

SELECTION & SPECIFICATION DATA

Generic Type	A gypsum based, Spray-applied Fire Resistive Material (SFRM) designed for the fire protection of interior structural steel.
Description	A medium density SFRM intended for the fire protection of interior structural columns, beams joists, decks, walls, roofs, girders, floors and pre-cast concrete units. It is tested and certified for fire resistance ratings up to 4 hours. Southwest TYPE 5MD™ is a trademark of the Southwest Fireproofing products Company.
Features	<ul style="list-style-type: none"> • Durable cementitious formulation • Noncombustable • Can be injected with Accelerator A-20 for fast set and increased yield (optional). • Asbestos-free-complies with WHMIS, EPA and OSHA regulations. • Mineral Wool free – no airborne fibres. • Styrene free – no toxic decomposition gasses. • Economical: Maintains products on budget. • Design flexibility with over 100 cUL/ULC designs.
Color	Non-Uniform Tan
Finish	Textured
Primers	Primers are not required or recommended. If a primer is specified, or steel is primed, bond strength must meet minimum UL/cUL criteria. A/D Type TC-55 Sealer is used as a primer/bonding agent to meet this requirement where specified. Southwest DK3 (Spatter Coat) must be used as a primer/bonding agent on cellular decks and roof decks per UL/cUL requirements. Contact A/D Technical Service for further information. Southwest Fireproofing materials neither promote nor prevent corrosion. Fireproofing should not be considered part of the corrosion protection system.
Fireproofing Topcoats	Generally not required. In severely corrosive atmospheres, consult A/D Technical Service for selection of coating most suitable for the operating environment.
Application Thickness	12.7-15.9mm (½"- 5/8")
Limitations	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 93°C (200°F).

SUBSTRATES & SURFACE PREPARATION

General	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 A/D 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 DK3 (Spatter Coat) is used. Also be sure that all roof work is completed and water tight before commencing installation of fire protection. Roof traffic shall be limited to maintenance after fire protection is applied and cured. No fireproofing shall be applied prior to completion of concrete work on steel floor decking.
Painted/Primed Steel Decks	Apply to painted/primed steel decking only if permitted by the UL/cUL 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/cUL requirements.
Painted/Primed Steel Joists	Painted steel joists do not require adhesive, lath or fastening devices. It is acceptable to apply directly to steel joists.
Painted/Primed Structural Steel	Painted/primed structural steel is generally not approved by UL/cUL as an acceptable substrate for SFRMs unless the paint or primer was included in the fire test and or a UL/cUL listed for SFRM

applications to structural steel. UL/cUL 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 Type 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 or the ULC Fire Resistance Directory for details or contact A/D Technical Service before applying to any painted / primed steel beams or columns.

PERFORMANCE DATA

Test Method	Results
ASTM D2240, Shore D Hardness,	Type 1, NCR 50 Class (a), Category A
ASTM C384, Acoustical Noise Reduction Coefficient (NRC)	0.37 @ 30" (7.6mm) 0.51 @ 0.45" (11.4mm)
ASTM E136, Combustibility	Passed, (non-combustible)
ASTM E-605, Density ^(1,2)	352 kg/m3 (22 pcf) nominal
ASTM E-736, Cohesion / Adhesion ⁽³⁾	60.7 kPa (1268 psf) @ 22 pcf 20.8 kPa (>434 psf) @ 17 pcf
ASTM E-759, Deflection	Passed
ASTM E-760, Impact	Passed
ASTM E-761, Compressive Strength	496 kPa (3700 psf)
ASTM E-84, Surface Burning	Flame Spread: 0, Smoke Development: 0
ASTM E-859, Air Erosion	0.00g/m ² (0.00 g/ft ²)
ASTM E-937, Corrosion	Passed
ASTM G-21, Fungi Resistance	Passed (No growth)

(1) Air dry at ambient conditions to constant weight. Do not force cure. Use ASTM E605 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).

(2) 15/14 pcf (minimum) required for UL designs.

(3) Exceeds 434 psf bond strength required by code at 17 pcf density

All values derived under controlled laboratory conditions

Test reports and additional data available upon written request.

MIXING & THINNING

- Mixer**
1. Use a minimum 340 - 453 litre (12 - 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 A/D 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 pervious 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 at 40 rpm. Do not over mix. The material; volume should not go over center bar of mixer. Use 30.3 to 37.8 litres (8 to 10 gallons) of water per 22.7kg (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 A/D representative or A/D Technical Service.

APPLICATION EQUIPMENT

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.

General Guidelines:

Pumps | 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 3FM9/FM5E (Rotor Stator/2L4) Putzmeister- model #S5EV (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

- 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 Hoses** | Use 4.5 to 7.6 m (15 to 25 ft.) of 76mm (3") I.D. or larger surge hose from the manifold. Follow with a 406mm (16") tapered fitting to a 51mm (2") I.D. hose to the spray area. Taper to 4.5 to 6 m (15 to 20 ft.) of minimum 38mm (1½") or 25mm (1") whip hose.
- Standpipe** | Use 76mm (3") I.D. aluminum tubing with quick external disconnections. Elbows should be 76mm (3") I.D. with minimum 91mm (36").
- Nozzle/Gun** | Use a minimum 25mm (1") I.D. plaster type nozzle with shut off valve, swivel and air shut off valve.
- Orifice Sizes and Shields** | 9.5mm to 15.9mm (9/16" to 5/8") I.D. "blow-off" tips. (mini shields optional).
- Compressor** | Compressor on pump must be capable of maintaining minimum 206kPa (30 psi) and 9 to 11 cfm at the nozzle.
- Air Line** | Use 15.9 mm (5/8") I.D. hose with a minimum bursting pressure of 689 kPa (100 psi).

APPLICATION PROCEDURES

General | Thicknesses of 19mm (¾") or less can be applied in one pass. When additional coats are required to reach specific thickness, apply subsequent coats after the 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 and where indicated by the UL/cUL design. For complete application instructions, refer to the Southwest Fireproofing Products Field Application Manual.

Field Testing | Test for thickness and density in accordance with the applicable building code, AWCI Technical Manual 12-A Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials, an Annotated Guide, and ASTM E605 Standard Test Methods for thickness and Density of Sprayed Fire-Resistive materials Applied to Structural Members

Finishing | Normally left as sprayed texture finish

APPLICATION CONDITIONS

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

*Air and substrate temperatures shall be maintained 24 hours before, during and 24 hours after application. Contact A/D Technical Service for recommendations.

CURING SCHEDULE

Surface Temp. & 50% Relative Humidity	Dry to Recoat
25°C (77°F)	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

Cleanup	Pump, mixer and hoses should be cleaned with potable water. Sponges should be run through the hoses to remove any material remaining in the hoses. Wet overspray must be cleaned up with soapy or clean, potable water. Cured overspray material may be difficult to remove and may require chipping or scraping to remove.
Safety	Follow all safety precautions on the Material Safety Data Sheet (MSDS.) It is recommended that personal protective equipment be worn, including spray suits, gloves, eye protection and respirators.
Overspray	Adjacent surfaces shall be protected from damage and overspray. Sprayed fireproofing materials may be difficult to remove from surfaces and may cause damage to architectural finishes
Ventilation	In enclosed areas, ventilation shall not be less than 4 complete air exchanges per hour until the material dries.

TESTING / CERTIFICATION / LISTING

Underwriters Laboratories, Inc.	<p>Tested in accordance with ASTM E119/ UL 263 and CAN/ULCS101 at Underwriters laboratories, Inc. and listed by UL in the following designs (most common 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</p> <p>Unprotected Floor/Ceiling: D949 (Restrained/Unrestrained) Additional designs: D905, D907, D909, D910, D916, D917, D920, F906</p> <p>Concrete Floor/Roof: J718 (Restrained/Unrestrained) Additional designs: G701, G702, G703, J701, J704, J705, J706, J919, J957, J966 Beam/Joist: N791, S740 (Restrained/Unrestrained) Additional designs: N7401, N404, N708, N732, N736, N754, N756, N791, S701, S702, S715, S739</p> <p>Protected Roof/Ceiling: D741 (Restrained/Unrestrained) Additional designs: P675, P676, P701, P708, P709, P710, P711, P714, P717, R705 Unprotected</p> <p>Roof/Ceiling: D921 (Restrained/Unrestrained) Additional designs: P901, P902, P907, P919, P920, P923, P937</p> <p>Metal Wall Assembly: U703 (Restrained/Unrestrained)</p> <p>Columns: X771, Y725 Additional designs: X527, X701, X704, X722, X723, X772, X751, X752, X808, X813, X819, X820, X821, X822, Z805, Z806, Z807, Z810</p>
City of New York	<p>MEA-55-04-M Vol. II (Wall) MEA 56-04-M Vol. II (Beam and Floor / Ceiling) MEA 409-02-M Vol. III (Columns and Roof / Ceiling)</p>

PACKAGING, HANDLING & STORAGE

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

Storage | Store indoors in a dry environment between 0°C to 52°C (32°F to 125°F)
*Material must be kept dry or clumping of material may occur.

Shelf Life | 12 months
*Shelf Life: (actual stated shelf life) when stored indoors in a dry place and in original unopened containers.

Packaging | 22.7 kg (50 lb.) bags
*Southwest Type 5AR, Type 5GP, Type 5MD and Type DK3 are trademarks of Southwest Fireproofing Products Company

WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance 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 Nullifire® are registered trademarks of Carboline Company.