



**Carboline-Southwest**  
**Type 5GP**  
**Injected with A-20 Accelerator**  
**Submittal Package**

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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.
<b>Description</b>	A 15 lbs./ft <sup>3</sup> 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. Southwest Type 5GP is a trademark of the Southwest Fireproofing Products Company.
<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 – complies with EPA and OSHA regulations.</li> <li>• Mineral Wool free – no airborne fibers.</li> <li>• Styrene free – no toxic decomposition gases.</li> <li>• Economical – Maintains project on budget.</li> <li>• Design flexibility with over 100 UL designs.</li> </ul>
<b>Color</b>	Non-Uniform Tan
<b>Finish</b>	Textured
<b>Primers</b>	Primers are not required or recommended. If a primer is specified, or steel is primed, bond strength must meet minimum UL criteria. A/D 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>Fireproofing Topcoats</b>	Generally not required. In severely corrosive atmospheres, consult Carboline Technical Service for selection of coating most suitable for the operating environment.
<b>Film Build</b>	1/2" - 5/8" (12.7 - 15.9 mm) on initial pass
<b>Theoretical Coverage Rates</b>	33-38 board foot per bag @ 15 pcf
	Field results will vary depending upon application parameters. Coverage based on theoretical gross yield without loss. Material losses during mixing and application must be taken into account when estimating project requirements. Coverage based on 50 lb. (22.7 kg) bags (one board ft = one ft <sup>2</sup> of material at one inch thick or 0.09 m <sup>2</sup> of material at 25.4 mm thick.
<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>	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 spattercoat 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>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 first be secured to the deck surfaces in accordance with the UL requirements.
<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 A/D 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.

# SOUTHWEST TYPE 5GP™

## Performance Data

Test Method	Results
ASTM 1042 DOD Classification	Type 1, NCR 50, Class (a), Category A
ASTM C384 Acoustics Noise Reduction Coefficient (NRC)	0.37 @ 0.30" (7.6 mm) 0.51 @ 0.45 (11.4 mm)
ASTM E136 Combustibility	Passed (non-combustible)
ASTM E605 Density <sup>1</sup>	15 pcf (240 kg/m <sup>3</sup> ) minimum average
ASTM E736 Cohesion/Adhesion	>200 psf
ASTM E759 Deflection	Passed
ASTM E760 Impact	Passed
ASTM E761 Compressive Strength	3,700 psf (177 kPa)
ASTM E84 Surface Burning	Flame Spread: 0 Smoke Development: 0
ASTM E859 Air Erosion	0.00 g/ft <sup>2</sup> (0.00 g/m <sup>2</sup> )
ASTM E937 Corrosion	Passed
ASTM G21 Fungi Resistance	Passed (no growth)

<sup>1</sup> Air dry at ambient conditions to constant weight. Do not force cure. Use ASTM E605 Positive Bead Displacement method utilizing #8 lead shot. Test density in accordance with AWC Technical Manual 12-A (Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials, an Annotated Guide).

All values derived under controlled laboratory conditions. Test reports and additional data available upon written request.

## Mixing & Thinning

**Mixer**

1. Use a minimum 12 to 16 cubic foot heavy-duty mortar mixer capable of rotating at 40 rpm with rubber tipped blades that wipe the sides.
2. Use continuous feed mixer. Contact Carboline Technical Service for recommendation. Densities may vary when using this type of mixing equipment.

**Mixing**

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 minutes at 40 rpm. Do not over mix. The material volume should not go over center bar of mixer. Use 10 to 11 gallons of water per 50 lb. bag. Add water to the mixer first with blades stopped. With mixer turned on, add material to the water and begin mixing.

**Density**

For information and recommendations obtaining 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.

**Pump**

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# S6EV (Rotor Stator/2L6)
- 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)

Marvel kit must be removed from piston pumps.

## 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.

**Ball Valves** 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.

**Material Hose** Use 15 to 25 feet (4.5 m to 7.6 m) of 3" (76 mm) I.D. or larger surge hose from the manifold. Follow with a 16" (406 mm) tapered fitting to a 2" (50 mm) I.D. hose to the spray area. Taper to 15 to 20 feet (4.5 m to 6 m) of minimum 1-1/4" or 1" (25 mm) whip hose.

**Standpipe** Use 3" (76 mm) I.D. aluminum tubing with quick external disconnections. Elbows should be 3" (76 mm) I.D. with minimum 36" (0.9 m).

**Nozzle/Gun** Use a minimum 1" (25 mm) I.D. plaster type nozzle with shut off valve, swivel and air shut off valve.

**Orifice Size and Shields** 9/16 to 5/8" (9.5 mm - 15.9 mm) I.D. "blow-off" tips (mini shields optional)

**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 1/2" - 5/8" (12.7 mm - 15.9 mm) or less can be applied in one pass. 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 increase set time and yield. Refer to Southwest Fireproofing Injection Procedures For High Production 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 Products Field Application Manual.

**Field Tests**

Test for thickness and density in accordance with the applicable building code, AWC 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).

**Finishing** Normally left as a sprayed texture finish.

## 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.

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# SOUTHWEST TYPE 5GP™

## Curing Schedule

Surface Temp. & 50% Relative Humidity	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.

## Cleanup & Safety

<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>	Follow all safety precautions on the Material Safety Data Sheet. It is recommended that personal protective equipment be worn, including spray suits, gloves, eye protection and respirators.
<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>	In enclosed areas, ventilation shall not be less than 4 complete air exchanges per hour until the material is dry.

## Testing / Certification / Listing

**Underwriters Laboratories, Inc** Tested in accordance with ASTM E119/UL 263 at Underwriter's Laboratories, Inc. and listed by UL 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)

## Packaging, Handling & Storage

<b>Shelf Life</b>	12 months
<b>Shipping Weight (Approximate)</b>	50 lb. (22.6 kg)
<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>Packaging</b>	50 lb. (22.6 kg) bags




An **RPM** Company

August 2013

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 <h1 style="margin: 0;">Material Safety Data Sheet</h1>	<b>CHEMTREC</b> <b>Transportation</b> <b>Emergency Phone: 800-424-9300</b>
	<b>Pittsburgh Poison Control Center</b> <b>Health Emergency No.: 412-681-6669</b>
<small>NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals</small>	

## Section 1 - Chemical Product / Company Information

**Product Name:** SOUTHWEST TYPE 5GP      **Revision Date:** 04/05/2012  
**Identification Number:** PLMSDS 24ADS1NL      **Supersedes :** 05/27/2009  
**Product Use/Class:** FOR INDUSTRIAL USE ONLY      **Preparer:** Regulatory, Department  
**Manufacturer:** Carboline Company  
 2150 Schuetz Road  
 St. Louis, MO 63146  
 (800) 848-4645

## Section 2 - Composition / Information On Ingredients

Chemical Name	CAS Number	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA-CEIL
GYPSUM	26499-65-0	70.0	10 MG/M3	N/E	15 MG/M3 TOTAL, 5 MG/M3 RESPIRABLE	N/E
VERMICULITE	1318-00-9	30.0	N/E	N/E	N/E	N/E
CELLULOSE	9004-34-6	10.0	10MG/M3	N/E	5 MG/M3	N/E
LIMESTONE	1317-65-3	5.0	N/E	N/E	5 MGM3	N/E
MICROCRYSTALLINE SILICA	14808-60-7	0.7	0.025 MG/M3 (respirable)	N/E	0.1 MG/M3 (respirable)	N/E

## Section 3 - Hazards Identification

**Emergency Overview:** Contains silica which can cause cancer. Risk of Cancer depends on duration and level of exposure. Floors in spray area may be slippery when wet. Post "Slippery When Wet" signs where appropriate. Direct contact with spray can damage eyes. May cause irritation to the respiratory tract.

**Effects Of Overexposure - Eye Contact:** May cause eye irritation.

**Effects Of Overexposure - Skin Contact:** May cause skin irritation.

**Effects Of Overexposure - Inhalation:** Overexposure will be irritating to mucous membranes.

**Effects Of Overexposure - Ingestion:** May be harmful if swallowed.

**Effects Of Overexposure - Chronic Hazards:** Crystalline silica is known to cause silicosis. Crystalline silica (Quartz) is classified as a known human carcinogen (Group 1) by IARC. Exposure is by route of inhalation. If material is in a liquid matrix it is unlikely to be inhaled. When sanding or grinding the finished product, there may be potential for crystalline silica to become airborne.

**Primary Route(s) Of Entry:** Skin Contact, Skin Absorption, Inhalation, Ingestion, Eye Contact

**Medical Conditions Prone to Aggravation by Exposure:** May aggravate dermatitis and asthma.

## Section 4 - First Aid Measures

**First Aid - Eye Contact:** Flush eyes with running water for at least 15 minutes. Seek medical attention if irritation persists.

**First Aid - Skin Contact:** Wash skin thoroughly with soap and water.

**First Aid - Inhalation:** Move person to fresh air. Seek medical attention if irritation persists.

**First Aid - Ingestion:** If swallowed do not induce vomiting. Seek immediate medical attention.

## Section 5 - Fire Fighting Measures

**Flash Point, F:** N/A  
(N/A)

**Lower Explosive Limit, %:** N/A  
**Upper Explosive Limit, %:** N/A

**Extinguishing Media:** Carbon Dioxide, Dry Chemical, Foam, Water Fog

**Unusual Fire And Explosion Hazards:** None known.

**Special Firefighting Procedures:** None. Product will not burn.

## Section 6 - Accidental Release Measures

**Steps To Be Taken If Material Is Released Or Spilled:** Sweep up material and place in appropriate disposal container. Use sweeping compound or other cleaning aids to pick up residues. Wash down area thoroughly with water. Dispose of material in accordance with all federal, state, and local regulations. Use personal protective equipment as necessary. Spilled material becomes very slippery when wet.

## Section 7 - Handling And Storage

**Handling:** Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid breathing vapors or spray mist.

**Storage:** Keep Dry. Keep containers closed when not in use. Store in a cool, dry place with adequate ventilation.

## Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:** Use appropriate equipment to keep nuisance dust cloud levels low.

**Respiratory Protection:** A properly fitted NIOSH/MSHA approved disposable dust respirator should be used when : high dust levels are encountered; the level of fibers in the air exceeds the OSHA permissible limits; or if irritation occurs. 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.

**Skin Protection:** Sensitive individuals should wear gloves to prevent repeated contact.

**Eye Protection:** Recommend safety glasses with side shields or chemical goggles to avoid eye contact.

**Other protective equipment:** Eye wash and safety showers should be readily available.

**Hygienic Practices:** Handle in accordance with good industrial hygiene and safety practices. These practices include: avoiding unnecessary exposures to dusts and fibers by using good local exhaust ventilation; removal of the material from the skin and eyes after exposure; removal of material from clothing (Use vacuum equipment to remove fibers and dusts from clothing. Compressed air should never be used. Always wash contaminated work clothes separately from other laundry and wipe out washer / sink to prevent loose fibers from getting on other articles); keep the work area clean of dusts and fibers generated during fabrication (Use vacuum equipment to clean up dusts and fibers. Avoid sweeping or using compressed air as these techniques re-suspend dusts and fibers into the air.) and; have access to safety showers and eye wash stations.

## Section 9 - Physical And Chemical Properties

<b>Boiling Range:</b>	N/A - N/A	<b>Vapor Density:</b>	N/A
<b>Odor:</b>	Slight	<b>Odor Threshold:</b>	N/D
<b>Appearance:</b>	Grey Powder	<b>Evaporation Rate:</b>	N/A
<b>Solubility in H2O:</b>	Slight		
<b>Freeze Point:</b>	N/A	<b>Specific Gravity:</b>	N/A
<b>Vapor Pressure:</b>	N/A	<b>PH:</b>	N/D
<b>Physical State:</b>	Solid		

(See section 16 for abbreviation legend)

## Section 10 - Stability And Reactivity

**Conditions To Avoid:** Keep Dry. Material becomes hard and unusable when exposed to water.

**Incompatibility:** Avoid contact with strong oxidizing agents.

**Hazardous Decomposition Products:** None are known.

**Hazardous Polymerization:** Will not occur under normal conditions.

**Stability:** This product is stable under normal storage conditions.

## Section 11 - Toxicological Information

**Product LD50:** N/D

**Product LC50:** N/D

<b>Chemical Name</b>	<b>CAS Number</b>	<b>LD50</b>	<b>LC50</b>
GYPSUM	26499-65-0	NOT AVAILABLE	NOT AVAILABLE
VERMICULITE	1318-00-9	NOT AVAILABLE	NOT AVAILABLE



CELLULOSE	9004-34-6	NOT AVAILABLE	NOT AVAILABLE
LIMESTONE	1317-65-3	NOT AVAILABLE	NOT AVAILABLE
MICROCRYSTALLINE SILICA	14808-60-7	NOT AVAILABLE	NOT AVAILABLE

## Section 12 - Ecological Information

**Ecological Information:** No data

## Section 13 - Disposal Information

**Disposal Information:** RCRA HAZARDS CLASS: Non Hazardous Material. Take up material and seal tightly for proper disposal.

## Section 14 - Transportation Information

<b>DOT Proper Shipping Name:</b>	Not Regulated	<b>Packing Group:</b>	N/A
<b>DOT Technical Name:</b>	N/A	<b>Hazard Subclass:</b>	N/A
<b>DOT Hazard Class:</b>	None	<b>Resp. Guide Page:</b>	N/A
<b>DOT UN/NA Number:</b>	None		

**Additional Notes:** None.

## Section 15 - Regulatory Information

### 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:

IMMEDIATE HEALTH HAZARD

### 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 Section 313 Substances exist in this product

### TOXIC SUBSTANCES CONTROL ACT

All components of this product are listed on the TSCA inventory.

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) Substances 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.

## PENNSYLVANIA RIGHT-TO-KNOW

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

## CALIFORNIA PROPOSITION 65

**Warning: The following ingredients present in the product are known to the state of California to cause Cancer:**

Chemical Name  
MICROCRYSTALLINE SILICA

CAS Number  
14808-60-7

**Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards:**

No California Proposition 65 Reproductive Toxins exist

## INTERNATIONAL REGULATIONS AS FOLLOWS:

### CANADIAN WHMIS

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

**CANADIAN WHMIS CLASS:** D2B

## Section 16 - Other Information

### HMIS Ratings

**Health:** 1      **Flammability:** 0      **Reactivity:** 0      **Personal Protection:** X

**VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED):** 0

**REASON FOR REVISION:** Name change to Southwest Type 5GP

**Legend:** N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

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

**Description** 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. Accelerator A-20 can be used with Southwest Type 5 materials.

## Mixing & Thinning

**Mixing** CAUTION: 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. Glove, 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 MSDS prior to use. Mix one 50 lbs. bag of Accelerator A-20 with 10.0 gallons of clean potable water. The standard mix is four bags of Accelerator A-20 with 40 gallons of water. The total solution volume will be 51 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.

**Set up** 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, the target specific gravity is 1.245 with range of 1.235 to 1.255. To check by net weight of a filled container, a full 1 liter container should weigh 1245 grams  $\pm$  10 grams. 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. Using the injector knob, turn the knob out to decrease the solution percentage and turn the knob in to increase the solution percentage to be injected.

## 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.

**Pump** 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.

## 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.

**Valves** 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.

**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. & 50% Relative Humidity	Dry to Recoat	Final Cure
70 °F (21 °C)	20.0 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 cleaned with potable water. Cured overspray material may be difficult to remove and may require chipping or scraping to remove. Read and abide by the MSDS. 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.

# Accelerator A-20

## Packaging, Handling & Storage

<b>Shelf Life</b>	24 months
<b>Shipping Weight (Approximate)</b>	Bag Weight is 50 lbs (22.7 kg)
<b>Storage</b>	Material should be kept dry, covered, and off the ground between -20°F to 150°F (-29°C to 66°C).
<b>Packaging</b>	50 lbs. bags



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April 2013

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 or injuries resulting from use. Liability, if any, is limited to replacement of products. 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. Carboline® and Carboguard® are registered trademarks of Carboline Company.

50AD



# Material Safety Data Sheet

**CHEMTREC Transportation  
Emergency Phone: 800-  
424-9300**

**Pittsburgh Poison Control  
Center  
Health Emergency No.: 412-  
681-6669**

•NOTE: The CHEMTREC Transportation •  
•Emergency Phone is to be used only in the •  
•event of chemical emergencies involving a •  
•spill, leak, fire, exposure or accident •  
•involving chemicals •

## Section 1 - Chemical Product / Company Information

**Product Name:** Accelerator A-20  
**Identification Number:** 50ADA20005AD  
**Product Use/Class:** FOR INDUSTRIAL USE ONLY

**Revision Date:** 09/21/2010  
**Supercedes :** 09/21/2010

**Manufacturer:** Carboline Company  
350 Hanley Industrial Ct.  
St. Louis, MO 63144

**Preparer:** Technical Services  
**Tel. No.** (800) 263-4087, (416) 292-2361  
**Fax No.** (416) 298-5887

## Section 2 - Composition / Information On Ingredients

Chemical Name	CAS Number	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA-CEIL
Aluminum Sulfate	10043-01-3	100.0	N/E	N/E	2 Mg/M3	N/E

## Section 3 - Hazards Identification

**Emergency Overview:** May cause irritation to the respiratory tract.

**Effects Of Overexposure - Eye Contact:** May cause eye irritation.

**Effects Of Overexposure - Skin Contact:** May cause skin irritation.

**Effects Of Overexposure - Inhalation:** Inhalation may cause irritation to the respiratory tract (nose, mouth, mucous membranes).

**Effects Of Overexposure - Ingestion:** May be harmful if swallowed.

**Effects Of Overexposure - Chronic Hazards:** Aluminum Sulphate has been shown to cause liver, kidney, and nervous system toxicity when tested in laboratory animals. Repeated ingestion may cause phosphate deficiency which can weaken bones.

**Primary Route(s) Of Entry:** Skin Contact, Skin Absorption, Inhalation, Ingestion, Eye Contact

**Medical Conditions Prone to Aggravation by Exposure:** If you have a condition that could be aggravated by exposure to dust or organic vapors, see a physician prior to use.

## Section 4 - First Aid Measures

**First Aid - Eye Contact:** If material gets into eyes, flush with water immediately for 15 minutes. Consult a physician.

**First Aid - Skin Contact:** In case of contact, wash skin immediately with soap and water.

**First Aid - Inhalation:** If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

**First Aid - Ingestion:** If swallowed do not induce vomiting. Seek immediate medical attention.

## Section 5 - Fire Fighting Measures

**Flash Point, F:** N/A  
(N/A)

**Lower Explosive Limit, %:** N.D.  
**Upper Explosive Limit, %:** N.D.

**Extinguishing Media:** Carbon Dioxide, Dry Chemical, Foam, Water Fog

**Unusual Fire And Explosion Hazards:** None known.

**Special Firefighting Procedures:** Evacuate hazard area of unprotected personnel. Use a NIOSH approved self-contained breathing unit and complete body protection. Cool surrounding containers with water in case of fire exposure.

## Section 6 - Accidental Release Measures

**Steps To Be Taken If Material Is Released Or Spilled:** Dispose of material in accordance with all federal, state and local regulations. Use personal protective equipment as necessary.

## Section 7 - Handling And Storage

**Handling:** Do not get in eyes, on skin, or on clothing. Keep container tightly closed when not in use. Wear personal protection equipment. Wash thoroughly after handling. Use only in accordance with Application instructions, container label and Product Data Sheet.

**Storage:** Protect from freezing. Keep container closed when not in use. Do not store with strong alkali or acids.

## Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:** General ventilation should be provided to maintain ambient concentrations below nuisance levels.

**Respiratory Protection:** Use only with ventilation to keep levels below exposure guidelines listed in Section 2. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use approved organic vapor respirator.

**Skin Protection:** Recommend impervious gloves and clothing to avoid skin contact. If material penetrates to skin, change gloves and clothing. The use of protective creams may be beneficial to certain individuals. Protective creams should be applied before exposure.

**Eye Protection:** Recommend safety glasses with side shields or chemical goggles to avoid eye contact.

**Other protective equipment:** Eye wash and safety showers should be readily available.

**Hygienic Practices:** Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and allow hazardous materials to pass through. Check shoes carefully after soaking before reuse.

## Section 9 - Physical And Chemical Properties

**Boiling Range:**

N/A - .

**Vapor Density:**

N/A

**Odor:**

None

**Odor Threshold:**

N/A

**Appearance:**

White Powder or Granules

**Evaporation Rate:**

N/A

**Solubility in H2O:**

50% @ 0C

**Freeze Point:** N/A  
**Vapor Pressure:** N/A  
**Physical State:** Solid

**Specific Gravity:** 1.610  
**PH:** 3.5 (1% Solution)

(See section 16 for abbreviation legend)

## Section 10 - Stability And Reactivity

**Conditions To Avoid:** Keep Dry. Material becomes hard and unusable when exposed to water.

**Incompatibility:** None

**Hazardous Decomposition Products:** None are known.

**Hazardous Polymerization:** Will not occur under normal conditions.

**Stability:** This product is stable under normal storage conditions.

## Section 11 - Toxicological Information

**Product LD50:**

**Product LC50:**

Chemical Name	CAS Number	LD50	LC50
Aluminum Sulfate	10043-01-3	1930 MG/KG, ORAL, RAT	NOT AVAILABLE .

## Section 12 - Ecological Information

**Ecological Information:** No data

## Section 13 - Disposal Information

**Disposal Information:** Dispose of in accordance with State, Local, and Federal Environmental regulations. Responsibility for proper waste disposal is with the owner of the waste.

## Section 14 - Transportation Information

<b>DOT Proper Shipping Name:</b>	Not Regulated	<b>Packing Group:</b>	N/A
<b>DOT Technical Name:</b>	N/A	<b>Hazard Subclass:</b>	N/A
<b>DOT Hazard Class:</b>	None	<b>Resp. Guide Page:</b>	N/A
<b>DOT UN/NA Number:</b>	None		

## Section 15 - Regulatory Information

### 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:

Immediate Health Hazard, Chronic Health Hazard

### 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:

None

## **TOXIC SUBSTANCES CONTROL ACT**

All components of this product are listed on the TSCA inventory.

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) Substances 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 Number</u>
No Chemical Name Found	NA

### **PENNSYLVANIA RIGHT-TO-KNOW**

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

### **CALIFORNIA PROPOSITION 65**

**Warning: The following ingredients present in the product are known to the state of California to cause Cancer:**

No California Proposition 65 Carcinogens exist

**Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards:**

No California Proposition 65 Reproductive Toxins exist

## **INTERNATIONAL REGULATIONS AS FOLLOWS:**

### **CANADIAN WHMIS**

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

**CANADIAN WHMIS CLASS:** Class D, Division 2

## **Section 16 - Other Information**

### **HMIS Ratings**

**Health:** 2      **Flammability:** 0      **Reactivity:** 0      **Personal Protection:** X

**VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED):** 0

**REASON FOR REVISION:** Changed to 16 Section Format

**Legend:** N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

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>	Gray Product color may vary due to variations in color of portland cement.
<b>Finish</b>	Textured
<b>Primers</b>	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. Southwest Fireproofing materials neither promote nor prevent corrosion. Fireproofing should not be considered part of the corrosion protection system.
<b>Film Build</b>	3/8" (9.5 mm)
<b>Theoretical Coverage Rates</b>	600-800 ft <sup>2</sup> (55-74 m <sup>2</sup> ) per bag applied over 70% of the surface area. 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.
<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>	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.
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## Mixing & Thinning

<b>Mixer</b>	<ol style="list-style-type: none"> <li>1. Use a minimum 12 to 16 cubic foot 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 1.5 minutes minutes at 40 RPM. Do not over mix. The material volume should not go over center bar of mixer. Use 9 to 10 gallons of water per 50 lb 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 be retarded (usually 2 batches before and after is sufficient). Use 2.5 oz. 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 obtaining 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# S6EV (Rotor Stator/2L6) 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) 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 15 to 25 feet (4.5 m to 7.6 m) of 3" (76 mm) I.D. or larger surge hose from the manifold. Follow with a 16" (406 mm) tapered fitting to a 2" (50 mm) I.D. hose to the spray area. Taper to 15 to 20 feet (4.5 m to 6 m) of minimum 1-1/4" or 1" (25 mm) whip hose.

# SOUTHWEST TYPE DK3™

## 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>Standpipe</b>	Use 3" (76 mm) I.D. aluminum tubing with quick external disconnections. Elbows should be 3" (76 mm) I.D. with minimum 36" (0.9 m).
<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>	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 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.
<b>Field Tests</b>	Test for thickness and density in accordance with the applicable building code, AWC 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).
<b>Finishing</b>	Normally left as a sprayed texture finish.

## 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

<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 soapy or clean, potable water. Cured overspray material may be difficult to remove and may require chipping or scraping to remove.
<b>Safety</b>	Follow all safety precautions on the Material Safety Data Sheet. It is recommended that personal protective equipment be worn, including spray suits, gloves, eye protection and respirators.

## Cleanup & Safety

<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>	In enclosed areas, ventilation shall not be less than 4 complete air exchanges per hour until the material is dry.

## Packaging, Handling & Storage

<b>Shelf Life</b>	12 months
<b>Shipping Weight (Approximate)</b>	50 lb. (22.6 kg)
<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>Packaging</b>	50 lb. (22.6 kg) bags


July 2013

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 or injuries resulting from use. Liability, if any, is limited to replacement of products. 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. Carboline® and Carboguard® are registered trademarks of Carboline Company.



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28AD

 <h1 style="margin: 0; display: inline-block; vertical-align: middle;">Material Safety Data Sheet</h1>	<p><b>CHEMTREC</b> Transportation Emergency Phone: 800-424-9300</p> <hr/> <p><b>Pittsburgh Poison Control Center</b> Health Emergency No.: 412-681-6669</p> <hr/> <p><small>NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals</small></p>
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## Section 1 - Chemical Product / Company Information

<b>Product Name:</b>	SOUTHWEST TYPE DK3	<b>Revision Date:</b>	04/05/2012
<b>Identification Number:</b>	PLMSDS 28ADS1NL	<b>Supersedes :</b>	04/05/2012
<b>Product Use/Class:</b>	Fireproofing Primer - FOR INDUSTRIAL USE ONLY	<b>Preparer:</b>	Regulatory, Department
<b>Manufacturer:</b>	<b>Carboline Company</b> 2150 Schuetz Road St. Louis, MO 63146 (800) 848-4645		

## Section 2 - Composition / Information On Ingredients

Chemical Name	CAS Number	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA-CEIL
PORTLAND CEMENT	65997-15-1	55.0	10 MG/M3	N/E	5 MG/M3	N/E
VERMICULITE	1318-00-9	25.0	N/E	N/E	N/E	N/E
CELLULOSE	9004-34-6	5.0	10MG/M3	N/E	5 MG/M3	N/E
LIMESTONE	1317-65-3	5.0	N/E	N/E	5 MGM3	N/E
MAGNESIUM OXIDE	1309-48-4	5.0	N/E	N/E	N/E	N/E
GLASS OXIDE	65997-17-3	0.6	1 FIBERS/CM3	N/E	N/E	N/E
MICROCRYSTALLINE SILICA	14808-60-7	0.2	0.025 MG/M3 (respirable)	N/E	0.1 MG/M3 (respirable)	N/E

## Section 3 - Hazards Identification

**Emergency Overview:** Contains SILICA which can cause cancer. Risk of Cancer depends on duration and level of exposure. Floors in spray area may be slippery when wet. Post "Slippery When Wet" signs where appropriate. Direct contact with spray can damage eyes. May cause irritation to the respiratory tract.

**Effects Of Overexposure - Eye Contact:** May cause eye irritation.

**Effects Of Overexposure - Skin Contact:** Portland cement wetted by bodily fluids may cause dry skin and/or alkali burns. May cause skin irritation.

**Effects Of Overexposure - Inhalation:** Overexposure will be irritating to mucous membranes.

**Effects Of Overexposure - Ingestion:** May be harmful if swallowed.

**Effects Of Overexposure - Chronic Hazards:** Crystalline silica is known to cause silicosis. Crystalline silica (Quartz) is classified as a known human carcinogen (Group 1) by IARC. Exposure is by route of inhalation. If material is in a liquid matrix it is unlikely to be inhaled. However, when sanding or grinding the finished product, there may be potential for crystalline silica to become airborne. Prolonged or repeated skin contact may cause dry skin and/or alkali burns.

**Primary Route(s) Of Entry:** Skin Contact, Inhalation, Ingestion, Eye Contact

**Medical Conditions Prone to Aggravation by Exposure:** May aggravate dermatitis and asthma.

## Section 4 - First Aid Measures

**First Aid - Eye Contact:** Flush eyes with running water for at least 15 minutes. Seek medical attention if irritation persists. If material gets into eyes, flush with water immediately for 15 minutes. Consult a physician.

**First Aid - Skin Contact:** In case of contact, wash skin immediately with soap and water. Wash skin thoroughly with soap and water.

**First Aid - Inhalation:** Move person to fresh air. Seek medical attention if irritation persists. If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

**First Aid - Ingestion:** If swallowed do not induce vomiting. Seek immediate medical attention.

## Section 5 - Fire Fighting Measures

**Flash Point, F:** None  
(N/A)

**Lower Explosive Limit, %:** N/A  
**Upper Explosive Limit, %:** N/A

**Extinguishing Media:** Carbon Dioxide, Dry Chemical, Foam, Water Fog

**Unusual Fire And Explosion Hazards:** None known.

**Special Firefighting Procedures:** None. Product will not burn.

## Section 6 - Accidental Release Measures

**Steps To Be Taken If Material Is Released Or Spilled:** Sweep up material and place in appropriate disposal container. Use sweeping compound or other cleaning aids to pick up residues. Wash down area thoroughly with water. Dispose of material in accordance with all federal, state, and local regulations. Use personal protective equipment as necessary. Spilled material becomes very slippery when wet.

## Section 7 - Handling And Storage

**Handling:** Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Do not get in eyes, on skin, or on clothing. Keep container tightly closed when not in use. Wear personal protection equipment. Do not breathe vapors. Wash thoroughly after handling. If pouring or transferring materials, ground all containers and tools. Do not weld, heat, cut or drill on full or empty containers. Use only in accordance with Carboline application instructions, container label and Product Data Sheet. Avoid breathing vapors or spray mist.

**Storage:** Keep Dry. Keep containers closed when not in use. Store in a cool, dry place with adequate ventilation.

## Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:** Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL). Use appropriate equipment to keep nuisance dust cloud levels low.

**Respiratory Protection:** A properly fitted NIOSH/MSHA approved disposable dust respirator should be used when : high dust levels are encountered; the level of fibers in the air exceeds the OSHA permissible limits; or if irritation occurs. Use only with ventilation to keep levels below exposure guidelines listed in Section 2. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use MSHA/NIOSH approved supplied air respirator. Follow all current OSHA requirements for respirator use. For silica containing coatings in a liquid state, and/or if no exposure limits are established in Section 2 above, supplied air respirators are generally not required.

**Skin Protection:** Recommend impervious gloves and clothing to avoid skin contact. If material penetrates to skin, change gloves and clothing. The use of protective creams may be beneficial to certain individuals. Protective creams should be applied before exposure. Sensitive individuals should wear gloves to prevent repeated contact.

**Eye Protection:** Recommend safety glasses with side shields or chemical goggles to avoid eye contact.

**Other protective equipment:** Eye wash and safety showers should be readily available.

**Hygienic Practices:** Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and allow hazardous materials to pass through. Check shoes carefully after soaking before reuse. Handle in accordance with good industrial hygiene and safety practices. These practices include: avoiding unnecessary exposures to dusts and fibers by using good local exhaust ventilation; removal of the material from the skin and eyes after exposure; removal of material from clothing (Use vacuum equipment to remove fibers and dusts from clothing. Compressed air should never be used. Always wash contaminated work clothes separately from other laundry and wipe out washer / sink to prevent loose fibers from getting on other articles); keep the work area clean of dusts and fibers generated during fabrication (Use vacuum equipment to clean up dusts and fibers. Avoid sweeping or using compressed air as these techniques re-suspend dusts and fibers into the air.) and; have access to safety showers and eye wash stations.

## Section 9 - Physical And Chemical Properties

<b>Boiling Range:</b>	N/A - N/A	<b>Vapor Density:</b>	N/A
<b>Odor:</b>	Dusty	<b>Odor Threshold:</b>	N/D
<b>Appearance:</b>	Grey Powder	<b>Evaporation Rate:</b>	N/A
<b>Solubility in H2O:</b>	N/D		
<b>Freeze Point:</b>	N/A	<b>Specific Gravity:</b>	1.92
<b>Vapor Pressure:</b>	N/D	<b>PH:</b>	7 - 9
<b>Physical State:</b>	Powder		

(See section 16 for abbreviation legend)

## Section 10 - Stability And Reactivity

**Conditions To Avoid:** Keep Dry. Material becomes hard and unusable when exposed to water.

**Incompatibility:** Avoid contact with strong oxidizing agents.

**Hazardous Decomposition Products:** None are known. Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning material as very hazardous. Welding, cutting or abrasive grinding can create smoke and fumes. Do not breathe any fumes or smoke from these operations.

**Hazardous Polymerization:** Will not occur under normal conditions.

**Stability:** This product is stable under normal storage conditions.

## Section 11 - Toxicological Information

**Product LD50:** N/D

**Product LC50:** N/D

Chemical Name	CAS Number	LD50	LC50
PORTLAND CEMENT	65997-15-1	NOT AVAILABLE	NOT AVAILABLE
VERMICULITE	1318-00-9	NOT AVAILABLE	NOT AVAILABLE
CELLULOSE	9004-34-6	NOT AVAILABLE	NOT AVAILABLE
LIMESTONE	1317-65-3	NOT AVAILABLE	NOT AVAILABLE
MAGNESIUM OXIDE	1309-48-4	NOT AVAILABLE	NOT AVAILABLE
GLASS OXIDE	65997-17-3		
MICROCRYSTALLINE SILICA	14808-60-7	NOT AVAILABLE	NOT AVAILABLE

## Section 12 - Ecological Information

**Ecological Information:** No data

## Section 13 - Disposal Information

**Disposal Information:** Dispose of in accordance with State, Local, and Federal Environmental regulations. Responsibility for proper waste disposal is with the owner of the waste. RCRA HAZARDS CLASS: Non Hazardous Material. Take up material and seal tightly for proper disposal.

## Section 14 - Transportation Information

<b>DOT Proper Shipping Name:</b>	Not Regulated	<b>Packing Group:</b>	N/A
<b>DOT Technical Name:</b>	N/A	<b>Hazard Subclass:</b>	N/A
<b>DOT Hazard Class:</b>	None	<b>Resp. Guide Page:</b>	N/A
<b>DOT UN/NA Number:</b>	None		

**Additional Notes:** None.

## Section 15 - Regulatory Information

### 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:

IMMEDIATE HEALTH HAZARD, CHRONIC HEALTH HAZARD

### **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 Section 313 Substances exist in this product

### **TOXIC SUBSTANCES CONTROL ACT**

All components of this product are listed on the TSCA inventory.

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) Substances 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 Number</u>
CALCIUM SULFATE	13397-24-5
CALCIUM OXIDE	1305-78-8

#### **PENNSYLVANIA RIGHT-TO-KNOW**

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

<u>Chemical Name</u>	<u>CAS Number</u>
CALCIUM SULFATE	13397-24-5
CALCIUM OXIDE	1305-78-8
VINYL ACETATE	TRADE SECRET

#### **CALIFORNIA PROPOSITION 65**

**Warning: The following ingredients present in the product are known to the state of California to cause Cancer:**

<u>Chemical Name</u>	<u>CAS Number</u>
GLASS OXIDE	65997-17-3
MICROCRYSTALLINE SILICA	14808-60-7

**Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards:**

No California Proposition 65 Reproductive Toxins exist

### **INTERNATIONAL REGULATIONS AS FOLLOWS:**

#### **CANADIAN WHMIS**

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

**CANADIAN WHMIS CLASS: D2B**

### **Section 16 - Other Information**

**HMIS Ratings**

**Health: 2            Flammability: 0            Reactivity: 0            Personal Protection: X**

**VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED): 0**

**REASON FOR REVISION: New Product**

**Legend:** N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

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





# Carboline Fireproofing Products

Credit Contributions for Leadership in Energy and Environmental Design

(LEED-NC Version 2.2)



## **Background**

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. This document outlines Carboline's contributions towards available LEED credits.

## **Energy and Atmosphere**

### **EA Credit 1: Optimize Energy Performance (1-10 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 1-10 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:** Select one of the compliance path options in compliance with EA Prerequisite 2 described in the LEED-NC Version 2.2 (page 33-35). 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 5 GP, Southwest™ Type 5 MD, Southwest™ Type 5 EF, Southwest™ Type 1 XR, Southwest™ Type 7 GP, Southwest™ Type 7 HD, Southwest™ Type 7 TB, Southwest™ Type DK 3 Spattercoat, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500

## **Materials and Resources**

### **MR Credit 1.1: Building Reuse: Maintain 75% of Existing Walls, Roofs and Floors (1 point)**

**Note:** This credit is applicable when installing Carboline fireproofing materials to existing building rehab projects or when upgrading the fire rating of existing structures

**Intent:** Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transportation

**Requirements:** Maintain at least 75% (based on surface area) of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing materials)

**Potential Technologies and Strategies:** Remove elements that pose contamination risk to the building occupants and upgrade components that would improve energy and water efficiency

**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 5 GP, Southwest™ Type 5 MD, Southwest™ Type 5 EF, Southwest™ Type 1 XR, Southwest™ Type 7 GP, Southwest™ Type 7 HD, Southwest™ Type 7 TB, Southwest™ Type DK 3 Spattercoat, Southwest™ Type TC-55, Pyroprime 775, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500, Firefilm® III, Firefilm® III C, Thermo-Sorb®, Nullfire® S605, Nullfire® S606, Thermo-Lag® 3000

### MR Credit 1.2: Building Reuse: Maintain 95% of Existing Walls, Roofs and Floors (1 point in Addition to MR Credit 1.1)

**Note:** This credit is applicable when installing Carboline fireproofing materials to existing building rehab projects or when upgrading the fire rating of existing structures

**Intent:** Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transportation

**Requirements:** Maintain at least 95% (based on surface area) of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing materials)

**Potential Technologies and Strategies:** Remove elements that pose contamination risk to the building occupants and upgrade components that would improve energy and water efficiency

**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 5 GP, Southwest™ Type 5 MD, Southwest™ Type 5 EF, Southwest™ Type 1 XR, Southwest™ Type 7 GP, Southwest™ Type 7 HD, Southwest™ Type 7 TB, Southwest™ Type DK 3 Spattercoat, Southwest™ Type TC-55, Pyroprime 775, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500, Firefilm® III, Firefilm® III C, Thermo-Sorb®, Nullfire® S605, Nullfire® S606, Thermo-Lag® 3000

### MR Credit 2.1: Construction Waste Management: Divert 50% From Disposal (1 point)

**Intent:** Divert construction, demolition and land clearing debris from landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to the appropriate sites

**Requirements:** Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that identifies the materials to be diverted from disposal and what materials will be sorted on-site or commingled. Excavated soil and land clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout

**Potential Technologies and Strategies:** Establish goals for diversion from disposals in landfills and incinerators and adopt a construction waste management plan to achieve these goals

**Carboline Contributions:** Carboline products are supplied in either 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 5 GP, Southwest™ Type 5 MD, Southwest™ Type 5 EF, Southwest™ Type 1 XR, Southwest™ Type 7 GP, Southwest™ Type 7 HD, Southwest™ Type 7 TB, Southwest™ Type DK 3 Spattercoat, Southwest™ Type TC-55, Pyroprime 775, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500, Firefilm® III, Firefilm® III C, Thermo-Sorb®, Nullifire® S605, Nullifire® S606, Thermo-Lag® 3000

### MR Credit 2.2: Construction Waste Management: Divert 75% From Disposal (1 point in Addition to MR Credit 2.1)

**Intent:** Divert construction, demolition and land clearing debris from landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to the appropriate sites

**Requirements:** Recycle and/or salvage at least 75% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that identifies the materials to be diverted from disposal and what materials will be sorted on-site or commingled. Excavated soil and land clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout

**Potential Technologies and Strategies:** Establish goals for diversion from disposals in landfills and incinerators and adopt a construction waste management plan to achieve these goals

**Carboline Contributions:** Carboline products are supplied in either 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 5 GP, Southwest™ Type 5 MD, Southwest™ Type 5 EF, Southwest™ Type 1 XR, Southwest™ Type 7 GP, Southwest™ Type 7 HD, Southwest™ Type 7 TB, Southwest™ Type DK 3 Spattercoat, Southwest™ Type TC-55, Pyroprime 775, Pyrocrete® 239, Pyrocrete® 40, Pyrocrete® 240 HY, Pyrocrete® 241, Pyrocrete® 241 HD, Hardcoat 4500, Firefilm® III, Firefilm® III C, Thermo-Sorb®, Nullifire® S605, Nullifire® S606, Thermo-Lag® 3000

### MR Credit 4.1: Recycled Content: Divert 10% Post-Consumer + 1/2 Pre-Consumer (1 point)

**Intent:** Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials

**Requirements:** Use materials with recycled content such that the sum of post-consumer recycled content plus one half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project

- The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of the assembly to determine the recycled content
- Post-consumer material is defined as waste material generated by households or by commercial, industrial and institutional facilities in their role as end users of the product which can no longer be used for its intended purpose
- Pre-consumer material is defined as material diverted from a waste stream during the manufacturing process. Excluded is the reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it

**Potential Technologies and Strategies:** Establish a project goal for recycled content and identify material suppliers that can achieve this goal. During construction ensure that the specified recycled content materials are installed

**Carboline Contributions:** Several Carboline products are manufactured with post consumer recycled materials

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

### MR Credit 5.1: Regional Materials: 10% Extracted, Processed & Manufactured Regionally (1 point)

**Intent:** Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation

**Requirements:** Use building materials that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% (based on cost) of the total materials value. If only a fraction of a product or material is extracted, harvested, recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value

**Potential Technologies and Strategies:** Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local products are installed and quantify the total percentage of local materials installed

**Carboline Contributions:** Carboline has strategically located manufacturing facilities. See map for manufacturing facility locations and the required 500 mile radius to earn this credit

**Carboline Products That Contribute:**

#### Products manufactured in Louisa, VA:

Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5 GP, Southwest™ Type 5 MD, Southwest™ Type 5 EF, Southwest™ Type 1 XR, Southwest™ Type 7 GP, Southwest™ Type 7 HD, Southwest™ Type 7 TB, 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

#### Products manufactured in Toronto, ON:

Firefilm® III, Firefilm® III C, Southwest™ Type TC-55, Southwest™ Type 5 GP, Southwest™ Type 5 MD

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

Thermo-Sorb®, Nullifire® S605, Nullifire® S606, Thermo-Lag® 3000

### MR Credit 5.2: Regional Materials: 20% Extracted, Processed & Manufactured Regionally (1 point in addition to MR Credit 5.1)

**Intent:** Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation

**Requirements:** Use building materials that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for an additional 10% beyond MR Credit 5.1 (total of 20% based on cost) of the total materials value. If only a fraction of a product or material is extracted, harvested, recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value

## Carboline Fireproofing Products

Credit Contributions for Leadership in Energy and Environmental Design (LEED-NC Version 2.2)

**Potential Technologies and Strategies:** Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local products are installed and quantify the total percentage of local materials installed

**Carboline Contributions:** Carboline has strategically located manufacturing facilities. See map for manufacturing facility locations and the required 500 mile radius to earn this credit

### Carboline Products That Contribute:

#### Products manufactured in Louisa, VA:

Pyrolite® 15, Pyrolite® 22, Southwest™ Type 5 GP, Southwest™ Type 5 MD, Southwest™ Type 5 EF, Southwest™ Type 1 XR, Southwest™ Type 7 GP, Southwest™ Type 7 HD, Southwest™ Type 7 TB, 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

#### Products manufactured in Toronto, ON:

Firefilm® III, Firefilm® III C, Southwest™ Type TC-55, Southwest™ Type 5 GP, Southwest™ Type 5 MD

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

Thermo-Sorb®, Nullifire® S605, Nullifire® S606, Thermo-Lag® 3000



\*Manufacturing Locations: Toronto, Ontario • Louisa, Virginia • Lake Charles, Louisiana • Green Bay, Wisconsin

## Indoor Environmental Quality

### EQ Credit 4.1: Low Emitting Materials: Adhesives and Sealants (1 point)

**Intent:** Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well being of installers and occupants.

**Requirements:** All adhesives and sealants used on the interior of the building (defined as the inside of the weatherproofing system and applied onsite) shall comply with the requirements of the following reference standards as outlined on page 67 of the LEED-NC version 2.2.

## Carboline Fireproofing Products

Credit Contributions for Leadership in Energy and Environmental Design (LEED-NC Version 2.2)

**Potential Technologies and Strategies:** Specify low VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section of the specification where adhesives and sealants are addressed.

**Carboline Contributions:** Carboline's Pyroprime 775 and Southwest™ Type TC-55 are VOC compliant and meet the standards set forth by the South Coast Air Quality Management District Rule #1168.

**Carboline Products That Contribute:** Pyroprime 775, Southwest™ Type TC-55

### EQ Credit 4.2: Low Emitting Materials: Paints and Coatings (1 point)

**Intent:** Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well being of installers and occupants

**Requirements:** Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied onsite) shall comply with the following criteria:

Architectural paints, coatings and primers applied to interior walls and ceilings: do not exceed the VOC limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993:

\*Flats: 50 g/l

\*Non-Flats: 150 g/l

Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates: do not exceed the VOC limit of 250 g/l established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997

**Potential Technologies and Strategies:** Specify low VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section of the specification where paints and coatings are addressed

**Carboline Contributions:** Carboline's Firefilm® and Thermo-Lag® products all meet the required VOC limits for this credit

**Carboline Products That Contribute:** Firefilm® III, Firefilm® III C, Thermo-Lag® 3000

# Certificate of Compliance

Certificate Number 20070208-R8213A  
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 5GP

*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 Comolite*  
Mona Comolite

Underwriters Laboratories Inc.

Reviewed by:

*Fred Hervey*  
Fred Hervey

Underwriters Laboratories Inc.



# Certificate of Compliance

Certificate Number 20070208-R8213A  
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 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, 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, J701, J704, J705, J706, 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 and P937.

Wall-Partition Design No. U703.

Issued by

*Mona Coullouite*  
Mona Coullouite

Underwriters Laboratories Inc.

Reviewed by

*Fred Harvey*  
Fred Harvey

Underwriters Laboratories Inc.

**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***

*"This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program."*

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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

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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 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

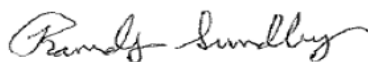
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Intertek has conducted testing for Southwest Fireproofing Products Co. on 5GP cementitious fireproofing. Testing was conducted in accordance with ICC-ES, following the standard methods of AC 23: *Acceptance Criteria for Spray-Applied and Intumescent 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**

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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 chance.

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

---



## 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: 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

---

### 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 OF 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

---

### 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 determined 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

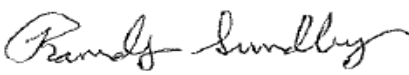
## 6 Conclusion


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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 ± 9F and a Relative Humidity < 60%*

*Samples II & IV: 240 hours at 95 ± 3F 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>

	<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



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

## 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.

---

## 5 Testing and Evaluation Results

---

### 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



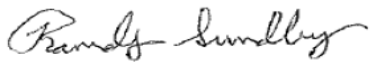
## 6 Conclusion

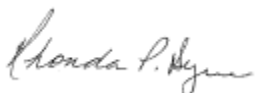
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Intertek has conducted testing for Southwest Fireproofing Products Co. on 5GP cementitious fireproofing. Testing was conducted in accordance with ICC-ES, following the standard methods of AC 23: *Acceptance Criteria for Spray-Applied and Intumescent 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  
Page 7 of 9

## 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

---

**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 E736: Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials 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 E736: *Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members***

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6	CONCLUSION .....	6

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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 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

---

### 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 3	47	90	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 fill the cap, and the cap was placed against the surface of the sprayed fire-resistive. The cap was supported until the adhesive dried, and any excess adhesive was removed. The sample was placed with the sprayed fire-resistive 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.

---



## 5 Testing and Evaluation Results

---

### 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.

Sample Tested	Applied force (lbf)	Cap diameter (in)	Cohesive Adhesive force (psf)	Mode of failure	Thickness (in.)	Density (lbs/ft <sup>3</sup> )
5 GP	29.08618	3 1/4	505.0	Cohesive	0.75 avg	14.7

---

## 6 Conclusion

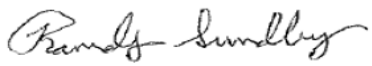
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The Adhesive/Cohesive force at failure of the tested material is 505.0 pounds per square foot. This exceeds the 150 psf or 20 times the weight of the fireproofing requirement of ICC-ES AC23 acceptance criteria for this physical property.

Intertek has conducted testing for Southwest Fireproofing Products Co. Type 5GP cementitious fireproofing. Testing was conducted in accordance ASTM E 736 - 00 (Reapproved 2006) Standard Test Method for Compressive Strength 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**

---



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

October 23, 2009  
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## APPENDIX A

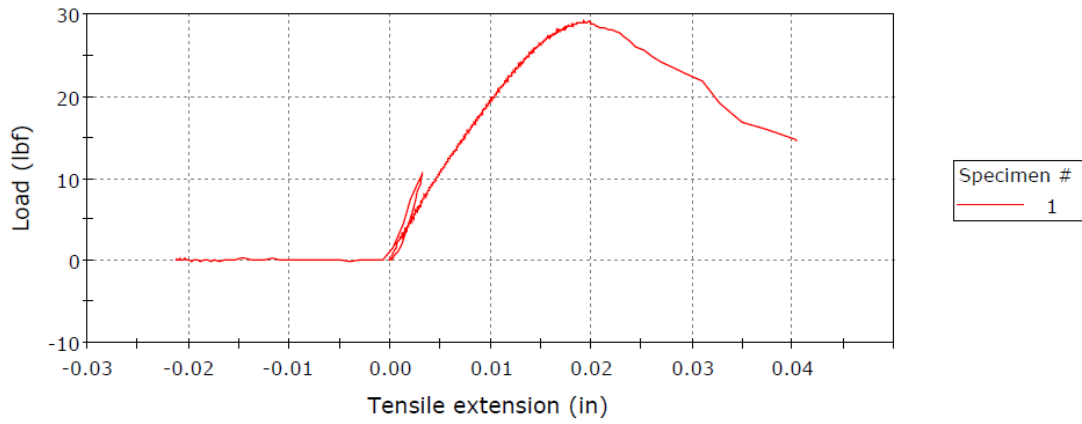
### Test Data

Southwest Fireproofing Products Company  
Project #3171245  
April 15, 2009

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

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

Specimen 1 to 1



	Maximum Load (lbf)
1	29.08618
Mean	29.08618



## REVISION SUMMARY

<b>DATE</b>	<b>SUMMARY</b>
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---

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**EVALUATION CENTER**  
Intertek  
8431 Murphy Drive  
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**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**

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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 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.

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

## 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 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 120°f 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 120°f. 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.

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## 5 Testing and Evaluation Results

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### 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

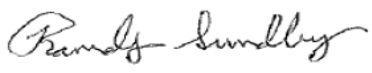
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Intertek has conducted testing for Southwest Fireproofing Products Co. on Type 7GP cementations fireproofing. Testing was conducted in accordance with ASTM E 859-93 (Reapproved 2006) Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to 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**

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

October 23, 2009  
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## 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.

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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: 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 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 E761: *Standard Test Method for Compressive Strength 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 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 October 27, 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 5GP - Bag 3	47	90	Steel plates per ASTM E 761

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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 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.

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## 5 Testing and Evaluation Results

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### 5.1. RESULTS AND OBSERVATIONS

#### E761 – Compressive Strength

Test results including the compressive load, compressive strength, maximum extension, mode of failure at two locations. One at each end of the sample. The density of the sample was determined at the mid section. Results are tabulated below.

	<b>Compressive Load (lbf)</b>	<b>Maximum extension (in)</b>	<b>Mode of failure</b>	<b>Thickness (in.)</b>	<b>Density (lbs/ft<sup>3</sup>)</b>
<b>5 GP (1)</b>	903.40900	.08899	Maximum extension	1	13.27
<b>5 GP (2)</b>	945.34799	.08906	Maximum extension	1	13.27

## 6 Conclusion

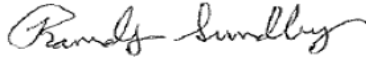
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The average compressive strength of the two determinations is 25.7 pounds per square inch. This equates to 3,701 pounds per square foot which exceeds the 750 psf requirement of ICC-ES AC23 acceptance criteria for this physical property.

Intertek has conducted testing for Southwest Fireproofing Products Co. Type 5GP 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 October 27, 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  
Page 7 of 9

## APPENDIX A

### Test Data

## ASTM E761 DATA SHEET

Project #: 3171245

Client: SWF

Date: 10/27/09

Tech/Reviewer: Randy

Sample: .5GP

Temp: 74.2 F

Thickness of SFRM: 1 inch.

Density of SFRM: 13.27 (lbs/ft<sup>3</sup>)

Mode of Failure: Maximum Extension

	Compressive load at Maximum Compressive extension (lbf)	Maximum Compressive extension (in)
1	903.40900	0.08899
2	945.34799	0.08906



## REVISION SUMMARY

<b>DATE</b>	<b>SUMMARY</b>
October 27, 2009	Original

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**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  
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[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**

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**

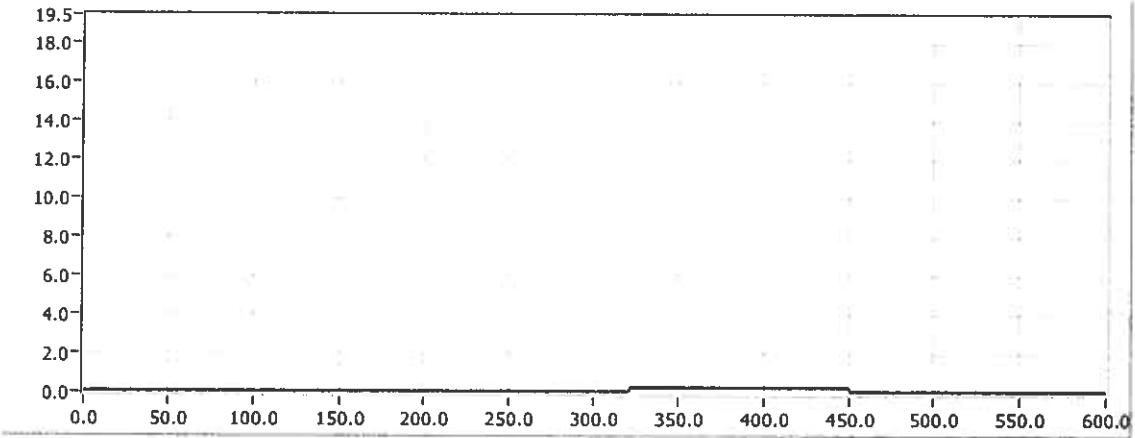
## SPECIMEN DATA

Time to Ignition (sec) 0  
 Time to Max FS (sec) 322  
 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

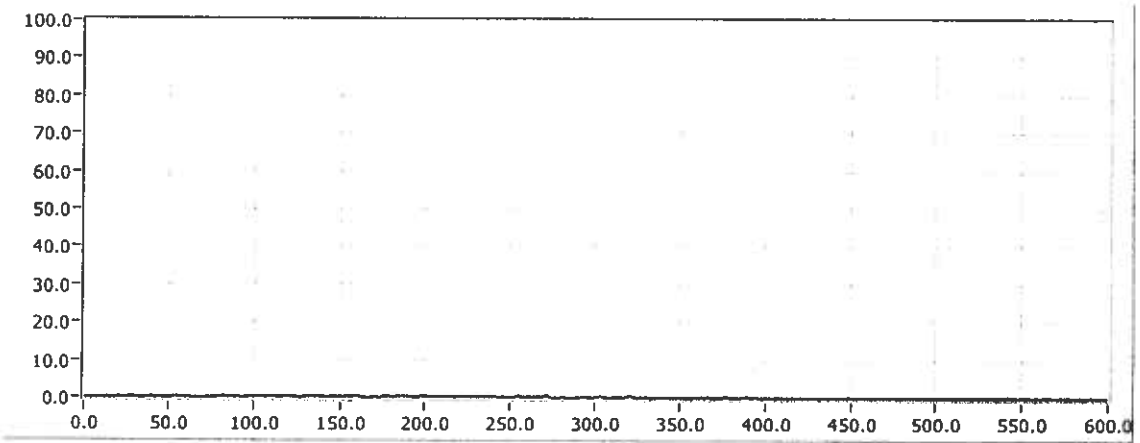
## CALIBRATION DATA

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

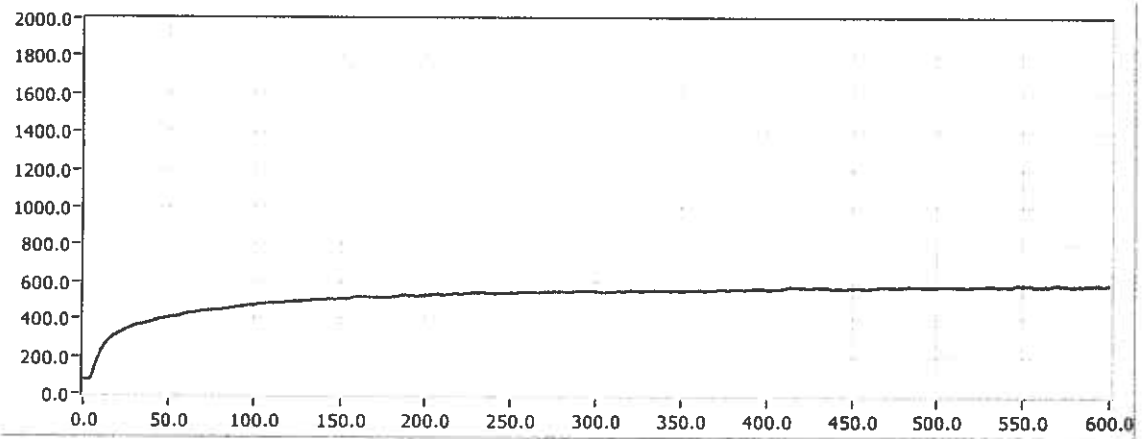
FLAME SPREAD (ft)



Smoke (%A)



Temperature (°F)



Time (sec)

600





**R. T. Vanderbilt Company, Inc.**  
INDUSTRIAL MINERALS AND CHEMICALS

30 WINFIELD STREET, P.O. BOX 5150, NORWALK, CONNECTICUT 06856-5150 • (203) 853-1400  
FAX (203) 853-1452 • CABLE: "BILTVAN"; NORWALK, CONNECTICUT • TWX 710-468-2940

March 10, 1999

Mr. Jason Bergman  
AD Fire Protection  
420 Tapescott Road  
Scarborough, Ontario  
Canada M1B 1Y4

Dear Mr. Bergman:

Enclosed, please find my report on 70 days exposure of your fire protection material to fungi under increased temperature and humidity conditions. No growth was seen on any of the formulas tested.

I believe the report is self-explanatory; however, should you wish to discuss any of the details, please feel free to give me a call.

Sincerely,

Frank B. Flynn  
Manager, Biochemical Products

FF/

[fflynn@rtvanderbilt.com](mailto:fflynn@rtvanderbilt.com)

**SUPPLEMENTAL REPORT**

ES-136 Resistance of Fireproofing Material Containing Inhibitors to Fungi  
AD Fire Protection Company

**Introduction:**

AD Fire Protection submitted 18 bags of a loose material along with directions on how to mix each with water. Each formula contains a biocide at an unrevealed level, except for Formula 1, which has no biocide.

Each sample was mixed in a paper cup using a spatula and according to directions. The test proceeded as detailed in the Procedures section, below. The results described here are from observations made after 70 days of incubation at 28°C.

**Conclusions:**

All samples contained in cups failed to exhibit fungi growth after 70 days of various temperature and humidity conditions.

**Procedures:**

Upon receipt, each formula was prepared in a 20-ounce wax paper cup according to provided directions. The specimens were allowed to dry at ambient conditions for 48 hours.

Each sample was then inoculated with a fungi spore suspension referenced from ASTM G-21, "Determining the Fungi Resistance of Synthetic Polymeric Materials to Fungi". All cups were subject to the following conditions:

- 14 days in an incubator at 28°C; cups covered; surfaces re-sprayed with fungi
- at 33 days, covers removed and cups re-sprayed. Open cups were placed into a plastic bag containing a pan of water for increased humidity then back into incubator;
- at 60 days, cups were removed from bag and read. Surfaces were re-sprayed and removed to a high humidity cabinet having a temperature of about 90F.
- at 70 days, plates were examined for final readings.

The grading system used to assess fungi resistance was from ASTM G-21-96, "Determining the Fungi Resistance of Synthetic Polymeric Materials to Fungi".

**Results:**

See attached sheet.

FF/

# AD FIRE PROTECTION COMPANY

<u>Batch No.</u>	<u>Formula</u>	<u>Cups</u>
		<u>70 Days</u>
Batch 01	AD Type 5	0
Batch 02	AD Type 5	0
Batch 03	AD Type 5	0
Batch 04	AD Type 5	0
Batch 05	AD Type 5	0
Batch 06	AD Type 5	0
Batch 07	AD Type 5	0
Batch 08	AD Type 5	0
Batch 09	AD Type 5	0
Batch 10	AD Type 5	0
Batch 11	AD Type 7	0
Batch 12	AD 1XR	0
Batch 13	AD Type 7	0
Batch 14	AD Type 7	0
Batch 15	AD Type 7	0
Batch 16	AD 1XR	0
Batch 17	AD 1XR	0
Batch 18	AD 1XR	0

Key: 0 = No Growth  
1 = Trace Growth (<10%)  
2 = Slight Growth (10-30%)  
4 = Moderate Growth (30-60%)  
5 = Heavy Growth (60-100%)



**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.

All services undertaken subject to the following general policy: Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations or surveys made. No quotations from reports or use of ETL's name is permitted except as expressly authorized by ETL in writing.

**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

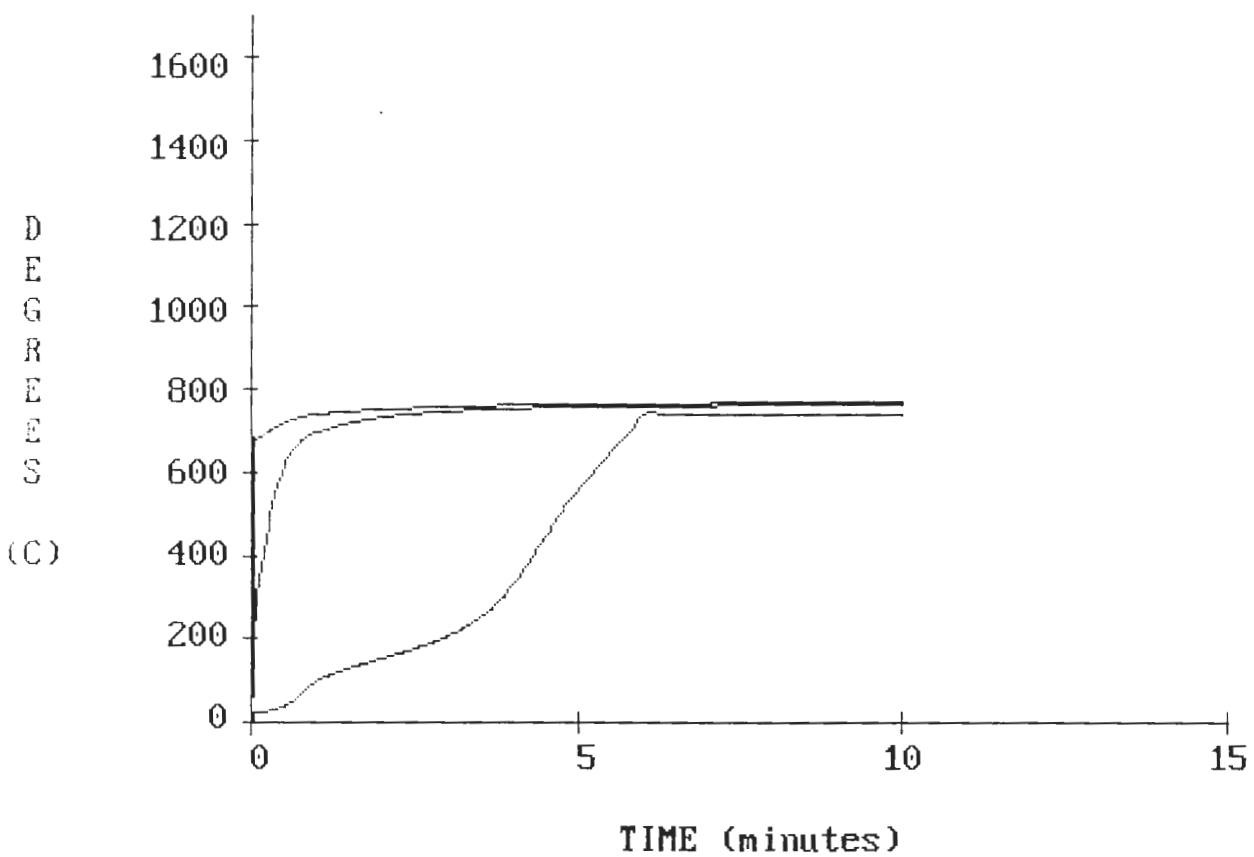
THERMOCOUPLE #1 IS LOCATED IN THE CENTER OF THE TEST SPECIMEN  
 THERMOCOUPLE #2 IS LOCATED ON THE SURFACE OF THE TEST SPECIMEN  
 THERMOCOUPLE #3 IS THE AIR TEMP. INSIDE THE FURNACE DURING THE TEST

**SPECIMEN NUMBER**

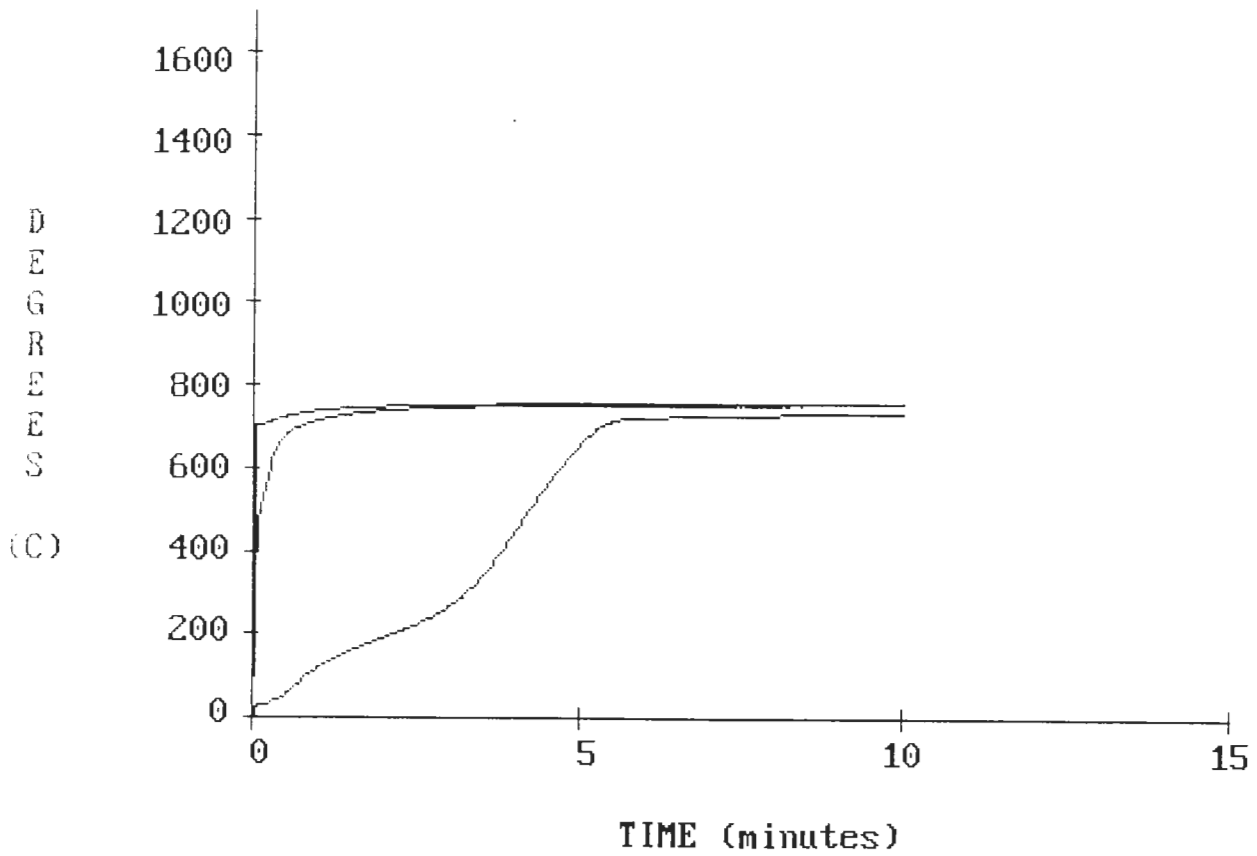
	1	2	3	4
INITIAL WEIGHT (g)	27.77	26.43	25.36	27.17
FINAL WEIGHT (g)	23.93	22.37	21.56	23.23
TIME TO FLAMING (min:sec)	---	---	---	---
FLAME OUT (min:sec)	---	---	---	---
MAX. TEMP. THERMOCOUPLE #1 (°C)	744.2	733.5	733.2	736.1
MAX. TEMP. THERMOCOUPLE #2 (°C)	764.2	755.9	764.2	758.4
TEMP. RISE ABOVE INITIAL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

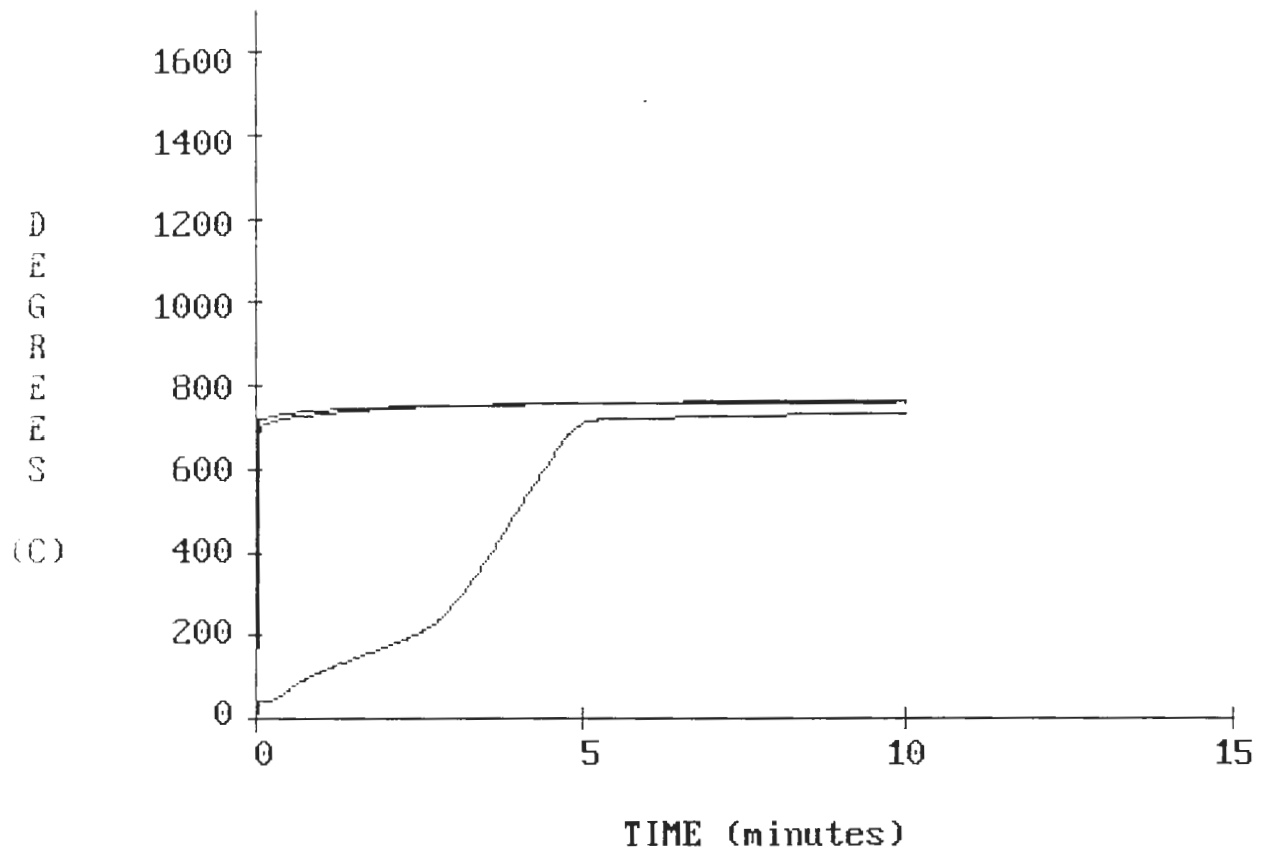


### Temperature vs. Time

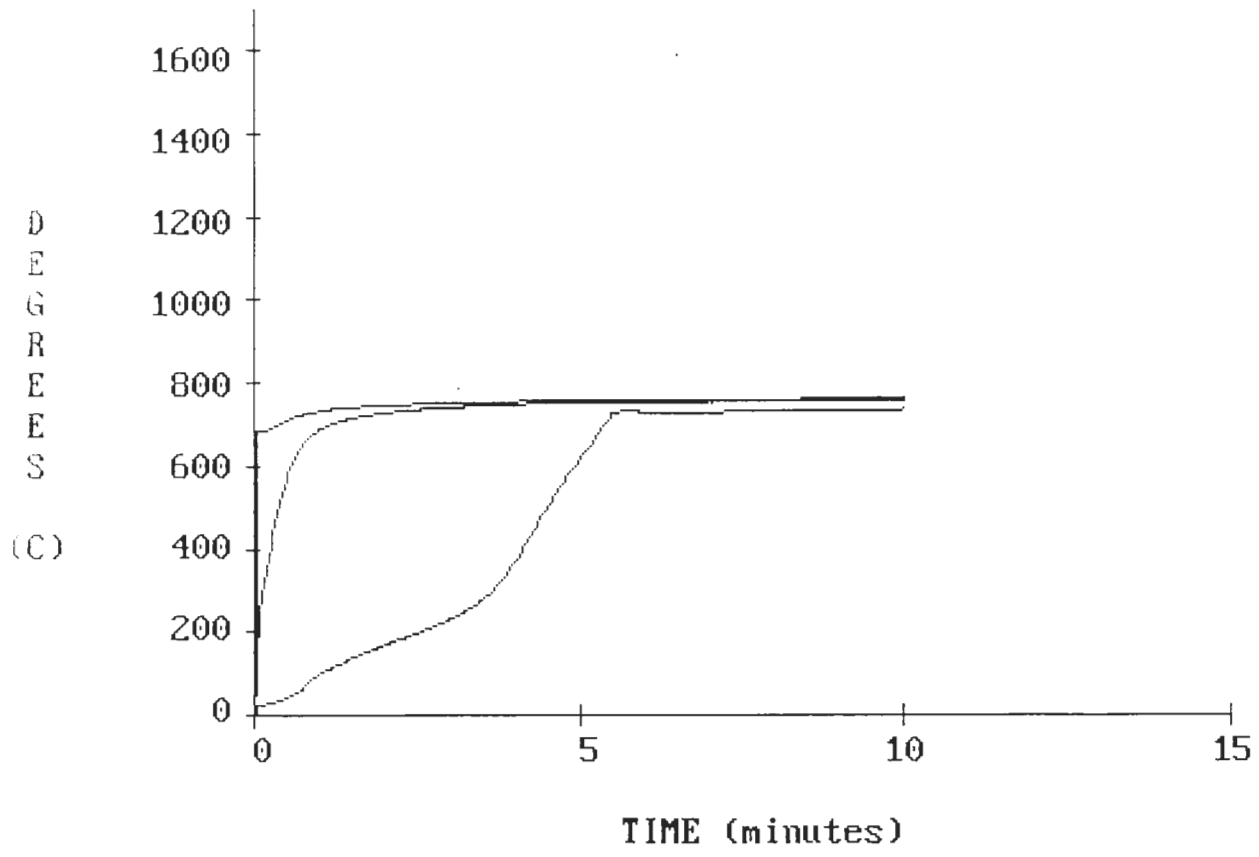




Temperature vs. Time



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