...hitectural

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Katherine K. Dibble

Dated: 9/25/89

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SUFFOLK, SS:

Then personally appeared KATHERINE K. DIBBLE to me known to be the person who executed the foregoing instrument and acknowledged that he executed the same as his (her) free act and deed.

Before me,

James F. Brenchene
Notary Public

My Commission Expires:
March 23, 1990

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ZONOLITE

Fireproofing

Zonolite®

Mono-Kote®

W. R. GRACE & CO.

GRACE

ZONOLITE

CONSTRUCTION PRODUCTS DIVISI

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.

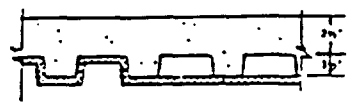
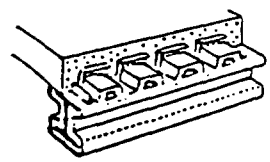
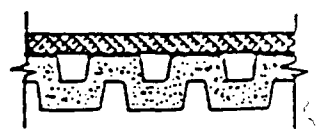
Technical Data

FIRE RESISTANCE: Mono-Kote been tested and rated accordin ASTM E-119 by the Underwriters' oratories, Inc. The material bear U. L. label under a quality contr spection program. Fire resistanc ings and details for varied stru systems are available on re Mono-Kote has been tested for properties such as corrosion resist deflection, bond-impact, surface ness. These tests comply with requirements and are available request.

FIRE HAZARD: Tested and repor accordance with ASTM E-84 b derwriters' Laboratories, Inc.

Zonolite Mono-Kote FIRE RESISTANCE RATINGS

(PARTIAL SUMMARY)

SYSTEM	DESCRIPTION	RATING	Underwriters' Laboratories, Inc. Number	Retard Repo
 1½" DECK	2½" Concrete Fill Mono-Kote ⅞" Thick following Contour.	3 hrs.	21-3	4374
	2½" Concrete Fill Mono-Kote ⅜" Thick Following Contour.	2 hrs.	294-2	4374
 3" DECK	2½" Concrete Fill Mono-Kote 1¾" in flute and 1¼" on flat plate.	3 hrs.	52-3	4374
	2½" Concrete Fill Mono-Kote ⅜" Thick Following Contour.	2 hrs.	294-2	4374
 COMPOSITE FLOOR - BEAM	2½" Concrete Fill Mono-Kote 1" in flute and ¾" on flat plate.	3 hrs.	205-3	4374
	2½" Concrete Fill Mono-Kote ½" in flute and ⅜" on flat plate.	2 hrs.	257-2	4374
 ROOF DECKS	Two layers ½" UL Listed roof insulation on steel deck. Fireproofing —1⅜" vermiculite Type-MK following contour.	1½ hrs.	RC5-1½	4374
	One layer 1" UL Listed roof insulation on steel deck. Fireproofing —1⅜" vermiculite Type-MK following contour.	1 hr.	RC10-1	399

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.

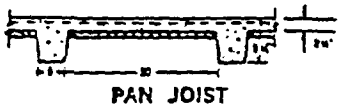
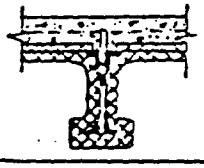
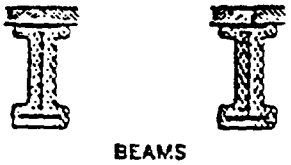
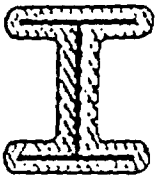
DRY DENSITY: Approximately 22 p.c.f. U. L. Inc. lists 18 p.c.f. minimum average density.

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- 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	Retardant Report
 PAN JOIST	2½" Concrete Slab Mono-Kote ⅞" Thick under slab.	2 hrs.	99-2	4374-9
 JOIST	2¾" regular concrete fill. Fireproofing—½" vermiculite Type-MK following contour of floor and 1½" vermiculite Type-MK following contour of joists.	3 hrs.	227-3	4374-32
 BEAMS	½" Mono-Kote following contour of the member.	4 hrs.	40-4	4374-24
	Composite beam (shear strap on stud).			
	¾"	4 hrs.	257-2	4374-25
	½"	3 hrs.	216-3	4339
 COLUMNS	Mono-Kote following contour of the Column—Min 14WF22B.			
	1¼"	4 hrs.	37-4	4374-21-23
	⅞"	3 hrs.	32-3	4374-21-23
	All Columns.			
	2½"	4 hrs.	15-4	4374-8
	1⅞"	3 hrs.	17-3	4374-13
	1½"	2 hrs.	7-2	4374-13
	Minimum Column 14WF22B—Mono-Kote with ⅞" U.L. Inc. approved board on one flange.			
	1½"	4 hrs.	46-4	4374-30
	1⅛"	3 hrs.	37-3	4374-30
	¾"	2 hrs.	22-2	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

... 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 spfayed 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 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 & Performance Criteria as stated below.

5. INSTALLATION

a) Application of sprayed fireproofing

b) Only experienced applic... proved by the materials ma... and Architect shall be allowe... the materials. Upon request ... manufacturer's representativ... present for initial application ... and assist applicator's perso...

c) All surfaces to which spr... proofing will be applied ... thoroughly cleaned of oil, gre... loose paint, mill scale or ... matter which would impair b...

d) All clips, hangers, support... and other attachments to the ... ing bases, as covered under ... tions of the specifications, a... placed by others prior to the ... tion of the fireproofing materi... these attachments can be an... in advance.

e) Ducts, piping or conduit ... suspended equipment that cou... fere with the uniform applicatio... fireproofing material are to ... tioned after the application ... sprayed fireproofing.

f) All patching and repairing of ... fireproofing, due to cutting b... trades, shall be performed unc... section and paid for by the ... that performed the cutting.

g) The contractor shall coope... the coordination and scheduling ... work of this section to avoid dc... the job progress.

6. TEMPERATURE AND VENTIL...

When the prevailing outdoor te... ture at the building site is les... 40°F, an interior temperature o... shall be maintained for 24 hou... fore and 24 hours after applica... Mono-Kote.

The plastering contractor shall p... natural ventilation to properly d... Mono-Kote during and subsequ... its application. In glazed buil... this shall be accomplished by k... windows open approximately 2... and bottom (or side pivoted wi... approximately 4") to provide air ... lation; and in enclosed areas or ... ings lacking openings for natural ... lation, by circulating exterior air ... exhausting it to the outside by t... temporary circulators, exhaust fa... the air-conditioning system.

7. CLEAN-UP

After completion of fireproofing ... equipment shall be removed an... wall and floor areas cleaned of ... posits of sprayed fireproofing mate...

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

PA-97R Zonolite Vermiculite Plaster Aggregate PA-96R Zonolite Perlite Plaster Aggregate

SALES OFFICES IN ALL PRINCIPAL CITIES

W. R. GRACE & CO.
GRACE
ZONOLITE
CONSTRUCTION PRODUCTS DIVISION

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