

MEGAPOXY for marble, granite & sandstone fixing

Issue 2, 04/2005

Megapoxy products:
PM, PF & 69



Summary

Clean, elegant lines of modern buildings reflect technical advances in stone cladding. Modern methods of stone cutting and polishing combined with reliable and safe fixing with MEGAPOXY structural adhesives led to construction of many outstanding architectural masterpieces.

MEGAPOXY structural adhesives are two component high strength assembly adhesives that exceed all existing international standards. They are manufactured under quality management system that is certified by National Association of Testing Authorities (N.A.T.A), Australia as conforming to International Standard ISO 9002.

- MEGAPOXY adhesives bond marble and granite to concrete, timber, steel, natural stone, ceramic and other materials of construction. Megapoxy is suitable for bonding large panels to all interior and exterior surfaces.
- MEGAPOXY is a non-slump fixing material and stonemasons can install panels accurately on out-of-plump walls. Rectification of the wall into true plump line by rendering or plastering is not necessary.
- Elasticity of MEGAPOXY allows movements most due to seismic activity and vibrations encountered in elevators and lift lobbies.
- Movements due to thermal expansion and contraction as well as wind loading are accommodated within the mass of MEGAPOXY bonds.
- Very heavy panels in high rise installation can be secured fixed with MEGAPOXY using stainless steel wire or anchors.
- MEGAPOXY frees the stonemason from the need to handle heavy bags of sand and cement, and fixing with bolts.
- Dislodgement and debonding failures, common with latex cement mortars, cannot happen. When using MEGAPOXY stonemasons will crease productivity two or three times.
- Large choice of novel designs, unusual and difficult installations are possible with Megapoxy.

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Surface preparation

Surfaces to be bonded must be clean and strong. At the bonding spots concrete should be lightly scabbed to ensure strong substrate. In case of weak wall material, such as old and weathered concrete, multicavity bricks or pre-cast concrete hollow blocks, the use of pins or anchors with MEGAPOXY is mandatory. The marble and granite panel surface must be clean and dry. Abrade lightly with an angle grinder (disc grinder) the areas to be spot bonded with MEGAPOXY. Holes for pin insertions into stone should be drilled with a drill without the use of impactor facility, to avoid fracturing the panel. Drilled holes must be blown out with clean air to make them dust free.

Technical characteristics

Tensile shear strength: >20 MPa
Elastic deformation at 20 MPa shear stress: 2.5%
Tensile bond strength: 10 MPa
Compressive strength: 80 MPa
Flexural strength: 15 MPa
Coefficient of Linear Expansion: 40 mm per °C x 10⁻⁶

Megapoxy application

Quantity of MEGAPOXY required to fix panels will vary according to size and weight of the panels. Without the use of pins or ties, minimum 10% of the panel surface area should be bonded.

For example, panel 1 metre long, 0.5 metre wide and 0.03 metre thick weights 40 kg. Typical gap between the panel and wall is 10mm. Area of the panel is 0.5 square metre. 10% of this area should be bonded to the wall, i.e. 0.05 square metre. Five spot applications of MEGAPOXY each 100 mm x 100 mm thick will give total bond over 10% of the area of the panel. MEGAPOXY requirement will be 5 x 0.1 litre, i.e. 0.5 litre total. The applications should be at corners and at the centre of the panel.

In the above example the shear load on MEGAPOXY is 0.08 MPa. At permanent stress levels below 5 MPa, any deformation caused by surges in positive or negative loads by strong winds or other forces will be fully elastic and no creep will occur. Short duration stresses of 20 MPa and over will not cause any creep or changes in strength of the assembly. This has been confirmed by extensive evidence of reliability of MEGAPOXY fixing system in cyclone affected areas such as Hong Kong and North Queensland.

It is essential that the panel weight is transmitted onto as large area of the wall surface as possible. The strength of the wall is of great importance and if doubt exists about the quality of the wall, use the pins is advisable.

Typical pull-out strengths of stainless steel pins embedded into 40 MPa concrete and granite

- **10 mm diameter stainless steel anchor embedded 50 mm into concrete with MEGAPOXY:**

Pull out = 50 kN, concrete failed.

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Megapoxy application (continued)

- **3 mm diameter stainless steel pin embedded 3 mm into granite with MEGAPOXY:**
Pull out = 7 kN, granite failed.

Cured MEGAPOXY is stone like, yet elastic, chemically inert, high strength and elasticity over a range of temperatures from above 90°C to as low as -30°C without softening or embrittlement.

- The spot fixing technique creates a ventilated cavity between the panel and wall. This provides thermal, acoustic and dampness insulation to the structure and makes open joint cladding practical.
- Non-sag properties of MEGAPOXY allow stonemasons to install panels at varying distances from the wall and fix vertical or inclined surfaces as called for by design.
- MEGAPOXY is ideal for use in stone prefabrication and artisan work.
- MEGAPOXY does not stain, burn or dehydrate even the most sensitive types of marble.
- MEGAPOXY strengthens and improves durability of intrinsically weak types of stones by sealing fine cracks and faults which could otherwise cause problems during and after installation.

In high rise installations increased safety is achieved by the use of pins and anchors with MEGAPOXY. This technique insures against wall material failure by distributing stress due to panel weight into the interior of the wall. This is particularly important when cladding older concrete or multi-cavity brick walls of type frequently used in Europe and the US.

Megapoxy specifications

	PM	PF	69
Consistency	Non-slump paste	Non-slump paste	Non-slump gel
Colour	White	White	Translucent amber
Mix ratio A:B	1:1 (volume)	1:1 (volume)	1:1 (volume)
Pot life at 25°C	45 minutes	3 minutes	45 minutes
Minimum cure at 25°C	12 hours	1 hours	12 hours
Full cure at 25°C	4 days	6 hours	4 days
Minimum application temperature	10°C	0°C	10°C

IMPORTANT

It is essential that the correct mixing ratio of part A to part B is used, i.e. strictly equal parts by volume. Mix part A with part B on a flat surface using a flat edge paint scraper or putty knife until uniform in colour and texture.

Inaccuracy or poor mixing will result in lower strength and possible discolouration on ageing.

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Availability

MEGAPOXY is available in 1, 4 and 20 litre re-sealable kits. Uncured MEGAPOXY can be cleaned up by wiping with an absorbent material such as paper towels and rags. Any residual material can be cleaned with warm soapy water. Cured removed by mechanical means only.

Unmixed part A and part B are materials of very low toxicity but as with all industrial material, including sand and cement, personal hygiene and frequent washing of skin areas that came into contact with the unmixed ingredients, will adequately protect workers from industrial hygiene problems. Mixed and cured MEGAPOXY, avoid breathing dust. For further details refer to Bulletin No. 100. "Recommended industrial hygiene practices".

Technical service

All purchasers of MEGAPOXY products are invited to avail themselves of our technical service on epoxy base materials. The methods and systems outlined in this bulletin are the best available at the present time, however continual research and development is being carried out and could result in change without prior notice.

Please do not hesitate to contact us, for any additional information.