Nafuflex

Flexible waterproofing for structural elements in contact with soil per DIN 18533

EXPERTISE
WATERPROOFING

MC
BE SURE. BUILD SURE.

We offer more

MC-Bauchemie not only provides you with a sophisticated system for the protection of your building against dampness and water, we also offer a full-line service for maximum planning efficiency and outcome reliability. From on-site advice and preparation of the performance specification through to equipment planning and record of execution, you can rely on our professional support all the way.

Nafuflex – Watertight Advantages

Optimised reliability

Seamless, jointless, flexible: Nafuflex adapts to any kind of substrate. Even protrusions, light shafts and angled joints can be sealed quickly, easily and above all securely thanks to this polymer-modified bitumen coating (PMBC). Large surface areas to cover? With Nafuflex, all tightly sealed with effortless ease. Nafuflex is optimised for spray application using airless, peristaltic and screw pumps. Saving both time and money.

Maximum flexibility

Depending on weather conditions and application method, you can choose from a system of one- and two-component products – and are guaranteed to find the right solution for your needs. This is particularly important in regions where the radioactive gas radon can penetrate building interiors through cracks in the earth's crust, jeopardising the health of the occupants. Protect your building and your health with Nafuflex – the safe and cost-efficient waterproofing system for your structure.

- Seamless membrane
- Highly flexible with efficient crack-bridging
- Efficient placement thanks to optimized machine suitability
- Resistant to both high and low temperatures

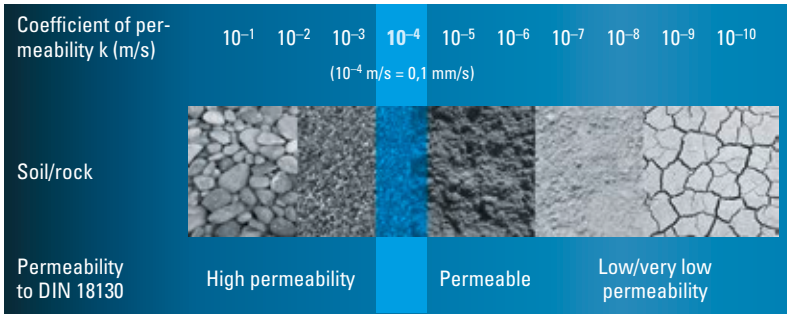
Standard Specifications – the Theory Underlying the Practice

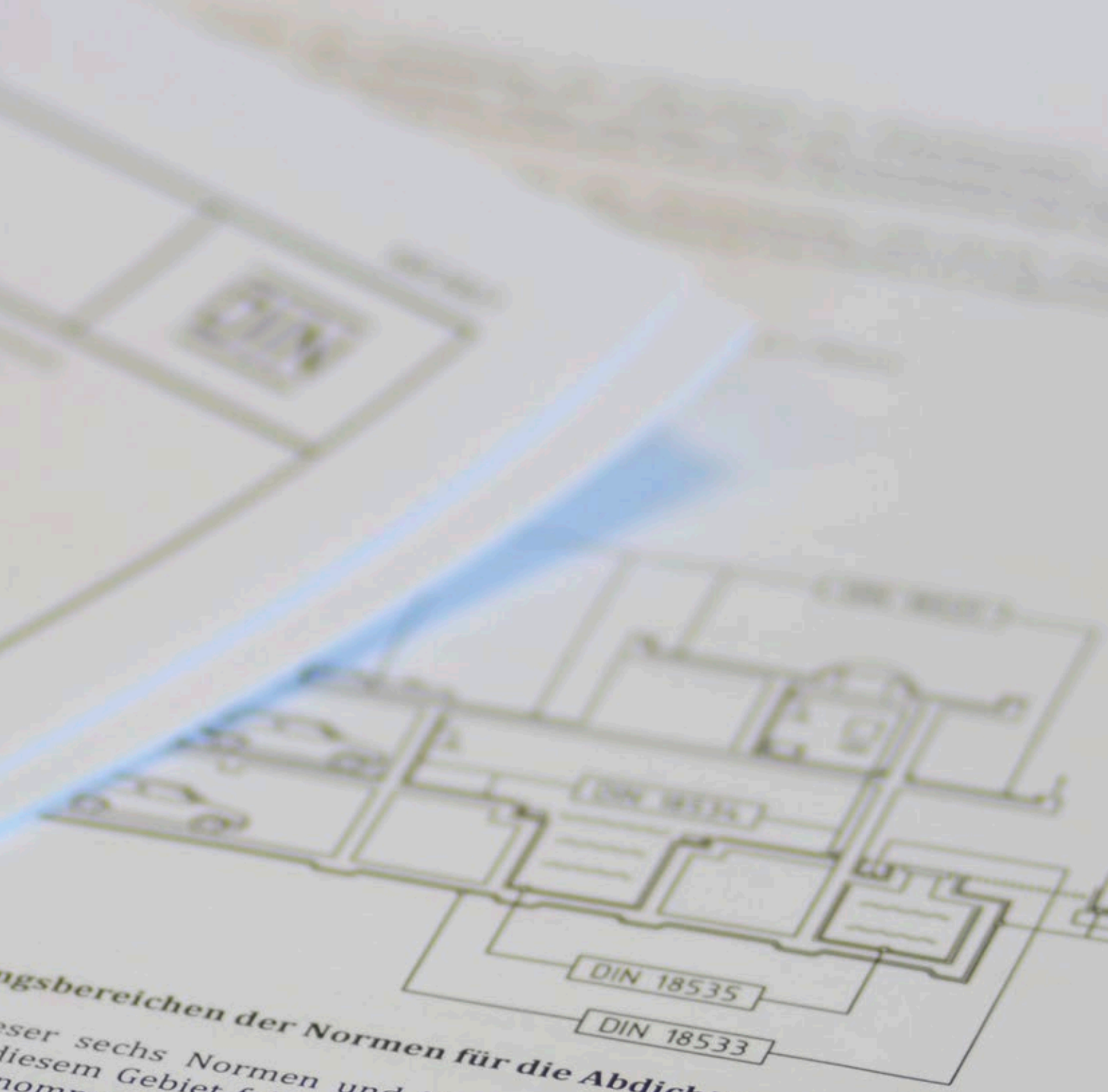
Types of water load

Achieving optimal structure waterproofing depends on the respective soil conditions and the water load acting on the components in contact with the ground. The waterproofing of buildings therefore has to be adapted to the soil and water conditions. The coefficient of permeability (aka hydraulic conductivity) k is an important parameter for classifying soil conditions and thus also the type of water load.

If the coefficient of permeability k ≥ is 10-4 m/s, the soil can be regarded as readily permeable. Drainage is not necessary (water penetration – aka water impact – class W1.1-E; soil moisture and non-pressing water for floor slabs and walls in contact with the ground). If the soil is less permeable with a permeability coefficient k ≤ 10-4 m/s, installation of drainage is recommended (water penetration class W1.2-E; soil moisture and non-pressing water for floor slabs and walls in contact with the ground with drainage). With no drainage in a less than readily permeable soil, a thicker waterproofing layer would be necessary (water penetration class W2-E; pressing water).

Water penetration class to DIN 18533	Load case: to DIN 18195	Minimum dry layer thickness
W1.1-E Soil moisture with no pressing water in the case of floor slabs and walls in contact with the ground	Part 4	3 mm
W1.2-E Soil moisture with no pressing water in the case of floor slabs and walls in contact with the ground with drainage	Part 4	3 mm
W2.1-E Moderate exposure to pressing water ≤ 3 m submersion depth	Part 6	4 mm
W3-E Non-pressing water on earth-covered roofs	Part 5	4 mm
W4-E Splash water and soil moisture at wall footings/plinths and capillary water in and under walls	Part 4	3 mm





ngsbereichen der Normen für die Abdichtung von Bauwerken

eser sechs Normen und Normenreihen für die Abdichtung von
diesem Gebiet folgend, auch weitere Bestimmungen und bisher
nommen.

berührten Bauteilen hängen nicht nur von ihrer fachgerechten
von der abdichtungstechnisch zweckmäßigen Planung,
uf die die Abdichtung aufgebracht wird. Diese Norm weist
n, sondern auch an diejenigen, die für die Gesamtplanung
ile verantwortlich sind, denn Wirkung und Bestand der
ten Planung aller Beteiligten ab.

The Water Penetration Classes

W1.1-E
Soil moisture and non-pressing water for floor slabs and walls in contact with the ground

Soil moisture is to be expected for floor slabs without basements or walls and floor slabs in contact with the ground where the waterproofing meets highly water-permeable soil. The lowest waterproofing level must be planned so that it is at least 50 cm above the assumed water level.

W1.2-E
Soil moisture and non-pressing water for floor slabs and walls in contact with the ground with drainage

Proper drainage in accordance with DIN 4095 prevents water accumulation where the subsoil is not very permeable to water. This means that components in contact with the ground can be assigned to water penetration class W1.2-E. The lowest waterproofing level must be planned so that it is at least 50 cm above the assumed water level.

W2.1-E
Moderate penetration impact from water under pressure

Moderate penetration impact should be accounted for in the planning work where the waterproofing membrane is exposed to standing/accumulated water, ground water or flood water up to a column height of 3 m (hydrostatic pressure).

W3-E
Non-pressing water on earth-covered roofs

Water can impact earth-covered roofs, e.g. as a result of precipitation. The waterproofing of an earth-covered roof must be designed so that the lowest point of the roof surface is at least 30 cm above HHW/HGW. The earth thickness on the roof surface must not exceed 10 cm. If this cannot be guaranteed, the waterproofing must be implemented in accordance with water penetration class W2-E.

W4-E
Splash water at wall footing and capillary water in and under walls in contact with the ground

The effects of splash or seepage water and capillary rising damp make wall base waterproofing and a cross-section membrane (DPC) indispensable. Wall footing/plinth waterproofing must be planned in such a way that the waterproofing is positioned about 20 cm below the soil level and 30 cm above the soil level. Cross-sectional sealing/DPC made of PMBC is no longer permitted in many jurisdictions. This detail should be provided using a flexible mineral sealing slurry.

Creating the Perfect Basis

Substrate preparation

Getting the fundamentals right: A properly prepared substrate is essential for reliable, long-lasting waterproofing.

All mineral substrates are suited to this kind of treatment, including in particular:

- Masonry
- Mixed masonry
- Concrete
- Render
- Mortar groups PII, PIII

The substrate must be frost-free, solid, load-bearing and free of substances that would impair adhesion (such as release agents, dust or dirt). Remove all loose particles, clay and sand. Also remove protruding mortar residues, sintered layers, burrs, gravel pockets and protruding edges.

Important:
Edges must be chamfered!

When interfacing with water-impermeable components, the substrate must be mechanically abraded. Smooth over rough unevenness, depressions or butt joints of more than 5 mm depth with the barrier mortar Oxal SPM. Any minor unevenness (≤ 5 mm) after priming with a filler or scratch coat can be levelled out with the Nafuflex sealant.

Fillets, corners and floor slabs

Round off the inside corners and the fillets between the rising walls and floor slabs with Oxal SPM barrier mortar. This enables you to achieve an even layer thickness of the bituminous thick-layer coating.

Tip: Apply sulphate-resistant waterproofing slurry Oxal DS-HS from 15 cm up to the end face of the floor slab and up to approx. 20 cm above the rounded fillet (wall to floor slab joint).

Note:
Things go even faster with MC-FastTape. See page 11!

In this way, you can protect the subsequent bituminous thick-layer coating from rising damp while achieving even drying and reliable adhesion to the substrate.

Priming

Apply a coating of primer to the substrate. The surface may be slightly moist, but not wet or frozen. Highly absorbent and powdery substrates will need to be pre-treated with Nafuflex GIP. Dilute the concentrate with water at a ratio of 1:1. On clean substrates, apply a 1:10 primer comprising one part Nafuflex waterproofing sealant to ten parts of water in order to level the surface.

Application methods: By rolling, with a small or wide brush or by spraying as the situation dictates.

Professional Waterproofing with Nafuflex

Mixing two-component products

In the twin pack: Two-component Nafuflex is supplied in packs comprising two matched quantities.

Important!

Avoid lump formation – ensure a mixing time of at least 3 minutes! Single-component products can be directly applied.

Application by spraying or trowelling.

Time-efficient, cost-effective, safe and reliable: We offer Nafuflex bituminous thick-layer coatings especially for spray application. Thanks to their optimised formula, they are ideal for both airless devices and for air spraying – saving you a lot of time either way. No separate priming coat on the prepared substrate is required for spray application. Needless to say, Nafuflex is also ideally suited to trowelling. Simply apply the bituminous thick-layer coating with a smoothing trowel in even layer thicknesses.

Note:

Spread the Nafuflex sealant over and below the front edge of the foundation projection in the prescribed layer thickness of min. 15 cm.

Reinforcing inlay

Giving real strength: Embed Nafuflex Grid 25 NF reinforcing inlay along the entire surface of the fillet between the first and second layers of Nafuflex sealant. At the wall, Nafuflex Grid 25 NF is embedded between the first and second waterproofing layers with an overlap of 10 cm.

Pipe penetrations

Once the first bitumen layer has been applied, cut out the reinforcing layer of Nafuflex Grid 25 NF to fit the pipe diameter (+ 10 cm). Cut the mesh in a star shape and embed it over the pipe into the first bitumen layer around the pipe. 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 bitumen layer. Then trowel the second bitumen layer over the top.

Note:

In the presence of water under pressure, form transit penetrations with an adhesive flange, approved building gland system or floating and fixed flange construction for PMBC.

Sealing joints

Use MC-FastTape for fast and secure joint sealing. It is fleece-laminated on both sides and can be seamlessly embedded in the Nafuflex sealant.

How it's done:

With MC-FastTape you can now seal angular joints (e.g. wall-floor connections) indoors and outdoors without time-consuming preparatory work. Matching moulded parts for inner and outer corners eliminate the need for cutting to size on site – ensuring fast and reliable sealing every time.

Splash water zone

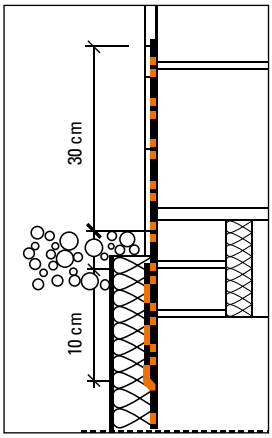
Ensure that the splash plinth is waterproofed from 30 cm below to a point at least 30 cm above the soil level. The Oxal DS-HS waterproofing slurries also provide a suitable substrate for the subsequent plinth render.

Note:

The Nafuflex bituminous thick-layer coating should overlap the waterproofing slurry by 5 cm to 20 cm below the soil level and by 10 cm above it. To prevent moisture from penetrating the plaster cross section from below, the lower edge of the plaster must additionally be sealed with MDS > 5 cm above ground level.

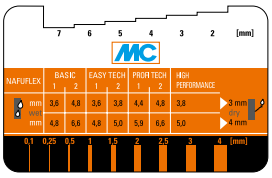
Measuring the wet layer thickness

The achievement of a reliable waterproofing result is dependent on ensuring the right wet layer thickness. We also provide a pre-printed form for easy measurement recording and documentation. The Nafuflex layer thickness gauge is also a useful tool for site measurements. In the case of two-layer waterproofing systems with a reinforcing inlay, it is essential that each layer be individually measured.



Application of render or plaster placed directly on the bituminous waterproofing system can lead to cracks occurring in the covering!

Use waterproofing mortar/ slurry from the Expert Proof product range for the footing/ plinth area below the render.



Nafuflex layer thickness gauge

MC-FastTape: When speed is of the essence

Once the substrate has been cleaned and prewetted to a matt dampness, apply the scratch coat. Allow this to dry and then build up the first waterproofing layer into which the MC-FastTape is to be embedded. MC-FastTape can be used with both Nafuflex and Expert Proof (see below).

- **Saves time and money**
- **Fast and easy application**
- **No more chamfering of insulation boards**
- **Absolutely watertight**

MC-FastTape AE outer corners or MC-FastTape IE inner corners embedded in the fresh first layer.

Apply MC-FastTape so that it overlaps at the inner or outer corner by approx. 10 cm.

Embed the MC-FastTape and apply the last waterproofing layer.

Build up the waterproofing membrane by laying fresh in fresh.

Make Sure It's Dry

Allowing the bituminous thick-layer coating to dry through

More haste, less speed: A polymer-modified bituminous thick-layer coating will only function as it should if it is allowed to completely dry. The water contained in the emulsion must evaporate for the PMBC membrane to develop its water-proofing properties. Once that happens, you can be sure that the seal will be tight, reliable and durable.

Checking the dryness profile

Regularly check a coated reference sample of the site substrate to determine how far drying has progressed. You will need to cut into the specimen and test its water content at specified intervals. The reference sample should take the form of a wedge-shaped Nafuflex coating on an appropriate mineral substrate. Expose the specimen in the excavation pit at the location with the worst weather conditions. Record your dryness checks using the pre-printed form provided by MC-Bauchemie.

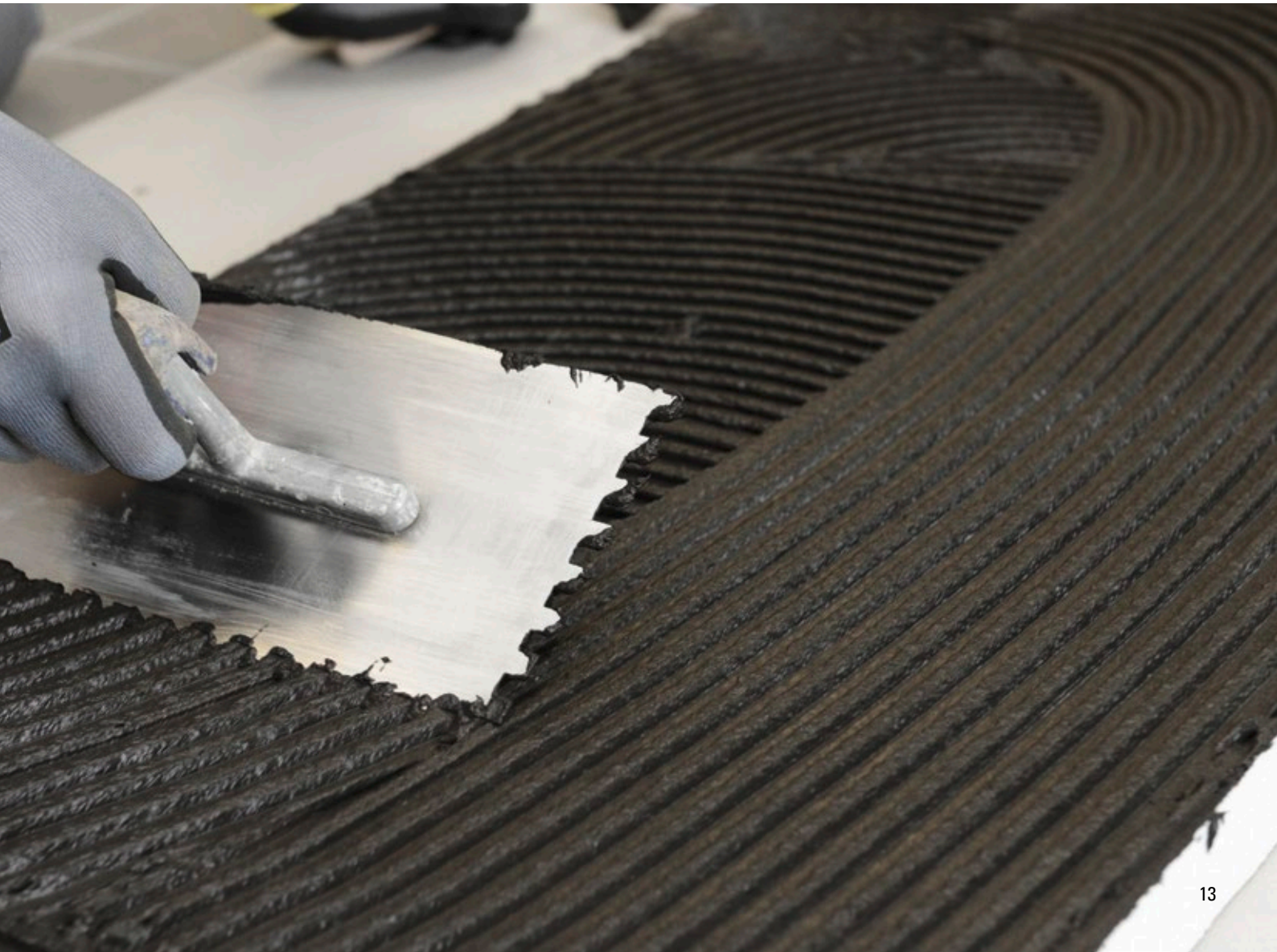
Protecting the Waterproofing Membrane

Making certain

You will need to protect the Nafuflex waterproofing membrane permanently from mechanical loads. Point and line loads must be avoided at all costs. Again, it is essential to make sure that the coating is fully dried before the appropriate protective layers are applied. Protective panels should be laid from bottom to top in a conjoined formation on the thoroughly dried sealant. With Nafuflex as a panel adhesive coated over the full surface area, the protective panels can be simply fixed to the waterproofing coating.

Note:

Vertical panels placed with their edges directly on coated fillets may destroy the waterproofing seal due to the line load that arises. The excavation pit may only be refilled once the Nafuflex waterproofing compound has dried through and is adequately protected against point and line loads!
The excavation pit should be refilled and sealed layer by layer (layer thickness ≤ 0.3 m).



Wind and Weather –
The Factors That Influence Drying

The speed with which your bituminous thick-layer coating dries out and achieves full serviceability depends significantly on the prevailing weather conditions. High air humidity and low temperatures inhibit drying. Rain, ice, snow and frost can actually destroy the freshly applied coating. On the other hand, high temperatures, sun and low air humidity generally promote drying, and wind will also accelerate the rate with which your coating sets.

However, it is not only the weather that influences drying – the substrate and wet layer thickness also have an effect. A highly absorbent substrate promotes drying while less absorbency impedes it. If a large wet layer thickness is required, this will need more time in order to completely set.

Always important: Thorough preparation of the substrate, ensuring the right wet layer thickness and regular checking of the progress of the drying process are all essential factors affecting your success. Protective layers – e.g. Nafuflex SD panels – should only be applied once the sealant has completely dried through.

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	–

Ensuring You Only Get the Best

Systematic waterproofing with the Nafuflex product range

Here you will find the right solution for every application – time-efficient, cost-effective and reliable. To keep things clear, all Nafuflex products have been classified according to the method of application (manual or machine). The subsequent figure, 1 or 2, indicates whether the product is a single or two-component compound. Take a look.

Basic – for manual application

The "Basic" category contains products that are applied by manual means. The single-component, polymer-modified bituminous thick-layer coating Nafuflex Basic 1 is trowelable and exceptionally high in yield. Nafuflex Basic 2 offers impressively fast drying, as do all two-component Nafuflex coatings – even at low ambient temperatures.

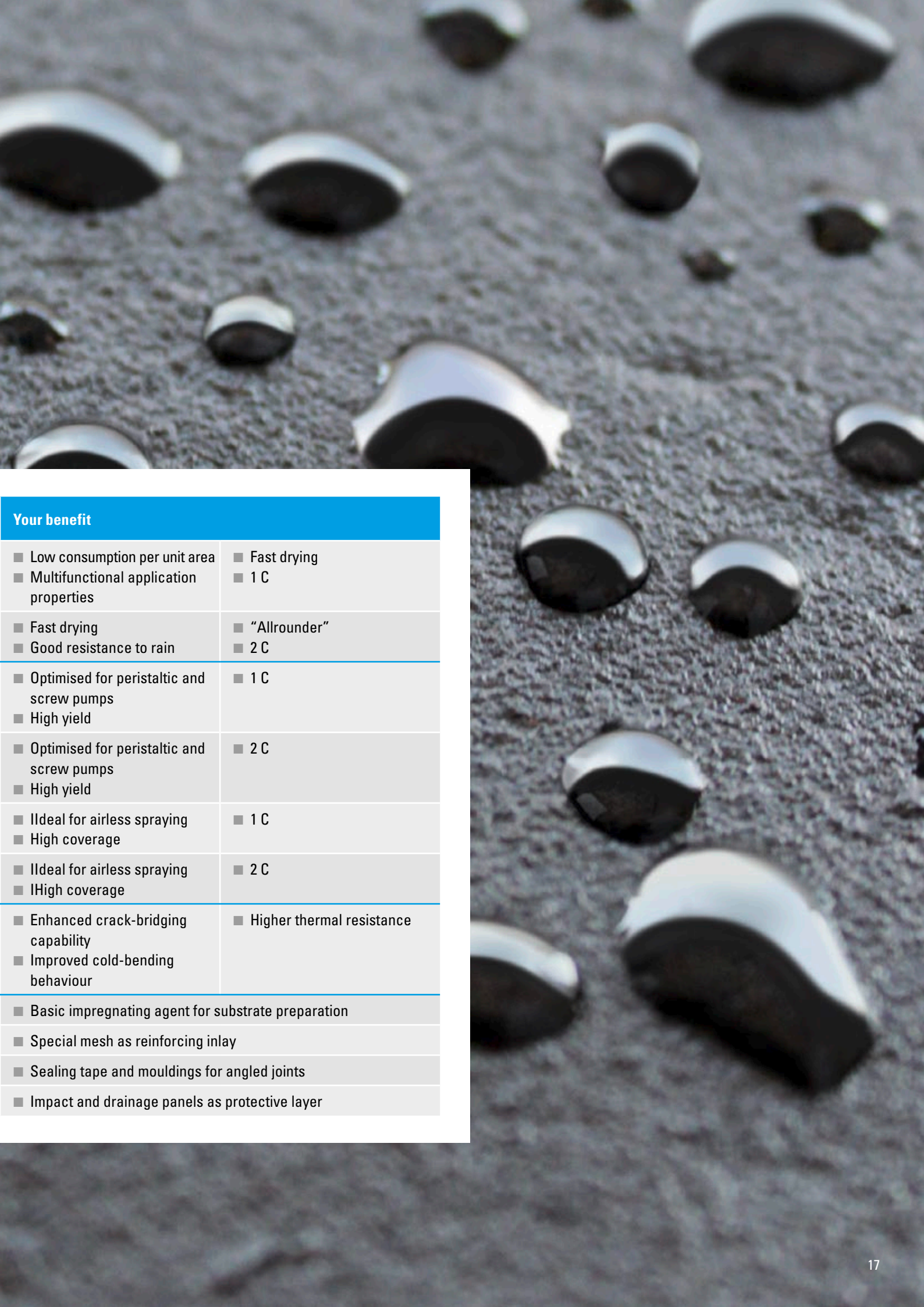
Spray Technology – for machine application

Categorised under the "Spray Technology" heading are products that have been specially formulated for machine application, with further refinements in order to ensure optimum placement by peristaltic pump, screw pump or an airless system. Nafuflex Easy Tech 1 and Easy Tech 2 have been optimised for peristaltic and screw pumps and offer high yield in terms of cost per square metre. For airless systems, we can also offer Nafuflex Profi Tech 1 and Profi Tech 2. These are readily pumpable even over large hose lengths, again providing more surface area coverage per unit time.

Special – for even greater reliability

Nafuflex High Performance is in a class of its own. This is particularly suitable for the subsequent waterproofing of structures and will bridge cracks of up to three millimetres in width. Thanks to improved cold-bending behaviour, it also remains flexible at temperatures below freezing. Nafuflex High Performance exceeds the requirements of any standard yet offers exceptional cost-efficiency and ease of application.

Category	Product name
Basic	Nafuflex Basic 1
	Nafuflex Basic 2
Spray Technology	Nafuflex Easy Tech 1
	Nafuflex Easy Tech 2
	Nafuflex Profi Tech 1
	Nafuflex Profi Tech 2
Special	Nafuflex High Performance
Extras	Nafuflex GIP
	Nafuflex GRID 25 NF
	MC-FastTape
	Nafuflex SD



Your benefit	
■ Low consumption per unit area ■ Multifunctional application properties	■ Fast drying ■ 1 C
■ Fast drying ■ Good resistance to rain	■ “Allrounder” ■ 2 C
■ Optimised for peristaltic and screw pumps ■ High yield	■ 1 C
■ Optimised for peristaltic and screw pumps ■ High yield	■ 2 C
■ IIdeal for airless spraying ■ High coverage	■ 1 C
■ IIdeal for airless spraying ■ IHigh coverage	■ 2 C
■ Enhanced crack-bridging capability ■ Improved cold-bending behaviour	■ Higher thermal resistance
■ Basic impregnating agent for substrate preparation	
■ Special mesh as reinforcing inlay	
■ Sealing tape and mouldings for angled joints	
■ Impact and drainage panels as protective layer	

Fully Focused on You,
We Offer More

A structure waterproofing system must, in particular be safe, reliable and durable. Without compromises. Because the consequential damage arising from damp masonry can be serious.

MC-Bauchemie provides you with solutions individually tailored to your requirements and capable of meeting each and every challenge – the high demands placed on the material, on flexibility and durability and also those arising from adverse external influences. MC offers perfectly coordinated systems to ensure the ideal package in terms of both weather-compatibility and method of application. At high or low temperatures, in spring or autumn, for manual or machine placement, you can be sure that you will always have the right product and system to hand.

And best of all: Thanks to our in-house research, we continue to develop Nafuflex in dialogue with our customers so as to be able to offer you the very latest technologies for even better results – with additional benefits such as reliable radon impermeability, good sustainability and excellent environmental compatibility.

Choose MC-Bauchemie for products that are at the cutting edge of technology, offering innovative advantages for your sustained success, with easy and cost-efficient application methods that save time and money. And make the most of our free on-site advisory service to ensure maximum planning reliability right from the start – for an outcome that you can be proud of.

Nafuflex

Flexible waterproofing for structures in contact with the soil per DIN 18533

- Maximum reliability with a seamless membrane
- Very good application properties
- Efficient placement thanks to optimised machine suitability
- Highly flexible with effective crack-bridging
- Resistant to both high and low temperatures
- Highly pressure-resistant

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