# MAGIFLEX BRAVO

## TWO-COMPONENT, FLEXIBLE CEMENT-BASED WATERPROOF BREATHABLE COATING, FOR FOUNDATIONS AND RETAINING STRUCTURES

*Suitable to the counterthrust and resistant to chemical aggression*

DRACO

WATERPROOFING LINE

FLEXIBLE CEMENT-BASED WATERPROOF COATINGS

CE EN 1504-2 PRINCIPI PI-MC | CE EN 1504-2 | CRACK BRIDGING +15% | FLEX ANTI CRACKING | SUITABLE FOR COUNTERTHRUST 0.5 ATM

**MAGIFLEX BRAVO** is a flexible two-component brushable waterproof coating based on selected aggregates, hydraulic binders, additives and polymers. **MAGIFLEX BRAVO** can be used for 1.5-3 mm thick waterproof coatings on most surfaces even those subject to micro-cracking (determination of **"static crack bridging" properties according to UNI EN 1062-7 - cert. ELLETIPI 46759/17 of 19/12/17 and "dynamic crack bridging" according to UNI EN 1062-7 - cert. ELLETIPI 48191/18 of 21/02/18)**. Resistant to negative pressure, **MAGIFLEX BRAVO** is quick and practical to apply and has high flexibility, tensile strength and adhesion to the substrate.

## ADVANTAGES

**MAGIFLEX BRAVO is a flexible brushable coating for waterproofing foundations and ground level structures even with negative hydraulic pressure. The specific characteristics of the product are:**

- ✓ **EASY TO APPLY**: **MAGIFLEX BRAVO** is easy to apply with a brush, roller or spray onto any surface.
- ✓ **HIGH CHEMICAL RESISTANCE**: **MAGIFLEX BRAVO** is very resistant to environmentally aggressive agents, polluted water, salt, chlorides, etc.
- ✓ **WATERPROOF AND BREATHABLE**: **MAGIFLEX BRAVO** has good water permeability and good vapour permeability and allows residual moisture to escape, preventing blistering and delamination. Also effective with negative pressure (< 0.5 atm).
- ✓ **FLEXIBLE AND RESISTANT: MAGIFLEX BRAVO** is also ideal for substrates with micro-cracks (up to 0.8 mm) due to its high elasticity.
- ✓ **EXCELLENT ADHESION**: **MAGIFLEX BRAVO** adheres well to all substrates, even damp ones (concrete, brick, metal, terracotta, plasterboard, etc.).
- ✓ **EFFECTIVE EVEN AT LOW TEMPERATURES:** Low temperatures do not affect elasticity or application (up to -5°C).
- ✓ **QUICK APPLICATION:** the complete application cycle lasts 12-24 hours.

## FIELDS OF APPLICATION

**MAGIFLEX BRAVO** is so flexible that it can be used for those surfaces in hydraulic thrust - positive and negative. It is typically used for:

- ✓ Protection coating for structures and pre-engineered buildings prone to strain and cracks.
- ✓ Coating and waterproofing walls in negative thrust, earth works, tanks, pipes, pools, underground tanks, etc.
- ✓ Waterproofing surfaces in counter thrust, such as parking lots, foundations, underground garages and cellars.
- ✓ Surfaces that are prone to settling and cracking
- ✓ Roller applications onto surfaces where no scaffolding is allowed. Moisture removal and salt inhibition for humid walls.





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# PRELIMINARY OPERATIONS

## CLEANING THE SUBSTRATE

- Remove all loose parts from the substrate to be treated, including cement slurry, efflorescence, etc.
- Remove stains or impregnations of oils, grease, release agents, previous treatments, dust, etc. that may impair adhesion by using pressurised water or sandblasting. The surface must be solid and clean.

## PREPARATION OF THE SUBSTRATE

- Roughen the surface of the substrate using mechanical means if it is too smooth to allow adhesion between the coating and the substrate.
- If the surfaces are dusty or loose or to improve adhesion to the substrate, the use of a primer applied with a roller or brush is recommended. Then apply MAGIFLEX BRAVO when the primer is still wet.

## POSITIVE PRESSURE - *hydrostatic pressure acts directly on the coating*

- If the surfaces are damaged, the deteriorated parts must be removed and the substrate repaired using a mortar in the FLUECO line. Before applying MAGIFLEX BRAVO, the surfaces must be moistened with water.
- In the connection area between the vertical wall and the foundation slab, a groove of at least 2-3 cm must be created using FLUECO BLITZ quick mortar.

## NEGATIVE PRESSURE - *pressurised water permeating through the substrate acts on the coating*

- Missing parts and irregularities must be repaired using FLUECO 40 T or similar thixotropic, waterproof and chemically resistant mortar. Gravel nests, if present, should be removed and smoothed over.
- The sealing of any holes, cracks, joints and concrete pouring subject to water ingress must be carried out by removing a part of the surrounding concrete at least 6 cm deep and then applying MAGISWELL 101.
- to quickly stop continuous water infiltration, use HYDROPLUG and repair the defects.

# METHOD OF APPLICATION

## PREPARATION OF MAGIFLEX BRAVO

- Pour about 60 % of component B (resin) into a container and add component A (powder). Mix for 4-5 minutes with a drill at low speed, gradually adding the rest of component B and taking care to incorporate the powder deposited on the walls and bottom. Let it rest for approximately 1 minute and stir again for a few minutes until the mixture is smooth and free of lumps. The mixed product must be applied within approx. 1 hour (at 20°C). Higher temperatures reduce its time of use.

## APPLICATION OF MAGIFLEX BRAVO

**MAGIFLEX BRAVO** can be applied manually with a roller, brush or spray on previously treated substrates as described in the previous paragraph. **MAGIFLEX BRAVO** must be applied within 40 minutes of mixing. Methods vary according to the type of application chosen:

- ROLLER-BRUSH: We recommend a thickness of at least 2 mm obtained by applying 2 coats of the product. The subsequent layer must be applied once the first one has hardened and after 4-8 hours. If application is difficult and the brush tends to drag the product, moisten the substrate; do not add water. Spreading rate: approx. 1.7 kg/m$^2$ per mm of thickness.
- SPRAY: MAGIFLEX BRAVO can be applied by spraying using a plastering machine and a pump with a compressed air compressor (air output min. 800l/min.). We recommend a final thickness of about 2 mm obtained by applying 2 coats of the product. The second coat should be applied once the first has dried after at least 4 hours. Spreading rate: approx. 2 kg/m$^2$ per mm of thickness; at least the first coat should be finished with a spatula to obtain an even finished layer. In the presence of negative hydraulic pressure, it is a good idea to finish both coats (first and second coat).
- For thicknesses of more than 2 mm, repeat the above steps, with layers of approximately 1 mm.





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## CURING

- After application, leave the product to cure for at least 24 hours. When waterproofing pipes, tanks, basins or structures that hold water in general, we recommend leaving MAGIFLEX BRAVO to cure for 7 days after application.

### WARNINGS FOR HOT CLIMATES

- If possible, store MAGIFLEX BRAVO in the shade before, during and after mixing it.
- Work in the early morning.
- Properly protect your coating for the first 24 hours and cover it with wet sheets, if possible.
- The higher the room temperature is, the shorter the time for product manipulation gets. For this reason, you should quickly apply your mix without any break.

### WARNINGS FOR COLD CLIMATES

- If possible, store MAGIFLEX BRAVO in a warm room.
- Do not use it at room temperatures below 5°C and do not apply any coat onto frozen surfaces.
- Start working late in the morning.
- Protect your coating from frost and cover it with waterproof insulated sheets.

## PACKAGING AND STORAGE

**MAGIFLEX BRAVO** packaging includes:
25-kg bag (Comp. A) + 10-kg canister (Comp. B) = **35 kg**

It keeps its features unchanged for 12 months if it is properly stored in its original package in dry rooms at a temperature above +10°C.


## FEATURES

| | |
|---|---|
| PHYSICAL STATE | powder (A) and liquid (B) |
| COLOUR | grey |
| SOLID RESIDUES - UNI EN 1015-7 | 37% (component B) |
| STORAGE | 12 months |

## APPLICATION REQUIREMENTS

| | |
|---|---|
| CONSISTENCY - UNI EN 1015-3 | 170 mm |
| MIX BULK DENSITY | about 1350 kg/m$^3$ |
| WORKABILITY TIME | about 40 minutes at 20°C |
| APPLICATION TEMPERATURE | from +5°C to +40°C |
| QUANTITY USED | approx. 1.6 kg/m$^2$ per mm of thickness<br>1.5 ÷ 2 kg/m$^2$ (per coat)<br>3.2 kg/m$^2$ (minimum recommended) |
| RECOMMENDED TOTAL MINIMUM THICKNESS | 2 mm |





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## PERFORMANCE CHARACTERISTICS 23°C - 50% R.H - Thickness 2 mm

Requirements according TO EN 14891 CM01P and EN 1504-2 coating (C) Principles MC and IR

| CHARACTERISTIC | TEST METHOD | MINIMUM REQUIREMENTS EN 1504-2 - Coating (C) principles PI - MC | MAGIFLEX BRAVO PERFORMANCE |
|---|---|---|---|
| **ADHESION TO CONCRETE** - after 28 days at +20°C and 50% R.H. | UNI EN 1542 | ≥ 0.8 | 2.1 N/mm$^2$ |
| **RESISTANCE TO ACCELERATED AGEING** | UNI EN 1062-11 | no swelling | specification exceeded |
| **WATER PERMEABILITY** - expressed as capillary absorption | UNI EN 1062-3 | w ≤ 0.1 kg/m$^2$ · h$^{0.5}$ | w = 0.05 kg/m$^2$ · h$^{0.5}$ |
| **LIQUID WATER PERMEABILITY** - equivalent air layer thickness $_{SD}$ (m) - | UNI EN ISO 7783-2 | class | Class I<br>$S_D$ = 1.1 m |
| **STATIC CRACK BRIDGING** - expressed as crack bridging properties after conditioning as per EN 1062-11:2002 | UNI EN 1062-7 | Classes from A1 (0.1 mm) to A5 (2.5 mm) | Class A4 > 1.25 mm (with MAGINET interposed) |
| **EVALUATION OF THERMAL COMPATIBILITY** - freeze-thaw cycles with immersion in de-icing salts | UNI EN 13687-1 | No swelling, cracking or delamination<br>Direct tensile adhesion test: flexible systems without traffic: ≥ 0.8 N/mm$^2$ | No swelling, cracking or delamination<br>Direct tensile adhesion test: flexible systems without traffic: ≥ 1.2 N/mm$^2$ |
| **EVALUATION OF THERMAL COMPATIBILITY** - Storm cycles (thermal shock) | UNI EN 13687-2 | | |
| **EVALUATION OF THERMAL COMPATIBILITY** - Thermal cycles without immersion in de-icing salts | UNI EN 13687-3 | | |
| **REACTION TO FIRE AFTER APPLICATION** | UNI EN 13501-1 | Euroclass | Classification B, S1-d0 |
| **ELASTICITY EXPRESSED AS ELONGATION** - after 28 days at +20°C with 50% R.H. - | DIN 53504 | Not required | > 60% |
| **PERMEABILITY TO CARBON DIOXIDE ($CO_2$)** - diffusion in equivalent air thickness $S_D$ | EN 1062-6 | > 50 m | 1650 m |
| **WATER PERMEABILITY UNDER PRESSURE**(1.5 bar for 7 days of positive pressure) | EN 14891 - A.7 | No penetration | Specification exceeded |

| CHARACTERISTIC | TEST METHOD | MINIMUM REQUIREMENTS EN 14891 | PERFORMANCE REQUIREMENTS |
|---|---|---|---|
| **WATER PERMEABILITY UNDER PRESSURE**(1.5 bar for 7 days of positive pressure) | EN 14891 - A.7 | No penetration | Specification exceeded |
| **CRACK BRIDGING ABILITY** at +20°C | EN 14891 - A.8.2 | ≥ 0.75 mm | > 1.50 mm |
| **CRACK BRIDGING ABILITY** at low temperature -5°C | EN 14891 - A.8.3 | ≥ 0.75 mm | > 0.9 mm |
| **ADHESION TO SUBSTRATE** | EN 14891 - A.6.2 | ≥ 0.5 N/mm$^2$ | > 1.0 N/mm$^2$ |
| **ADHESION AFTER IMMERSION IN WATER** | EN 14891 - A.6.4 | ≥ 0.5 N/mm$^2$ | > 0.6 N/mm$^2$ |
| **ADHESION AFTER FREEZE-THAW CYCLES** | EN 14891 - A.6.6 | ≥ 0.5 N/mm$^2$ | > 0.8 N/mm$^2$ |
| **ADHESION AFTER HEAT AGEING** | EN 14891 - A.6.5 | ≥ 0.5 N/mm$^2$ | > 1.5 N/mm$^2$ |

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In the technical specifications herein, Draco Italiana s.p.a. used the indicators therein specified, with the relevant standards. Please check if this Sheet and the figures therein contained apply to the product batch you are interested in or if they have been overridden by any later release. If in doubt, check whether this Sheet matches the one applicable at the time of finalising the sales agreement, at **www.draco-edilizia.it**, and/or contact our Engineering Department. No advice provided by our staff, either verbally or in writing at your request, about the potential applications of the Products shall be binding under the sales agreement or shall be considered an integral part of the agreement. Such advice is based on our experience and on the best available practical and/or scientific knowledge; as such, it shall not be binding or conditional on the buyer or user. Please try our products first to find out whether they are fit for your intended use or application; in any case, you shall be solely responsible for your choice.





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