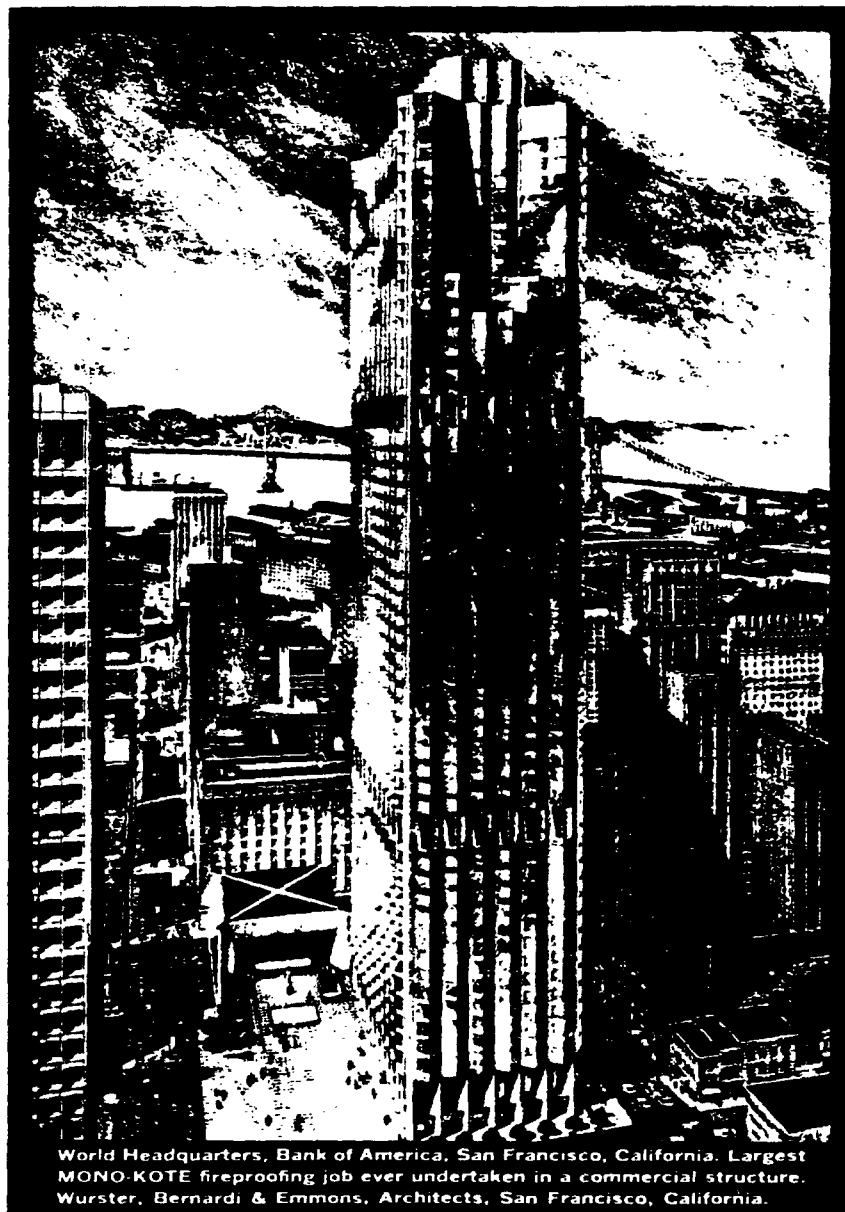


ZONOLITE®



World Headquarters, Bank of America, San Francisco, California. Largest MONO-KOTE fireproofing job ever undertaken in a commercial structure. Wurster, Bernardi & Emmons, Architects, San Francisco, California.

Mono-Kote Spray-On Fireproofing Vermiculite Plaster Aggregate

ZONOLITE MONO-KOTE IS A CEMENTITIOUS FIREPROOFING COMPOUND THAT IS SPRAY-APPLIED TO CONCRETE OR STEEL. IT HAS BEEN ACCORDED FIRE RATINGS ON MANY SYSTEMS INVOLVING FLOORS, CEILINGS, BEAMS, AND COLUMNS. ZONOLITE VERMICULITE PLASTER AGGREGATE IS USED IN LIGHTWEIGHT PLASTER MEMBRANE FIREPROOFING APPLICATIONS.

W. R. GRACE & CO.



CONSTRUCTION PRODUCTS DIVISION

CONSTRUCTION PRODUCTS DIVISION
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MONO-KOTE SPRAY-ON FIREPROOFING
Vermiculite Plaster Aggregate

04502785

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, mill-mixer material requiring only the addition of water at the job. It is applied directly to steel, concrete and other surfaces requiring fire protection.

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SPRAY-ON FIREPROOFING

TECHNICAL DATA

APPLIED DRY DENSITY: Approximately 20 PCF.

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

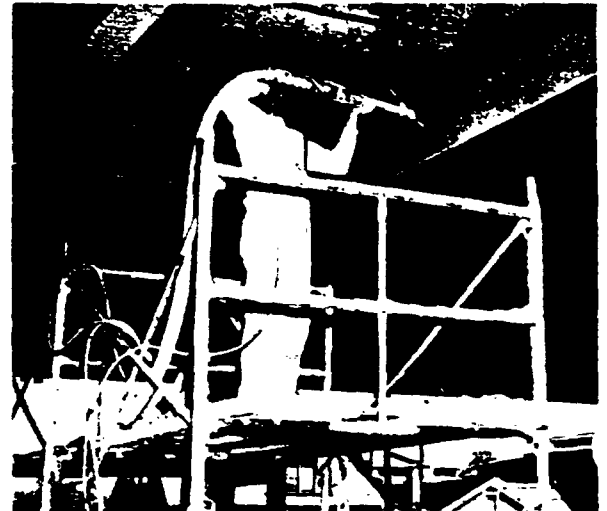
SOUND ATTENUATION: The combination of beams and ceiling when fireproofed with Mono-Kote gives sound absorption of .50 to .85 depending upon the ratio of beam area to flat area. This is of value to the designer in accomplishing attenuation objectives, especially when the fireproofed area is part of a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

COMPRESSIVE STRENGTH: (2 in. cubes): More than 70 psi.

AIR EROSION RESISTANCE: 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.

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. To insure that architects and engineers have the benefit of the most recent ratings, it is suggested that they contact the local Construction Products Division office. Up to five hour ratings are available for steel beams. Ratings are also available on cellular, flat, or fluted, or blended steel floor systems and columns.

SPECIFICATION (SHORT FORM): Fire protection material shall be Mono-Kote as manufactured by the Construction Products Division, W. R. Grace & Co. or its processing Distributors, applied by machine to the thicknesses and in the areas shown on the drawings. The method of mixing and application shall conform to the manufacturer's recommendation. See Long Form Specification.



Direct application of Mono-Kote to beams and floors put fireproofing out of the way of mechanical installations.



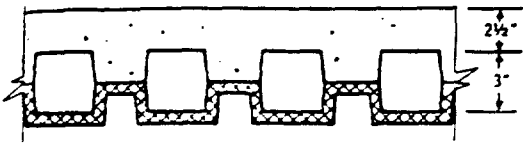
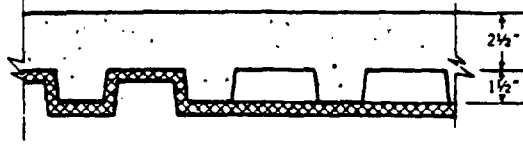
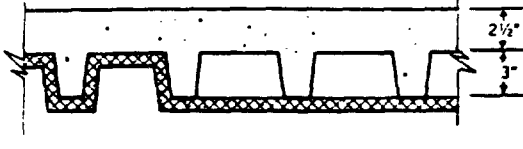
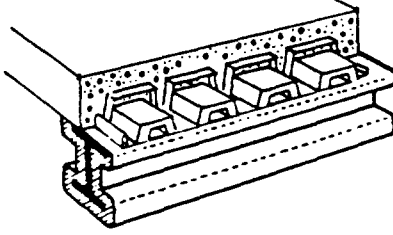
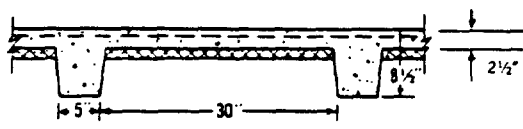
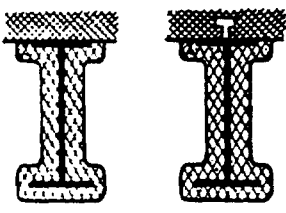
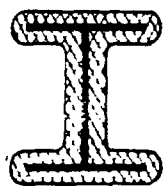
Machine-applied cementitious Mono-Kote withstands air erosion, prevents "dusting" in air-conditioning and ventilating systems.



Greenway Plaza Development, Houston, Tex. Zonolite Mono-Kote plays a prominent role in fireproofing this \$100 million project. Lloyd, Morgan, and Jones, architects. -

ZONOLITE MONO-KOTE FIRE RESISTANCE RATINGS

(PARTIAL SUMMARY)

SYSTEM	04502786	DESCRIPTION	RATING	Underwriters' Laboratories, Inc. Number	Vermiculite Institute Number
		2 1/2" sand concrete fill. 3/8" ZONOLITE MONO-KOTE following contour of underside of deck with an additional 1/8" across top of flute.	3 hrs.	72-3	4374-15
		2 1/2" sand concrete fill. 3/8" ZONOLITE MONO-KOTE following contour of underside of deck with an additional 1/8" across top and sides of flute.	2 hrs.	248-2	4374-22
		2 1/2" sand concrete fill. ZONOLITE MONO-KOTE 3/8" thick applied to underside of steel floor as shown.	3 hrs.	21-3	4374
		2 1/2" sand concrete fill. ZONOLITE MONO-KOTE 3/8" thick applied to underside of steel floor with 1/2" on top and sides of flute. Note: 1 1/2" deep steel floor section.	2 hrs.	248-2	4374-22
		2 1/2" sand-gravel concrete. ZONOLITE MONO-KOTE 1/16" thick applied to underside of steel deck as shown, with additional 1/8" at top and sides of flutes 1 1/2" under trench header ducts.	3 hrs.	52-3	4374-18
		2 1/2" sand-concrete fill. ZONOLITE MONO-KOTE applied directly to underside of steel floor with 3/16" under flat plate, add 1/8" at top and sides of flutes and 1" under filled flutes under 36" trench header duct. Note: 3" deep steel floor section. Trench header duct not shown.	2 hrs.	228-2	4374-18
		2 1/2" sand-gravel concrete. ZONOLITE MONO-KOTE composite floor—beam design applied 3/8" on underside of blended, fluted and cellular 1 1/2" steel floor. 1/2" of MONO-KOTE on top and sides of flute.	2 hrs.	257-2	4374-25
		2 1/2" sand-gravel concrete. ZONOLITE MONO-KOTE composite floor—beam design applied 3/4" on underside of blended, fluted and cellular 1 1/2" steel floor. 1" of MONO-KOTE on top and sides of flute.	3 hrs.	205-3	4374-26
		2 1/2" sand-gravel concrete slab. ZONOLITE MONO-KOTE 3/8" thick applied directly under slab as shown.	2 hrs.	99-2	4374-9
		ZONOLITE MONO-KOTE applied direct to structural steel beams and girders. 1/2"..... 3/4"..... 1/2".....	4 hrs. 3 hrs. 2 hrs.	40-4	4374-24
		Composite Beam — (shear strap or shear lug acceptable). 3/4"..... 1/2".....	4 hrs. 3 hrs.	257-2 216-3	4374-25 4339
		ZONOLITE MONO-KOTE applied directly to structural columns. Minimum column 14 WF 228. 1 1/4".....	4 hrs.	37-4	4374-21 22
		7/8".....	3 hrs.	32-3	4374-21 23
		All columns. 2 1/2".....	4 hrs.	15-4	4374-8
		1 1/2".....	3 hrs.	17-3	4374-11
		1 1/2".....	2 hrs.	7-2	4374-13

SPECIFICATIONS

1. GENERAL CONDITIONS

All applicable revisions of the General Conditions and Special Conditions shall form a part of this Specification Section, except as may be modified herein.

2. SCOPE

- Work included—The work required under this section consists of furnishing all labor, materials and equipment necessary for sprayed fireproofing of structural steel members and metal decking, as indicated in the drawings and as specified herein, and clean-up subsequent to that application.
- Work not included —
 - Structural steel encased in concrete.
 - Trowelled plaster fireproofing is specified under the Plastering Section.
 - The cleaning of the surfaces to receive sprayed fireproofing.
 - In the event of sprayed fireproofing application in cold weather, the supply of temporary heat shall be by others, as defined in Section _____ of the specifications.

3. EXAMINATION & COORDINATION

- The contractor shall examine all surfaces to which the sprayed fireproofing is to be applied, and shall notify the General Contractor, in writing, if any conditions exist which would be detrimental to the proper and expeditious installation of the work. Starting of work, within an area, will be construed as acceptance of the conditions of that area.
- 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 materials can be anticipated in advance.
- 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.
- The contractor shall cooperate in the coordination and scheduling of the work of this section to avoid delays in the job progress.

4. ACCEPTANCE & PERFORMANCE CRITERIA

- The sprayed fireproofing shall have been tested by Underwriters' Laboratories, Inc.

in accordance with the procedures of A. S. T. M. E119. 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

(Note: Secondary steel members are those which support only the floor system, and are spaced at 1/2 the column spacing or less.)

- 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 A. S. T. M. E119, and performed by Underwriters' Laboratories, Inc.
- Minimum bond strength between the fireproofing material and the structural steel or galvanized decking shall be _____ P. S. F.
- 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.
- 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.

5. MATERIALS

- The sprayed fireproofing shall be 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 name of the product, the manufacturer's name

and the Underwriters' Laboratories, Inc. Label.

The materials shall be stored off ground, under cover, and away damp surfaces. Materials shall be dry until ready for use. Materials that have been exposed to water before actual use shall be discarded.

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

6. INSTALLATION

- Application of sprayed fireproofing shall be in accordance with the printed instructions of the material manufacturer and the fire test report information.
- 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.
- 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.
- Temperatures and enclosure conditions shall be as specified by the materials manufacturer.
- 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.

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.

8. BID INFORMATION

- Each bidder shall submit with his bid:
- Full report(s) of Underwriters' Laboratories, Inc. fire tests including material and detailed drawings of the tested assembly.
 - Materials manufacturer's printed instructions for methods and procedures of application.
 - Bond test data for uncoated, coated and galvanized steel applications.
 - Results of tests of material performance when subjected to high velocity air flow.

ZONOLITE VERMICULITE PLASTER AGGREGATE

DESCRIPTION

Zonolite Plaster Aggregate is a specially graded vermiculite produced under rigid quality controls in more than 45 Zonolite plants in the United States and Canada.

When used with gypsum in plaster, it results in a lightweight, insulating, fire-resistant plaster for either hand or machine application.

ZONOLITE PLASTER AGGREGATE BASECOAT PROPORTIONS

Base	MIXES		Thickness including Finish Coat*
	100 lbs. Gypsum	Cu. ft. Zonolite	
Gypsum Lath	1	2	1/2" min.
Metal Lath	1	2	3/4" min.
Masonry	1	3	5/8" min.
Monolithic Concrete**			
Ceilings	1	3	3/4" min.
Walls	1	3	5/8" min.

*Greater thickness may be required for fire retardant ratings. See Vermiculite Institute "Fire Resistance Ratings."

**If monolithic concrete ceiling or wall surfaces require more than 1 1/2" or 1 3/4" respectively of plaster to produce desired finish surfaces, metal lath or wire lath shall be attached thereto. Extreme cases, metal furring may be required.

TECHNICAL DATA

Weight: Approximately 1 1/2 lbs. per sq. ft. at 1/2 in. thickness.

Gradation:

Conforms to ASTM C35. Listed and inspected under Re-examination Service of Underwriters' Laboratories, Inc.

Fire Resistance:

Consult your local Construction Products Division office for the most recent rating.

Notes:

- Zonolite Plaster Aggregate should be used with gypsum plaster that has been especially formulated for lightweight aggregates.
- If Zonolite plaster is applied directly to exterior masonry walls, wall design should insure impermeability to wind-driven rain, and an interior surface above the dew point.

For local Zonolite plant listing, see Roof Deck Systems Section 1e/20

W. R. GRACE & CO.



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CONSTRUCTION PRODUCTS DIVISION