

SMFMA
Tech Comm



June 23, 1966

Dr. Morris Lieff
22 Grumman Avenue
Newark, New Jersey 07112

Dear Morris:

For ASTM next week, attached is a draft of our suggestions for physical properties and test methods for sprayed-on fireproofing materials. With the exception of Resistance to Dusting, we can tie all the other characteristics to an ASTM Standard in one form or another.

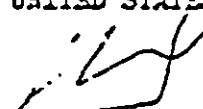
Please note for the BondStrength we indicated a minimum of 4 inches by 4 inches. I'm not sure whether the new GSA Interim calls for 6 inches by 6 inches or 2 inches by 2 inches as a minimum. In Corrosion Resistance we suggest for ASTM to develop a temperature and humidity test instead of the current salt spray test. With reference to Resistance to Dusting, GSA currently calls for .01 grams. This at times can be too severe. I suggest we call for .1 gram. With reference to purging, the longer the purging the better. I am not sure whether we have decided on 6 hours or longer.

Also enclosed is a statement which we may use to discard the method proposed by Mr. Levy. When I see you in Atlantic City I'll show you a damageability type test which we originally proposed to San Francisco, which to us seems like a more reasonable test.

In case you have to get hold of me I'll be at the Tides Motel, telephone number 344-5173.

Sincerely yours,

UNITED STATES MINERAL PRODUCTS COMPANY


Frank M. Stampf
Vice President - Research

FMS/ec

Attachments

cc:

✓ Mr. J. P. Verhalen

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PHYSICAL PROPERTIES AND TEST METHODS
TO DETERMINE SUITABILITY OF SPRAYED-ON FIREPROOFING MATERIALS

Fire Resistance Performance - Shall be reported in hours and tested in accordance with Standard Method for Fire Test of Building Construction and Materials, ASTM E-119

Fire Hazard Classification - Shall be reported as Flame Spread, Fuel Contributed, and Smoke Developed and tested in accordance with Standard Method of Test for Surface Burning Characteristics of Building Materials, ASTM E-84.

Thickness - Shall be reported to the nearest 16th of an inch and tested in accordance with Standard Method of Test for Thickness and Density of Blanket and Batt Type Thermal Insulating Materials, ASTM C-167.

Density - Shall be reported to the nearest 1/10th of a pound per cubic foot and shall be determined in accordance with Standard Method of Test for Thickness and Density of Blanket and Batt Type Thermal Insulating Materials, ASTM C-167.

Bond Impact Test - The material being tested shall not crack or delaminate from the surface to which it is applied and is tested in accordance with Strength Test of Panel for Building Construction, Section 61-62 (Impact Load of Floor Test) ASTM E-72. The specimen shall be a complete floor assembly, 2 ft. wide by 8 ft. long unsupported, and a 60 lb. sand bag shall be dropped from a height of 4 ft.

Bond Strength - The minimum bond strength shall be 20 times the weight of the applied product when tested in accordance with Standard Method of Tension Test of Flat Sandwich Construction in Flatwise Plane ASTM C-297. The test specimen shall be a minimum of 4" 4" and the material applied 3/4" thick to shop coated and/or galvanized steel.

Corrosion Resistance - Corrosion occurring on the sprayed specimen shall not be greater than on similar unsprayed specimen when tested in accordance with Standard Method of Salt Spray (Fog) Testing ASTM B-117. Shop Coated and ^{or} galvanized steel shall be sprayed with

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3/4" fire protection and tested along with unsprayed control sections.

This salt spray test is not really applicable for testing building constructions and therefore it is in order for ASTM to develop a new test method which would involve only temperature and humidity to induce corrosion similar to Military Specification MIL-I-5272C, Humidity Test Procedure.

Resistance to Dusting - The dust accumulated shall not exceed .01 or .1 grams per square foot when tested in accordance with the following test method.

The test shall be made in a suitable type metal duct with a filter at the blower end and a dust collecting black cloth over the open end. Test specimen of the specified minimum density for the type of material proposed for use shall be placed in opening inside of duct so that the face of the sample and inside face of the duct are on the same plane. Air velocity shall parallel the face of sample. After 6 hours - 24 hours of purging, the specimen is tested for 24 hours with an impinging velocity on filter of minimum 800 ft. per minute and an issuing velocity of minimum 270 ft. per minute. Specimen shall have a minimum surface area of 4 square feet.

Deflection Test - The applied material shall not crack or delaminate when the backing to which it is applied is subject to a downward deflection of 1/120th of the span when tested in accordance with Standard Method of Test for Flexural Strength of Concrete C-293. The material is applied to 6" by 24" steel plates and tested on 22" span center

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Our company has looked into the method to determine durability (damageability) of sprayed fireproofing, as outlined to ASTM by Mr. Robert C. Levy, Superintendent of the San Francisco Bureau of Building Inspections.

We find this method not to be applicable since it essentially defines one type of physical characteristic for one type of fireproofing material. Essentially this method favors one type of material over another and is not truly checking durability or damageability.

For example, a brittle granular material may easily pass this test, but when struck with some large object, can come loose and fall in large sheets. A very tough fibrous material, on the other hand, is easily caught by the fingers causing failure. This material, however, can repeatedly be hit and squeezed and yet not show any substantial evidence of being damaged.

Other methods are available which will more truly show the durability aspects of sprayed-on as well as other applied fireproofing materials.