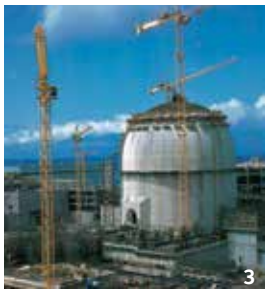
gcp
applied technologies

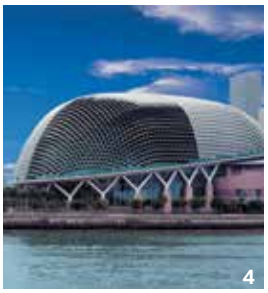
Performance Under Fire

MONOKOTE®
Fire Protection Systems

Asia Pacific

MONOKOTE®





ABOVE: **Taipei Financial Centre, Taipei, Taiwan**. Also known as Taipei 101, this 508-metre structure makes a striking addition to Taipei's city skyline. Monokote® MK-6®/HY® and Z-146 were sprayed onto the structural beams and columns, and columns of the high-speed elevator shafts of this landmark project.

OPPOSITE PAGE:

1. Tianjin World Financial Centre, Tianjin, China
2. World Trade Centre III, Beijing, China
3. Wolsung Nuclear Power Plant, S. Korea
4. Esplanade – Theatres on the Bay, Singapore
5. ION Orchard, Singapore
6. Taipei Financial Centre, Taipei, Taiwan.
7. Cheung Kong Centre and International Finance Centre II, Hong Kong
8. Central Government Complex, Hong Kong
9. CCTV Building, Beijing, China Mainland
10. Petronas Twin Towers, Kuala Lumpur, Malaysia
11. International Commerce Centre, Hong Kong
12. JR Central Station, Nagoya, Japan
13. Incheon International Airport, Incheon, S. Korea

Interior Concealed Fireproofing

MONOKOTE® MK-6®/HY®

Proven in-place performance on interior structural steel makes it the most widely used fireproofing material in the world. MK-6/HY is a low cost, gypsum-based, cementitious, spray-applied fireproofing product designed for an easy, fast application to steel and concrete substrates. MK-6/HY incorporates application benefits, including GCP's exclusive injection technology for fast set and improved hangability.

Chek Lap Kok International Airport, Hong Kong

Typical Uses

- High-rise commercial office buildings
- Conventional buildings
- Hotels, resorts and casinos
- Health care facilities, sports centres
- Schools and museums
- Airport terminals

Benefits

- High bond strength
- Quick set in 15 minutes
- Resists damage from air erosion and abrasion
- Gypsum-based formulation contains no mineral fibres
- No topcoat or surface sealer required

Performance Characteristics*

PHYSICAL PROPERTIES	Monokote® MK-6/HY Recommended Specification	Test Method
Dry density, minimum average	240 kg/m³ (15 pcf)	ASTM E 605
Bond strength	9.6 kN/m² (200 psf)	ASTM E 736
Compression strength @ 10% deformation	68.9 kN/m² (10.0 psi)	ASTM E 761
Air erosion	Max. 0.00 g/m² (0.000 g/ft²)	ASTM E 859
High velocity air erosion	No continued air erosion after 4 hours	ASTM E 859
Corrosion	Does not contribute to corrosion	ASTM E 937
Bond impact	No cracking, spalling or delamination	ASTM E 760
Deflection	No cracking, spalling or delamination	ASTM E 759
Resistance to mold growth	No growth after 28 days	ASTM G 21
Surface burning characteristics	Flame spread = 0, Smoke developed = 0	ASTM E 84
Combustibility	Less than 15 MJ/m² 20 kw/m² peak heat release	ASTM E 1354

* Actual laboratory tested values meet or exceed GCP's recommended values. Test reports are available upon request.

Interior Exposed Fireproofing

MONOKOTE® Z-106/HY

A portland cement-based, medium density fireproofing product that provides excellent moisture resistance and durability for interior, exposed applications. Z-106/HY incorporates application benefits including GCP's exclusive injection technology for fast set and improved hangability. It provides highly cost-effective installation while assuring the specifier of high performance in-place characteristics.

Korean Airlines Cargo Terminal, Incheon International Airport, Incheon, S. Korea

Typical Uses

- High-rise commercial office buildings
- Transportation terminals
- Convention centres
- Swimming pools
- Parking garages
- Light manufacturing facilities
- Mechanical rooms
- Elevator shafts
- Power plants
- Dockyards

Benefits

- Cement-based formulation provides high bond strength
- Quick set in 15 minutes
- Damage-resistant surface resists air erosion, abrasion and impact damage
- Can be trowel-finished for improved aesthetics
- Withstands high humidity and condensation
- Proven performance with moisture exposed ASTM Bond and Compressive Tests

Performance Characteristics*

PHYSICAL PROPERTIES	Monokote® Z-106/HY Recommended Specification	Test Method
Dry density, minimum average	350 kg/m³ (22 pcf)	ASTM E605
Bond strength	94.5 kN/m² (2,000 psf)	ASTM E736**
Compression, 10% deformation	689.4 kN/m² (100.0 psi)	ASTM E761**
Air erosion	Max. 0.00 g/m² (0.000 g/ft²)	ASTM E859
High velocity air erosion	No continued erosion after 4 hours	ASTM E859
Corrosion	Does not contribute to corrosion	ASTM E937
Bond impact	No cracking, spalling or delamination	ASTM E760
Deflection	No cracking, spalling or delamination	ASTM E759
Resistance to mold growth	No growth after 28 days	ASTM G21
Surface burning characteristics	Flame spread = 0, Smoke developed = 0	ASTM E84
Combustibility	Less than 5 MJ/m² total, 20 kw/m² peak heat release	ASTM E1354

* Actual laboratory tested values meet or exceed GCP's recommended values. Test reports are available upon request.
** ASTM test methods modified where required for high density high performance products.

Exterior Exposed Fireproofing

MONOKOTE® Z-146

High density, cement-based fire protection delivers maximum protection for interior or exterior exposed applications. Its physical characteristics are excellent for areas exposed to environmental or climatic conditions.

National Semiconductor Facility, South Portland, Maine, USA

Typical Uses

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

Benefits

- Cement-based formulation provides extremely high bond strength
- Tough, concrete-like surface resists air erosion and abrasion
- Trowelable finishing for improved aesthetics
- Releases no particulate matter or volatile organics to interfere with sensitive computer chip manufacturing environments
- Resists freeze/thaw, wind and rain

Performance Characteristics*

PHYSICAL PROPERTIES	Monokote® Z-146 Recommended Specification	Test Method
Dry density, minimum average	640 kg/m³ (40 pcf)	ASTM E605
Bond strength	478 kN/m² (10,000 psf)	ASTM E736**
Compression, 10% deformation	3,447.4 kN/m² (500.0 psi)	ASTM E761**
Air erosion	Max. 0.00 g/m² (0.000 g/ft²)	ASTM E859
High velocity air erosion	No continued erosion after 4 hours	ASTM E859
Corrosion	Does not contribute to corrosion	ASTM E937
Bond impact	No cracking, spalling or delamination	ASTM E760
Deflection	No cracking, spalling or delamination	ASTM E759
Resistance to mold growth	No growth after 28 days	ASTM G21
Surface burning characteristics	Flame spread = 0, Smoke developed = 0	ASTM E84
Combustibility	Less than 5 MJ/m² total, 20 kw/m² peak heat release	ASTM E1354

* Actual laboratory tested values meet or exceed GCP's recommended values. Test reports are available upon request.
** ASTM test methods modified where required for high density high performance products.

International Standard of Manufacturing

Monokote® fireproofing products applied in Asia are produced in our ISO 9001 certified manufacturing facility in South Korea. The GCP manufacturing facility, Incheon, Korea, is under the Underwriters Laboratories Inc's Follow-up Service Programme. Monokote products are manufactured under strict quality control, in accordance with our formulations and specifications. The facility's location also ensures prompt delivery of quality Monokote fireproofing products to meet the most demanding construction schedules.

GCP manufacturing facility in Incheon, S. Korea

Professional Installation

Product quality alone does not guarantee success. It requires professional installation from well trained and experience applicators. GCP has a network of applicators that have trained in the proper application and installation of Monokote® fireproofing. The proper application and installation of fireproofing is critical to its long-term performance and its ability to meet the required hourly ratings. GCP has a world class training program that provides instruction and guidance to its network of experienced applicators. This training along with GCP's technical support and field assistance provide our network of applicators the guidance and support to efficiently and effectively apply Monokote products.

TOP: Reputable hardware (continuous mixer) is deployed; BOTTOM: A proper and safe job site setup is crucial in achieving the product's designed in-place performance and in meeting the construction schedule.

Fire Test Approvals

Monokote® fireproofing has been tested world-wide and has the following global approvals, which includes over 120 design listings at Underwriters laboratories Inc. (UL).

USA	UL 263/ASTM E 119
JAPAN	JIS A 1304
SPAIN	EN13381 Series
UK	BS476 Parts 20, 21 and EN13381 Series
CANADA	ULC S101/ASTM E 119
FRANCE	EN13381 Series
GERMANY	DIN4102 and EN13381 Series
KOREA	KSF-2257
CHINA	GB 14907

ASIA PACIFIC KEY LOCATIONS

AUSTRALIA
74 Annie Street,
Rocklea QLD 4106
Tel: 1800 334 444
Fax: +61 7 3875 1365

CHINA MAINLAND
Unit 2, First floor, Building 6,
Dazu Enterprise Bay,
No. 8 Liangshuihe No.2 Street,
Beijing Economic-Technological
Development Area,
Beijing, China 100176
Tel: +86 10 8792 9888
Fax: +86 10 8792 9899

HONG KONG
6 On Chuen Street
On Lok Tsuen Ind Area
Fanling, Hong Kong
Tel: +852 2675 7898
Fax: +852 2676 4370

INDIA
208, 2/F Time Tower Building
Sector 28, MG Road, Gurgaon
Haryana - 122002, India
Tel: +91 124 488 5900
Fax: +91 124 488 5930

INDONESIA
Cikarang Industrial Estate Kav
C-32
Cikarang, Bekasi 17530
Tel: +62 21 893 4260
Fax: +62 21 893 4315

JAPAN
100 Kaneda Atsugi-shi
Kanagawa Japan 243-0807
Tel: +81 46 225 8806
Fax: +8146 221 7214

KOREA
301, Cheongneung-daero,
Namdong-gu, Incheon, 21633,
South Korea
Tel: +82 32 820 0800
Fax: +82 32 820 0803

MALAYSIA
7 Lorong CJ 1/1A
Off Jalan Balakong
43200 Cheras Jaya
Kuala Lumpur
Tel: +60 3 9074 6133
Fax: +60 3 9074 7322

PHILIPPINES
Progess Ave cor C.A. Yulo, SCIP
Canlubang, Calamba City, Laguna
4028
Philippines

SINGAPORE
25 Tanjong Penjuru
Singapore 609024
Tel: +65 6265 3033
Fax: +65 6265 9232

THAILAND
848 Moo 2, Bangpoo Industrial
Estate (North)
Phraksa Mai, Muang Samutprakarn
Samutprakarn 10280,
Thailand
Tel: +66 2 030 9700
Fax: +66 2 030 9718

VIETNAM
Lot B14, Section B, Street No. 12
Xuan Thoi Son Small Scale Arts &
Crafts Group
National Road 22
Xuan Thoi Son Village
Hoc Mon District
Ho Chi Minh City
Tel : +84 8 3710 6168
Fax: +84 8 3710 6167

WORLDWIDE HEADQUARTERS
GCP Applied Technologies Inc.
U.S.A.

gcpat.com | For technical information: asia.enq@gcpat.com

GCP Applied Technologies Inc., USA

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