

SELECTION & SPECIFICATION DATA

Generic Type	A Portland cement based, Spray-applied Fire Resistive Material (SFRM) designed for the fire protection of structural steel in general purpose areas with prolonged exposure to physical abuse, moisture and high humidity.
Description	A nominal 40 lb./ft ³ (640 kg/m ³) density (average) SFRM intended for the fire protection of 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. It was specifically formulated for high humidity areas such as mechanical rooms, elevator shafts and garages and is resistant to damage and moisture. Southwest Type 7HD™ is a trademark of the Southwest Fireproofing Products Company.
Features	<ul style="list-style-type: none"> • Damage resistant and permanent • Noncombustible • High build • Moisture resistant • Asbestos-free-complies with WHMIS, EPA and OSHA regulations. • Mineral Wool free • Styrene free – no toxic decomposition gases • Economical: Maintains products on budget • Design flexibility over 100 UL/cUL designs
Colour	Gray Product colour may vary due to variations in colour of Portland cement.
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 design 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	Not required. In corrosive atmospheres, consult A/D Technical Service for selection of coating most suitable for the operating environment.
Application Thickness	15.9mm (5/8") Max. recommended thickness per pass.
Limitations	Not intended for permanent direct exposure to weather, exterior use 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	<p>Prior to application, all substrates must be clean and free of loose scale, dirt, oil, grease, condensation, or any other substance that would impair adhesion.</p> <p>Mechanical attachment utilizing metal lath is required for applications to deck surfaces due to the increased weight of the product when compared to normal and medium density products. 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. Also be sure that all roof work is completed and water tight before commencing installation of fire protection. Roof traffic shall be limited to maintenance after fire protection is applied and cured. No fireproofing shall be applied prior to completion of concrete work on steel floor decking.</p>
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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 <i>UL Fire Resistance Directory- Volume 1</i> for details or contact A/D Technical Service before applying to any painted / primed steel beams or columns.
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.

PHYSICAL DATA (TYPICAL VALUES)

Test Method	Results
ASTM D2240, Shore D Hardness,	40
ASTM E136, Combustibility,	Passed,(non-combustible)
ASTM E-605, Density ⁽¹⁾	640 kg/m ³ (40 pcf) Avg. 577 kg/m ³ (35 pcf) Min.
ASTM E-736, Cohesion / Adhesion	813 kPa (17000 psf)
ASTM E-759, Deflection	Passed
ASTM E-760, Impact	Passed
ASTM E-761, Compressive Strength	4412 kPa (640 psi)
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)Applied density is dependent upon equipment and application parameters. 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 AWCI Technical Manual 12-A (Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire Resistant Materials, an Annotated Guide)
All values derived under controlled laboratory conditions.
Test reports and additional data available upon written request.

MIXING

Mixer	<ol style="list-style-type: none"> Use a minimum 340-453 litre (12 to 16 cubic foot) heavy-duty mortar mixer capable of rotating at 40 rpm with rubber tipped blades that wipe the sides. 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 24.6 to 28.3 litres (6.5-7.5 gallons) of water per 22.6kg (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 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	<p>This material can be pumped with a wide range of piston, rotor stator and squeeze pumps designed to pump cement/plaster materials, including:</p> <ul style="list-style-type: none"> Essick- model #FM9/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) <p>Marvel kit must be removed from piston pumps.</p>
Ball Valves	<p>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.</p>
Material Hose	<p>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 (1.5") or 25mm (1") whip hose.</p>
Standpipe	<p>Use 76mm (3") I.D. aluminum tubing with quick external disconnections. Elbows should be 76mm (3") I.D. with minimum 91mm (3.6").</p>
Nozzle/Gun	<p>Use a minimum 25mm (1") I.D. plaster type nozzle with shut off valve, swivel and air shut off valve.</p>
Orifice Size and Shields	<p>12.5mm (1/2") I.D. "blow-off" tips. (mini-shields optional).</p>
Compressor	<p>Compressor on pump must be capable of maintaining minimum 275kPa (40 psi) and 9 to 11 cfm at the nozzle.</p>
Air Line	<p>Use 15.9 mm (5/8") I.D. hose with a minimum bursting pressure of 689 kPa (100 psi).</p>

APPLICATION PROCEDURE

General	<p>Thicknesses of 19mm (3/4") 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. 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 <i>Southwest Fireproofing Products Field Application Manual</i>.</p>
Finishing	<p>Normally left as a sprayed texture finish.</p>
Field Testing	<p>Test for thickness and density in accordance with the applicable building code, AWCI Technical Manual 12-A <i>Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials, an Annotated Guide</i>, and ASTM E605 <i>Standard Test Methods for thickness and Density of Sprayed Fire-Resistive materials Applied to Structural Members</i>.</p>

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. Once the product has set, it is suitable for general purpose areas with prolonged exposure to moisture or high humidity.

CLEANUP & SAFETY

- Cleanup** | Pump, mixer and hoses should be cleaned with potable water. Sponges should be run through the hoses to remove any material remaining in the hoses. Wet overspray must be cleaned up with soapy or clean, potable water. Cured overspray material may be difficult to remove and may require chipping or scraping to remove.
- Safety** | Follow all safety precautions on the Safety Data Sheet (SDS.) 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 is dry.

TESTING / CERTIFICATION / LISTING

Underwriters Laboratories, Inc.	<p>Tested in accordance with ASTM E119/ UL 263 and CAN/ULC-S101 at Underwriters Laboratories, Inc. and listed by UL in the following designs (most common in bold):</p> <p>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</p> <p>Unprotected Floor/Ceiling: D949 (Restrained/Unrestrained) Additional designs: D905, D907, D909, D910, D916, D917, D920</p> <p>Concrete Floor/Roof: J718 (Restrained/Unrestrained) Additional designs: G701, G702, G703, J701, J704, J705, J706, J919, J957, J966</p> <p>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</p> <p>Unprotected Roof/Ceiling: D921 (Restrained/Unrestrained) Additional designs: P901, P902, P907, P919, P920, P923, P937</p>
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	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
City of New York	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)

PACKAGING, HANDLING & STORAGE

Shelf Life | 12 months

Shipping Weight (Approximate) | 22.6 kg (50 lb.)

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

Packaging | 22.6 kg (50 lb.) bags

Type 7HD™ is manufactured under license to Southwest Fireproofing™

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.