



A City of Dreams in Macau

Mapei products and systems for a luxury resort

Macao is one of the two Special Administrative Regions in the People's Republic of China, the other being Hong Kong. It is located at the Southeast coast of China to the west of the Pearl River Delta and borders with Zhuhai River Delta and Guangdong Province, just 60 km far from Hong Kong. This small area of land covers just 29.5 km²

Photo 1. The Cotai strip in Macau.

Photo 2. Rendering picture of the City of Dreams complex, located in the Cotai strip linking Taipa and Coloane islands.

with a population of approximately 543,000. It was under Portuguese rule from the beginning of the 16th century until December 1999. That was the time when Macao was handed back over to China, maintaining a considerable degree of legal and monetary independence and its own police force, customs, foreign affairs and immigration control. Its land encompasses the peninsula and the two islands of



Taipa and Coloane.

Located on a strip of reclaimed land that connects Macau's islands of Taipa and Coloane, Cotai Strip is a remarkable destination for premiere leisure, entertainment and luxury hotels. Full of prominent buildings and extraordinary establishments in such a small place, it is praised to be the



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Photos 3 and 4.

The building works lasted almost one year and a half and resulted in the construction of several buildings for premiere leisure, entertainment and luxury accommodation.

“China’s Las Vegas”.

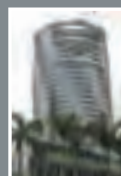
City of Dreams, an urban integrated entertainment resort, was opened on 1st June 2009 at Cotai Strip. City of Dreams results from the passion of the developer, namely Melco Crown Entertainment, to set a new standard of gaming and entertainment experience in Asia. City of Dreams is an unprecedented resort in Macau, comprising distinctly branded casino floors, three separate world-class hotels, a unique shopping precinct “The



City of Dreams consists of three renowned hotels, a 420,000-m² casino, over 20 new restaurants and bars, an iconic dome-shaped theatre, and unique lifestyle-oriented retail precinct with the world’s most famous brands shops.



The Crown Towers hotel, with approximately 300 luxurious guest rooms, including 33 high roller villas, offers prime service.



The Hard Rock Hotel, with approximately 300 guest rooms, is its first theme hotel in Asia.



The Grand Hyatt Macau hotel offers around 800 high-end guest rooms.



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Boulevard" which wraps around the casino floors and links the three hotel towers, and an awe-inspiring multimedia show housed in a dome-shaped theatre called "The Bubble". Among the hotels Crown Towers, with approximately 300 luxurious guest rooms and 33 high roller villas, offers lavish style and prime service; the exciting, music-inspired Hard Rock Hotel, with approximately 300 guest rooms, is its first theme hotel in Asia; Grand Hyatt Macau offers around 800 high-end guest rooms.

Photos 5 and 6. TOPCEM PRONTO was used for the screeds of several fountains. **Photo 7.** Marble and natural stone slabs were laid in the fountains with ADESILEX P10+ ISOLASTIC; KERAPOXY was used for grouting the joints and MAPESIL AC for sealing the expansion joints.

Mapei Solutions

Being the flagship development of Melco Crown Entertainment Ltd in Macau, the whole project of City of Dreams has been seriously planned for nearly five years and carefully established to bring it to be the Asia's most desirable leisure and gaming destination. In fulfilling such enormous project with the objective of creating the most superb and luxurious resort, construction materials were chosen carefully to secure the stability and durability of all buildings. Possessing impressive and

IN THE SPOTLIGHT

MAPELASTIC

It is a two-component mortar based on cementitious binders, fine-grained selected aggregates, special additives and synthetic polymers dispersed in water, blended according to a formula developed in Mapei's own research laboratories. When the two components are mixed together, a free-flowing mix is obtained which may be easily

applied, even on vertical surfaces, at a thickness of up to 2 mm in one single coat. It is used for waterproofing concrete basins used for containing water; for bathrooms, showers, balconies, terraces, swimming pools, etc. before laying ceramic tile coverings; for waterproofing plasterboard, render or cementitious surfaces, lightweight cement blocks and marine-grade plywood. It also ensures protection of renders or concrete with cracks caused by shrinkage. MAPELASTIC has excellent bonding properties to all concrete, masonry, ceramic and marble surfaces, as long as they are sound and sufficiently clean. These properties mean that structures protected

and waterproofed with MAPELASTIC are hardwearing, even under particularly adverse climatic conditions, in coastal areas with a high salt content in the atmosphere or in industrial areas where the air is particularly polluted.

MAPELASTIC meets the requirements defined by **EN 1504-9** ("Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - General principles for the use of products and systems") and the minimum requirements claimed by **EN 1504-2** coating (c) according to the **PI, MC** and **IR** principles ("Protection systems for concrete surfaces").



well-recognized job references in Macau, Mapei's quality and reliable systems, including those for water-proofing, tile installation, rendering and floor screeding, became the prior choices. Works with Mapei products commenced in early 2008 and were completed within 3 years. Many of Mapei products (primers, levelling compounds, fibreglass mesh, adhesives for ceramics, latexes and mortars for grouting joints) have been adopted for appropriate applications in different buildings.

External Landscape

To bond the natural stone slabs on the long walking path to the main entrance of the shopping precinct KERAFLEX was used. This is a high-performance cementitious adhesive, with no vertical slip and extended open time, ideal for ceramic tiles and stone material. The joints were grouted with KERAPOXY high-performance two-component acid-resistant grout.

Fountains and Water Displays

For the fountains along both sides of the walking path to the main entrance of the shopping precinct, the fountains in front of the dome-shaped theatre, those in front of the casino entrance and in front of the Hard Rock Hotel, as well

as for the water display of the dragon ball next to the theatre representing the "Dragon's Treasure" (a famous topic in Chinese art) show, the following system was used to install stone and marble slabs: TOPCEM PRONTO special hydraulic binder for rendering and floor screeding; NIVOPLAN levelling mortar was mixed with PLANICRETE for improving bonding and mechanical strength before levelling the surfaces prior to installation; MAPELASTIC waterproofing membrane, reinforced with FIBREGLASS MESH (N.B this product was superseded on several markets by MAPENET), and MAPEBAND rubber tape for waterproofing the substrates; ADESILEX P10 high performance cementitious adhesive, mixed with

Photo 8. KERAFLEX adhesive was chosen to bond the natural stone slabs on the walking path to the main entrance of the shopping precinct.

Joints were grouted with KERAPOXY.

Photos 9 and 10.

The following Mapei products were used for the swimming pools: NIVOPLAN+PLANICRETE, TOPCEM PRONTO, MAPELASTIC, FIBREGLASS MESH, MAPEBAND, ADESILEX P10, KERAPOXY, MAPESIL AC, KERALASTIC, KERACRETE SYSTEM, KERAPOXY and ULTRACOLOR PLUS.

ISOLASTIC flexible latex additive, to bond the slabs; KERAPOXY for grouting the joints; MAPESIL AC acetic cross-linking silicone sealant for sealing the expansion joints.

Swimming Pools

The swimming pool area, which is to be shared by both guests of Crown Towers and Hard Rock hotels, includes a pool by the bar, the biggest pool with a fountain, a small Jacuzzi, a kid's pool, etc.

Just like in the above-mentioned case, NIVOPLAN+PLANICRETE, TOPCEM PRONTO were used for preparing the substrates; MAPELASTIC, FIBREGLASS MESH and MAPEBAND for waterproofing; ADESILEX P10+ ISOLASTIC for bonding the mosaic tiles; KERAPOXY for grouting the joints; MAPESIL AC for sealing the expansion joints. The same products were used for laying mosaics in the Grand Hyatt swimming pool area where it was necessary to mix PLANICRETE with cement and water to obtain a bonding slurry before preparing the screed. For grouting the joints ULTRACOLOR PLUS was chosen in this case. This is a fast-setting and drying, high performance, anti-efflorescence, water-repellent mortar grout with DropEffect® and anti-mould with BioBlock® technology. It is ideal for grouting joints from 2 to 20 mm.



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Photos 11, 12 and 13. In the Hard Rock and Crown Towers lobby areas KERACRETE SYSTEM was used to bond natural stone slabs on walls and floors. KERAPOXY and ULTRACOLOR PLUS were used to grout the joints.

Hard Rock Hotel

For the bathrooms floors and walls in VIP levels within the Hard Rock hotel PRIMER G was used as primer, MAPELASTIC as waterproofing treatment; KERALASTIC and KERACRETE SYSTEM (adhesive system including KERACRETE

and KERACRETE POWDER) for bonding marble slabs; KERAPOXY for grouting the joints. In the hotel lobby, in the washrooms and service areas KERACRETE SYSTEM was used for bonding the stone material slabs, while joints were grouted with ULTRACOLOR

PLUS.

Crown Towers Hotel

In this hotel natural stone slabs were laid on the floorings of the lobby, washrooms and service rooms with the KERACRETE SYSTEM as adhesive and KERAPOXY and ULTRACOLOR PLUS as grout for the joints.

Casinos

To install natural stone wall and floor coverings in the City of Dreams Casino and Crown Towers Casino KERACRETE SYSTEM was used as adhesive, KERAPOXY and ULTRACOLOR PLUS as grouts for the joints.

TECHNICAL DATA

City of Dreams, Macau, (People's Republic of China)

Designer: Melco Crown Entertainment Ltd

Period of Construction: 2007-2009

Intervention by Mapei: supplying products for preparing the substrates, waterproofing surfaces and installing stone materials and mosaic on walls and floors

Period of the Intervention: early 2008 – second half of 2009

Customer: Melco Crown Entertainment Ltd

Contractor: joint venture among Leighton, Chinese Government and John Holland

Laying Company: Pat Davie (Macau) Ltd, Themeworks International (Macau) Limited, iTop Construction Materials & Engineering Co Ltd, ASTEL (Macau) Ltd

Laid Materials: natural stone (marble, sandstone, etc.) slabs, mosaics.

Mapei Co-ordinators: Antony Lai and Roger Kwan, Mapei China (Hong Kong)

MAPEI PRODUCTS

The products mentioned in the article belong to the "Products for Ceramic Tiles and Stone Materials" range. The technical data sheets are available at the web site www.mapei.com. Mapei's adhesives for ceramics and stone materials conform to EN 12004 and have been awarded the CE mark in compliance with Annex ZA, standard EN 12004. Mapei grouts for ceramics and stone materials conform to EN 13888. Almost all the Mapei products for laying floors and walls are also GEV-certified and have been awarded the EMICODE EC1 ("very low emission level of volatile organic compounds") mark by GEV. Mapei levelling and smoothing compounds and pre-blended mortars for screeds conform to EN 13813 standard and have been awarded the CE mark in compliance with annex ZA, standard EN 13813. Mapei products for the protection and repair of concrete surfaces and structures have been awarded the CE mark in compliance with EN 1504 standards. Mapei mortars for renders conform to standard EN 998 and have been awarded the CE mark in compliance with standard EN 998. Mapei sealants comply with standard ISO 11600.

Adesilex P10 (C2TE, CE EN 12004, mixed with Isolastic satisfies class S1 according to EN 12004, EC1 R): white high performance cementitious adhesive with no vertical slip and extended open time for glass, ceramic and marble mosaic coverings.

Fibreglass Mesh: alkali-resistant fibreglass mesh in compliance with ETAG 004 guides for reinforcing waterproof protections, anti-fracture membranes and insulation coatings. N.B: this product has been superseded on several markets by Mapenet 150.

Isolastic: flexible latex additive to be mixed with Kerabond, Kerabond T, Kerafloor and Adesilex P10.

Keracrete + Keracrete Powder (C2T, CE EN 12004, EC1 R): high performance two-component adhesive with no vertical slip for ceramic tiles

and stone material.

Keraflex (C2TE, CE EN 12004, EC1 R): high performance cementitious adhesive, with no vertical slip and with extended open time for ceramic tiles and stone material.

Kerapoxy (R2T, RG, CE EN 12004): high performance two-component acid-resistant grout and adhesive with no vertical slip for installing and grouting ceramic tiles and stone material.

Mapeband: rubber tape with alkali-resistant fabric for cementitious waterproofing systems and liquid membranes.

Mapelastic (CE EN 1504-2, coating (c) principles PI, MC and IR): two-component flexible cementitious mortar for waterproofing balconies, terraces and bathrooms

Mapesil AC (F-25-LM ISO 11600/DIN 18540, BS 5889/ASTM C920, TTS 00230C, TTS 001543A): one-component mildew resistant acetic cross-linking silicone sealant.

Nivoplan (EN 998-1): levelling mortar for internal and external walls and ceilings for thicknesses from 2 to 30 mm.

Planicrete: synthetic-rubber latex for cementitious mortars used for improving bonding and mechanical strength.

Primer G (EC1): synthetic-resin-based water dispersion primer with very low VOC content.

Topcem Pronto (CT-C30-F6-A1, CE EN 13813, EC1 R): ready-to-use, pre-blended, normal-setting mortar with controlled shrinkage for fast-drying screeds.

Ultracolor Plus (CG2, EC1): fast-setting and drying, high performance, anti-efflorescence, water-repellent grout for joints from 2 to 20 mm. With DropEffect® and anti-mould with BioBlock® technology.