# Nafuflex

## Application Manual

EXPERTISE
**WATERPROOFING**

MC
BE SURE. BUILD SURE.

**The power of water is immense and often unpredictable, with structure penetration possible via many pathways.**

Professional and reliable waterproofing of buildings is indispensable for permanent protection against water. This places high demands on the product and the expertise with which it is applied.

This application manual serves as a practical companion to the technical data sheets of the Nafuflex product range. Here you will find useful background information as well as practical tips for the processing and employment of the associated products. Each product component is tested as part of the system and complies with all relevant standards and regulations – giving you maximum outcome reliability in your waterproofing work.

## Nafuflex – seamless, jointless, flexible

The Nafuflex range of waterproofing systems comprises seamless, jointless and permanently flexible coating materials. They owe their success to special additives such as polystyrene beads that facilitate and accelerate application.

- Highly flexible with effective crack-bridging
- Simple cost-efficient application
- Sprayable and trowelable
- Solvent-free for enhanced environmental compatibility
- Resistant to water under pressure





## Nafuflex: An ideal product for every requirement

The product range with its high-quality system components covers the entire spectrum of waterproofing requirements while consistently offering ease of application – even under the most difficult weather conditions.

| | Single-component | Two-component | Suitable for trowelling | Sprayable with screw pumps | Sprayable with airless systems |
|---|---|---|---|---|---|
| **Nafuflex Basic 1** | ● | | ● | | |
| **Nafuflex Basic 2** | | ● | ● | | |
| **Nafuflex Easy Tech 1** | ● | | ● | ● | |
| **Nafuflex Easy Tech 2** | | ● | ● | ● | |
| **Nafuflex Profi Tech 1** | ● | | | | ● |
| **Nafuflex Profi Tech 2** | | ● | | | ● |
| **Nafuflex High Performance** | | ● | ● | ● | |

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If you should have any queries regarding our products and systems, or their application, just give us a call!

# Substrate requirements

**Suitable for all mineral substrates, including:**

- Masonry
- Mixed masonry
- Concrete
- Render

The substrate must be frost-free, solid, load-bearing and free of substances that would impair adhesion (such as release agents, dust or dirt). All loose particles, clay and sand must be removed.

Protruding mortar residues, sintered layers, burrs, gravel pockets, flaking mortar and gaps in masonry joints, protruding edges and recesses must all be removed or remedied.

**NOTE!**

Edges must be chamfered!

Smooth over and seal rough surfaces, unevenness, depressions or butt joint recesses of more than 5 mm depth with a suitable barrier mortar (such as Oxal SPM).

After priming with a filler or scratch coat, minor unevennesses (≤ 5 mm) should be levelled out with Nafuflex bituminous thick coatings.

## Fillets, corners and floor slabs

Applying waterproofing slurries in the shoulder area

If rising damp is likely to be an issue, it is recommendable to apply the sulphate-resistant, mineral-based waterproofing slurry Oxal DS-HS, 15 cm up to the front face of the floor slab and up to approx. 20 cm above the radiused concave fillet (wall/floor connection).



Substrate preparation

Mineral fillet created with a rounded trowel

The inside corners and the fillets between the rising wall and floor slab are rounded off with Oxal SPM barrier mortar. This enables you to achieve an even layer thickness of the bituminous coating.

Alternatively, the wall-floor joint can be created using the MC-FastTape sealing tape system.

## Preliminary sealant

Rolling the primer on

The substrate needs to be prepared with a preliminary sealant. The surface may be slightly moist, but not wet or frozen. The preliminary sealant comprises a solution of 1:10 Nafuflex bituminous coating and water.

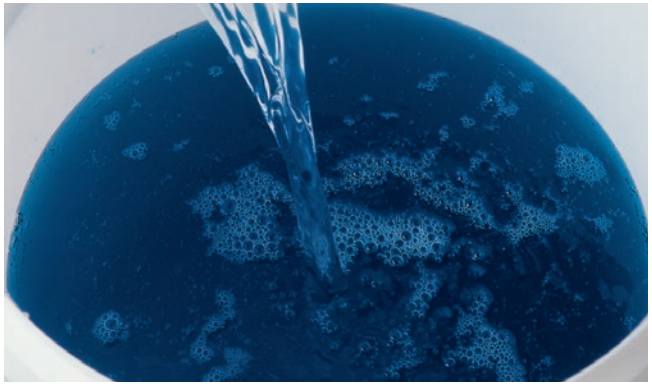
**Application:**
With a small or wide brush, by rolling or by spraying.

**NOTE!**

If spraying, the first coat is not required.







Nafuflex impregnation primer

Highly absorbent or powdery substrates need to be pre-coated with Nafuflex GIP impregnation primer for surface consolidation. The concentrate is diluted 1:1 with water.

**Application:**
With a small or wide brush, by rolling or by spraying.

## Mixing of two-component products


Two-component Nafuflex is supplied in packs comprising two matched quantities. The easiest way to achieve optimum mixing is with so-called anchor stirrers.

**NOTE!**

Avoidance of lump formation is essential, so ensure a mixing time of at least 3 minutes! Single-component products can be directly applied.





## Application by spraying or trowelling

Spraying

Nafuflex bituminous thick coatings can be applied in an extremely economical spraying process with the right equipment.
The ideal dispensers are airless units (Profi Tech) or air atomising sprayers (Easy Tech).

Trowelling

Nafuflex bituminous thick coatings are applied in uniform layer thicknesses with a smoothing trowel.

In the case of transitions at floor slabs or foundation projections, the waterproofing coating must be extended to create a strip at least 15 cm wide downward over the end face of the floor slab or projection.

## Mesh inlay

Embed Nafuflex Grid 25 NF reinforcing inlay over the entire surface between the first and second Nafuflex layers.

Nafuflex Grid 25 NF is embedded between the first and second waterproofing layers with an overlap of 10 cm.





## Pipe and conduit penetrations

Incorporation within the first layer of Nafuflex

Once the first layer has been applied, cut out the Nafuflex GRID 25 NF reinforcing mesh to fit the pipe or conduit diameter (+ 10 cm). The mesh web is cut into a star shape and embedded in the first layer of bitumen over the pipe.

Trowelling-on the second layer of Nafuflex

A sleeve-like strip of Nafuflex GRID 25 NF measuring around 10 cm in width should then be wrapped around the pipe and again embedded in the Nafuflex layer. The second layer of bitumen is then trowelled on.

With moderate exposure to pressurized water (W 2.1-E), penetrations may be formed using e.g. a floating and fixed flange type of assembly.

## Joint sealing


Joints are sealed with sealing tapes which have a fleece lamination on both sides for embedding in the Nafuflex membrane.

MC-FastTape 300 or 500 is embedded in the first Nafuflex layer. Ensure that the embedded joint tape overlaps the membrane on both sides by at least 10 cm.

Markings on both sides of the joint tapes provide guidance for integration within the membrane.





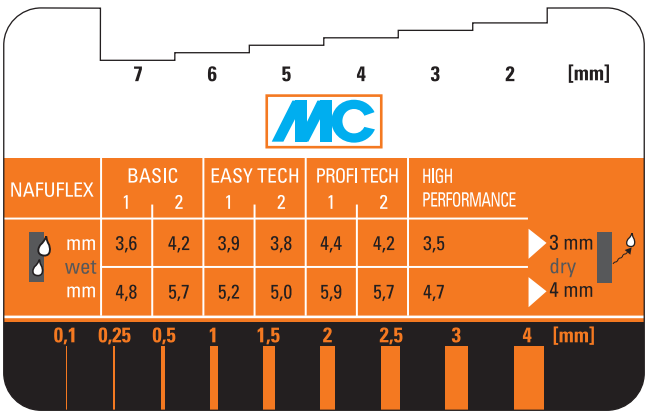
## Measuring the wet layer thickness

The wet layer thickness is checked by 20 measurements per membrane or 20 measurements per 100 $m^2$, whichever is greater.

The measuring points should be arranged diagonally across the surface. The measuring point density will need to be increased in the area of penetrations, transitions or connections/fillets.

Where two-layer waterproofing is applied with a mesh inlay, each layer must be checked individually.

We also provide a pre-printed form for easy measurement recording and documentation. As a practical on-site support, the values of the wet layer thicknesses and the resultant dry layer thicknesses are listed on the MC coating thickness gauge.

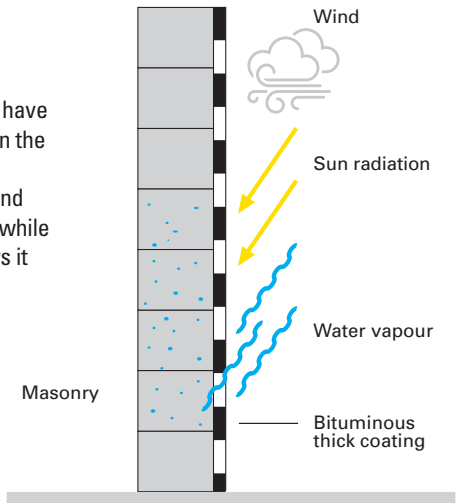


# Drying mechanism of polymer-modified bituminous coatings (PMBC)

The functionality of a bitumen emulsion depends on ensuring it is completely dry:

The water contained in the emulsion must completely evaporate for bituminous thick coatings to properly develop their waterproofing properties!

**Weather conditions**
Weather conditions have a strong influence on the drying speed:
For example, wind and sun promote drying while damp masonry slows it down.







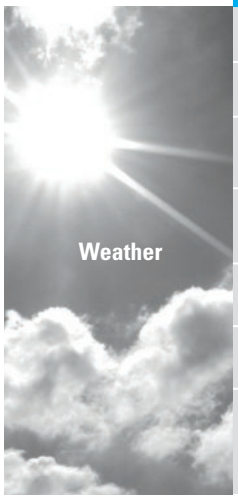

# Checking the dryness profile

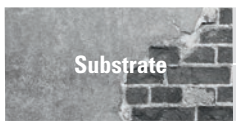
The dryness check is carried out on a coated reference sample from the relevant substrate: In specified intervals, you will need to cut into the specimen and test its water content and dryness profile. Expose the specimen in the trench/excavation pit at the location with the worst weather exposure.

You can obtain a form directly from MC-Bauchemie for recording the results of your dryness checks.

Drying

# Parameters that influence drying:



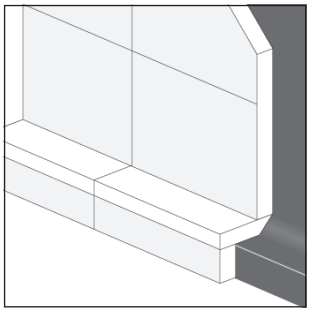





| Parameter | | Effect | |
|---|---|---|---|
| High air humidity | → | Impedes drying | – |
| Low air humidity | → | Promotes drying | + |
| Rain | → | Halts the drying process and can destroy a freshly applied coating | – |
| Ice, snow, frost | → | Reduces the rate of drying to a minimum and can destroy a freshly applied coating | – – |
| Sun | → | Accelerates drying | + |
| Wind | → | Accelerates drying | + + |
| Temperature | → | High temperatures accelerate drying, low temperatures decelerate drying | |
| High absorbency | → | Promotes drying | + |
| Low absorbency | → | Impedes drying | – |
| Small layer thickness | → | Reduces the drying time | + |
| Large layer thickness | → | Increases the drying time | – |

Waterproofing membranes of Nafuflex need to be permanently protected from mechanical stress. Point and line loads must be avoided at all costs. It is essential to make sure that the coating is fully dried before the appropriate protective layers are applied.

Insulation panels should be cut to size.



The panels are then laid from bottom to top in a conjoined formation on the thoroughly dried membrane.
Use either the same bituminous material or special Nafuflex DPK to bond to the membrane.

**NOTE!**

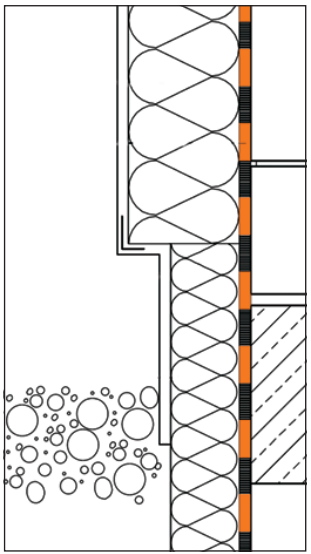
Vertical panels placed with their edges directly on coated fillets may destroy the waterproofing seal due to the line load that arises.





## Protective boards

For example:
- Nafuflex SD (protection and drainage)
- Drainage matting with slide and load distribution sheeting
- Extruded drainage and protective boards
- Perimeter insulation panels
- Foam plastic panels and load distribution sheeting



The trench/excavation pit should be back-filled and compacted layer by layer.
The backfill material should have the highest possible water permeability coefficient (k >10-4m/s).

Drainage systems must be provided in accordance with DIN 4095 or equivalent standards.

**NOTE!**

The trench/excavation pit may only be back-filled once the waterproofing membrane has dried through and is adequately protected against point and line loads!

## Tips and tricks for additional assurance

| Problem | Cause | Solution |
|---|---|---|
| **Bubble formation in the bituminous membrane** | With concrete substrates featuring large numbers of pores and cavities, air is trapped in the voids as the bituminous thick coating is applied. At high ambient temperatures, the air expands and can lead to bubbles in the membrane. | Such porous substrates must be pretreated with appropriate sealants. Large blowholes and cavities should be filled with Oxal SPM. Porous substrates are generally primed with Nafuflex and then provided with a scratch coat. |
| **Bubble formation and delayed drying in the bituminous membrane** | Porous or perforated wall bricks exposed to rain. The rainwater can trickle down unhindered through the brick material. The additional water hinders drying. Moreover, evaporation arising from exposure to heat gives rise to pressurised vapour which can lead to bubbles as the membrane is laid. | Early coverage of the masonry to protect it against rain. Application of the mineral sealing slurry Oxal DS-HS to protect against bubbles and rising damp. |
| **Bituminous thick coating not drying properly in the area of the fillet joint** | Rain penetrating through unfinished window openings. There is water on the floor slab causing rising damp in the fillet area, thus hindering the drying of the bituminous thick coating. | Seal fillet joints with Oxal DS-HS waterproofing slurry and round off with Oxal SPM before continuing with Nafuflex bituminous thick coatings. |

## Tips and tricks for additional assurance

| Problem | Cause | Solution |
|---|---|---|
| **Dampness in the area of basement windows** | Light shafts are fixed to the building waterproofing membrane with anchors/wall plugs. Rainwater can enter the interior of the house unhindered along the fixings. | Einbetten des Lichtschachtrahmens in die Abdichtungsfläche und zusätzliche Abdichtung der Durchdringung nach Lichtschachtbaustellen-Vorgabe. |
| **Dampness in the area of pipe and conduit penetrations** | Retrofitted penetrations not sealed. | All penetrations need to be embedded in the membrane. |

# Structure waterproofing: expert efficiency, proven practicality

- Waterproofing of soil-facing surfaces
- Adhesive for insulating panels and drainage boards
- Comprehensive range of services

With Nafuflex, MC-Bauchemie offers planners, specifiers, builders and fabricators product solutions for the fast, reliable and cost-efficient waterproofing of buildings: A coordinated system for protection against dampness and moisture in the area in contact with the soil ensuring enhanced peace of mind and reliable value retention.

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