Monokote Type Z-106/HY®

Portland Cement Based, Medium Density Cementitious Fireproofing

Product Information

Monokote Z-106/HY® is Portland cement based cementitious fireproofing designed to meet specific commercial and industrial fire protection requirements on structural steel members, floor/ceiling and roof/ceiling assemblies.

Monokote Z-106/HY® is hard, moisture resistant and suitable for interior areas where resistance to moisture and abrasion is needed. Formulated for use with Grace's patented Injection System. Monokote Z-106/HY® offers high yield and improved application characteristics while providing resistance to repeated physical contact and/or high humidity.

Applications

Monokote Z-106/HY® can be used for interior, exposed applications where abrasion, high humidity, and damage resistance are desired such as:

- Special use areas in commercial buildings
- Transportation terminals
- Convention centers
- Stairwells
- Parking garages
- Elevator shafts
- Light manufacturing areas and facilities
- Mechanical rooms
- Gymnasiums and pool areas
- Correctional facilities

Benefits

Monokote Z-106/HY® offers the following advantages to the architect, owner, applicator and building occupant.

Durability – 100% Portland cement binder provides increased durability in interior environments where high-traffic resistance to physical abuse is required.

Moisture Resistant – Provides excellent resistance to high humidity and condensation.

Quick Set – HY formulation allows use with Grace patented Injection System for high-yield and quick set.

Applicator Friendly – Low pumping pressures allow use of small diameter hoses for increased maneuver ability and greater distances.

Non-Toxic – The factory-mixed blend of common Portland cement and inert materials require only the addition of water for mixing and application.

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, 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 camp 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.

Steel and Concrete Surfaces

a. Prior to the application Z-106/HY fireproofing, an inspectional 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-compatible primer, lock down agent 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. Prior to the application of Monokote Z-106/HY®, a bonding agent approved by the fireproofing manufacturer shall be applied to all substrates to receive Z-106. There are two exceptions to this requirement:

   1. No bonding agent is required when Monokote Z-106/HY® is applied uninjected to bare steel and
   2. No bonding agent is required when bond tests run in accordance to the Coatings Materials section of the Underwriters Laboratories Fire Resistance Directory Volume 1 indicate that a bonding agent is not required for Monokote Z-106/HY® in conjunction with the specific primed or painted structural steel.

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

d. No fireproofing to the underside of roof deck assemblies shall be done only after roofing application is complete and roof traffic has ceased.

Recommended Specifications - Medium Density Products

Physical Properties	Monokote Z-106/HY®	Test Method	Laboratory Test* Value
Minimum density	22 pcf (352 kg/m^3)	ASTM E605	See note below**
Minimum bond strength	2,000 psf (94.5 kN/m^2)	ASTM E736	Greater than 2,000 psf (94.5 kN/m^2)
Minimum compressive strength @ 10 deformation	100 psi (680 kPa)	ASTM E761	Greater than 100 psi (680 kPa)
Deflection and bond impact	No cracking No delamination	ASTM E759 ASTM E760	Pass Pass
Air erosion	0.000 gr/ft^2 (0.000 gr/m^2)	ASTM E859	0.000 gr/ft^2 (0.000 gr/m^2)
Mold inhibitor	Yes	ASTM G21	Pass / No growth
Standard color	Gray		

*Actual laboratory tested values meet or exceed Grace's recommended value.
**ASTM test methods modified where required, for high density, high performance products.

Mixing

a. Monokote Z-106/HY® fireproofing shall be mixed by machine in a conventional, plaster-type mixer or a continuous mixer specifically modified for cementitious fireproofing. The mixer shall be kept clean and free of all previously mixed material. 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 38-43 pcf (610-690 kg/m^3)

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 thoroughly wet. Target density of 38-43 pcf (610-690 kg/m^3) is most desirable. Over-mixing Monokote Z-106/HY® will reduce pumping rate and will negatively effect in-place density and mechanical properties.

Application

a. Application of Monokote Z-106/HY® fireproofing can be made in the following sequence:
   1. Required fire rating thickness will determine if a multi-pass operation is required. If the first pass can be applied at a thickness sufficient to obtain the required rating a second pass will not be required.
   2. Where the full required thickness cannot be applied in a single pass, subsequent passes can be applied only after the first coat has set.

b. Monokote Z-106/HY® fireproofing material shall not be used if it contains partially set, frozen or caked material.

c. Monokote Z-106/HY® shall have a minimum average dry, in-place density of 22 pcf (352 kg/m^3)

d. Monokote Z-106/HY® is formulated to be mixed with water at the job site.

e. Monokote Accelerator may be used with Monokote Z-106/HY® to enhance set characteristics and product yield. The Monokote Accelerator is injected into the Monokote Z-106/HY® at the nozzle of the spray gun. Monokote Accelerator shall be mixed and used according to manufacturers' recommendations.

f. Monokote Z-106/HY® 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 20 psi (.014 MPa), will provide the correct hangability, density and appearance.

Temperature and Ventilation

a. An air and substrate temperature of 40°F (4.4°C) minimum shall be maintained for 24 hours prior to application, during application and for a minimum of 24 hours after application of Monokote Z-106/HY®.

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 to achieve a minimum total air exchange rate of 4 times per hour until material is substantially dry.

Field Test

a. The architect will select an independent testing laboratory (for which the owner will pay) to sample and verify the thickness and density of the fireproofing in accordance with the provisions of ASTM E605 (current edition), Standard Test Method for Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members or Uniform Building Code Standard No. 7-6 Thickness and Density Determination for Spray Applied Fireproofing. Where samples are or irregular share (or sprayed texture), the displacement method (ASTM E605 published in AWCI Technical Manual 12-A) shall be used to determine in-place fireproofing density.

b. The architect will select an independent testing laboratory (for which the owner will pay) to randomly sample and verify the bond strength of the fireproofing in accordance with the provisions of ASTM E736.

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. Monokote Z-106/HY® is slippery when wet. The general contractor and applicator shall be responsible for posting appropriate cautionary SLIPPERY WHEN WET signs. Signs should be used on all working surfaces.

b. Material Safety Data Sheets for Monokote Z-106/HY® is available upon request.