ARABIAN VERMICULITE INDUSTRIES

Monokote Type MK-6s

Cementitious Fireproofing

Product Information

Monokote MK-6s Cementitious Fireproofing has been developed by Grace Construction Products to meet specialized commercial fireproofing requirements. Type MK-6s is gypsum based, mil-mixed material requiring only the addition of water on the job site for application. Type MK-6s is spray applied directly to structural steel and steel decking, providing up to 4 hours of fire resistance. Type MK-6s is well suited for projects where access to substrate is limited, mobilization times need to be minimized and overall project size is small.

Features

Monokote Type MK-6s offers the following advantages to both applicators and end users:

Factory Pre-Mixed: Ready to use. No job site proportioning required. Simply add water in a standard paddle-type or continuous plaster mixer and apply with conventional plastering equipment.

Non-Toxic: The factory mixed blend of gypsum and inert materials, requires only the addition of water for mixing and application.

Permanent: When set and dry, Type MK-6s is a fully passive fire protection. Type MK-6s maintains its in-place characteristics of durability and fire resistance for the design life of the structure.

Durable: Its hardness and durability help resist accidental physical damage.

Patented Injection System: The use of the patented Monokote Injection System and Monokote Accelerator is optional with MK-6s. If injection is used with MK-6s, flash set benefit will occur. Use of Monokote Accelerator will not increase the yield of MK-6s.

Delivery and Storage

a. All material to be used for fireproofing shall be delivered in original unopened packages bearing the name of the manufacturer, the brand and proper Underwriters Laboratories Inc. labels for fire hazard and fire resistance classifications.

b. The material shall be kept dry until ready for use. Packages of material shall be kept off the ground, under cover and away from sweating walls and other damp surfaces. All bags that have been exposed to water before use shall be discarded. Stock of material is to be rotated and used before its expiration date.

Recommended Specifications - Standard Density Products

Physical Properties	Values*	Test Method
Dry Density	305 kg/m^3 (15 pcf)	ASTM E 605
Bond Strength**	29.3 kPa (612 psf)	ASTM E 736
Air Erosion	0.000 g/m^2 (0.000 g/ft^2)	ASTM E 859
	No continued erosion after 4 hours	ASTM E 859, UMC STD 6-1
Compressive Strength @ 10% Deformation	117 kPa (2451 psf)	ASTM E 761
Deflection	No cracking, spalling or delamination	ASTM E 759
Bond Impact	No cracking, spalling or delamination	ASTM E 760
Corrosion	Does not contribute to corrosion	ASTM E 937
Resistance to Mold Growth	No growth after 60 days	ASTM G 21
Impact Penetration	3.9 cm^3	Developed by City of San Francisco
Abrasion Resistance	7.6 cm^3	Developed by City of San Francisco
Combustibility	Less than 5 M J/m^2 total, 20 kW/m^2 peak heat release	ASTM E 1354
Surface Burning Characteristics	Flame Spread = 0 Smoke Developed = 0	ASTM E 84
Yield	2.6m^2 at 25mm thickness (28 bd ft/bag)	
Color	Off-white	

* The physical properties listed were obtained under laboratory conditions at a maximum in-place density of 305 kg/m^2 (19pcf)

** Bond to galvanized steel

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Steel and Concrete Surfaces

a. Prior to the application of Monokote Type MK-6s Fireproofing, an inspection shall be made to determine that all steel and concrete surfaces are acceptable to receive fireproofing. The steel to be fireproofed shall be free of oil, grease, excess rolling compounds or lubricants, loose mill scale, excess rust, non-combustible primer or any other substance that will impair proper adhesion. Where necessary, the cleaning of steel surfaces to receive fireproofing shall be the responsibility of the general contractor.

b. Spatterkote™ SK 3 shall be applied to flat plate cellular decking and to all areas beneath bottomless trench-headers, prior to application of MK-6s. Spatterkote shall be applied to roof decking where required prior to application of MK-6s. Apply Spatterkote in accordance with manufacturer's instructions.

c. Prior to application of Monokote Type MK-6s, a bonding agent, approved by the fireproofing manufacturer, shall be applied to all concrete substrates to receive Type MK-6s.

d. The project architect shall determine if the painted/primed steel to receive fireproofing has been tested in accordance with ASTM E 119, to provide the required fire resistance rating.

e. No fireproofing shall be prior to completion of concrete work on steel decking.

Mixing

a. Monokote Type MK-6s Fireproofing shall be mixed by machine in a conventional, plaster-type mixer or a continuous mixer specifically modified for cementitious fireproofing. The mixer speed in a conventional mixer shall be adjusted to the lowest speed which gives adequate blending of the material and a mixer density of 610-690 kg/m^3 (38-43 pcf) of material.

b. Using a suitable metering device and a conventional mixer, all water shall be first added to the mixer as the blades turn. Mixing shall continue until the mix is lump-free with a creamy texture. All material is to be roughly wet. Target density of 640-690 kg/m^3 (40-43 pcf) is most desirable. Over-mixing Type MK-6s will reduce pumping rate and may reduce in-place density and mechanical properties.

Application

a. Application of Type MK-6s Fireproofing can be made in the following sequence:

   1. For the thicknesses of approximately 13mm (1/2 inch) or less, apply in one pass.
   2. For thicknesses of 14mm (5/8 inch) or greater, apply subsequent passes after the first coat has set.

b. Type MK-6s Fireproofing material shall not be used if it contains partially set, frozen or caked material.

c. Type MK-6s shall have a minimum average dry in-place density of 305 kg/m^3 (19 pcf)

d. Type MK-6s is formulated to be mixed with water at the job site.

e. Type MK-6s is applied directly to the steel, at various rates of application which will be job dependent, using standard plastering type equipment or continuous mixer/pump units. A spray gun with a properly sized orifice and spray shield, and air pressure at the nozzle of approximately 38 kPa (20 psi) will provide the correct hangability, density and appearance.

Temperature and Ventilation

a. An air substrate temperature of 4.4°C (40°F) minimum shall be maintained for 24 hours prior to application, during application and for a minimum of 24 hours after application Type MK-6s.

b. Provisions shall be made for ventilation to properly dry the fireproofing after application. In enclosed areas lacking natural ventilation, air circulation and ventilation must be provided. A minimum total air exchange rate of 4 times per hour is recommended until the material is substantially dry.

Field Test

a. The architect may select, and the owner will pay for an independent testing laboratory to sample and verify the thickness and density of the fireproofing in accordance with the provisions of ASTM E 605-93 or Uniform Building Code Standard No. 7-6.

b. The architect will select, and the owner will pay an independent testing laboratory to randomly sample and verify the bond strength of the fireproofing in accordance with ASTM E 736.

c. Results of the above tests will be made available to all parties at the completion of pre-designated areas which shall have been determined at a pre-job conference.

Safety

a. The MK-6s is slippery when wet. The general contractor and applicator shall be responsible for posting appropriate cautionary SLIPPERY WHEN WET signs. Signs should be posted in all areas in contact with wet fireproofing material. Anti-slip surfaces should be used on all working surfaces.

b. A Material Safety Data Sheet for Monokote Type MK-6s is available upon request.