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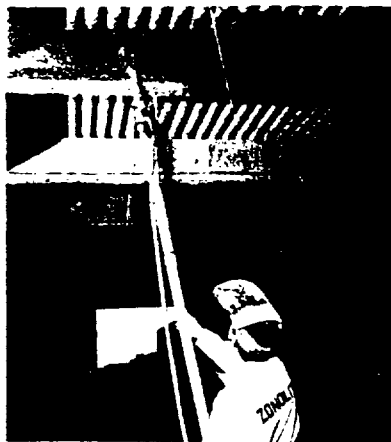
WRG-569

Fireproofing

20042382

Mono-Kote® Cementitious (Plaster) Spray-On Fireproofing

Mono-Kote is the trade name for a fire protection material developed by Construction Products Division, W. R. Grace & Co., specifically for fast application, high fire resistance, and low cost. The material is spray applied by any one of several plastering machines. Mono-Kote is a cementitious (plaster), mill-mixed material requiring only the addition of water at the job. It is applied directly to steel, concrete and other surfaces requiring fire protection.



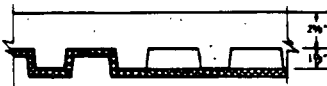
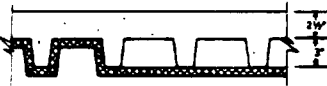
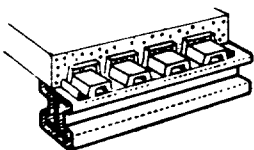
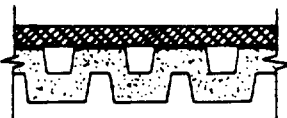
Machine-applied cementitious Mono-Kote withstands air erosion, prevents "dusting" in air-conditioning and ventilating systems.

Technical Data

FIRE RESISTANCE: Mono-Kote has been tested and rated according to ASTM E-119 by the Underwriters' Laboratories, Inc. The material bears the U. L. label under a quality control inspection program. Fire resistance ratings and details for varied structural systems are available on request. Mono-Kote has been tested for other properties such as corrosion resistance, deflection, bond-impact, surface hardness. These tests comply with G.S.A. requirements and are available upon request.

FIRE HAZARD: Tested and reported in accordance with ASTM E-84 by Underwriters' Laboratories, Inc. Flame

Zonolite Mono-Kote FIRE RESISTANCE RATINGS (PARTIAL SUMMARY)

SYSTEM	DESCRIPTION	RATING	Underwriters' Laboratories, Inc. Number	Reference Report
 1 1/2" DECK	2 1/2" Concrete Fill Mono-Kote 7/8" Thick following Contour.	3 hrs.	21-3	4374
	2 1/2" Concrete Fill Mono-Kote 3/8" Thick Following Contour.	2 hrs.	294-2	4374-31
 3" DECK	2 1/2" Concrete Fill Mono-Kote 1 1/8" in flute and 1/8" on flat plate.	3 hrs.	52-3	4374-18
	2 1/2" Concrete Fill Mono-Kote 3/8" Thick Following Contour.	2 hrs.	294-2	4374-31
 COMPOSITE FLOOR - BEAM	2 1/2" Concrete Fill Mono-Kote 1" in flute and 3/4" on flat plate.	3 hrs.	205-3	4374-26
	2 1/2" Concrete Fill Mono-Kote 1/2" in flute and 3/8" on flat plate.	2 hrs.	257-2	4374-25
 ROOF DECKS	Two layers 1/2" UL Listed roof insulation on steel deck. Fireproofing — 1 3/8" vermiculite Type-MK following contour.	1 1/2 hrs.	RC5-1 1/2	4374
	One layer 1" UL Listed roof insulation on steel deck. Fireproofing — 1 3/8" vermiculite Type-MK following contour.	1 hr.	RC10-1	3996-5

Spread-10, Fuel Contributed-5, Smoke Developed-0.

POLLUTION AND HEALTH: Because of the constantly-changing conditions involving fireproofing and its relation to pollution and health, we recommend that you contact your Zonolite sales office for the latest data on these subjects. Recent tests at Underwriters' Laboratories, Inc. have provided some fire-ratings on an asbestos-free formula Mono-Kote. Other tests and ratings will follow.

Existing formulations of Mono-Kote contain minimal amounts of asbestos which are "locked in" during the mixing process. Mono-Kote is wet-mixed, pumped and sprayed, and hardens to a cementitious mass. Job-site tests show air fiber counts well below occupational

threshold limit values proposed by governmental bodies.

DRY DENSITY: Approximately 22 p.c.f. U. L. Inc. lists 18 p.c.f. minimum average density.

BOND STRENGTH TO STEEL OR CONCRETE: More than 500 lbs. per sq. ft. when set and dry.

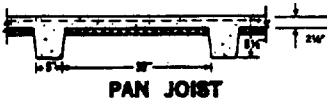
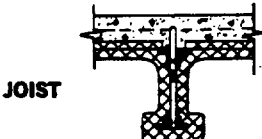
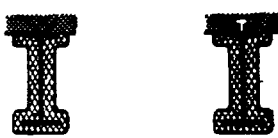
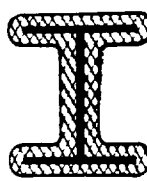
RESISTANCE TO AIR EROSION: Independent laboratory test subjected standard, machine-applied Mono-Kote surface to winds exceeding hurricane velocity . . . over 100 M.P.H. for 87 hours . . . with no erosion. Copies of test description available.

SOUND ATTENUATION: The combination of beams and ceiling when fire-

proofed with Mono-Kote gives sound absorption of .50 to .85 depending upon the ratio of beam area to flat area. This is of value to the designer in accomplishing attenuation objectives, especially when the fireproofed area is part of a plenum above a finished ceiling.

SPECIFICATION (SHORT FORM):

Sprayed fireproofing material shall be Mono-Kote as manufactured by Zonolite, Construction Products Division, W. R. Grace & Co. or its processing distributor. It shall be applied by machine to the thickness required by local codes and in the areas shown on the drawings. The method of mixing and application shall comply with the manufacturer's recommendations.

SYSTEM	DESCRIPTION	RATING	Underwriters' Laboratories, Inc. Number	Reference Report
 PAN JOIST	2 1/2" Concrete Slab Mono-Kote 7/8" Thick under slab.	2 hrs.	99-2	4374-21
 JOIST	2 3/4" regular concrete fill. Fireproofing—1/2" vermiculite Type-MK following contour of floor and 1 1/2" vermiculite Type-MK following contour of joists.	3 hrs.	227-3	4374-32
 BEAMS	1/2" Mono-Kote following contour of the member.	4 hrs.	40-4	4374-24
	Composite beam (shear strap on stud). 3/4" 1/2"	4 hrs. 3 hrs.	257-2 216-3	4374-25 4339
 COLUMNS	Mono-Kote following contour of the Column—Min 14WF228. 1 1/4" 7/8"	4 hrs. 3 hrs.	37-4 32-3	4374-21-23 4374-21-23
	All Columns. 2 1/2" 1 7/8" 1 1/2"	4 hrs. 3 hrs. 2 hrs.	15-4 17-3 7-2	4374-8 4374-13 4374-13
	Minimum Column 14WF228—Mono-Kote with 7/8" U.L. Inc. approved board on one flange. 1 1/2" 1 7/8" 3/4"	4 hrs. 3 hrs. 2 hrs.	46-4 37-3 22-2	4374-30 4374-30 4374-30

NOTE: Revision of thickness to comply with new criteria of ASTM E-119 and Underwriters' Laboratories, Inc. 263, effective January 1, 1971, has been completed but not approved in time for this publication. This will list restrained and unrestrained floor and beam assemblies under a 1100°-1300° limit.

Please contact any of the Zonolite, Construction Products Division offices for these new listings or any other data.

GRACE

20042384

Specifications

1. SCOPE

a) Work Included

Provide all labor, materials and equipment required for complete installation of all sprayed fireproofing and related work as shown on the drawings or specified herein, and in accordance with all applicable requirements of the Contract Documents.

b) Work Not Included

1. Structural steel encased in concrete.
2. Trowelled plaster fireproofing in specified under appropriate section.
3. The cleaning of the surfaces to receive sprayed fireproofing.

c) Codes and Regulations

This specification shall be supplemented by the applicable requirements of the Building Codes and all authorities having jurisdiction. Conflicts and/or discrepancies between Contract Documents, ordinances, etc., noted by the subcontractor shall be immediately brought to the architect's attention.

2. MATERIALS

a) The sprayed fireproofing shall be plaster cementitious setting-type, and shall be Mono-Kote as manufactured by Construction Products Division, W. R. Grace & Co., or its processing distributors.

All manufactured materials shall be mill-mixed and shall be delivered in original, unopened packages bearing the manufacturer's name and the Underwriters' Laboratories, Inc. label. The materials shall be stored off the ground, under cover, and away from damp surfaces. Materials shall be kept dry until ready for use. Materials that have been exposed to water before actual use shall be discarded.

b) Water shall be clean, fresh and free from organic and mineral impurities which would be harmful to the sprayed fireproofing materials.

3. ACCEPTANCE AND PERFORMANCE CRITERIA

a) The sprayed fireproofing shall have been tested by Underwriters' Laboratories, Inc. in accordance with the procedures of ASTM E-119. The structural steel members shall be protected with adequate fireproofing thicknesses and densities to provide the following fire resistance ratings:

Steel columns	-Hours
Primary steel members (Girders)	-Hours
Secondary steel members (Beams)	-Hours

b) The sprayed fireproofing beneath the deck assembly together with adequately proportioned concrete fill above

the metal decking shall provide a hour fire resistant deck assembly as substantiated by a fire test in accordance with the procedures of ASTM E-119, and performed by Underwriters' Laboratories, Inc.

c) Minimum bond strength between the fireproofing material and the structural steel or galvanized decking shall be P.S.F.

d) The fireproofing material shall not be subject to losses from the finished application by sifting, flaking or dusting. This performance shall be measured by the results of a test for erosion resistance when subjected to high velocity air flow across the surface of dried samples. The samples thus tested must be representative of machine applied material similar to that which can be expected on the project. The air velocity shall be not less than feet per minute, and the duration of the test shall be at least hours.

e) Material shall not crack or delaminate when the structural element is subjected to downward deflection of 1/120 of the span.

f) Documentation of the above performance shall be submitted with the bid, in order that all parties will fully understand the intention of application performance at that time.

Note to Specifier:

Recommended Quality Criteria:

TESTS

a) The architect will select and the owner will pay an independent testing laboratory, to sample and verify the density of the direct-to-steel fireproofing as applied.

b) Contractor shall control thickness, utilizing a workable depth gauge to meet minimum thickness as required. He shall cooperate with the owner's inspector in furnishing samples for tests.

This recommendation is made in recognition of the variance in product that may be used. Mono-Kote being cementitious has a minimal tolerance in density at which it can be applied. The same may not be true of sprayed fiber types.

4. SAMPLES

Samples of sprayed fireproofing shall be submitted for approval in accordance with the applicable provisions of the Special Conditions. These samples shall be representative of the material as applied in accordance with Acceptance and Performance Criteria as stated below.

5. INSTALLATION

a) Application of sprayed fireproofing

shall be in accordance with the printed instructions of the material manufacturer and the fire test report information.

b) Only experienced applicators, approved by the materials manufacturer and Architect shall be allowed to place the materials. Upon request a qualified manufacturer's representative can be present for initial application to guide and assist applicator's personnel.

c) All surfaces to which sprayed fireproofing will be applied shall be thoroughly cleaned of oil, grease, dirt, loose paint, mill scale or any other matter which would impair bond.

d) All clips, hangers, supports, sleeves and other attachments to the fireproofing bases, as covered under other sections of the specifications, are to be placed by others prior to the application of the fireproofing material, where these attachments can be anticipated in advance.

e) Ducts, piping or conduit or other suspended equipment that could interfere with the uniform application of the fireproofing material are to be positioned after the application of the sprayed fireproofing.

f) All patching and repairing of sprayed fireproofing, due to cutting by other trades, shall be performed under this section and paid for by the trade(s) that performed the cutting.

g) The contractor shall cooperate in the coordination and scheduling of the work of this section to avoid delays in the job progress.

6. TEMPERATURE AND VENTILATION

When the prevailing outdoor temperature at the building site is less than 40°F, an interior temperature of 40°F shall be maintained for 24 hours before and 24 hours after application of Mono-Kote.

The plastering contractor shall provide natural ventilation to properly dry the Mono-Kote during and subsequent to its application. In glazed buildings, this shall be accomplished by keeping windows open approximately 2" top and bottom (or side pivoted windows approximately 4") to provide air circulation; and in enclosed areas or buildings lacking openings for natural ventilation, by circulating exterior air and exhausting it to the outside by use of temporary circulators, exhaust fans or the air-conditioning system.

7. CLEAN-UP

After completion of fireproofing work, equipment shall be removed and all wall and floor areas cleaned of deposits of sprayed fireproofing materials.

ZONOLITE PRODUCES OTHER PLASTER AND FIREPROOFING PRODUCTS. WRITE FOR THESE DATA SHEETS:

PA-97R Zonolite Vermiculite Plaster Aggregate

PA-96R Zonolite Perlite Plaster Aggregate

SALES OFFICES IN ALL PRINCIPAL CITIES

W. R. GRACE & CO.



ZONOLITE

CONSTRUCTION PRODUCTS DIVISION

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