

# Fire Protection Products

THE WORLDWIDE  
LEADER IN  
SPRAY-APPLIED  
FIREPROOFING!



# Monokote® MK-6

Standard-Density Fireproofing

## OUR NEWEST PRODUCT INNOVATION



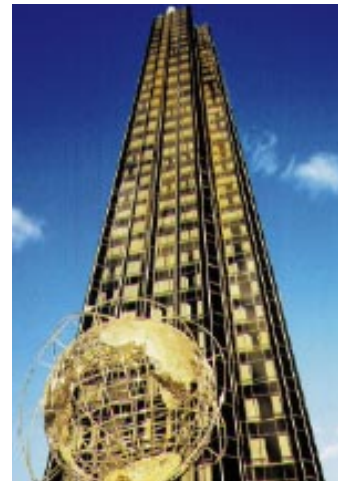
Petronis Twin Towers, Kuala Lumpur, Malaysia



The Getty Center, Los Angeles, California



New York-New York Hotel and Casino, Las Vegas, Nevada



Trump International Hotel & Tower, New York

### Monokote® MK-6/HY Extended Set™ Fireproofing

Monokote MK-6/HY Extended Set Fireproofing is the newest innovation in MK-6/HY technology. It increases applicator productivity and minimizes the impact of fireproofing on the construction schedule. This single component, mill-mixed cementitious fireproofing plaster has a delayed set feature which allows it to be left unattended in the delivery system for up to 4 days. At the jobsite, water is added to form a consistent, pumpable slurry and Monokote® Accelerator is injected to achieve fast set, high production results. MK-6/HY Extended Set is approved for use on structural steel columns, beams, joists, trusses and floors and roof decking, and is listed in the UL Fire Resistance Directory.

Feature	Benefit
Delayed set time (>96 hrs)	<ul style="list-style-type: none"> <li>Allows applicator to significantly reduce or eliminate time consuming pump-in/pump-out procedure</li> <li>Allows applicator to increase daily productivity rate (bags/day) up to 20%</li> <li>Allows applicator to reduce waste water disposal and material scrap</li> <li>Allows applicator to complete fireproofing jobs in less time</li> </ul>
Same in-place performance and fire rating performance as MK-6/HY	<ul style="list-style-type: none"> <li>Durable</li> <li>UL listed (Type MK-6HY)</li> <li>Factory inspected to ensure product performance</li> <li>Compliance with UBC, NBC, SBC, and IBC Building Codes</li> </ul>
Superior technical service and support	<ul style="list-style-type: none"> <li>Provides application training and support</li> <li>Provides timely trouble shooting and follow up service</li> </ul>

### Monokote® MK-6/HY and MK-6s

Proven, in-place performance on interior structural steel makes these products the most widely used fireproofing in the world. MK-6/HY and MK-6s are cost-effective, gypsum-based, cementitious spray-applied fireproofing products designed for easy, fast application to steel and concrete substrates. Both products provide maximum flexibility for a wide variety of jobsite conditions.

#### Typical Uses:

Interior, concealed applications such as:

- High-rise and low-rise commercial office buildings
- Government buildings
- Hotels, resorts, and casinos
- Health care facilities
- Schools and museums

#### Benefits:

- High bond strength in excess of 200 psf
- Resists damage from air erosion and abrasion
- Gypsum-based formulation contains no mineral fibers
- No topcoat or surface sealer required

### Retro-Guard® Replacement Fireproofing

Cementitious replacement fireproofing designed for retrofit spray application to steel and concrete substrates. Its blue signal coat makes it easy to identify re-sprayed areas. Interior, concealed applications include retrofit of commercial office buildings, asbestos abatement and patching and repair of existing fireproofing.

### Physical Properties and Recommended Specifications

Monokote MK-6 and Retro-Guard RG			
Physical Properties	Recommended Specifications*	Tested Values	Test Method
Dry density, minimum average	240 kg/m <sup>3</sup> (15 pcf)	240 kg/m <sup>3</sup> (15 pcf)	ASTM E 605/ UBC STD 7-6
Bond Strength	9.6 KPa (200 psf)	16.2 KPa (339 psf)	ASTM E 736
Compression, 10% Deformation	57 KPa (1,200 psf)	68.9 KPa (1,440 psf)	ASTM E 761
Air Erosion	Max. 0.05 g/m <sup>2</sup> (0.005 g/ft <sup>2</sup> )	0.000 g/m <sup>2</sup> (0.000 g/ft <sup>2</sup> )	ASTM E 859
High Velocity Air Erosion	No continued air erosion after 4 hours	No continued erosion after 4 hours	ASTM E 859 UMC STD 6-1
Corrosion	Does not contribute to corrosion	Does not contribute to corrosion	ASTM E 937
Bond Impact	No cracking, spalling or delamination	No cracking, spalling or delamination	ASTM E 760
Deflection	No cracking, spalling or delamination	No cracking, spalling or delamination	ASTM E 759
Resistance to mold Growth	Min. 28 days general use Min. 60 days used in plenums	No growth after 60 days	ASTM G 21
Impact Penetration City	No more than 6 cm <sup>3</sup> abraded	3.3 cm <sup>3</sup>	Developed by of San Francisco
Abrasion Resistance City	No more than 15 cm <sup>3</sup> abraded	8.3 cm <sup>3</sup>	Developed by of San Francisco

\* Both Monokote Type MK-6/HY and Type MK-6s meet or exceed these performance standards.

# Monokote® Z-106

## Medium-Density Fireproofing



Foxwoods Resort & Casino,  
Ledyard, Connecticut



Old Trafford Stadium,  
Manchester, United Kingdom



One Beacon Street,  
Boston, Massachusetts



# Monokote® Z-146

## High-Density Fireproofing



Malden Mills Industries, Lawrence, Massachusetts



New York City Hospital, New York



White Oak Semiconductor, Richmond, Virginia

## MEDIUM & HIGH-DENSITY FIREPROOFING PRODUCTS

### Monokote® Z-106 & Z-106/HY

Medium-density, cement-based fire protection products provide superior durability for interior, exposed applications. Z-106 was the first generation Monokote medium-density fireproofing product. Monokote Z-106/HY is the next generation 100% portland cement binder, medium-density fireproofing. In addition to the moisture resistance and durability of Z-106, Z-106/HY incorporates application benefits including Grace's patented injection technology for fast set and improved hangability. Specifying both Z-106 & Z-106/HY allows alternatives to provide the most cost effective installation while assuring the specifier of the same high performance in-place characteristics.

#### Typical Uses:

Interior, exposed applications such as:

- High-rise commercial office buildings
- Transportation terminals
- Convention centers
- Parking garages
- Light manufacturing facilities
- Elevator shafts
- Swimming pool areas

#### Benefits:

- Cement-based formulation provides high bond strength — >1,000 psf
- Damage resistant surface resists air erosion, abrasion and impact damage
- Can be trowel-finished for improved aesthetics
- Withstands traffic, high-humidity, and condensation

#### Recommended Specifications for High and Medium-Density Products\*

	Z-146**	Z-106 and Z-106/HY	Test Method
Medium Density	640 kg/m <sup>3</sup> (40 pcf)	350 kg/m <sup>3</sup> (22 pcf)	ASTM E 605
Minimum Bond Strength	472 kN/m <sup>2</sup> (10,000 psf)	94.5 kN/m <sup>2</sup> (2,000 psf)	ASTM E 736
Minimum Compressive Strength @ 10% Deformation	3.79 MPa (550 psi)	476 KPa (70 psi)	ASTM E 761
Deflection & Bond Impact	No Cracking or Delamination.	No Cracking or Delamination.	ASTM E 759
Air Erosion	0.000gr/m <sup>2</sup> (0.000g/ft <sup>2</sup> )	0.000gr/m <sup>2</sup> (0.000g/ft <sup>2</sup> )	ASTM E 859
Mold Inhibitor	Yes	Yes	ASTM G 90
Standard Color	Gray	Gray	

\* Actual laboratory tested values meet or exceed Grace's recommended value. Test reports are available on request from your Grace Sales Representative.

\*\* ASTM test methods modified where required, for high density, high performance products.

### Monokote® Z-146

High-density, cement-based fire protection delivers maximum protection for interior or exterior exposed applications.

#### Typical Uses:

Interior or exterior exposed applications such as:

- High-tech clean rooms
- Chip fabrication facilities
- Transportation terminals
- Heavy manufacturing facilities
- Gymnasiums & sports facilities
- Elevator shafts & stairwells
- Mechanical rooms

#### Benefits:

- Cement-based formulation provides extremely high bond strength — >10,000 psf
- Tough, concrete-like surface resists air erosion and abrasion
- Trowel grade Z-146 can be trowel-finished for improved aesthetics
- Releases no particulate matter or volatile organics to interfere with sensitive computer chip manufacturing environments
- Suitable for exterior exposure — resists freeze/thaw, wind and rain

CC-CODES, CERTIFICATION

## Technical Support

From initial design to detailing the specification, to on-site application, you'll find Grace fireproofing people right there with you, providing value and service every step of the way. **Call your Grace fireproofing representative for assistance.**

## Performance

Monokote meets or exceeds the in-place performance requirements and complies with the following specifications.

- General Services Administration (GSA); AIA/SC/GSA: 07811
- Department of the Navy; NAVFACENGCOM Guide Specification NFGS-07810B, Sprayed-Applied Fireproofing
- Veterans Administration (VA); H-08-1
- U.S. Environmental Protection Agency (EPA); Regulation 40 CFR, Part 61, Sub-part M, Section 61:148
- Department of the Army U.S. Army Corps of Engineers Guide Specification For Military Construction Section 07810 Spray-Applied Fireproofing CEGS-07810 (May 1998)

## Fire Test Performance

Monokote Fireproofing is included in over 120 design listings at Underwriters Laboratories Inc. (UL).

It has been tested worldwide and has the following global approvals.



USA	UL 263/ASTM E 119
Japan	JIS A 1304
Spain	PNE 23.820
England	BS 476 Part 8
Canada	ULC S101/ASTM E 119
France	ISO 834
Germany	DIN 4102
Korea	KSF-2257

## Building Codes

Monokote Fireproofing products meet the requirements of the following building code bodies:

- Southern Building Code Congress International
- Building Officials and Code Administrators, International
- International Conference of Building Officials
- New York City MEA
- National Building Code of Canada



## Underwriters Laboratories Inc. Fire Ratings

The following chart details the most common UL designs utilizing Monokote Type MK-6 Fireproofing. For specific design selection assistance, contact your Grace Sales Representative.

Construction <sup>1</sup>	Restrained Assembly Rating (Hr.)					UL Design No.	Unrestrained Assembly Rating (Hr.)				
	1	1 1/2	2	3	4		1	1 1/2	2	3	4
<b>Protected Floor/Ceiling Systems</b>											
Electrified Floor Options	•	•	•	•	•	D779	•	•	•	•	•
Unclassified Painted Decking	•	•	•			D739	•	•	•	•	•
Form Deck	•	•	•	•		D744	•	•	•		
Fluted Deck/3-1/4" LW Concrete	•	•	•	•	•	D780	•	•	•	•	•
	•	•	•	•	•	D782	•	•	•	•	•
<b>Unprotected Floor/Ceiling Systems</b>											
	•	•	•	•		D925 <sup>5</sup>	•	•	•	•	
		•	•	•		D917					
<b>Concrete Systems</b>											
Pan-Joist/Poured-In-Place				•		J701	•				
Slab/Poured-In-Place	•	•	•	•	•	J709, J712	•	•	•	•	•
Precast/Tees			•	•	•	J704, J705			•	•	•
Precast/Hollow Core			•	•	•	J919			•		
<b>Roof/Ceiling Systems</b>											
IRMA Roof	•	•	•			P714	•	•	•		
Polystyrene Foam Insulation	•	•	•			P725	•	•	•		
Polyisocyanurate Foam Insulation	•	•	•	•		P732	•	•	•	•	
Spray Polyurethane Foam Insulation	•	•	•	•		P733	•	•	•	•	
Mineral Fiber Board/Fiberglass Roof Insulation	•	•	•			P732, P740	•	•	•		
Lightweight Insulating Concrete Roof Deck	•	•	•			P921 <sup>5</sup>	•	•	•		
<b>Beams/Joists<sup>2</sup></b>											
Beam Only — Floor Systems	•	•	•	•	•	N706	•	•	•	•	•
	•	•	•	•	•	N708, N782	•	•	•	•	•
Joist Only — Floor Systems	•	•	•	•	•	N736	•	•	•	•	•
	•	•	•	•		N777	•	•	•	•	
Beam Only — Roof Systems	•	•	•	•	•	S735	•	•	•	•	•
	•	•	•	•	•	S734	•	•	•	•	•
Joist Only — Roof Systems	•	•	•	•		S728	•	•	•	•	
	•	•	•	•		S736	•	•	•	•	
<b>Columns<sup>3</sup></b>											
(Size) (Metric Equivalent)											
W6 x 9 To (W150 x 13)	•	•	•	•	•	X772, 4715	•	•	•	•	•
W14 x 730 (W360 x 1086)	•	•	•	•	•	X772	•	•	•	•	•
W-shaped Steel Column <sup>4</sup> Formula	•	•	•	•	•	X771, 4710	•	•	•	•	•
Tube and Pipe Columns	•	•	•	•	•	X791	•	•	•	•	•
Concrete filled Pipe Column	•	•	•	•	•		•	•	•	•	•

**web** Visit our web site @ [www.gcp-grace.com](http://www.gcp-grace.com)

### Design Details

**Protected Floor Assemblies**

Beam & Steel Deck

Joist & Steel Deck

**Unprotected Floor Assemblies**

Section B-B

**Roof Assemblies**

Lightweight Insulating Concrete Joists

Insulation Boards Beams

**Beam Only & Joist Only Designs**

Beams

Protected Floor    Unprotected Floor

Joists

Protected Floor    Unprotected Floor

**Columns**

Wide Flange

Tube

Pipe

<sup>1</sup> Refer to the UL Design Listing for concrete type, beam sizes, composite beam, deck profile, trench header, electrical inserts, roof covering type and other construction details.  
<sup>2</sup> Ratings for N or S series designs refer to restrained or unrestrained beam ratings  
<sup>3</sup> Column ratings do not fall under restrained or unrestrained rating criteria  
<sup>4</sup> Column W/D must be between 0.33 and 6.62  
<sup>5</sup> Unrestrained ratings are subject to deck gauge and span limitations

**Note:** Flutes above beams and joists must be filled unless otherwise allowed in the specific fire resistance design.

## Product Specifications

We make it easy to obtain complete long-form specifications for the Monokote family of fireproofing products. You may obtain electronic files for each of the products listed in this catalog using any of the resources listed below.



You can download text files of our product specifications and our Material Thickness handbook from our website at: [www.gcp-grace.com](http://www.gcp-grace.com)



Complete specifications can be found on the current Sweets CD-ROM under section 07812



You may request copies of our specifications on 3.5" diskette. Contact your Grace sales representative or our Customer Service Center.

## We're here to help!

Grace provides a staff of dedicated Fireproofing Architectural Representatives who can help you interpret local building codes and develop quality fireproofing specifications. **Talk to the experts! Contact your local representative at the numbers listed below.**

### KEY FIRE PROTECTION PRODUCTS SALES LOCATIONS

#### WORLDWIDE HEADQUARTERS

W. R. Grace & Co.-Conn.  
62 Whittemore Avenue  
Cambridge, MA 02140  
USA

1-800-778-2880  
Tel. 617-876-1400  
Fax 617-498-4311

#### Service Centers

Grace maintains sales offices in every major metropolitan area. To contact your local Grace Fireproofing representative, or to obtain additional product information, call 1-800-778-2880.

#### UNITED STATES

**Eastern Region  
Massachusetts**  
62 Whittemore Ave.  
Cambridge, MA 02140

**Southern/Central Region  
Alabama**

2601 Commerce Boulevard  
Irondale, AL 35210

**Western Region  
California**  
2500 S. Garnsey Street  
Santa Ana, CA 92707

#### CANADA

**Toronto Area**  
W. R. Grace and Co.  
of Canada Ltd.  
Ajax, Ontario  
Tel. 905-683-8561  
Fax 905-683-5947

#### Québec

W. R. Grace et Cie du Canada Ltée  
Lasalle, Québec  
Tel: 514-366-3362  
Fax: 514-366-0727

#### EUROPE

**United Kingdom**  
Grace Construction Products  
Slough, Berks  
Tel. 44-(0)-1753-692-929  
Fax 44-(0)-1753-637-616

#### LATIN AMERICA

**Argentina**  
Grace Argentina S.A.  
Buenos Aires, Argentina  
Tel. 54-1-229-0146  
Fax 54-1-229-0193

#### ASIA

**Hong Kong**  
W. R. Grace (Hong Kong) Ltd.  
Wanchai  
Tel. 852-2-675-7898  
Fax 852-2-675-9193

#### AUSTRALIA

W. R. Grace Australia Ltd.  
Tel. 61-2-9743-8811  
Fax 61-2-9743-8539

### NORTH AMERICA CUSTOMER SERVICE CENTER

# 1-800-778-2880



Visit our website at: [www.gcp-grace.com](http://www.gcp-grace.com)

**Call Sweet's BuyLine Number for the name and telephone number of your nearest sales representative: (800) 892-1165.**

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