

AQUAFLEX SYSTEM

Treatment cycle for permanent encapsulation of asbestos-cement and forming waterproof membranes on mineral-based substrates



WHERE TO USE

- Permanent encapsulation systems of type A (external exposed), type B (internal exposed) and type C (not exposed prior to confining members/structures), certified in compliance with Italian Ministerial Decree 20/08/1999, for asbestos-cement members/structures exposed to atmospheric agents and at risk, therefore, of progressive decay leading to the exposure and release of fibres.
- Elastic waterproofing membranes on mineral-based substrates such as screeds, old ceramic coverings and concrete.

Some application examples

- Permanent encapsulation of flat roofs made from slabs of flat and corrugated asbestos-cement.
- Waterproofing terraces and balconies with occasional foot traffic.
- Waterproofing old ceramic coverings, including by overlaying.
- Waterproof protective coatings for cornices, guttering, chimney stacks, etc.

TECHNICAL CHARACTERISTICS

The **Aquaflex System** treatment cycle is suitable for encapsulating members/structures of types A, B and C as specified by Ministerial Decree 20/08/1999. It meets the legal requirements for encapsulation systems and has been certified by a laboratory authorised to issue Certificates of Conformity.

The encapsulation cycle is made up of high quality, certified products:

- **Malech**: micronised acrylic resin-based primer in water dispersion that, thanks to its high wetting capacity, penetrates into deteriorated material and binds the fibres to each other and to the cementitious matrix to prevent them from being released into the atmosphere. It also creates a surface for the next layer in the encapsulation system to anchor to.
- **Aquaflex**: one-component elastomeric resin-based encapsulating and coating product in water dispersion, available in white, grey and red. To comply with the specifications in Italian Ministerial Decree 20/08/1999 for types A and B encapsulation cycles, two coats of **Aquaflex** must be applied in contrasting colours so that, over the years, the colour used for the first coat will start to show through and indicate that the encapsulation treatment needs to be renovated. Type C cycles, on the other hand, require only one coat of **Aquaflex**. **Aquaflex** is supplied ready to use and its viscosity allows for easy application on horizontal, sloping and vertical surfaces. **Aquaflex** may be diluted with up to 5% of water if required. When the water evaporates off, **Aquaflex** forms a tough, elastic membrane. The elasticity of **Aquaflex** allows it to withstand movements caused by expansion and shrinkage due to temperature variations and vibrations. The total thickness of the cycle is very low and does not interfere with the dimensions of existing doors and openings.

According to EN 13501-1 fire resistance standards, **Aquaflex System** is classified as B_{fl}-s1 for use on floors and B-s1-d0 for use on walls and ceilings.

Aquaflex maintains its elasticity, even when subjected to accelerated ageing tests, so that when applied on members/structures in good condition the permanent encapsulation system provides an excellent solution in terms of durability, with work being completed in a short period of time at a reasonable price. Buildings may also remain open while work is being carried out and application of the cycle, carried out by specialised contractors, is very simple. Also, with an encapsulation system, there is no toxic waste and risks to workers and the environment is reduced to a minimum.

RECOMMENDATIONS

- Do not apply **Aquaflex System** if the temperature is lower than +5°C or if it is about to rain.
- Prevent the accumulation of free-standing water by forming a slight slope.
- Do not apply **Aquaflex System** on wet cementitious substrates or on substrates with rising damp.
- Do not apply **Aquaflex System** on surfaces continuously immersed in water (swimming pools, fountains, storage basins, etc.).
- Protect **Aquaflex** from rain and leaching during application and also until it is completely dry.

APPLICATION PROCEDURE

· ENCAPSULATION OF ASBESTOS

All the operations for the encapsulation cycle must be carried out as specified by current norms and regulations.

After cleaning and drying the slabs of asbestos-cement, apply a coat of **Malech** to impregnate the member/structure, making sure the product is thoroughly mixed before use.

Malech may be applied with a brush, roller or by airless spray. Wait until it is completely dry (approx. 10-12 hours) before applying **Aquaflex**.

For application on internal and external exposed members/structures, spread on two coats of **Aquaflex** in contrasting colours (for example, the first coat in grey and the second coat in white, or vice versa) as specified in Italian Ministerial Decree 20/08/1999 for encapsulation systems types A and B. Over the years, if the colour of the first coat starts to appear, it is an indication that repair work needs to be carried out.

For type C encapsulation systems, on the other hand, one or two coats of the same colour of **Aquaflex** may be used. The product may be applied by trowel, roller, brush or airless spray. Only apply the second coat when the first coat is dry (from 2 to 12 hours depending on surrounding conditions). **Aquaflex** may be diluted with water up to 5% by weight, to make application easier.

The thickness of the coats applied must comply with current norms and regulations, depending on the type of work being carried out, as specified in the following table.

· LIQUID WATERPROOFING MEMBRANE

Substrates must be sound, clean and free of all traces of oil, grease, old paint and any other substance or material that could affect adhesion of the waterproofing cycle.

In the case of existing substrates, thoroughly clean the surface to be waterproofed with high pressure water jets. As a general rule, enamelled surfaces such as old ceramic tiling should be sanded down, or cleaned with a mixture of water and 30% caustic soda and then thoroughly rinsed to remove all traces of caustic soda.

Before applying **Aquaflex** as a waterproofing membrane, take special care around expansion joints and fillet joints between horizontal and vertical surfaces by waterproofing them with **Mapeband** or **Mapeband PE 120** bonded to the substrate with **Aquaflex**. **Mapeband SA** self-adhesive strip may also be used on horizontal/vertical fillet joints.

Structural joints must be waterproofed with **Mapeband TPE** bonded to the substrate with **Adesilex PG4**.

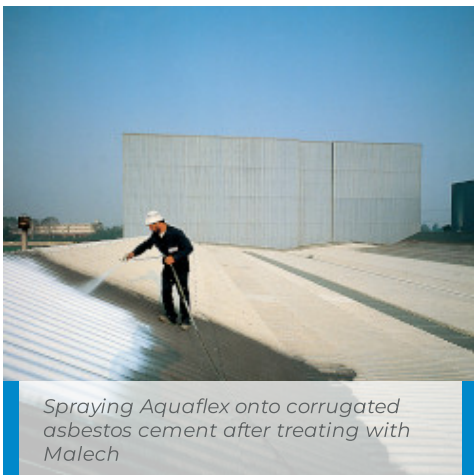
Special kits are also available from the **Drain** range to seal drainage points.

Once the surfaces have been prepared according to specification and all the waterproofing work has been carried out, apply **Aquaflex** with a trowel, roller, brush or airless spray. Apply thin, even coats of product and wait until the first coat is dry (2 to 12 hours depending on the surrounding conditions) before applying a second coat in the same colour crossways to the first one.

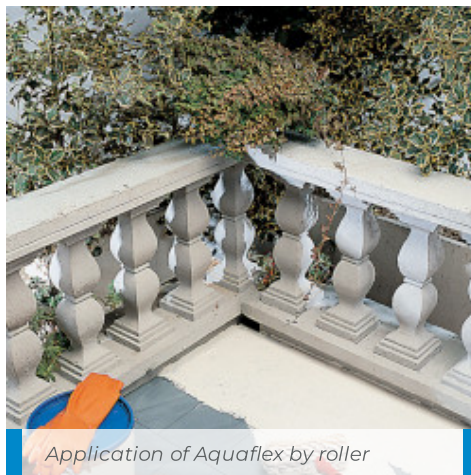
The final thickness of **Aquaflex** must be at least 0.7 mm in order to create a robust, elastic, seamless film. Make sure there are no interruptions in the film caused by imperfections in the substrate.

Cleaning

Aquaflex may be cleaned from tools and surfaces with water, while still wet. Once hardened, it may only be removed from the surface of metal using mechanical means.



Spraying Aquaflex onto corrugated asbestos cement after treating with Malech



Application of Aquaflex by roller

CONSUMPTION

· for encapsulation systems

Type of system	Average total thickness (mm)	Average thickness per coat (mm, dry)	Average thickness per coat (mm, wet)	Average consumption per coat (kg/m ²)
A	0.300	0.150	0.215	0.30
B	0.250	0.125	0.180	0.25
C	0.200	0.200	0.285	0.40

· for waterproofing membranes

The consumption rate for each coat of **Aquaflex** is approximately 0.7 kg/m², which corresponds to a wet thickness of 0.5 mm (final dry thickness 0.35 mm).

PACKAGING

Aquaflex is supplied in 5 kg and 20 kg drums.

STORAGE

Aquaflex may be stored for 24 months in its original sealed packaging in a dry place. Protect from frost.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Aquaflex and **Malech** are not considered hazardous according to current norms and regulations regarding the classification of mixtures. It is recommended to use protective gloves and goggles and to take the usual precautions for handling chemicals.

For further and complete information about the safe use of our product please refer to the latest version of our Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

TYPES OF ENCAPSULATION SYSTEMS (ITALIAN MINISTERIAL DECREE 20/08/1999)			
TYPE OF SYSTEM	AREA OF USE	THICKNESS (dry coat)	MAPEI CYCLE
A	External exposed	Av. total thickness: at least 300 µm (not less than 250 µm in any single point). The average thickness of the final coat must not be more than the average thickness of the previous coat	· One coat of Malech · One coat of Aquaflex in one colour · One coat of Aquaflex in a second colour
B	Internal exposed	Av. total thickness: at least 250 µm (not less than 200 µm in any single point). The average thickness of the final coat must not be higher than the average thickness of the previous coat	· One coat of Malech · One coat of Aquaflex in one colour · One coat of Aquaflex in a second colour

C	Not exposed	Minimum thickness in any point: 200 µm	<ul style="list-style-type: none"> · One coat of Malech · One coat of Aquaflex · One coat of Aquaflex (optional)
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Italian Ministerial Decree 20/08/1999 (G.U. 22-10-1999, No. 249). - Wider reaching norms and technical methods for decontamination interventions, including those aimed at making asbestos harmless, as specified by Art. 5, comma 1, letter f) in Law No. 257 dated 27/03/1992, No. 257, containing norms regarding stopping the use of asbestos.

(...)

Appendix 1

Performance characteristics of encapsulation systems

1. Type A encapsulating systems.

The average dry thickness of the encapsulating system must be at least 300 µm and it must not be less than 250 µm in any single point.

The final two products comprising the encapsulating system must be two coating products and must be in two different and contrasting colours. The total average thickness of the final product must not be higher than the total average thickness of the penultimate product. The total thickness of the final product must not be more than 20% higher than the thickness of the penultimate product in any single point.

For the laboratory tests specified below the thickness of the coating must be at least 250 µm, as specified by UNI 10686 standards. (...)

2. Type B encapsulating systems.

The average dry thickness of the encapsulating system must be at least 250 µm and it must not be less than 200 µm in any single point.

The final two products comprising the encapsulating system must be two coating products and must be in two different and contrasting colours. The total average thickness of the final product must not be higher than the total average thickness of the penultimate product. The total thickness of the final product must not be more than 20% higher than the thickness of the penultimate product in any single point. (...)

3. Type C encapsulating systems.

The average dry thickness of the encapsulating system must be at least 200 µm and it must not be less than this value in any single point.

TECHNICAL DATA (typical values)	
In compliance with:	
· Italian Ministerial Decree 20 th August 1999	
PRODUCT IDENTITY	
Consistency:	paste
Colour:	white, grey and red
Density (g/cm ³):	1.4
pH:	8.5
Dry solids content (%):	70
Brookfield viscosity (mPa·s):	60,000 (RV 6 - 10 rpm)
APPLICATION DATA (at +23°C and 50% R.H.)	
Minimum filming temperature:	+5°C
Application temperature range:	from +5°C to +40°C
Waiting time between first and second coat (h):	from 2 to 12
Full hardening at +23°C (0.5 mm thick):	4-5 hours
FINAL PERFORMANCE	
Tensile strength (ISO 37) (N/mm ²): · after 28 days at +23°C:	1.5
Elongation at failure (ISO 37) (%): · after 28 days at +23°C:	400

Adhesion (EN 4624) (N/mm ²):	1.5
Adhesion after freeze-thaw cycles (EN 4624) (N/mm ²):	1.5
Adhesion after sunlight-rain cycles (EN 4624) (N/mm ²):	1.5
Impermeability to water after accelerated ageing (UNI 10686):	positive
Resistance to washing cycles (UNI 10560):	> 5000 cycles
Resistance to fire (EN 13501-1):	B _{FL} -s1 (floors) B-s1-d0 (walls and ceilings)



A microscope view of asbestos cement



This picture highlights both the penetration of the primer into the asbestos cement as well as the efficiency of the encapsulation of the asbestos fibres which is already guaranteed by the primer

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com

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