



VHDRS®
Very
High
Durability
Repair & Prevention
Systems



Certified Quality System since **FEBRUARY 1993**

From Project to Jobsite

BS ANCORA GLASS

MuCis® sra

SHRINKO-tec®

MuCis®

FIB-energy®

R4

EN 1504-3

NORMA EUROPEA

FIBRE REINFORCED POURABLE BI-COMPONENT MORTAR
CEMENT BASED, ANTI-CORROSION, ANTI-SHRINKAGE MORTAR WITH MINERAL AND POLYMER
FIBRES FOR ANCHORAGE AND STRUCTURAL REPAIRS BY CASTING

CE approved – Certificate n. 1305 - CPD - 0808
EN 1504-3 Class R4

type MC1: "mortar, premixed, pourable, compensated expansion, with liquid humidity retainer, containing polyacrylonitrile fibers and inorganic flexible reinforcement fiber featuring length 12 mm, diameter 14 µm, tensile strength of 1700 MPa, elastic modulus 72,000 MPa" corresponding to ITALIAN HIGHWAYS SPECIFICATIONS "pourable mortar type MC1" (with the addition of aggregates could become pre-qualified in **class B1**).

type B1: "cement based microconcrete, castable, compensated expansion, with liquid humidity retainer, containing polyacrylonitrile fibers and flexible inorganic fibers featuring length 12 mm, diameter 14 µm, tensile strength of 1700 MPa, modulus elasticity 72,000 MPa, obtained by adding selected aggregates to the mortar selected in the previous paragraph MC1" corresponding to ITALIAN HIGHWAYS SPECIFICATIONS "structural screeds type B1"



Description

BS ANCORA GLASS MuCis® sra is a ready-to-use mortar which after mixing with water is perfect for pouring. It cures to a high quality repair mortar with excellent adhesion, durability, impermeability and extremely high mechanical resistance, with virtually no shrinkage. The product does not contain metallic compounds. The two components has self-expansion properties in air while keeping the other physical and mechanical characteristics unchanged. The product is formulated with the **SHRINKO-tec®** technology and has auto-expansive capacity in air of more than 400µ/m in 24 hours, followed by a very reduced or zero shrinkage. The product contains **MuCis®** multiple corrosion inhibiting synergies, in contact and by migration towards the steel reinforcement, and contains polymer fibres with very high elasticity modulus **FIB-energy® GLASS 13** (length 13mm, diameter 14 micron, modulus of elasticity 74000 N/mm²)

Advantages and characteristics

- The product is fully self-leveling and pourable, completely fills the most difficult and inaccessible cavities, inaccessible even if distant from the point of casting and with limited gap.
- Absence of "bleeding"
- Very strong adhesion to the substrate and to the reinforcement steel.
- Elimination of plastic shrinkage and drying shrinkage compensation
- Excellent durability against chemical attack, freeze-thaw cycles, resistance to fats and oils
- Very low permeability to water penetration under pressure
- Outstanding mechanical strength

The applied and cured material will have high adhesion, durability, high impermeability to water and carbon dioxide, good water vapor permeability, high physical-mechanical strength and low modulus of elasticity.

Fields of use

Pourable repairs in formwork without contrasting reinforcement. Foundations and anchoring of machines in general. Anchoring of reinforced concrete or steel columns. Repair of cavities, sealing of joints or panels, restoration of deteriorated structures, undercasting. Grouting of prefabricated elements to obtain the structural continuity. Consolidation of soils and foundations with pre-tensioned cables and rods.

Edition: 04/2009
Revision date: 12/2011

Nr Revision : 3

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Method of use **Preparation of the substrate**

Carefully remove all loose parts from the contact surfaces and anything that might adversely affect the normal hardening or adhesion of the BS-91 to the base concrete (oil, grease, dust, polystyrene, etc.).

Wet the contact surfaces until thoroughly soaked: do this some hours before casting to ensure maximum saturation of suction porosity. Remove any excess surface or standing water with compressed air or sponge immediately before casting.

Application

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COMP. A = Kg 25 - COMP. B = Kg 3,25

Mix for about 3'-4', or until the slurry is smooth and lump-free, using slightly less liquid as indicated. Add next the liquid component B until the desired workability and mix again for 2'. Apply for casting or pump. Always take care to perform properly the filling of the formwork on pillars or beams or soffits as follows:

- Avoid pouring if there are vibrations that can affect the necessary adhesion to concrete and steel.
- Seal each opening (even the smallest) of the formwork, to prevent leakage of grout.
- Pouring the grout continuously from one side only.
- Ensure that the trapped air can escape.

In the case of lining of pillars, strengthen the formwork and test them for the height of casting of the product.

After application, not yet fully set, keeping the surface of the grout damp or in any way prevent the evaporation of water contained, and this is especially important with hot, dry and windy conditions. If necessary you can also use anti-evaporating membranes (Curing Compound UR19).

NOTE : In the case of pouring large volume or thickness of the product, it is recommended to add 20-40% of quartz or gravel, sound and washed with 3-6 mm size or 3-12 mm., depending on the section of the cast.

Remark

The product can be applied in a large range of temperatures. In the case that temperature exceeds 30°C, apply the mortar as quickly as possible after mixing, and keep the surface wet with wet cloths till the product has set. **In the case of low temperatures (<8°C) it is advisable to use warm or hot water to prepare the mix.** The optimal conditions of fluidity are obtained when the temperature inside the mix is $\geq 15^\circ\text{C}$.

We advise against casting in temperatures $\leq 0^\circ\text{C}$ unless you can protect the exposed parts suitably with polystyrene or other insulating material in addition to using hot mixing water and materials at room temperature. The internal cast temperature should, wherever possible, be kept to above 10°C, also bearing in mind the contribution of the exothermic hydration reaction

- Read carefully the instructions on the packaging
- Respect on the jobsite the same safety precautions as when working with traditional cement based products (safety glasses, gloves,..)
- Do not use the content if the bags are already open and contain any lumps.
- Information according to 2003/53/CE

Storage: 12 months in original, unopened packaging, kept in a dry and protected environment between +5°C and +35°C

Packaging

Powder Component : bag of 25 kg (comp A)

Liquid Component: jerry can of 3,25 kg. (comp B)

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COMPARISON PERFORMANCE AND REQUIREMENTS

BS ANCORA GLASS SISTEMO-tec®
MuCis® sra MuCis®
FIB-energy®

Standard EN 1504-3

Performance characteristics	Reference substrate (EN 1766)	Testing method	requirements	RESULT (typical values)
			Structural	
			Classe R4	
Compressive strength	None	EN 12190	≥ 45 MPa (28 days)	69 MPa (28 days.)
Ionic chloride content	None	EN 1015-17	≤ 0,05%	≤ 0,03%
Adhesive bonding (adhesion to concrete)	MC(0,40)	EN 1542	≥ 2,0 MPa	2,5 MPa
Restrained shrinkage/expansion	MC(0,40)	EN 12617-4	Adhesion strength after test ≥ 2,0 Mpa	≥ 2,0 MPa
Carbonation resistance	None	EN 13295	$d_k \leq$ reference concrete [MC(0,45)]	Exceeds the requirement
Modulus of elasticity	None	EN 13412	≥ 20.000 MPa (28 days.)	29500 MPa (28 days)
Thermal compatibility * Part 1, frost-thaw resistance	MC(0,40)	EN 13687-1	Adhesion strength after 50 cycles ≥ 2,0 MPa	≥ 2,0 MPa
Thermal compatibility * Part 2, thunder shower	MC(0,40)	EN 13687-2	Adhesion strength after 30 cycles ≥ 2,0 MPa	≥ 2,0 MPa
Thermal compatibility * Part 4, dry cycle	MC(0,40)	EN 13687-4	Adhesion strength after 30 cycles ≥ 2,0 MPa	≥ 2,0 MPa
Coefficient of thermal expansion	None	EN 1770	No requirements for this test *, otherwise declared values	<ul style="list-style-type: none"> • test* exceeds • declared value = $15,1 \times 10^{-6}$ (1/K°)
Capillary absorption	None	EN 13057	≤ 0,5 Kg · m ⁻² · h ^{-0,5}	≤ 0,3 Kg · m ⁻² · h ^{-0,5}

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**Other
technical
characteristics
(typical
values)**

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• Initial setting time		about 1 h at 20°C
• Bleeding		none
• Spreading (self-levelling)		140%
• Consumption		2,0 Kg/m ² /mm
• Compressive strength UNI EN 12190	1 day.	30 MPa
	28 days.	69 MPa
• Flexural strength UNI EN 196/1	1 day.	4,8 MPa
	28 days.	10,8MPa
• MODULUS OF ELASTICITY	28 days.	29.500 MPa
• Pull-out of reinforcement bar	28 days.	> 22 MPa
• Impermeability to water UNI EN 12390/8	28 days.	3 mm
• Bowing/warping test		Warping
• Expansion when ageing in open air	1 days.	> 400 µ/m
• Restrained shrinkage test (ring) (O.R.T.)		Stable, no cracks
• Corrosion test in presence of chloride salts ASTM G109	5 years	≤ 10 µA no corrosion
• Resistance frost-thaw SIA /62/ 1/ 91 < 60 gr/m ²		~ 45 gr/m ²
• Permeability to chlorides FHWA/ RD/ 81 100÷1000 Coulomb		145 Coulomb
• Depth of carbonation in time (laboratory simulation)	8 years	0,5 mm
	18 years	1,5 mm
	25 years	2,5 mm
• Resistance to CO ₂ penetration		12.500 µ
• Water vapour diffusion resistance		55 µ

Aesthetic and protective systems

In order to achieve optimal performance after the structural repair and restoration, it is recommended to use an aesthetic and protective system from our Protection Systems VHDRS®.

Consult our Technical Department (U.A.P.P.) or our website www.tecnochem.it.

The above data are based on our actual and most experienced practical and laboratory knowledge and the results are collected from application of the product in different situations. Tecnochem Italiana does not assume any responsibility regarding inadequate or negative performance as a result of improper use of the product or for defects deriving from factors or elements other than the quality of the product including improper storage. The technical characteristics and performance mentioned in this datasheet are updated periodically. The revision dates and number of revision of the datasheets are listed in the table below. Eventual variations are traceable on our website www.tecnochem.it where the most updated datasheets can be retrieved.

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