technical assistance regarding field issues, contact the technical service staff of Southwest Fireproofing Products Co. Authorities Having Jurisdiction should be consulted as to the particular requirements covering the installation and use of UL Listed or Classified products, equipment, systems, devices and materials.

#### **1. Patching**

Types 4, 5, 5GP, 5EM, 5MD, 7GP, 7HD, 8GP, 8EF, 8MD, 9GP, 9EF, and 9MD may be hand patched in all designs, in areas up to 144 sq. in., following the guidelines listed below:

A) The material used for patching is of the same Type designation as the material being patched.

B) All loose material, including dirt and any other foreign material, that would impair adhesion of the patching material must be removed prior to patching. Where damaged material extends to the steel or concrete substrate, removal should be to the steel or concrete substrate.

C) Where well-bonded material exists below the damaged material, removal of the damaged material should extend to the well-bonded firm material. There is no requirement to remove well-bonded material that lies immediately beneath loosely bonded or



poorly adhered material.

D) The material is keyed into the material surrounding the patch. It should be understood that the integrity of the surrounding material shall not have been impaired and must be pre-wetted prior to applying the patching material.

E) All manufacturer's application instructions of the Spray-Applied Fire Resistive Material being used to patch the area must be followed.

F) The minimum in-place density and minimum thickness of the material, as specified in the fire resistance design, must be maintained.

G) Any clips or hangers being patched around are 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.

H) Where hand applications will exceed 144 square inches, the spray applied fire resistive material shall be mechanically mixed, pumped and sprayed using standard application equipment as outlined in the manufacturer's application instructions.

## **2. Surface Coatings**

Surface coatings such as water-based latex, vinyl acrylic, urethane or chlorinated rubber coatings may be used as overspray on Types 4, 5, 5GP, 5EF, 5MD, 7GP, 7HD, 8GP, 8EF, 8MD, 9GP, 9EF, and 9MD. If used, the coatings are intended for surface coloring only. Their application must be controlled so that the coatings do not saturate the Spray-Applied Fire Resistive Material (SFRM) and thus influence the bond between the SFRM and the steel substrate. Unless specifically indicated above, these systems have not been investigated for exterior use. The flame spread index of the surface coating shall be less than 200 as determined by the test method in ANSI/UL 723 (ASTM E84 and NFPA 255). Surface Burning Classifications are contained in the Building Materials Directory.

## **3. Top-Coat Materials**

Gypsum plaster, Portland cement plaster, Types 7HD, 1BX or 1XR may be used as a top-coat over Types 4, 5, 5GP, 5EF, 5MD, or 7GP. If used, the coating is intended as a smooth surface coating only. Their application must be controlled to a maximum 1/4 in. thickness so that the coating does not affect the Spray-Applied Fire Resistive Material (SFRM) and thus influence the bond between the SFRM and the steel substrate. The minimum thickness and density for the SFRM being top-coated shall be as specified in the individual Design.

## **4. Spanning Gaps Between a Wide Flange Steel Beam and a Rated Concrete Block Wall**

When the wide flange steel beam in a floor-or-roof ceiling assembly is in close proximity and parallel to a rated concrete block wall, preventing the entire perimeter of the beam from being properly protected with Spray-Applied Fire Resistive Material (SFRM), the following method may be used to maintain the fire resistance rating of the floor-or-roof ceiling assembly. Minimum 3.4 lb/sq yd galvanized or painted expanded steel lath shall be used to bridge the gap between the beam and the masonry wall. The lath shall be mechanically attached by welds, screws or powder-actuated fasteners to the lower flange of the beam and the masonry facade. The SFRM shall be applied to the entire metal lath surface at the thickness specified for the steel beam in the chosen design for the desired rating. The steel beam, lath and masonry wall shall be clean and free of dirt, loose scale and oil. The gap may not be greater than 18 in. The concrete block wall must have an hourly rating equal to or greater than the restrained assembly rating. The steel floor units between the beam and masonry wall need not be sprayed due to the protection provided by the box enclosure formed by the metal lath and the SFRM.

## **5. Spanning Gaps Between a Vertical Column and a Rated Concrete Block Wall**

Where a vertical column is in close proximity to a rated concrete block wall, preventing the entire perimeter of the column from being properly protected with Spray-Applied Fire Resistive Material (SFRM), one of the following methods may be used to maintain the fire resistance rating of the column assembly, depending on the depth of the gap. The protection on the remaining sides of the column shall be in accordance with the requirements in the specified column design. The concrete block wall must have an hourly rating equal to or greater than the column rating. a) For gaps greater than 2 in. and up to 18 in., minimum 3.4 lb/sq yd galvanized or painted expanded steel lath shall be used to bridge the gap between the column and the masonry wall. The lath shall be mechanically attached by welds, screws or powder-actuated fasteners to both flanges of the column and the masonry facade. The SFRM shall be applied to the entire metal lath surface at the thickness specified for the column in the chosen design for the desired rating. The column, lath and masonry wall shall be clean and free of dirt, loose scale and oil. b) For gaps 2 in. or less, no metal lath is required to bridge the gap. The gap shall be completely filled with the SFRM.

Last Updated on 2014-07-14

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8431 Murphy Drive  
Middleton, WI 53562

Telephone: (608) 836-4400  
Facsimile: (608) 831-9279  
www.intertek.com

January 27, 2015

Letter Report No. 101974037MID-001a  
Project No. G101974037

Mr John Wright  
Southwest Fireproofing Products Co.  
5119 Edith Blvd NE  
Albuquerque, NM 87107  
[john@Southwestfireproofing.com](mailto:john@Southwestfireproofing.com)

Subject: Engineering Evaluation to review Southwest Fireproofing Products Company's spray-applied fireproofing products Type 5GP and Type 5MD. Evaluation is of physical property test data referencing Intertek Report 3171245MID-022.

Dear Mr Wright,

This letter represents the results of the engineering evaluation of the above referenced subject to the requirements contained in ICC-ES AC23: Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials.

This investigation was authorized by signed proposal 500574371. In a letter of January 7, 2015 it was explained by Mr John Wright of Southwest Fireproofing Products Co., that the evaluation seeks to verify the validity of using results of tests conducted on the lower density Type 5GP product to also confirm compliance of the higher density Type 5MD product for selected properties investigated. A summary of the Intertek reported test data from the appropriate sections of 3171245MID-022 is found in table 1 below.

Property Evaluated	Reported by	5GP Test Value	5MD Test Value and deemed equivalent
ASTM E761 Compressive Strength	Intertek	3701 psf	10,354 psf
ASTM E736 Cohesion / Adhesion	Intertek	505 psf	3996 psf
ASTM E760 Effect of Impact	Intertek	Pass	Equivalent
ASTM E759 Effect of Deflection	Intertek	Pass	Equivalent
ASTM E859 Air Erosion	Intertek	0.009g/ft <sup>2</sup> total loss and no loss after 6 hours	Equivalent or Better
ASTM E84 Surface Burning	Intertek	FS = 0 SD=0	Equivalent
ASTM E937 Corrosion of Steel	Intertek	Average Weight loss 0.000 g/mm <sup>2</sup>	Equivalent

Table 1.0

Both products are produced with the same components with the exception of the Type 5MD (medium density) being of a higher target density of 22pcf vs. 14 to 15 pcf for Type 5GP (general purpose) product. The higher density is achieved by increased gypsum content in the formulation with all other components being equal.

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It should be noted that values for compressive strength and cohesion /adhesion are found to be significantly higher in the higher density Type 5MD as compared to the Type 5GP product.

Based on Intertek's experience with gypsum based products, Intertek believes that the testing of the lower density Type 5GP represents worse case testing of the two products when evaluating ASTM E760 Impact performance, ASTM E759 Effects of Deflection, ASTM E84 Surface Burning Characteristics ASTM E859 Air Erosion and ASTM E937 Corrosion of Steel.

Authorities Having Jurisdiction (AHJ) should be consulted in all cases as to the particular requirements covering the installation and use of Intertek certified products, equipment, systems, devices and materials. The AHJ should be consulted before construction. Fire resistance assemblies and products are developed by the design submitter and have been investigated by Intertek for compliance with specific requirements. The published information (product and design listings) cannot always address every construction nuance encountered in the field. When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the test standard referenced for each Intertek certified product. The test standard includes specifics concerning alternate materials and alternate methods of construction. Only products which bear Intertek's Mark are considered as certified. The appearance of a company's name or product in Intertek Directory of Listed Building Products does not in itself assure that products so identified have been manufactured under Intertek's Follow-Up Service. Only those products bearing the Intertek Mark should be considered to be Listed and covered under Intertek's Follow-Up Service. Always verify the Mark on the product before using it.

**Conclusion:**

Per the discussion above and as summarized in Table1, It is Intertek's judgement that ASTM E760 Impact; ASTM E759 Effects of Deflection; ASTM E937 Corrosion of Steel and ASTM E84 performance for product Type 5MD would be equivalent to those reported for Type 5GP. It is also Intertek's Judgement that performance results for ASTM E859 Air Erosion would be equivalent or better than results reported for Type 5GP.

This letter report completes our evaluation.

If there are any questions regarding the results contained in this report, or if we can be of any further service, please do not hesitate to contact us at Intertek.

Completed by:	John Schachtner Project Engineer – Engineering Services	Reviewed by:	Rick Curckee Chief Engineer – Building & Hearth Products
Title:		Title:	
Signature:		Signature	

**REPORT NUMBER: 3171245MID-022**  
ORIGINAL ISSUE DATE: October 23, 2009

**EVALUATION CENTER**  
Intertek  
8431 Murphy Drive  
Middleton, WI 53562

**RENDERED TO**

**Southwest Fireproofing Products Co.**  
**5119 Edith Blvd. NE**  
**Albuquerque, NM 87107**

PRODUCT EVALUATED: 5GP cementitious fireproofing  
EVALUATION PROPERTY: ICC-ES AC 23: Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials as detailed in ASTM E759: Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members

**Report of Testing 5GP cementitious fireproofing for compliance with the applicable requirements of the following criteria: ICC-ES AC 23: Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials as detailed in ASTM E759: Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members**

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## 2 Introduction

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Intertek has conducted testing for Southwest Fireproofing Products Co. on Type 5GP cementitious fireproofing. Testing was conducted in accordance with ASTM E 759-92 (Reapproved 2005) Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members. This evaluation began April 14, 2009 and was completed September 21, 2009.

The thickness and density of the tested specimens were determined in accordance with ASTM E 605 – 93 (Reapproved 2006) Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.

Results are reported in accordance with the ASTM Standard specified above and compared to the conditions of acceptance provided in ICBO Evaluation Service, Inc. publication AC23, "Acceptance Criteria For Spray-Applied Fire-Protection Materials".

## 3 Test Samples

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### 3.1. SAMPLE SELECTION

The products to be tested arrived by commercial carrier shipment from Southwest Fireproofing Products Co. in factory packed bags with inspection agency labels. The required mixing of materials and spray application to the specified test substrate was performed by the client with Intertek observation at the Intertek Evaluation Center.

Aluminum sulfate hydrate (alum) solution was prepared with 6.39 lbs of alum and 10 lbs of water. The alum was dissolved in water and the solution filtered for injection at nozzle to accelerate gypsum set.

### 3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The dry fireproofing material as removed from bags was mixed with water to produce a coherent pump able slurry. The mixed material was transferred to the hopper of a pump and pumped to a spray nozzle at the end of the hose. Alum solution was injected into the slurry within the hose close to the nozzle and the slurry was dispensed through the spray nozzle orifice with air injected through an air stem for dispersion.

The product identification, material weight, mix water used and the substrate of application are identified in the following table.

Product - Bag No.	Net material weight (lbs)	Water added (lbs)	Substrate of Application
Type 5GP - Bag 2	46.5	88	Cellular roof deck assembly per ASTM E 759

---

## 4 Testing and Evaluation Methods

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The samples cured for 30 days at nominal conditioning levels.

### 4.1. TEST STANDARD 1 – E759

The substrate was a cellular 1 1/2 inch galvanized deck assembly with a flat surface, with no sprayed fire-resistive material applied to an area 13-in from each end of the specimen to allow the steel deck to bear directly on the supports. The sample was conditioned at a standard temperature and humidity until cured and dry. The fireproofing thickness is 3/4-in minimum per criteria. The sample was handled with special care to avoid impact or deflection before testing due to its size and weight.

The sample was placed on the test supports with the sprayed fire-resistive material as the lower surface. The initial reading of the dial micrometer was recorded prior to the application of the load, and deformation was recorded as the load (a bearing block) was applied to the upper face of the specimen.

### 4.2. TEST STANDARD 2 – E605

Thickness of each sample was determined by inserting the penetrating pin of the thickness gage perpendicular into the sprayed fire-resistive material. When the pin touched the surface of the substrate, the disk was moved to the surface of the sprayed fire-resistive material with sufficient force to register the average plane. The gage was withdrawn to read the thickness.

The densities of the tested materials were determined by removing all of the in-place material from the substrate within a measured test area of the sample, conditioning the removed material as specified by the Standard and calculating the density from the thickness, area and weight.

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## 5 Testing and Evaluation Results

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### 5.1. RESULTS AND OBSERVATIONS

#### E759 – Effect of Deflection

Prior to testing, the fireproofing was inspected for general appearance and condition. It was firm and monolithic with no observable defects. After deflection of the deck 1/120 of the deck span, the fireproofing had no change in appearance. Observation for cracking is not specified in the ASTM Standard, but was added at the sponsors request to provide information specified in ICC-ES AC23. Test results are tabulated below.

Sample Tested	Fireproofing Thickness (in.)	Density (lbs/ft <sup>3</sup> )	Appearance after testing
5 GP	0.75	14.74	No change in appearance No spalling, delamination or cracking



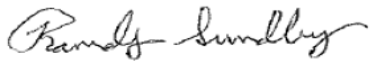
## 6 Conclusion


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Intertek has conducted testing for Southwest Fireproofing Products Co. on 5GP cementitious fireproofing. Testing was conducted in accordance with ICC-ES, following the standard methods of AC 23: *Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials* as detailed in ASTM E759: *Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members*. This evaluation began April 14, 2009 and was completed September 21, 2009.

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

### INTERTEK

Reported by:   
Randy Sundby  
**Project Engineer, Construction Products**

Reviewed by:   
Rhonda Byrne  
**Operations Manager**

---



Southwest Fireproofing Products Co.  
Project No. 3171245MID-022

October 23, 2009  
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## APPENDIX A

### Test Data

## ASTM E759 DATA SHEET

Project #: 3171245

Client: SWF

Date: 4/13/09

Tech/Reviewer: Randy

Sample: 5GP

Temp: 73.9 F

Thickness of SFRM: 3/4 in minimum

Density of SFRM: 14.74 (lbs/ft<sup>3</sup>)

Place the specimen on the test supports with the SFRM as the lower surface.

Measure the deflection of the specimens and record the deformations as the load is applied.

Apply a vertical center load to the upper face of the specimen by means of a bearing block to develop a deflection of 1/120 of the clear span, that is, 1 inch.

Load applied. 5GP 942 lbs

Describe the final physical condition and appearance of the SFRM after Defection:  
Appearance did not change.

Note any spalling, delamination, cracking: No Cracking, spalling, delamination

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## REVISION SUMMARY

<b>DATE</b>	<b>SUMMARY</b>
October 23, 2009	Original

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**REPORT NUMBER: 3171245MID-022**  
ORIGINAL ISSUE DATE: October 23, 2009

**EVALUATION CENTER**  
Intertek  
8431 Murphy Drive  
Middleton, WI 53562

**RENDERED TO**

**Southwest Fireproofing Products Co.**  
**5119 Edith Blvd. NE**  
**Albuquerque, NM 87107**

PRODUCT EVALUATED: 5GP cementitious fireproofing  
EVALUATION PROPERTY: ASTM E937: Standard Test Method for Corrosion  
of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural  
Members

**Report of Testing 5GP cementitious fireproofing for compliance with the  
applicable requirements of the following criteria: *ASTM E937: Standard  
Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material  
(SFRM) Applied to Structural Members***

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## 2 Introduction

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Intertek has conducted testing for Southwest Fireproofing Products Co. on Type 5GP cementitious fireproofing. Testing was conducted in accordance with ASTM E 937-93 (Reapproved 2005) Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members. This evaluation began April 14, 2009 and was completed September 21, 2009.

The thickness and density of the tested specimens were determined in accordance with ASTM E 605 – 93 (Reapproved 2006) Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members. Results are reported in accordance with the ASTM Standard specified above.

## 3 Test Samples

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### 3.1. SAMPLE SELECTION

The products to be tested arrived by commercial carrier shipment from Southwest Fireproofing Products Co. in factory packed bags with inspection agency labels. The required mixing of materials and spray application to the specified test substrate was performed by the client with Intertek technical personnel observation at the Intertek Evaluation Center. Aluminum sulfate hydrate (alum) solution was prepared with 6.39 lbs of alum and 10 lbs of water. The alum was dissolved in water and the solution filtered for injection at nozzle to accelerate gypsum set.

### 3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The SFRM was applied in accordance with the manufacturer's published instructions and were representative of application in the field. The dry fireproofing material as removed from bags was mixed with water to produce a coherent pumpable slurry. The mixed material was transferred to the hopper of a pump and pumped to a spray nozzle at the end of the hose. Alum solution was injected into the slurry within the hose close to the nozzle and the slurry was dispensed through the spray nozzle orifice with air injected through an air stem for dispersion.

The product identification, material weight, mix water used and the substrate of application are identified in the following table. The product was prepared and conditioned for testing in the as sprayed surface condition. No finishing techniques such as tamping, troweling, surface sealing or similar operations were made.

Product	Substrate of Application
Type 5GP	Bare, coated and galvanized steel plates per ASTM E 937

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## 4 Testing and Evaluation Methods

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The samples cured for 30 days at nominal conditioning levels.

### 4.1. TEST STANDARD – E937

The substrates were twelve each 12-gauge plates measuring 8" x 8", four sheets were in each set of bare, shop coated and galvanized. Samples I and III of each set were conditioned for 240 hours and samples II and IV of each set were conditioned for 240 hours. The fireproofing thickness was 3/4" +/- 1/8". The samples were handled with special care to accommodate safe handling.

Each sheet of each set was weighed to the nearest 0.1 g and recorded as IA, IIA, IIIA and IVA. The edges and the sides opposite the fireproofing of each sheet were protected with a suitable coating. The sprayed fire-resistive material and protective coating were removed from the steel sheets identified as I and III from each set. All surface rust was removed from I and III of each set with a wire brush and cleaned with solvent. Sheets I and III of each set were weighed and recorded as Ib and IIIb. The remaining sheets, specimens II and IV of each set, were placed in the temperature humidity cabinet and kept at 95 +/- 3 0F and a 95 +/- 3% relative humidity for 240 hours. After 240 hours elapsed, the specimens were removed from the cabinet. The surface rust, sprayed fire-resistive material and protective coating were removed with a wire brush and cleaned with solvent. The sheets were weighed to the nearest 0.1 g and recorded as IIb and IVb.

### 4.2. TEST STANDARD 2 - ASTM E 605

Thickness of the applied material was determined by inserting the penetrating pin of the thickness gage perpendicular into the sprayed fire-resistive material. When the pin touched the surface of the substrate, the disk was moved to the surface of the sprayed fire-resistive material with sufficient force to register the average plane. The gage was withdrawn to read the thickness.

The density of the material was determined from separate sample plates prepared at the same time as the test samples by removing all of the in-place material from the substrate within a measured test area of the sample, conditioning the removed material as specified by the Standard and calculating the density from the thickness, area and weight.

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## 5 Testing and Evaluation Results

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### 5.1. RESULTS AND OBSERVATIONS

Initial weights of the four test plates in each of the three sets, final weights of two of the test plates in each set (sets I and III), and final weights of the other two test plates in each set (sets II and IV) were determine as specified in the standard. Data for Southwest Fireproofing Type 5GP are tabulated below. The fireproofing was applied at a thickness of 3/4 inch and density of 14.06 pcf. The weight loss of each set expressed in g/ mm<sup>2</sup> is tabulated below.

#### E937 – Corrosion of Steel

	<i>Initial Weights (g)</i>			<i>Final Weights (g)</i>		
	<b>Bare</b>	<b>Coated</b>	<b>Gal. Steel</b>	<b>Bare</b>	<b>Coated</b>	<b>Gal. Steel</b>
<b>I</b>	802.9	801.6	822.9	800.7	800.8	822.5
<b>II</b>	798.7	813.4	822.9	797.1	812.7	821.5
<b>III</b>	801.2	805.6	828.6	799.3	805.2	828.0
<b>IV</b>	797.3	814.5	816.3	796.2	813.8	815.4

	<i>Average Weight Loss (g/mm<sup>2</sup>)</i>		
	<b>Bare</b>	<b>Coated</b>	<b>Gal. Steel</b>
<b>I</b>	0.0000533	0.0000194	0.0000097
<b>II</b>	0.0000388	0.0000170	0.0000339
<b>III</b>	0.0000460	0.0000097	0.0000145
<b>IV</b>	0.0000266	0.0000170	0.0000218

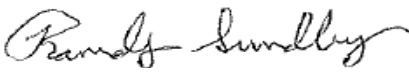
## 6 Conclusion

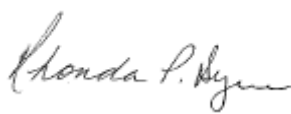
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Intertek has conducted testing for Southwest Fireproofing Products Co. on 7GP, 5GP, 5MD and 7HD cementitious fireproofing. Testing was conducted in accordance with ICC-ES, following the standard methods of AC 23: *Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials* as detailed in ASTM E937: *Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members*. This evaluation began April 14, 2009 and was completed September 21, 2009.

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

### INTERTEK

Reported by:   
Randy Sundby  
**Project Engineer, Construction Products**

Reviewed by:   
Rhonda Byrne  
**Operations Manager**

---



Southwest Fireproofing Products Co.  
Project No. 3171245MID-022

October 23, 2009  
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## APPENDIX A

### Test Data

**Test: Corrosion of Steel by Spray Fire-Resistive Material (SFRM) Applied to Structural Members**

Test Date: Room Temp Corrosion on 4.23.09 Humidified Corrosion on 4.30.09

Client: Southwest Fireproofing

Project #: 3171245

Product: 5GP

Date of Manufacture: Prepared on 3.3.09

Test Standard(s): ASTM E937-93 (2005) - *Standard Test Method for Corrosion of Steel by SFRM Applied to Structural Members*

Conditioning: *Samples I & III: 20 days at 68 ± 9°F and a Relative Humidity < 60%*

*Samples II & IV: 240 hours at 95 ± 3°F and a Relative Humidity of 95 ± 3%*

Equipment: Scale: Ohaus Scout Pro 4001 - MID Asset #1120 (Calibration due 11/18/09)

*Conditioning: Cincinnati Sub-Zero Z32+ Environmental Chamber - MID Asset #1059 (Cal. due 11/10/09)*

Area of Sheet: 64 in<sup>2</sup> 41290.24 mm<sup>2</sup>

	Initial Weights (g)			Final Weights (g)		
	Bare	Coated	Gal. Steel	Bare	Coated	Gal. Steel
I	802.9	801.6	822.9	800.7	800.8	822.5
II	798.7	813.4	822.9	797.1	812.7	821.5
III	801.2	805.6	828.6	799.3	805.2	828.0
IV	797.3	814.5	816.3	796.2	813.8	815.4

	Average Weight Loss (g/mm <sup>2</sup> )		
	Bare	Coated	Gal. Steel
I	0.0000533	0.0000194	0.0000097
II	0.0000388	0.0000170	0.0000339
III	0.0000460	0.0000097	0.0000145
IV	0.0000266	0.0000170	0.0000218



## REVISION SUMMARY

<b>DATE</b>	<b>SUMMARY</b>
October 23, 2009	Original

---

**REPORT NUMBER: 3171245MID-022**  
ORIGINAL ISSUE DATE: October 23, 2009

**EVALUATION CENTER**

Intertek  
8431 Murphy Drive  
Middleton, WI 53562

**RENDERED TO**

**Southwest Fireproofing Products Co.**  
**5119 Edith Blvd. NE**  
**Albuquerque, NM 87107**

PRODUCT EVALUATED: 5GP cementitious fireproofing  
EVALUATION PROPERTY: ICC-ES AC 23: Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials as detailed in ASTM E760: Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members

**Report of Testing 5GP cementitious fireproofing for compliance with the applicable requirements of the following criteria: ICC-ES AC 23: Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials as detailed in ASTM E760: Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members**

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## 2 Introduction

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Intertek has conducted testing for Southwest Fireproofing Products Co. on Type 5GP cementitious fireproofing. Testing was conducted in accordance with ASTM E 760 - 92 (Reapproved 2005) Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members. This evaluation began April 14, 2009 and was completed September 21, 2009.

The thickness and density of the tested specimens were determined in accordance with ASTM E 605 – 93 (Reapproved 2006) Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.

Results are reported in accordance with the ASTM Standard specified above and compared to the conditions of acceptance provided in ICBO Evaluation Service, Inc. publication AC23, "Acceptance Criteria For Spray-Applied Fire-Protection Materials".

## 3 Test Samples

---

### 3.1. SAMPLE SELECTION

The products to be tested arrived by commercial carrier shipment from Southwest Fireproofing Products Co. in factory packed bags with inspection agency labels. The required mixing of materials and spray application to the specified test substrate was performed by the client with Intertek observation at the Intertek Evaluation Center.

Aluminum sulfate hydrate (alum) solution was prepared with 6.39 lbs of alum and 10 lbs of water. The alum was dissolved in water and the solution filtered for injection at nozzle to accelerate gypsum set.

### 3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The dry fireproofing material as removed from bags was mixed with water to produce a coherent pumpable slurry. The mixed material was transferred to the hopper of a pump and pumped to a spray nozzle at the end of the hose. Alum solution was injected into the slurry within the hose close to the nozzle and the slurry was dispensed through the spray nozzle orifice with air injected through an air stem for dispersion.

The product identification, material weight, mix water used and the substrate of application are identified in the following table.

Product - Bag No.	Net material weight (lbs)	Water added (lbs)	Substrate of Application
Type 5GP - Bag 1	45.5	87	Concrete deck assembly per ASTM E 760

---



## 4 Testing and Evaluation Methods

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The samples cured for 30 days at nominal conditioning levels.

### 4.1. TEST STANDARD 1 – ASTM E760

The substrate was a cellular deck assembly with concrete topping and a galvanized flat surface. The sample was conditioned at a standard temperature and humidity until cured and dry. The fireproofing thickness is 3/4" minimum per criteria. The sample was handled with special care to avoid impact before testing due to its size and weight.

The specimen was placed on the test supports with the sprayed fire-resistive material as the lower surface and the concrete as the upper surface. The 60-lb. leather bag filled with shot was hoisted to a height of 4 ft, measured from the upper face of the specimen to the bottom of the bag. The bag was dropped, thus applying an impact load once to the middle of the upper face of the specimen.

### 4.2. TEST STANDARD 2 – ASTM E605

Thickness of each sample was determined by inserting the penetrating pin of the thickness gage perpendicular into the sprayed fire-resistive material. When the pin touched the surface of the substrate, the disk was moved to the surface of the sprayed fire-resistive material with sufficient force to register the average plane. The gage was withdrawn to read the thickness.

The densities of the tested materials were determined by removing all of the in-place material from the substrate within a measured test area of the sample, conditioning the removed material as specified by the Standard and calculating the density from the thickness, area and weight.

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## 5 Testing and Evaluation Results

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### 5.1. RESULTS AND OBSERVATIONS

#### E760 – Effect of Impact on Bonding

Prior to testing, the fireproofing was inspected for general appearance and condition. It was firm and monolithic with no observable defects. After testing, specimen had no change in appearance. Test results are tabulated below.

Sample Tested	Fireproofing Thickness (in.)	Density (lbs/ft <sup>3</sup> )	Appearance after testing
5 GP	0.75	14.7	No change in appearance No spalling, delamination or cracking

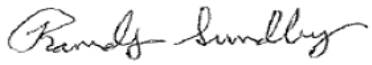
## 6 Conclusion


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Intertek has conducted testing for Southwest Fireproofing Products Co. on 5GP cementitious fireproofing. Testing was conducted in accordance with ICC-ES, following the standard methods of AC 23: *Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials* as detailed in ASTM E760: *Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members*. This evaluation began April 14, 2009 and was completed September 21, 2009.

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

### INTERTEK

Reported by:   
Randy Sundby  
**Project Engineer, Construction Products**

Reviewed by:   
Rhonda Byrne  
**Operations Manager**

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Southwest Fireproofing Products Co.  
Project No. 3171245MID-022

October 23, 2009  
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## APPENDIX A

### Test Data

## ASTM E760 DATA SHEET

Project #: 3171245

Client: SWF

Date: 4/13/09

Tech/Reviewer: Randy

Sample: .5GP

Temp: 73.9 F

Weight of bag (Asset # 1137): 60 lbs

Cal. Due date: N/A

Thickness of SFRM: 3/4 in minimum

Density of SFRM: 14.74 (lbs/ft<sup>3</sup>)

Place the specimen on the test supports with the SFRM as the lower surface and the concrete as the upper surface.

Hoist the impact bag to a height of 4 feet (1.2 m) as measured from the upper face of the specimen to the bottom of the impact bag.

Apply an impact load once to the middle of the upper face of the specimen by dropping the impact bag.

Describe the final physical condition and appearance of the SFRM after impact: Appearance did not change.

Note any spalling, delamination, cracking: No Cracking, spalling, delamination

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## REVISION SUMMARY

<b>DATE</b>	<b>SUMMARY</b>
October 23, 2009	Original

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**REPORT NUMBER: 3171245MID-022**  
ORIGINAL ISSUE DATE: October 23, 2009

**EVALUATION CENTER**  
Intertek  
8431 Murphy Drive  
Middleton, WI 53562

**RENDERED TO**

**Southwest Fireproofing Products Co.**  
**5119 Edith Blvd. NE**  
**Albuquerque, NM 87107**

PRODUCT EVALUATED: 5MD cementitious fireproofing  
EVALUATION PROPERTY: ICC-ES AC 23: Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials as detailed in ASTM E736: Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members

**Report of Testing 5MD cementitious fireproofing for compliance with the applicable requirements of the following criteria: ICC-ES AC 23: *Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials* as detailed in ASTM E736: *Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members***

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5.1.	RESULTS AND OBSERVATIONS.....	5
6	CONCLUSION .....	6

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## 2 Introduction

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Intertek has conducted testing for Southwest Fireproofing Products Co. on Type 5MD cementitious fireproofing. Testing was conducted in accordance with ASTM E 736 - 00 (Reapproved 2006) Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members. This evaluation began April 14, 2009 and was completed September 21, 2009.

The thickness and density of the tested specimens were determined in accordance with ASTM E 605 – 93 (Reapproved 2006) Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.

Results are reported in accordance with the ASTM Standard specified above and compared to the conditions of acceptance provided in ICBO Evaluation Service, Inc. publication AC23, "Acceptance Criteria For Spray-Applied Fire-Protection Materials".

## 3 Test Samples

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### 3.1. SAMPLE SELECTION

The products to be tested arrived by commercial carrier shipment from Southwest Fireproofing Products Co. in factory packed bags with inspection agency labels. The required mixing of materials and spray application to the specified test substrate was performed by the client with Intertek observation at the Intertek Evaluation Center.

Aluminum sulfate hydrate (alum) solution was prepared with 6.39 lbs of alum and 10 lbs of water. The alum was dissolved in water and the solution filtered for injection at nozzle to accelerate gypsum set.

### 3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The dry fireproofing material as removed from bags was mixed with water to produce a coherent pumpable slurry. The mixed material was transferred to the hopper of a pump and pumped to a spray nozzle at the end of the hose. Alum solution was injected into the slurry within the hose close to the nozzle and the slurry was dispensed through the spray nozzle orifice with air injected through an air stem for dispersion.

The product identification, material weight, mix water used and the substrate of application are identified in the following table.

Product - Bag No.	Net material weight (lbs)	Water added (lbs)	Substrate of Application
Type 5MD - Bag 3	58	95	Steel plates per ASTM E 736

---

## 4 Testing and Evaluation Methods

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The samples cured for 30 days at nominal conditioning levels.

### 4.1. TEST STANDARD 1 – ASTM E736

The substrate was a 16 gauge galvanized steel sheet measuring 12" x 12". The sample was conditioned at 72 hours at a room temperature of 68 +/- 18 °F followed by oven drying at 110 +/- 10°F at humidity not exceeding 60% until a constant weight was reached. The fireproofing thickness is 1/2" to 1". The sample was restrained to prevent flexing during the test. The hook and pulling force was centered in the cap.

Adhesive was applied at sufficient volume to secure the plug, and the plug was placed against the surface of the sprayed fire-resistive material. The cap was supported until the adhesive dried, and any excess adhesive was removed. The sample was placed with the sprayed fire-resistive material facing up, and restrained to prevent movement and flexing. A scale with hook was engaged and exerted an increasing force perpendicular to the surface until failure occurred.

### 4.2. TEST STANDARD 2 – ASTM E605

Thickness of each sample was determined by inserting the penetrating pin of the thickness gage perpendicular into the sprayed fire-resistive material. When the pin touched the surface of the substrate, the disk was moved to the surface of the sprayed fire-resistive material with sufficient force to register the average plane. The gage was withdrawn to read the thickness.

The densities of the tested materials were determined by removing all of the in-place material from the substrate within a measured test area of the sample, conditioning the removed material as specified by the Standard and calculating the density from the thickness, area and weight.

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## 5 Testing and Evaluation Results

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### 5.1. RESULTS AND OBSERVATIONS

#### E736 – Cohesion / Adhesion

Test results including the applied force, cup diameter, calculated Adhesive/Cohesive force, failure mode and the sample thickness and density are tabulated below. The density of the sample was determined on a second plate sprayed with the same batch of wet material prepared at the same time as the test sample.

The specified 3 1/4 inch bottle screw cap called for by the ASTM Standard Procedure was replaced by the 1 3/8 inch wood disk described in Appendix B of AWCI Technical Manual 12-A for fireproofing having bond strengths exceeding 1,146 psf.

Sample Tested	Applied force (lbf)	Cap diameter (in)	Cohesive Adhesive force (psf)	Mode of failure	Thickness (in.)	Density (lbs/ft <sup>3</sup> )
5 MD	41.20916	1 3/8	3996	Cohesive	0.75 avg	22.42

## 6 Conclusion

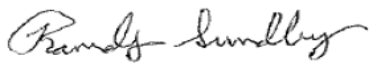
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The Adhesive/Cohesive force at failure of the tested material is 3996 pounds per square foot. This exceeds the 150 psf or 20 times the weight of the fireproofing requirement of ICC-ES AC23 acceptance criteria for this physical property.

Intertek has conducted testing for Southwest Fireproofing Products Co. Type 5MD cementitious fireproofing. Testing was conducted in accordance ASTM E 736 - 00 (Reapproved 2006) Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members. This evaluation began April 14, 2009 and was completed September 21, 2009.

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

### INTERTEK

Reported by:   
Randy Sundby  
**Project Engineer, Construction Products**

Reviewed by:   
Rhonda Byrne  
**Operations Manager**

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Southwest Fireproofing Products Co.  
Project No. 3171245MID-022

October 23, 2009  
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## APPENDIX A

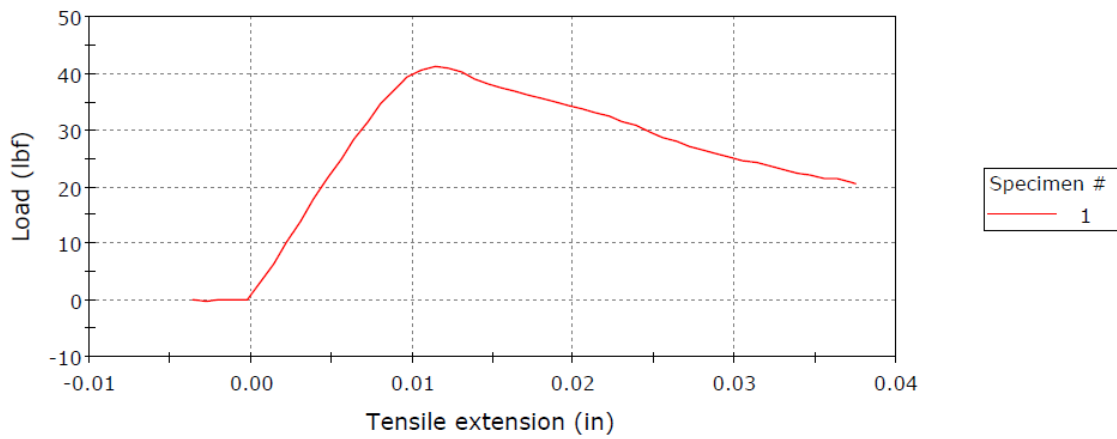
### Test Data

Southwest Fireproofing Products Company  
Project #3171245  
April 15, 2009

ASTM E736: Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members

Type 5MD  
Substrate: 16ga Galvanized Steel Sheet, 12"x12"  
Fireproofing Thickness: 1/2" to 1"

Specimen 1 to 1



	Maximum Load (lbf)
1	41.20916
Mean	41.20916



## REVISION SUMMARY

<b>DATE</b>	<b>SUMMARY</b>
October 23, 2009	Original

---

**REPORT NUMBER: 3171245MID-022**  
ORIGINAL ISSUE DATE: October 23, 2009

**EVALUATION CENTER**  
Intertek  
8431 Murphy Drive  
Middleton, WI 53562

**RENDERED TO**

**Southwest Fireproofing Products Co.**  
**5119 Edith Blvd. NE**  
**Albuquerque, NM 87107**

PRODUCT EVALUATED: 5GP cementitious fireproofing  
EVALUATION PROPERTY: ICC-ES AC 23: Acceptance Criteria for Spray-  
Applied and Intumescent Mastic Coating Fire-Protection Materials  
ASTM E 859-93 (Reapproved 2006) Air Erosion of Sprayed Fire-Resistive  
Materials

**Report of Testing 5GP cementitious fireproofing for compliance with the applicable requirements of the following criteria: ICC-ES AC 23: Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials as detailed in. ASTM E 859-93 (Reapproved 2006) Air Erosion of Sprayed Fire-Resistive Materials**

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## **2 Introduction**

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Intertek has conducted testing for Southwest Fireproofing Products Co. on Type 7GP cementations fireproofing. Testing was conducted in accordance with ASTM E 859-93 (Reapproved 2006) Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to Structural Members. This evaluation began April 14, 2009 and was completed September 21, 2009.

The thickness and density of the tested specimens were determined in accordance with ASTM E 605 – 93 (Reapproved 2006) Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.

Results are reported in accordance with the ASTM Standard specified above and compared to the conditions of acceptance provided in ICBO Evaluation Service, Inc. publication AC23, "Acceptance Criteria For Spray-Applied Fire-Protection Materials".

## **3 Test Samples**

---

### **3.1. SAMPLE SELECTION**

The products to be tested arrived by commercial carrier shipment from Southwest Fireproofing Products Co. in factory packed bags with inspection agency labels. The required mixing of materials and spray application to the specified test substrate was performed by the client with Intertek technical personnel observation at the Intertek Evaluation Center.

Aluminum sulfate hydrate (alum) solution was prepared with 6.39 lbs of alum and 10 lbs of water. The alum was dissolved in water and the solution filtered for injection at nozzle to accelerate gypsum set.

### **3.2. SAMPLE AND ASSEMBLY DESCRIPTION**

The SFRM was applied in accordance with the manufacturer's published instructions and were representative of application in the field. The dry fireproofing material as removed from bags was mixed with water to produce coherent pump able slurry. The mixed material was transferred to the hopper of a pump and pumped to a spray nozzle at the end of the hose. Alum solution was injected into the slurry within the hose close to the nozzle and the slurry was dispensed through the spray nozzle orifice with air injected through an air stem for dispersion.

The product identification, material weight, mix water used and the substrate of application are identified in the following table. The product was prepared and conditioned for testing in the as sprayed surface condition. No finishing techniques such as tamping, toweling, surface sealing or similar operations were made.

---

Product	Substrate of Application
Type 5GP	Rigid plates per ASTM E 859

## 4 Testing and Evaluation Methods

---

The samples cured for 30 days at nominal conditioning levels.

### 4.1. TEST STANDARD 1 –ASTM E859

The substrate was a rigid plate to cover a 4 square foot duct opening with a minimum 2 inch edge overlap. The sample was cured and dried to a constant weight. The fireproofing thickness is 3/4" +/- 1/8". The sample was handled with special care to avoid damage to the fireproofing surface.

After following the procedure for E605 (below), the first sample was measured to determine the thickness and density. The collecting filter was dried at 120f for one hour, weighed and placed in the apparatus. The second sample was placed into the duct opening so the face of the sample and inside face of the duct are flush and in the same plane. The tube was placed 4-in. from the upstream edge of the sample at the center line of the duct and 2-in. below the top side of the duct. The blower was maintained at a velocity of 20 ft/sec. At 1, 6 and 24 hours, the blower was stopped. The collecting filter was removed, folded and dried at 120f. The test was continued until a constant weight was reached.

### 4.2. TEST STANDARD 2 –ASTM E605

Thickness of the duplicate sample was determined by inserting the penetrating pin of the thickness gage perpendicular into the sprayed fire-resistive material. When the pin touched the surface of the substrate, the disk was moved to the surface of the sprayed fire-resistive material with sufficient force to register the average plane. The gage was withdrawn to read the thickness.

The density of the materials on the duplicate sample was determined by removing all of the in-place material from the substrate within a measured test area of the sample, conditioning the removed material as specified by the Standard and calculating the density from the thickness, area and weight.

---

## 5 Testing and Evaluation Results

---

### 5.1. RESULTS AND OBSERVATIONS

#### E859 – Air Erosion

A weight of the collecting filter before and after each test period is tabulated below along with the accumulative weight gains and the tested specimen thickness and density. Calculation of sample weight loss per square foot is not specified in the ASTM Standard, but was added at the sponsors request to provide information specified in ICC-ES AC23. Test results are tabulated below.

Type 5GP Filter weights	Weight prior to test (g)	Weight after 1hour (g)	Weight prior to test (g)	Weight after 6 hours (g)	Weight prior to test (g)	Weight after 24 hours (g)	Thickne ss (in.)	Density (lbs/ft3)
Original test	11.465	11.487	11.482	11.499	11.499	11.499	0.75	14.06
Weight gain	NA	0.022	NA	0.017	NA	0	NA	NA
Accumulative weight gain	NA	0.022	NA	0.039	NA	0.039	NA	NA
Sample weight loss g/sq.ft.	NA	0.006	NA	0.009	NA	0.009	NA	NA

## 6 Conclusion

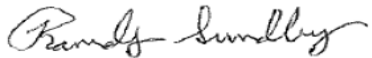
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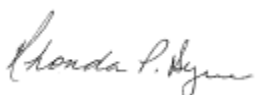
Intertek has conducted testing for Southwest Fireproofing Products Co. on Type 7GP cementations fireproofing. Testing was conducted in accordance with ASTM E 859-93 (Reapproved 2006) Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to Structural Members. This evaluation began April 14, 2009 and was completed September 21, 2009.

The thickness and density of the tested specimens were determined in accordance with ASTM E 605 – 93 (Reapproved 2006) Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.

Results are reported in accordance with the ASTM Standard specified above and compared to the conditions of acceptance provided in ICBO Evaluation Service, Inc. publication AC23, "Acceptance Criteria For Spray-Applied Fire-Protection Materials".

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

Reported by:   
Randy Sundby  
**Project Engineer, Construction Products**

Reviewed by:   
Rhonda Byrne  
**Operations Manager**

---



Southwest Fireproofing Products Co.  
Project No. 3171245MID-022

October 23, 2009  
Page 7 of 9

## APPENDIX A

### Test Data

## ASTM E859 DATA SHEET

Project #: 3171245 Client: SWF

Date: 4-14-09 Tech/Reviewer: RS/JT

Sample: 5GP Temp: 73°F, 35% R.H.

Scale (# 1045 ) cal due date: 2-4-10

Thickness of SFRM: 3/4 in minimum

Density of SFRM: 14.06 (lbs/ft<sup>3</sup>)

Weight of dried filter prior to test (grams): 11.465

Weight of dried filter after 1 hour (grams): 11.487

Weight of dried filter prior to test (grams): 11.482

Weight of dried filter after 6 hours (grams): 11.499

Weight of dried filter prior to test (grams): 11.499

Weight of dried filter after 24 hours (grams): 11.499

If the collecting filter continues to show a weight gain at 24 hours, continue the test, making measurements every 24 hours until a constant weight is reached.

---



## REVISION SUMMARY

<b>DATE</b>	<b>SUMMARY</b>
October 23, 2009	Original

---



**REPORT NUMBER: 3171245MID-022**  
ORIGINAL ISSUE DATE: June 11, 2010

**EVALUATION CENTER**

Intertek  
8431 Murphy Drive  
Middleton, WI 53562

**RENDERED TO**

**Southwest Fireproofing Products Co.**  
**5119 Edith Blvd. NE**  
**Albuquerque, NM 87107**

PRODUCT EVALUATED: 5MD cementitious fireproofing  
EVALUATION PROPERTY: ICC-ES AC 23: Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials as detailed in ASTM E761: Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members.

**Report of Testing 5MD cementitious fireproofing for compliance with the applicable requirements of the following criteria: ICC-ES AC 23: Acceptance Criteria for Spray-Applied and Intumescent Mastic Coating Fire-Protection Materials as detailed in ASTM E761: Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members.**

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---

## 2 Introduction

---

Intertek has conducted testing for Southwest Fireproofing Products Co. on Type 5MD cementitious fireproofing. Testing was conducted in accordance with ASTM E 761 - 92 (Reapproved 2005) Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members. This evaluation began April 14, 2009 and was completed June 11, 2010.

The thickness and density of the tested specimens were determined in accordance with ASTM E 605 – 93 (Reapproved 2006) Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.

Results are reported in accordance with the ASTM Standard specified above and compared to the conditions of acceptance provided in ICBO Evaluation Service, Inc. publication AC23, "Acceptance Criteria For Spray-Applied Fire-Protection Materials".

## 3 Test Samples

---

### 3.1. SAMPLE SELECTION

The products to be tested arrived by commercial carrier shipment from Southwest Fireproofing Products Co. in factory packed bags with inspection agency labels. The required mixing of materials and spray application to the specified test substrate was performed by the client with Intertek observation at the Intertek Evaluation Center.

Aluminum sulfate hydrate (alum) solution was prepared with 6.39 lbs of alum and 10 lbs of water. The alum was dissolved in water and the solution filtered for injection at nozzle to accelerate gypsum set.

### 3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The dry fireproofing material as removed from bags was mixed with water to produce a coherent pumpable slurry. The mixed material was transferred to the hopper of a pump and pumped to a spray nozzle at the end of the hose. Alum solution was injected into the slurry within the hose close to the nozzle and the slurry was dispensed through the spray nozzle orifice with air injected through an air stem for dispersion.

The product identification, material weight, mix water used and the substrate of application are identified in the following table.

Product - Bag No.	Net material weight (lbs)	Water added (lbs)	Substrate of Application
Type 5MD - Bag 1	58	95	Steel plates per ASTM E 761

---

## **4 Testing and Evaluation Methods**

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The samples cured for 30 days at nominal conditioning levels.

### **4.1. TEST STANDARD 1 – ASTM E761**

The substrate was a 16 gauge galvanized steel sheet measuring 7” x 24”. The sample was conditioned at 72 hours at a room temperature of 68 +/- 18°F followed by oven drying at 110 +/- 10°F at humidity not exceeding 60% until a constant weight was reached. The fireproofing thickness is a minimum of 3/4” with a variation of thickness less than or equal to +/- 1/8”. The surface was evened on opposite ends of the sample for testing.

The load (bearing block) of 0.1 psi was applied perpendicular to the face of the sample. The initial thickness, the distance between the plane bearing surface of the assembly and the steel plane, was recorded. The sample was compressed until a deformation of 10% or ultimate load was reached.

### **4.2. TEST STANDARD 2 – ASTM E605**

Thickness of each sample was determined by inserting the penetrating pin of the thickness gage perpendicular into the sprayed fire-resistive material. When the pin touched the surface of the substrate, the disk was moved to the surface of the sprayed fire-resistive material with sufficient force to register the average plane. The gage was withdrawn to read the thickness.

The densities of the tested materials were determined by removing all of the in-place material from the substrate within a measured test area of the sample, conditioning the removed material as specified by the Standard and calculating the density from the thickness, area and weight.

## **5 Testing and Evaluation Results**

---

### **5.1. RESULTS AND OBSERVATIONS**

#### **E761 – Compressive Strength**

<b>Sample Number</b>	<b>Compressive Load (lbf)</b>	<b>Compressive Strength (psi)</b>	<b>Maximum extension (in)</b>	<b>Mode of failure</b>	<b>Thickness (in.)</b>	<b>Density (lbs/ft<sup>3</sup>)</b>
5 MD (1)	2638.08157	73.28	.10073	Maximum extension	1.0	22.42
5 MD (2)	2537.19556	70.48	.10027	Maximum extension	1.0	22.42

---

## 6 Conclusion


---


The average compressive strength of the two determinations is 71.9 pounds per square inch. This equates to 10354 pounds per square foot which exceeds the 750 psf requirement of ICC-ES AC23 acceptance criteria for this physical property.

Intertek has conducted testing for Southwest Fireproofing Products Co. Type 5MD cementitious fireproofing. Testing was conducted in accordance ASTM E 761 - 92 (Reapproved 2005) Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members. This evaluation began April 14, 2009 and was completed June 11, 2010.

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

### INTERTEK

Reported by:   
Randy Sundby  
**Project Engineer, Construction Products**

Reviewed by:   
Rhonda Byrne  
**Operations Manager**  
Reviewer

---



Southwest Fireproofing Products Co.  
Project No. 3171245MID-022

June 11, 2010  
Page 6 of 8

## APPENDIX A

### Test Data

## ASTM E761 DATA SHEET

Project #: 3171245

Client: SWF

Date: 6/11/10

Tech/Reviewer: Randy

Sample: .5MD

Temp: 74.2 F

Thickness of SFRM: 1 inch.

Density of SFRM: 22.42 (lbs/ft<sup>3</sup>)

Mode of Failure: Maximum Extension

	Compressive load at Maximum Compressive extension (lbf)	Maximum Compressive extension (in)
1	2638.08157	0.10073
2	2537.19556	0.10027



## REVISION SUMMARY

<b>DATE</b>	<b>SUMMARY</b>
June 11, 2010	Original



**Intertek**

**TEST REPORT**

**ASTM E84-09**

**SURFACE BURNING  
CHARACTERISTICS  
OF BUILDING MATERIALS**

Report No. 3171245SAT-003A Rev.1

**Type 5GP Cementitious Fireproofing**

June 8, 2009

Prepared for:  
Southwest Fireproofing Products Co.  
5119 Edith Blvd.Ne  
Albuquerque, NM 87107

**Intertek Testing  
Services NA, Inc.**  
16015 Shady Falls Road  
Elmendorf, TX 78112  
(voice) 210-635-8100  
(fax) 210-635-8101  
[www.intertek-  
etlsemko.com](http://www.intertek-etlsemko.com)

*ABSTRACT*

Test Specimen:	Type 5GP Cementitious Fireproofing		
Test Standard:	ASTM E84-09		
Test Date:	May 07, 2009		
Test Sponsor:	Southwest Fireproofing Products Co.		
Test Results:	FLAME SPREAD INDEX	=	0
	SMOKE DEVELOPED INDEX	=	0
		=	N/A ft. Beyond Burners Centerline

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Teodoro Alvarado Jr  
E84 Operator

June 8, 2009

Reviewed and approved:

Miguel Zamarripa  
Project Manager

June 8, 2009



## I INTRODUCTION

This report describes the results of the ASTM E84-09 Standard Test Method for SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS, a method for determining the comparative surface burning behavior of building materials. This test is applicable to exposed surfaces, such as ceilings or walls, provided that the material or assembly of materials, by its own structural quality or the manner in which it is tested and intended for use, is capable of supporting itself in position or being supported during the test period.

The purpose of the method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame spread and smoke density developed are reported, however, there is not necessarily a relationship between these two measurements.

“The use of supporting materials on the underside of the test specimen may lower the flame spread index from that which might be obtained if the specimen could be tested without such support. This method may not be appropriate for obtaining comparative surface burning behavior of some cellular plastic materials. Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by testing materials that remain in place.”

This test method is also published under the following designations:

ANSI 2.5  
NFPA 255  
UBC 8-1 (42-1)  
UL 723

*This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.*

## II PURPOSE

The ASTM E84-09 (25 foot tunnel) test method is intended to compare the surface flame spread and smoke developed measurements to those obtained from tests of fiber cement board and select grade red oak flooring. The test specimen surface (18 inches wide and 24 feet long) is exposed to a flaming fire exposure during the 10 minute test duration, while flame spread over its surface and density of the resulting smoke are measured and recorded. Test results are presented as the computed comparisons to the standard calibration materials.

The furnace is considered under calibration when a 10 minute test of red oak decking will pass flame out the end of the tunnel in five minutes, 30 seconds, plus or minus 15 seconds. Fiber cement board forms the zero point for both flame spread and smoke developed indexes, while the red oak flooring smoke developed index is set as 100.

## III DESCRIPTION OF TEST SPECIMEN

Specimen Identification:	Type 5GP Cementitious Fireproofing
Date Received:	3/27/2009
Date Prepared:	3/27/2009
Conditioning (73°F & 50% R.H.):	41 days
Specimen Width (in):	24
Specimen Length (ft):	24
Specimen Thickness:	1.3400-in.
Material Weight:	N/A oz./sq. yd
Total Specimen Weight:	216-lbs.
Adhesive or coating application rate:	N/A

### Mounting Method:

The specimen was self-supporting and was placed directly on the inner ledges of the tunnel.

### Specimen Description:

The test specimen was described by the client as the "Type 5GP Cementitious Fireproofing received in bags with Underwriters Laboratories Inc. Labels. The Type 5GP was mixed with water and spray applied at the Intertek Laboratories to cement board Provided by Intertek with observation by laboratory personnel. Mixing and spraying used typical job site equipment and job experienced workmen. The samples were left with Intertek personnel for curing, conditioning and testing". The specimen consisted of (5) 5-ft. long x 24-in. wide x 1.3400-in. thick, panels. The specimen was identified by the client as "Type 5GP Cementitious Fireproofing." The samples were received in good condition.

**IV TEST PROCEDURE**

The tests were conducted in accordance with the procedures outlined in the American Society for Testing and Materials ASTM E84-09. The self-supporting specimens were placed directly on the tunnel ledges. As required by the standard, one or more layers of 0.25 inch thick reinforced concrete board was placed on top of the test sample between the sample and the tunnel lid. After the tests, the samples were removed from the tunnel, examined and disposed of.

The test was conducted on 5/7/2009, and not witnessed by any third parties.

**V TEST RESULTS**

The test results, computed on the basis of observed flame front advance and electronic smoke density measurements are presented in the following table. In recognition of possible variations and limitations of the test method, the results are computed to the nearest number divisible by five, as outlined in the test method for smoke developed index results greater than 200 the calculated value is rounded to the nearest 50 points.

*While no longer a part of this standard test method, the Fuel Contributed Value has been computed, and may be found on the computer printout sheet in the Appendix.*

Test Specimen	E84 (10 Minute) Flame Spread Index	E84 (10 Minute) Smoke Developed Index	NFPA 703 (30Minute) ft
Fiber Cement Board	0	0	N/A
Red Oak Flooring		100	N/A
Type 5GP Cementitious Fireproofing	0	0	N/A

The data sheets are included in the Appendix. These sheets are actual print-outs of the computerized data system which monitors the ASTM E84-09 apparatus, and contain all calibration and specimen data needed to calculate the test results.



## VI OBSERVATIONS

During the test, the specimen was observed to behave in the following manner: sample never ignited. The test continued for the 10:00 duration.

After the test the specimen was observed to be damaged as follows:

The panels were discolored from 0-ft. -4.5-ft. and no visible damage was seen from 4.5-ft. -24-ft.

# **APPENDIX**

## **ASTM E84-09**

### **Data Sheets**

# ASTM E84-09

Client: SOUTHWEST FIRE PROOFING  
Date: 5-7-09  
Project Number: 3171245SAT-003A Rev.1  
Test Number: 1  
Operator: TA/AM  
Specimen ID: TYPE 5 GP CEMENTITIOUS FIRE-PROOFING, CEMENT BOARD  
PRODUCT THE SPECIMEN WAS SELF-SUPPORTING.

## TEST RESULTS

FLAMESPREAD INDEX: 0  
SMOKE DEVELOPED INDEX: 0

## SPECIMEN DATA

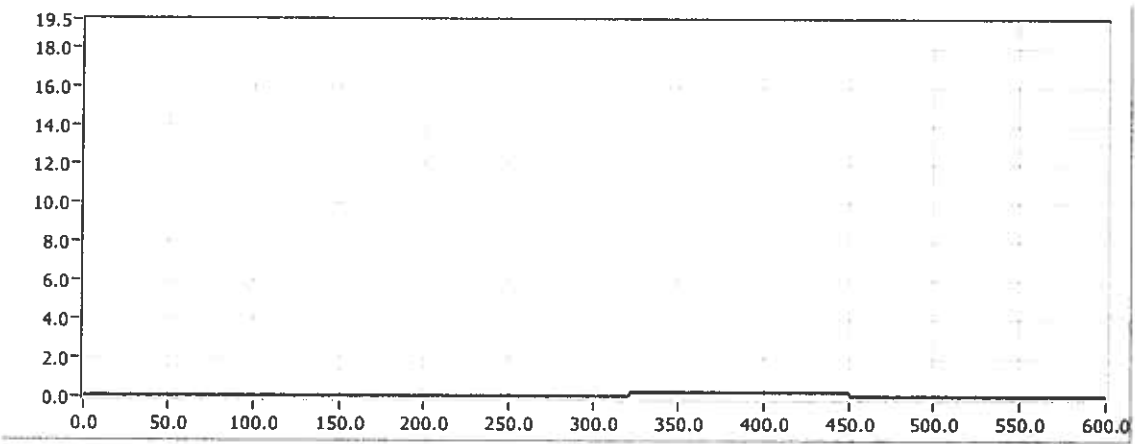
Time to Ignition (sec): 0  
Time to Max FS (sec): 327  
Maximum FS (feet): 0.3  
Time to 980 F (sec): Never Reached  
Time to End of Tunnel (sec): Never Reached  
Max Temperature (F): 587  
Time to Max Temperature (sec): 547  
Total Fuel Burned (cubic feet): 50.94  
  
FS\*Time Area (ft\*min): 1.6  
Smoke Area (%A\*min): 0.8  
Unrounded FSI: 0.8

## CALIBRATION DATA

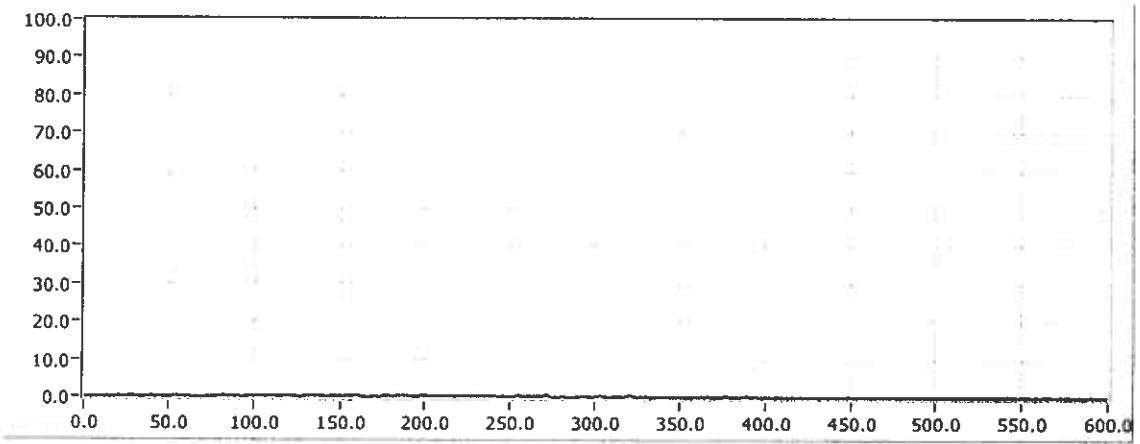
Time to Ignition of Last Red Oak (Sec): 39.0  
Red Oak Smoke Area (%A\*min): 111.0



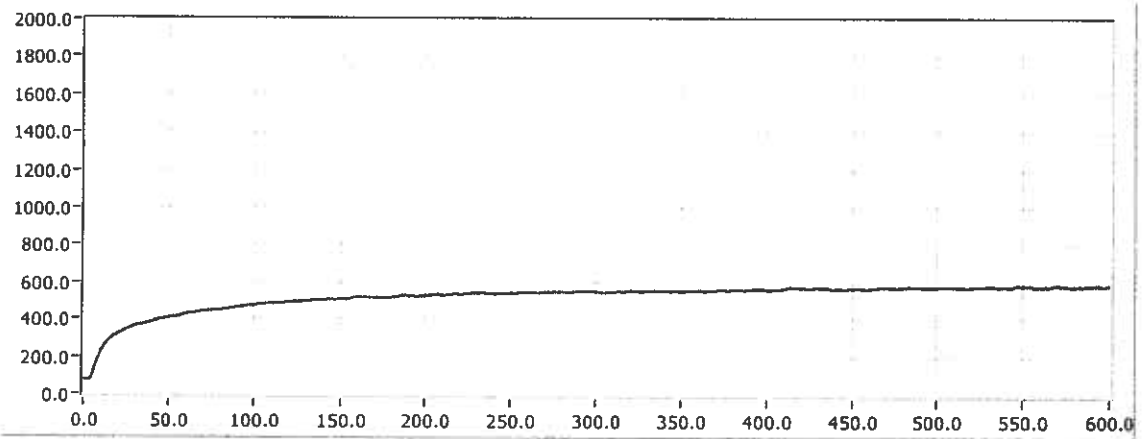
FLAME SPREAD (ft)



Smoke (%A)



Temperature (°F)



Time (sec)

600



**INTERNATIONAL SPECIALTY PRODUCTS**

# **BIOCIDES TECHNICAL SERVICE REPORT**

**ASTM G-21**

**“DETERMINING THE RESISTANCE OF  
SYNTHETIC POLYMERIC MATERIALS TO  
FUNGI”**

**TYPE 5MD**

**SOUTHWEST FIREPROOFING PRODUCTS  
COMPANY**

**CRM # 3807**

**DATE: 8/1/2007**

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## OBJECTIVE

To evaluate customer submitted Type 5MD with Nuocide 960 @ 0.025% for resistance to fungal defacement in accordance with ASTM G-21 entitled “*Determining the Resistance of Synthetic Polymeric Materials to Fungi*”.

## EXPERIMENTAL

The evaluation for resistance to fungal growth was performed in accordance with the American Society for Testing and Materials, Method G-21, entitled “*Determining Resistance of Synthetic Polymeric Materials to Fungi*”. Briefly, the samples were prepared as per customers mixing instructions. After mixing, the samples were poured into forms and allowed to dry for 48 hours. After drying, the samples were removed from the forms and placed on the surface of solidified potato dextrose agar plates and inoculated with a mixed fungal spore suspension containing *Aspergillus niger* (ATCC 9642), *Penicillium funiculosum* (ATCC 11797), *Chaetomium globosum* (ATCC 6205), *Gliocladium virens* (ATCC 9645), and *Aureobasidium pullulans* (ATCC 15233). All plates were incubated at 28° C, 85-90% relative humidity for four weeks. Observations of growth were recorded weekly.

## DISCUSSION

The results of the ASTM G-21 test are presented in Table I. Growth ratings are on a scale of “0” to “4” where “0” corresponds to no growth and “4” corresponds to heavy growth (60-100% coverage).

## CONCLUSION

Sample 1 No Nuocide 960 (Control) was susceptible to defacement.

Sample 2 With Nuocide 960 @ 0.025% provided complete resistance to fungal defacement.



## RESULTS

**TABLE I**

FUNGAL RESISTANCE EVALUATION ASTM G-21													
Sample ID#	Nuocide 960 Loading	Fungal Growth rating											
		Week #1			Week #2			Week #3			Week #4		
		<u>1</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>4</u>	<u>4</u>	<u>4</u>
#1	0.0%	0	0	0	3	3	3	3	3	3	3	3	3
#2	0.025%	0	0	0	0	0	0	0	0	0	0	0	0

Legend:

1. Growth Ratings:

- 0 = None
- 1 = Traces of Growth (less than 10%)
- 2 = Light Growth (10-30%)
- 3 = Medium Growth (30-60%)
- 4 = Heavy Growth (60% to complete coverage)

2. The samples were tested in triplicate.



**Testing carried out  
by:**

Name: Daniel H. Brown

Position: Senior Microbiologist

**Project Dates:**

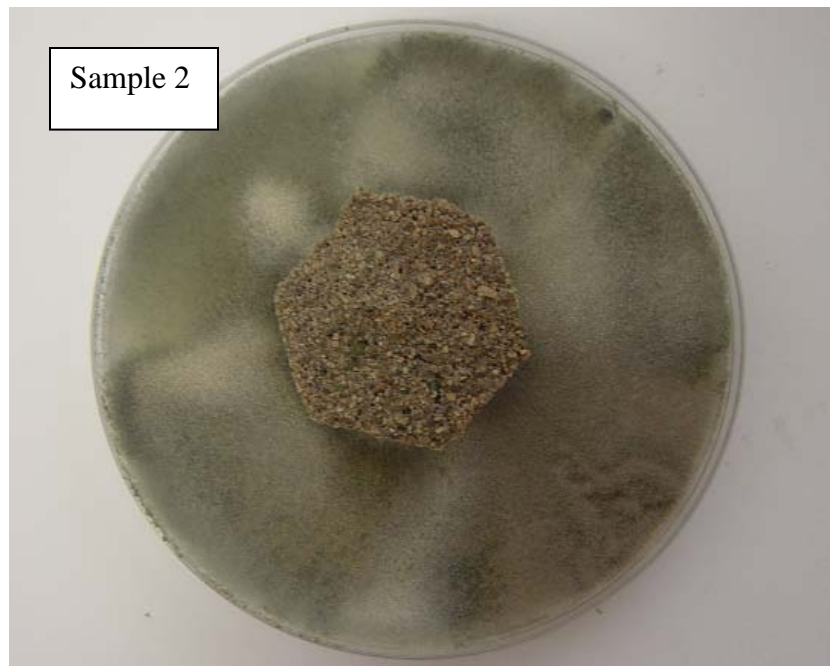
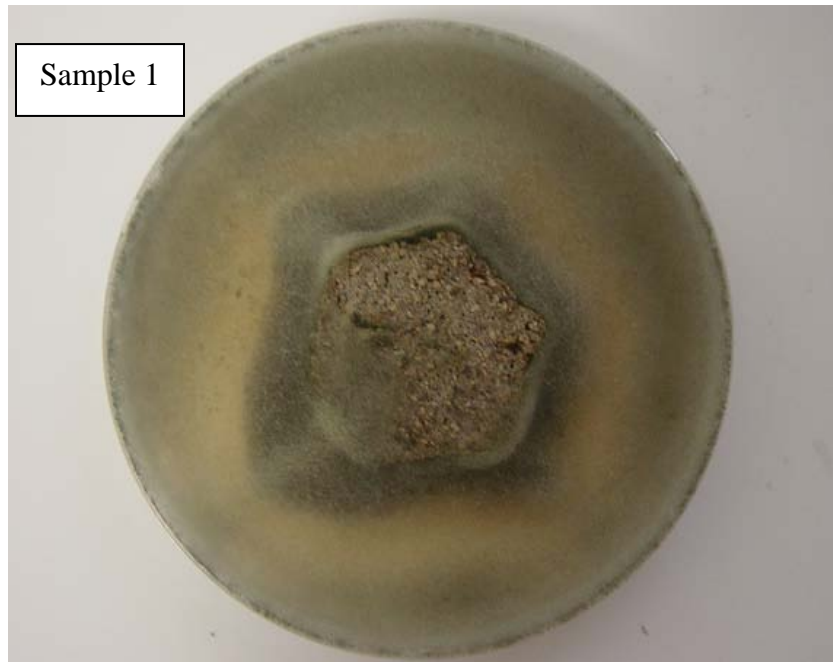
Start: 6/15/2007

Finish: 7/13/2007

**Reference:**

N.B. Ref. 11555-28

Figure A  
ASTM G-21  
Fungal Resistance





**SOUTHWEST FIREPROOFING PRODUCTS CO**

CRM # 3807

Date 8/1/2007

COPIES TO:

Gadstar

J. Bailey (orig)

R. Fahmy

G. Hertenberger

P. Varin

K. Winkowski

W. Woods



**REPORT**  
**ETL TESTING LABORATORIES, INC.**

INDUSTRIAL PARK

CORTLAND, NEW YORK 13045

Order No. 117227-405

Date: September 5, 1996

Report No.: 568300

**Rendered To:**

A/D Fire Protection Systems, Inc.  
420 Tapscott Road  
Ontario, Canada M1B1Y4

**STANDARD USED:** ASTM E136-92

**TEST:** Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C

**AUTHORIZATION OF TEST:** The test was authorized by A/D Fire Protection Systems, Inc. Purchase Order No. 010567, dated August 7, 1996, by Don Falconer, representing the client A/D Fire Protection Systems, Inc..

**DATE OF TEST:** August 29, 1996

**SPECIMEN DESCRIPTION:** The test was performed on a specimen identified by the client as A/D Type 5.

An independent organization testing for safety, performance, and certification.

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**INTRODUCTION**

This report describes the results of the ASTM E136-82 Standard Test Method for Behavior of Materials In a Vertical Tube Furnace at 750°C, performed on specimens, previously described, submitted by A/D Fire Protection Systems, Inc.. The specimens were prepared and test evaluations were conducted at ETL Testing Laboratories, Inc.

**TEST OBJECTIVE AND PROCEDURE**

The method covers the performance of elementary building materials when exposed to 1382°F (750°C), to indicate those materials which do not act to aid combustion or add appreciable heat to an ambient fire. It is not intended to apply to laminated or coated materials. It should be used to measure and describe the properties of materials, products or systems in response to heat and flame under controlled laboratory conditions and should not be used for the description or appraisal of the fire hazards of materials, products or systems under actual fire conditions.

Each Specimen (minimum of four) is exposed to a temperature of  $1382 \pm 10^\circ\text{F}$  ( $750 \pm 5.5^\circ\text{C}$ ) in the center of an air stream in a furnace tube at an air velocity of 10 ft/minute (3 m/minute) for a 15-minute period. The surface and internal temperature of the specimen was measured. The weight loss is also determined.

**TEST REQUIREMENTS**

To be reported as passing this test, the following criteria must be met:

1. Specimen interior and surface temperatures do not increase more than 54°F (30°C) above the initial furnace temperature;
2. No flaming from the specimen after 30 seconds;
3. Average specimen weight loss less than 50 percent.

**RESULTS:**Client: A/D Fire Protection Systems, Inc.Date Received: 08/06/96Order No.: 117227-405Date Completed: 08/29/96Test No.: 1Engineer: Amy RiceDamage (yes/no): NoTechnician: Lisa PhinneySPECIMEN DESCRIPTION: A/D Type 5Specimen Length (in): 2      Width(in): 1 1/2      Thickness(in): 1 1/2**RESULTS:**EQUILIBRIUM FURNACE TEMP. PRIOR TO TESTING = 758 °C

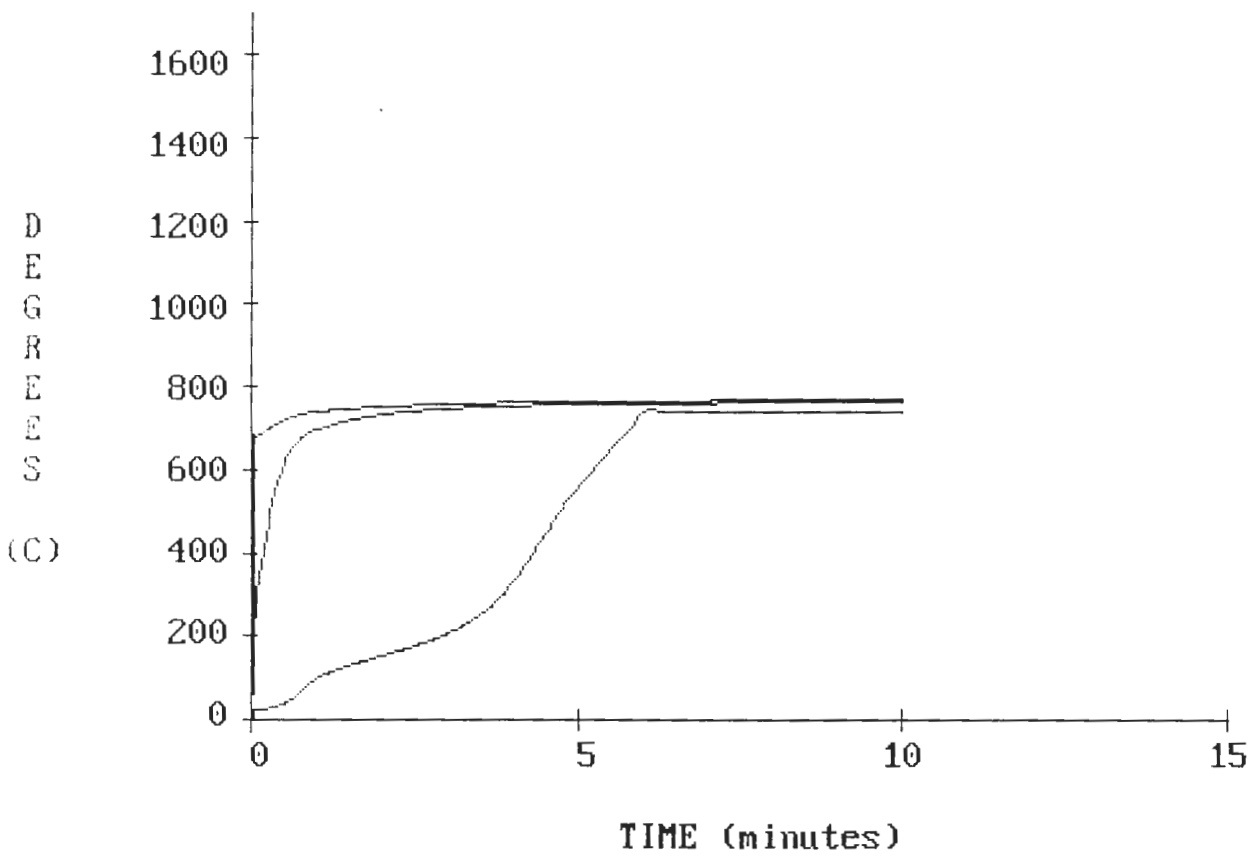
THERMOCOUPLE #1 IS LOCATED IN THE CENTER OF THE TEST SPECIMEN  
 THERMOCOUPLE #2 IS LOCATED ON THE SURFACE OF THE TEST SPECIMEN  
 THERMOCOUPLE #3 IS THE AIR TEMP. INSIDE THE FURNACE DURING THE TEST

**SPECIMEN NUMBER**

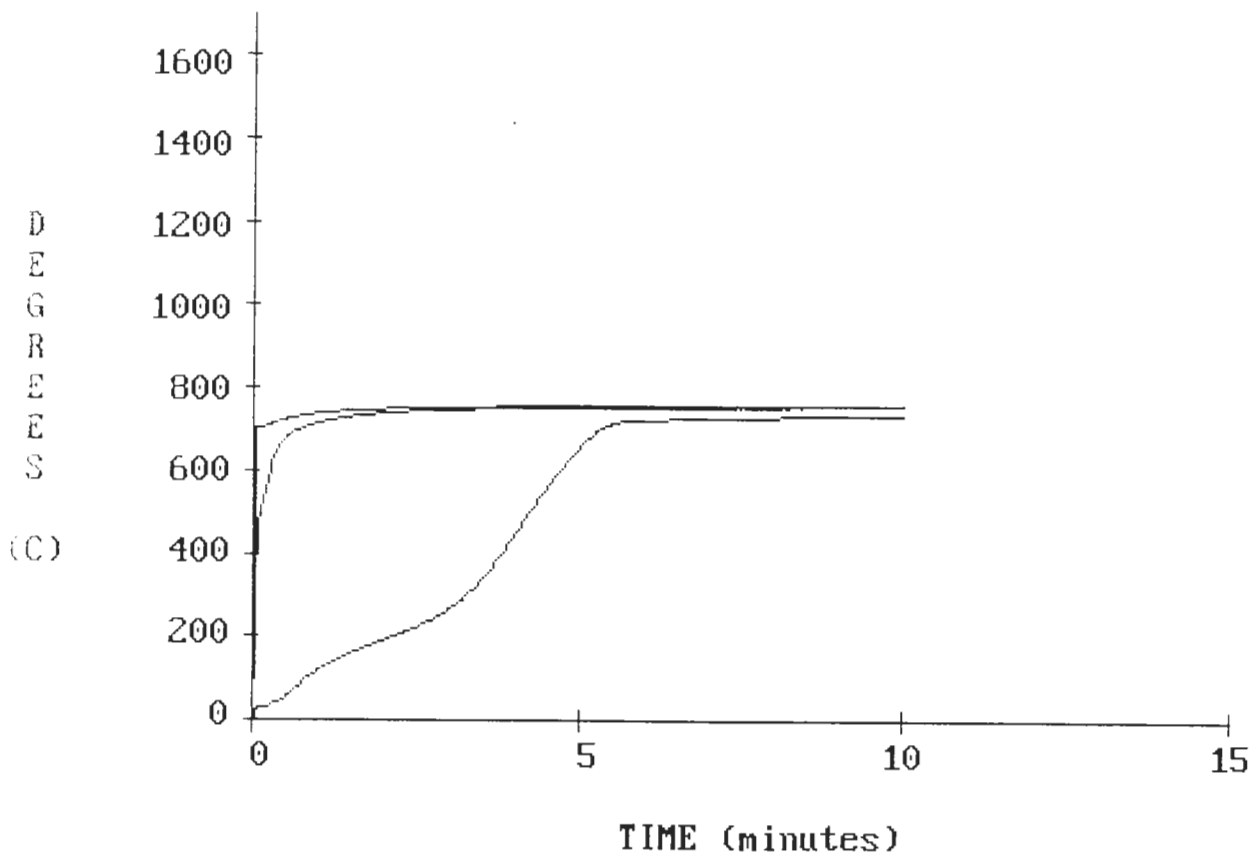
	1	2	3	4
INITIAL WEIGHT (g)	27.77	26.43	25.36	27.17
FINAL WEIGHT (g)	23.93	22.37	21.56	23.23
TIME TO FLAMING (min:sec)	---	---	---	---
FLAME OUT (min:sec)	---	---	---	---
MAX. TEMP. THERMOCOUPLE #1 (°C)	744.2	733.5	733.2	736.1
MAX. TEMP. THERMOCOUPLE #2 (°C)	764.2	755.9	764.2	758.4
TEMP. RISE ABOVE INITIAL FURNACE TEMP. #1 (°C)	---	---	---	---
TEMP. RISE ABOVE INITIAL FURNACE TEMP. #2 (°C)	6.2	---	6.2	0.4
<b>PASS/FAIL</b>	PASS	PASS	PASS	PASS

RESULTS (Cont'd):

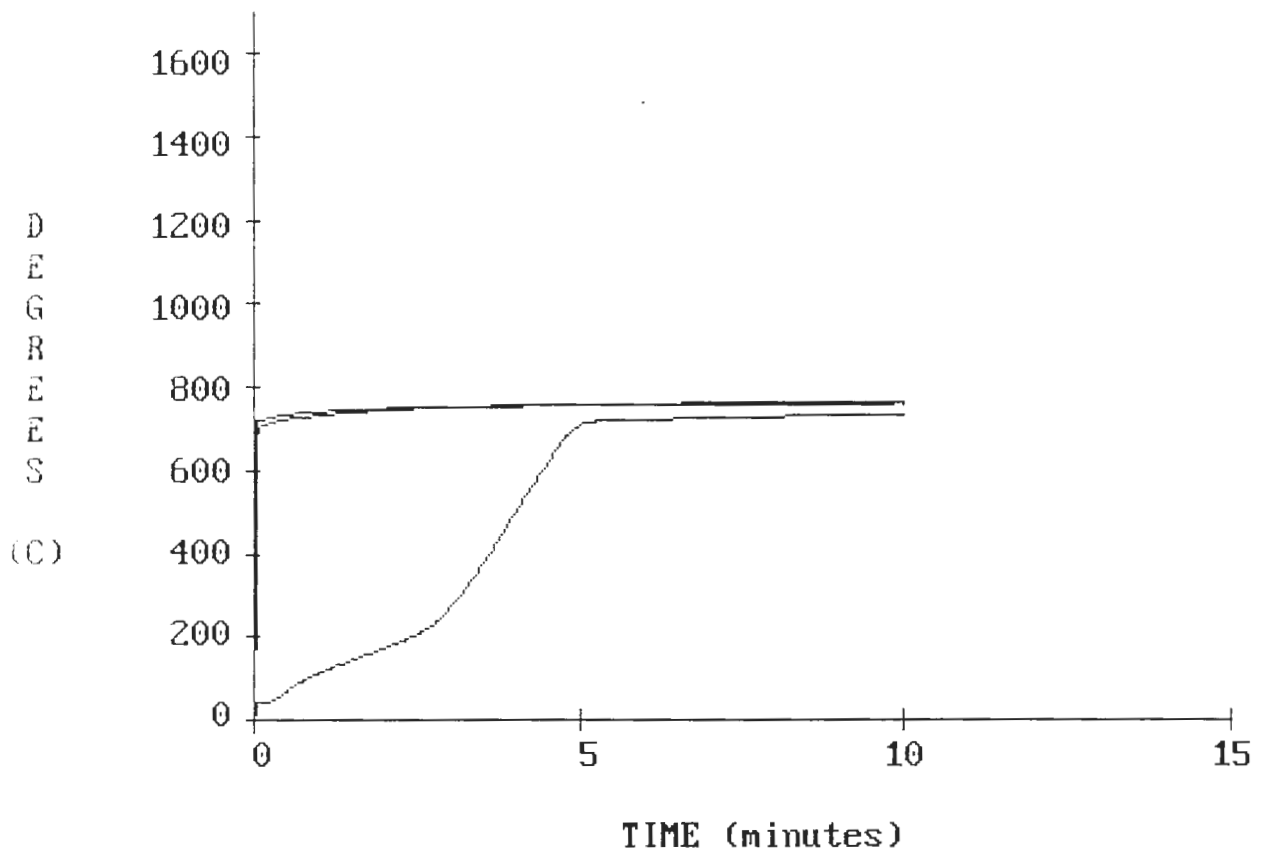
Temperature vs. Time



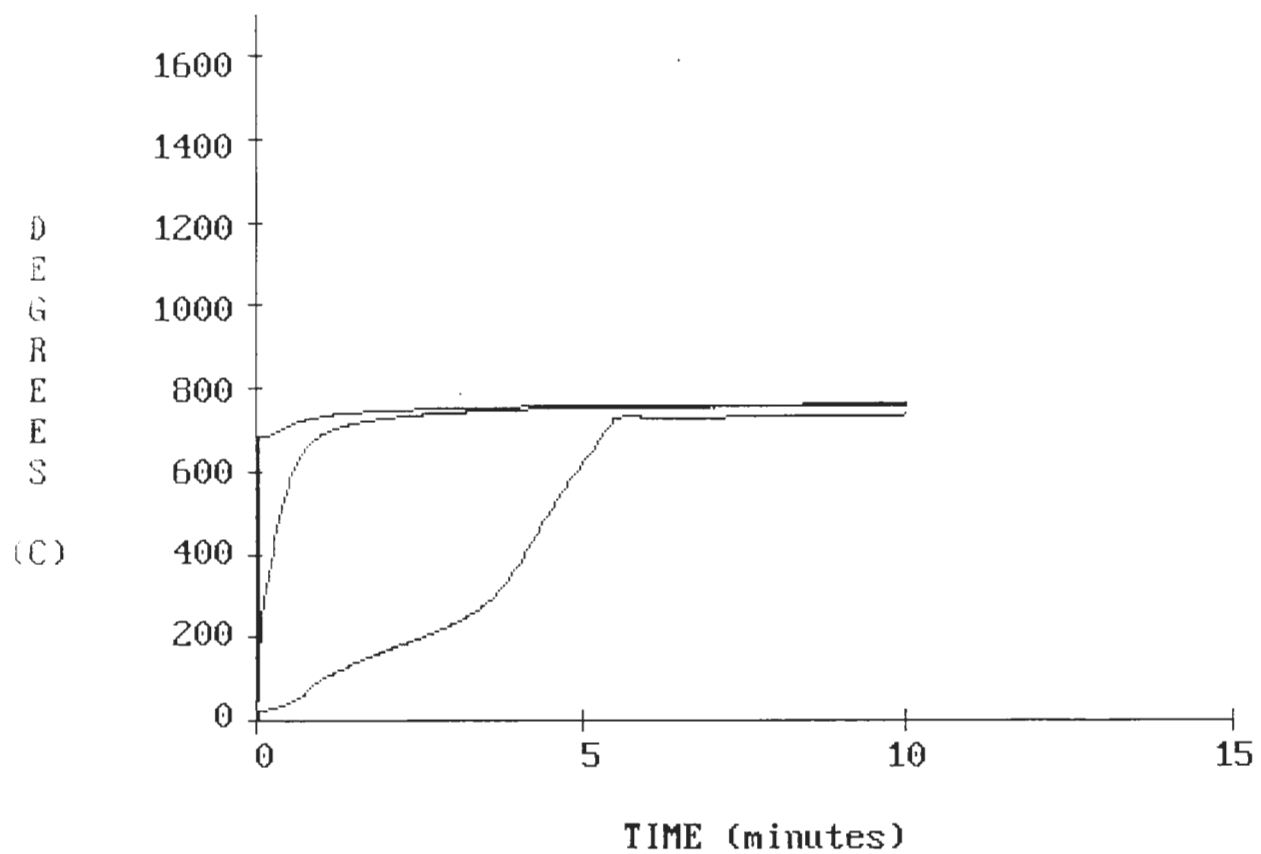
Temperature vs. Time



Temperature vs. Time



Temperature vs. Time



**CONCLUSION**

The A/D Type 5, previously described, submitted by A/D Fire Protection Systems, Inc., was evaluated in accordance with ASTM E136-82 Standard Test Method for Behavior of Materials In a Vertical Tube Furnace at 750°C on 08/29/96.


**The specimen was judged to be in compliance with the applicable standard.**

Reviewed by:

Lisa Phinney  
Technician  
Performance Division

jaa

Approved by:

  
Amy Rice  
Engineer  
Performance Division

# Declare.



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## Southwest Type 5MD Carboline Global, Inc.

**Final Assembly:** Louisa, Virginia, USA

**Life Expectancy:** Life of Structure Year(s)

**Embodied Carbon:** 1.55E+02 kg CO<sub>2</sub>

**Declared Unit:** 1,000 kg

**End of Life Options:** Landfill (100%)

### Ingredients:

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Calcium sulfate (hemihydrate); Vermiculite; Calcium Carbonate; Cellulose; Calcium hydroxide (Ca(OH)<sub>2</sub>); Glass, oxide, chemicals; Quartz

**Living Building Challenge Criteria:** Compliant

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### I-13 Red List:

- LBC Red List Free % Disclosed: 100% at 100ppm
- LBC Red List Approved VOC Content: 0 g/L
- Declared

**I-10 Interior Performance:** CDPH Standard Method v1.2-2017

**I-14 Responsible Sourcing:** Not Applicable

CRB-0003

EXP. 01 MAR 2025

Original Issue Date: 2018