BS 42 RS / FIB-energy® MuCis®

FIBRE- REINFORCED TWO-COMPONENT (binder + FIB-energy®)
FIBRE- REINFORCED THREE-COMPONENT (binder + FIB-energy®+ reactive Sra Synergy)

RHEOPLASTIC MORTAR WITH COMPENSATED SHRINKAGE, FOR STRUCTURAL REPAIRS, SULPHATE RESISTANT, FIBRE-REINFORCED WITH POLYMER FIBRES WITH VERY HIGH ELASTICITY MODULUS

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

EN 1504-3 R4 NORMA EUROPEA

Description

BS 42 RS/FIB-energy® MuCis® is a thixotropic, sulphate resistant repair mortar with compensated shrinkage and with normal setting time (60-90 minutes).
It 'is a cement based product, enriched with reactive micro-silica with very high pozzolanic activity. Ready to use, after mixing with water, is perfectly applicable by trowel or spray; the applied product cures to very high adhesion and durability, waterproof and with excellent mechanical resistances. Necessary to saturate the substrate with water prior to application and keep the surface moist over for at least 24 hours. The part cement consists of Portland cement with a content in C_3A (tri-calcium aluminate) less than 3%. The formulation contains MuCis® corrosion inhibitors by migration and contact. The formulation BS 42 RS/FIB- energy® MuCis® is enhanced with high modulus fibres **FIB-energy® MC 40/8** (Elasticity Modulus = 42.000 MPa) and **FIB-energy® MC 200/12** (Elasticity Modulus = 30.000 MPa). The excellent adhesion between the cement paste and the polymeric fibres allows high values of fracture energy, exceptional ductility.
The three-component assumes the ability of self-expansion in the air while the other physical and mechanical characteristics remain unchanged.

Advantages and characteristics

- The type of cement and special additives make BS 42 RS/FIB-energy® MuCis® particularly resistant to chemical sulphate aggression.
- The thixotropic characteristics of BS 42 RS/FIB-energy® MuCis® contributes to optimal adhesion properties, and easy application on vertical substrates, on soffits, beams and pillars.
- Normal manual or mechanic tools, used for the application of normal mortars, can be used for the application of this product.
- Absence of “bleeding”.
- Very high adhesion to the substrate.
- Very good durability against chemical attack and optimal waterproofing even under pressure.
- Very high mechanical resistance.
- The polymer fibres FIB-energy® maintain the structural integrity in case of fire of the concrete or mortars in which they are added.
  When subjected to fire, the fibres will create pores to relieve the vapour pressure from the water in the concrete. When burned, the fibres will not release any toxic gasses.

Indications of use

- Structural repair mortar in general and more specific, in those cases where very high sulphate resistance is required.
- Structural repairs of concrete structures.
- Repairs and reinforced reconstructions of masonries and sewer channels.
- On vertical substrates and soffits in general, or where following properties are required
  - Easy spreading and application
  - Very high and early adhesion to the substrate
  - Reduced rebounds and application losses.
  - Dimensional stability
  - Very high physical and mechanical strengths.
  - Very high durability of the repairs

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Method of use

Note: The adhesion on the support is a fundamental characteristic for the durability and structural upgrade of a repair mortar.
It is recommended to consult the Technical sheet: "*Validation and preparation of substrates for an optimal adhesion of the repair mortar – recommendations for a correct finishing*

- Prepare the substrate with adequate water, sand or grid blasting, removing the degraded and carbonated concrete and exposing the corroded steel reinforcement. Remove the rust and friable parts by means of water jetting or sandblasting.
- In the case of large surfaces, apply first a reinforcement net fixed on steel stubs, previously fixed or anchored to the existing reinforcement.
- Saturate the substrate completely with water; begin some hours before starting the application of the repair mortar in order to obtain complete saturation of the porosity of the substrate.
- The water in excess, on the surface or superficial cavities, will be removed completely by compressed air or sponge, just before starting the application.
- The average amount of water needed for obtaining a plastic consistency is: 16 lt per 100 Kg. of BS 42 RS/FIB-energy® MuCis®.
- Mix during 3' - 5' (or, depending on the efficiency of the mixer, the time needed to obtain a homogeneous paste, free from lumps) in the concrete mixer, by adding the powder to the water, already in the mixer in approximate amount, leaving out small part for adjustments.
- Adjust to the desired workability by adding the ultimate part of the mixing water. The total amount of water can vary upon the applicative and environmental conditions (temperature-humidity).
- Apply manually or by spraying, for each pass, the suited thickness depending on the particular conditions. In the case there is reinforcement net installed to the substrate, take special attention to the consistency of the mixture, allowing filling all area behind the net (the shadow zone in which the shape of the next makes it difficult for the mortar to penetrate). In this case predispose the application of the net, fixing it on the stubs, after the application of a first layer of mortar, on which the net gets pushed.
- After application, in the case of using the **two-component** version, keep the substrate of the freshly set mortar wet, and avoid the evaporation of the water for at least 24 hours. This operation is especially required in hot climates, dry and wind. Optimal result can be obtained when the surface is wetted during 3-4 days.
- In case the **three-component** version has been used, it is not required to humidify the substrate, but is it sufficient to protect it for 24 hours.
- Vertical layers or thick applications shall be built up in several layers in order to avoid that the weight of the application will create delamination when the mortar is still plastic.

Remarks

The closed bag protects the product during storage, due to the polyethylene-paper lining. Can be stored during 12 months in the warehouse. Do not use opened bags or if there is already some lumping in the powder.
Information regarding senses according 2003/53/CE:
Storage: can be stored during 12 months in the unopened protected packaging stored between +5°C and +35°C.

Packging

TWO - COMPONENT:

	For small jobsite:	For big jobsite:
Powder Component A:	Bag of **25 Kg.**	Bag of **25 Kg.**
Liquid Component B:	Little bag of **75 gr.** FIB-energy MC 200/12	Little bags of 5 Kg to be weighted **75 gr.** FIB-energy MC 200/12

THREE - COMPONENT:

	For small jobsite:	For big jobsite:
Powder Component A:	Bag of **25 Kg.**	Bag of **25 Kg.**
Liquid Component B:	Little bag of **75 gr.** FIB-energy MC 200/12	Little bags of 5 Kg to be weighted **75 gr.** FIB-energy MC 200/12
Liquid Component C:	Bottles of **300 gr.** Reactive sra Sinergy	Cans of 20 Kg or IBC of 1.000 kg Concentrated to be weighted **100 gr.**

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From Project to Jobsite

Technical Characteristics(typical values)

• Initial setting time: about 1 hour at 25°C		
• Compressive strength (UNI EN 196/1)	N/mm^2 (28 days)	80
• Flexural strength (UNI EN 196/1)	N/mm^2 (28 days)	13,6
• Static modulus of elasticity (UNI 6556)	N/mm^2 (28 days.)	30.000
• Adhesion to concrete (Highways method)	N/mm^2 (28 days)	5,85
• Adhesion to concrete (direct traction test)	N/mm^2 (28 days)	2,9
• Pull-out	N/mm^2 (28 days)	24
• Carbonation in time (UNI 9944)	10 years - mm	<2,5
	18 years - mm	<6
	25 years - mm	<10
• CO_2 permeability	μ	1.280
• Water vapour permeability	μ	50
• ① Frost/thaw resistance (EN 104-840-3)		>50 cycles
• ② Chloride permeability	Coulomb	530
• Type mortar		Thixotropic mortar
• Number components		two/three
• Recommended thickness	mm	10÷60
• Application		Hand/spray
• Humid curing		SI
• Protective curing		SE
• Typical application		Structural repair
• Setting time		Normal
• Hardening		Normal
• Shrinkage compensation (contrast expansion) (UNI 8147)	(1 day)	> 0,045 %
• Consumption		1,99 Kg/m^2/mm
• Fracture energy	N/m	12.950
• ③Resistance to sulphates	20 cycles	No damage

1N/mm^2 = 1MPa = 10,19 Kg/cm^2

* Questi prodotti possono essere confezionati anche con l'aggiunta di inibitori di corrosione MuCis®

① Resistenza gelo-disgelo in presenza di sale - SIA 162/1/91 gr/mq. (< 600 gr/mq = molto alta = requisito per cordoli autostradali)

② Permeabilità ai cloruri - Coulomb FHWA/RD/81 (100÷1000 Coulomb =molto bassa)

SE *In funzione delle condizioni applicative (pioggia - sole - temperatura - umidità - ecc...)*

VHDRS *Very High Durability Repair & Prevention Systems* — *Sistemi di riparazione e prevenzione anticorrosione ad elevatissima durabilità*

VHDRC *Very High Durability Reinforced Concretes* — *Calcestruzzi armati anticorrosione ad elevatissima durabilità*

MuCis *Multiple Corrosion Inhibithing Synergies* — *Sinergie multiple per l'inibizione della corrosione delle barre d'acciaio nei calcestruzzi armati*

AED *Altissima Energia di Deformazione*

③ According to ASTM C 88

Mechanical strength:1 day – 7 days – 28 days (typical results for paste made with 16% of water on weight of BS 42 RS/FIB-energy® MuCis®): prisms 4x4x16 cm

	Compressive str. N/mm^2	*Flexural str N/mm^2*
1 day	32	8,5
7 days	66	10
28 days	80	13,6

Safety indications Read carefully the safety indications on the packaging, or consult the relevant Material Safety Datasheet of this product.

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