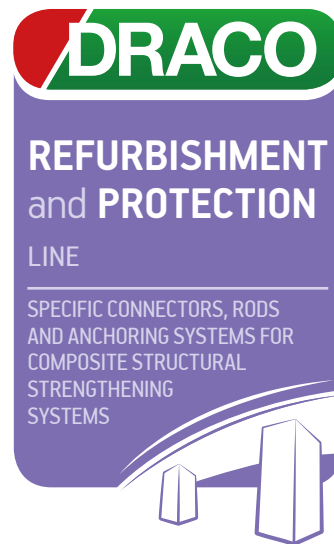


# ARMOSHIELD BC

HIGH-STRENGTH PULTRUDED CARBON FIBRE RODS FOR STRENGTHENING OF AND STITCHING CRACKS IN MASONRY AND CONCRETE STRUCTURES



High-strength pultruded carbon fibre rods for consolidating reinforced concrete, pre-stressed reinforced concrete, brick, stone and natural material structures. **ARMOSHIELD BC** rods can be used in combination with ARMOSHIELD C fabrics and ARMOGRIP aramid ribbons to improve connections and the anchoring of carbon fibre fabrics to reinforced substrates.

## BENEFITS

Specific product characteristics include:

- ✓ Superior chemical and mechanical resistance and corrosion protection.
- ✓ Improved tensile strength with no increase in weight.
- ✓ Extremely light.
- ✓ Easy to install.
- ✓ Excellent bonding to the epoxy adhesive and concrete matrix.



## USES

- ✓ Strengthening of reinforced concrete or masonry structures with an increase in load-bearing capacity.
- ✓ Restoration and refurbishment of buildings and monuments of artistic and historical importance, masonry vaults and arches, wooden slabs and buildings, etc. without increasing weight.
- ✓ Interconnecting structural anchorages in combination with ARMOSHIELD carbon fibre strips and ARMOGRIP BC connectors.

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## SUBSTRATE PREPARATION

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Repair the substrate if damaged and suitably prepare it before installing connectors or rods.

### CLEANING AND REPAIR

1. Remove all loose or friable particles from the area to be strengthened, taking care not to damage the structures. Remove spots, efflorescence salts or soaked-in stains of oil, grease, paint, dust, dirt, concrete release agents, etc.
2. When installing on masonry and vaults, the surface must be brushed and all traces of dust removed. Any cracks must be filled with a masonry repair mortar of the ARMOLIME line, or other suitable lime-based mortar.
3. If the concrete surface is in good condition, it is sufficient to sandblast it. If the surface has deteriorated, the damaged layer must be removed by scarification or high pressure water jetting.
4. Sandblast or wire brush any steel reinforcement to remove rust flakes or fragments of material that could trigger corrosion. Scarification of the substrate by hydro-blasting also effectively cleans the reinforcement, making sandblasting unnecessary. After cleaning, protect the steel reinforcement with the corrosion-inhibiting agent DRACOSTEEL.
5. If necessary, reconstruct or repair any degraded/damaged areas of the concrete substrate with mortars of the FLUECO line. Use ARMOFIX MTL to repair edges and fill micro cracks. In the event of cracks or splits, restore the load-bearing capacity and integrity of the concrete structure by injecting special dispersive resins (EPOX INIEZIONE R.M.2 or R.M.3).

### DRILLING HOUSING HOLES

Drill holes with a diameter of between 14 and 20 mm in the masonry, depending on the size of the rod or connector to be used. The actual size and tilt angle of the holes will depend on the size and type of masonry and indicated by the designer/engineer, based on the specific project. The edges of the outer profile of the hole shall be rounded off (minimum radius 1 cm) and any dust and loose material vacuumed out.

### PRIMING

Apply ARMOPRIMER 100 primer to the hole walls using a brush (or pipe cleaner) . A second coat of product can be applied to extremely absorbent substrates.

## PREPARATION OF ARMOSHIELD BC

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The size of the **ARMOSHIELD BC** rod should be indicated by the designer/engineer and calculated on the basis of the thickness of the masonry and if used to reinforce the fabric connections with ARMOGRIP BC connectors, on the basis of the length of the aramid ribbon.

ARMOGRIP BC connectors are fitted inside a hollow plastic tube which keeps the connector in shape and simplifies its impregnation during installation. The tube shall be pulled out before inserting the carbon rod into the connector.

## INSTALLATION

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**ARMOSHIELD BC** carbon fibre rods can be used to reinforce and consolidate masonry or reinforced concrete structures or combined with ARMOGRIP aramid fibre connectors and ARMOSHIELD C carbon fibre fabrics to connect existing structures and the strengthening system. During positioning of ARMOSHIELD C carbon fibre strips, which should be carried out following the instructions provided in the applicable technical data sheets, particular attention should be paid near the previously drilled holes that will house the rods or aramid connectors; taking particular care not to break the fibres, the weave of the carbon fibre fabric should be delicately opened up until the hole is exposed, thus allowing the connectors to protrude.

### PRODUCTS FOR BAR GROUTING

Depending on the application method, the following should be used:

- ARMOFIX MT, epoxy adhesive for horizontal floor application or for vault extrados
- ARMOFIX MTX, thixotropic adhesive for vertical application.

Prepare the product by mixing it according to the instructions in the technical data sheet; apply the product when the epoxy systems being used are completely set (1-2 days depending on the temperature).

### REINFORCED INJECTIONS

Fill the hole along its entire length, either by casting or using a cartridge. Insert the prepared bar into the hole, ensuring any excess resin is expelled. This operation should be carried out slowly and carefully, to prevent an excessive loss of product or the formation of voids.

### END ANCHORING OF REINFORCEMENTS WITH ARMOGRIP BC

Install **ARMOGRIP BC** into the hole and fill the connector cavity with the appropriate resin, slowly pulling out the outer plastic tube. Slowly insert the rod into the impregnated aramid connector. The unsaturated end of the aramid connector that sticks out of the hole (ribbon) should be turned back, fanned out and fixed to the surfaces around the hole with impregnation resin. The adhesive should be applied to the surface to be glued first and then to the ribbon. To protect the connector, a piece of ARMOSHIELD C carbon fibre fabric should be applied to the still-fresh resin coat, ensuring no creases or wrinkles are created. The piece of fabric should be big enough to totally cover the ribbon. It should then be impregnated again with epoxy resin, using the special spiked roller to facilitate penetration into the fibres. If a finish is envisaged, quartz sand should be applied to the still-fresh resin.

## PRECAUTIONS

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Use rubber gloves and safety goggles both during application and when cleaning tools. Ensure resin does not come into contact with the skin, mucous membranes or eyes. In the event of accidental contact, wash with plenty of water and neutral soap.

## RECOMMENDATIONS FOR APPLICATION

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Do not apply at temperatures below +5°C. The presence of humidity may affect proper bonding of the adhesive. Protect surfaces from rain and wind for at least 24 hours at temperatures of up to 15°C and for at least 3 days at lower temperatures.

## PACKAGING AND STORAGE

**ARMOSHIELD BC** is available in various lengths and 10-12 mm diameter and is supplied in PVC tubes. Connectors can be cut into portions of different lengths, based on design requirements. Store the product in its original packaging indoors, in a dry place with a temperature of at least +10°C.



## AVAILABLE VERSIONS

| TYPE   |         | PACKAGING                        |
|--|---------|----------------------------------|
| SMOOTH RODS, DIAM. 8 - 16 mm                 | 160 GPa | PVC tubes containing<br>3-m rods |
| RODS WITH IMPROVED ADHESION, DIAM. 8 - 16 mm | 130 GPa |                                  |

## PRODUCT CHARACTERISTICS

|                         |  |
|-------------------------|--|
| APPEARANCE              | carbon fibre rods pultruded in an epoxy matrix |
| AVAILABLE DIAMETER (cm) | 8 - 10 - 12 - 14- 16                           |
| PACKAGING               | 3-m rods                                       |

## PERFORMANCE CHARACTERISTICS

| CHARACTERISTIC        | SMOOTH RODS | RODS WITH IMPROVED ADHESION |
|-----------------------|-------------|-----------------------------|
| TENSILE STRENGTH      | > 2400 MPa  | > 2100 MPa                  |
| YOUNG'S MODULUS       | 160 GPa     | 130 GPa                     |
| ELONGATION AT FAILURE | 1.36%       | 1.36%                       |

### Legal notes - SLCMP version of 01.03.2017

Draco Italiana s.p.a. has adopted the parameters indicated in this data sheet and the related standards for the calculation of the values and technical data contained herein.

Customers shall verify that this data sheet and the values indicated herein apply to their product batch and have not been superseded by later editions. If in doubt, verify that the sheet corresponds to the one available on the website [www.draco-edilizia.it](http://www.draco-edilizia.it) at the time the sales contract was executed and/or by previously contacting the Technical Department.

Any suggestions on the use of the Products provided by our personnel either orally or in writing upon the Customer's request do not constitute additional obligations to the purchase contract and do not imply a contractual obligation for the company. They are based on our experience and limited to the current state of practical and/or scientific knowledge. They are not binding for the client or for the installer. It is the Customer's responsibility to test our products and verify they are suitable for the type of application and use envisaged.