BS 40 FLOW MuCis® sra

SHRINKO-tec®
MuCis®
FIB-energy®

R4 EN 1504-3 NORMA EUROPEA

SPECIAL CEMENT BASED PREMIX WITH EXPANSIVE AND ANTI-CORROSION PROPERTIES FOR THE PRODUCTION OF SUPERCONCRETES WITH COMPENSATED SHRINKAGE AND VERY HIGH DURABILITY WITH SELECTED AND PRE-QUALIFIED LOCAL AGGREGATES

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

- **LE type**: ***"expansive binder that allows for production of extremely fluid concrete or grouts, with no bleeding, low water / cement ratio, characterized by high mechanical strength"*** corresponding to the Class LE of the SPECIFICATIONS FOR ITALIAN HIGHWAYS for which can be obtained the **CE Class**.

- **Type CE**: ***"concrete rheoplastic, volumetric stability, having Rck ≥ 50 MPa, consistency S4-S5, the absence of bleeding and high pumping ability, obtained using a special binder as expansive cement type LE in place of normal cement, and mixing it with water and aggregates"*** corresponding to the Class CE of ITALIAN HIGHWAYS SPECIFICATIONS

Description

BS 40 MuCis FLOW® sra is a mixture of Portland cement and special additives, which allow to obtain, after mixing with water and selected healthy, washed aggregates with rational curve, screeds and concretes with exceptional corrosion protection, durability, water resistance, high mechanical strength and chemical aggression resistance in general. The product is also formulated with expansive properties and shrinkage compensation, is reoplastic and has self-leveling characteristics.

Advantages and characteristics

- Compensation of shrinkage and volumetric stability.
- Almost no permeability to water and chloride salts, but with good water vapour permeability.
- Excellent durability to attack by many chemical agents and in particular the CHLORIDES, NITRATES, SULPHATES.
- Corrosion protection of the reinforcement through MuCis® Multiple Corrosion Inhibitors for contact and Migrating Inhibitors which pass the pores of the concrete to reach and also protect the reinforcement steel inside the concrete, not even in direct contact.
- Exceptional resistance to freeze-thaw cycles even in the presence of de-icing salts.
- Barrier to carbonation allowing the penetration of carbon dioxide during many decades, for only 1 millimetre depth.
- No bleeding and shrinkage compensation.
- Very strong adhesion to other concrete in contact and to reinforcement.
- Exceptional mechanical resistance.

Indicated use

For all the operations of casting in moulds or in a confined environment with concretes to obtain concrete elements of exceptional physical and mechanical performance and durability even under severe environmental aggression.

Method of use

Depends on the final use, and the aggregates used.

In principle, a dosage of between 350 and 500 kg/m^3 is sufficient for obtaining concretes or grouts having the characteristics described above.

The product allows, with very low water/cement ratios, to obtain concretes with excellent workability and compaction properties. Of course, the lower the amount of water used, the higher the impermeability of the concrete.
In the case of concrete pours in contact with other older concrete, saturate this concrete with water some time before casting in order to allow the full saturation without residual water on the surface. Immediately after casting and screeding, apply Curing Compound UR 19 by roller. This will avoid the formation of cracks in the plastic phase. As soon the hardening of the surface obtained (1-3 hours), it is advisable in many cases, to apply in warm climate a non-woven fabric kept saturated with water and with above polyethylene sheet. In the case of very cold climate interpose a sheet of polystyrene between the polyethylene and the concrete cast.

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Remark 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 : bag of Kg 20
bigbag of 400-600-800 Kg.
Bulk

COMPARISON PERFORMANCE REQUIREMENTS

STANDARD EN 1504-3

BS 40 FLOW MuCis® sra

Performance characteristics	Reference substrate (EN 1766)	Testing method	Requirements Structural Class R4	RESULT TYPICAL VALUES obtained by: BS 40 FLOW MuCis® sra 400 Kg/m³ Qualified aggregate sound and washed size max. 20 mm 1850 Kg/m³ Water 150 Kg/m³ Consistency S5
Compressive strength	None	EN 12190	≥ 45 MPa (28 days)	64 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	2,0 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 ≤ reference concrete [MC(0,45)]	Exceeds the requirement
Modulus of elasticity	None	EN 13412	≥ 20.000 MPa (28 days)	38500 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	• Test ✱ exceeds • declared value = $15,1x10^{-6}$ ($1/K^{-1}$)
Capillary absorption	None	EN 13057	≤ 0,5 Kg $\cdot m^{-2} \cdot h^{-0,5}$	≤ 0,3 Kg $\cdot m^{-2} \cdot h^{-0,5}$

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Other technical characteristics (typical values)

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• Initial setting time: about 1h at 20°C		
• Bleeding		non
• Consumption		400 kg/m^3
• Compressive strength UNI EN 12190	1 day 28 days	30 MPa 64 MPa
• MODULUS OF ELASTICITY	28 days	38.500 MPa
• Pull-out of reinforcement bar	28 days	18 MPa
• Impermeability to water UNI EN 12390/8	28 days	2 mm
• Expansion when ageing in open air	1 day	> 250 µ/m
• Curling/arching test *		stable
• Restrained shrinkage test (ring) *		Stable, no cracks
• Corrosion test in presence of chloride salts ASTM G109	5 years	≤ 10 µA no corrosion
• Resistance frost-thaw SIA /162/1/91 < 60 gr/m²		190 gr/m²
• Permeability to chlorides FHWA/RD/ 81 (100÷1000 Coulomb)		180 Coulomb
• Depth of carbonation in time (laboratory simulation)	8 years 18 years 25 years	1,5 mm 3,0 mm 4,0 mm
• Resistance to CO_2 penetration		10.800 µ
• Water vapour diffusion resistance		55 µ

NOTE* : sometimes it is necessary to add on the jobsite **SHRINKO-tec® nano 4**, about 1% based on the weight of the **BS 40 FLOW MuCis® sra**.

Aesthetic protective finish

After the restoration and structural repair we recommend the use of one of the Protective System VHDRS® for maximum protection on the structure and aesthetic functionality Consult our Technical Office (U.A.P.P.) or our internet site **www.tecnochem.it**.

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