

## GLOBALSTONE

### Resin for Tunnelling and Mining

The 2-component injection resins GLOBALSTONE and GLOBALSTONE-LV are especially suitable for bonding injection drill bolts because the resins cure within just a few minutes and the bolt can be loaded in a very short time.

GLOBALSTONE is a rapid-hardening and rapid-curing silicate resins. It is free of CFC and halogen. GLOBALSTONE may be used with overhead boreholes with large diameters as well since it hardens very quickly right after mixing. Once both components have been mixed together, the resin begins hardening, becomes viscous and cannot flow even into large cracks on its own but has to be pumped in. the mixture then cures into a viscoplastic silicate resin.

### GENERAL INFORMATION

Organic-mineral two components resin, not expansible, characterised by excellent chemical stability, mechanical resistance and flexibility. Ideal for water-proofing fractured rock, consolidation of loose land and rock, crack and cavity filling. Also designed for construction, lining and insulating materials, protection and water-proofing of reservoirs and aqueducts, water conveyance in water-bearing stratum.

The irreversible reaction between the two components (A and B) of GLOBALSTONE takes place very quickly (1-2 minutes at 25°C). For special or low temperature applications, it is possible to accelerate the reaction speed by adding ACCELERATOR K1 (1-2% by weight) to the A compound.

The presence of water does not affect the reaction process and does not cause the product to swell since it is essentially inorganic.

GLOBALSTONE is not flammable and hardens rapidly; it also has thixotropic properties that appear as soon as the two components are mixed. After hardening, the material retains some elasticity and adheres perfectly even to vitreous materials. It is not toxic and non-pollutant.

### TECHNICAL PROPERTIES

(at +25°C and 60% R.H.)

Chemical composition of component A	: inorganic silicate, water, tertiary and cyclic amino compounds, polysiloxanes
Chemical composition of component B	: prepolymer of diphenylmethane 4,4 diisocyanate with silicone additives, surfactants
Density of component A	: 1.40 ± 0.05 (g/cm <sup>3</sup> )
Density of component B	: 1.200 ± 0.05 (g/cm <sup>3</sup> )
Viscosity of component A	: 480-720 mPas. (Brookfield viscosity)
Viscosity of component B	: 200-300 mPas. (Brookfield viscosity)
pH component A	: 11.5 ± 0.5
pH component B	: neutral
Colour component A	: yellow - reddish
Colour component B	: brown
Mixing ratio (A+B)	: 100 + 100 parts by volume / 100+87 parts by weight.
Application	: by injection, using suitable pumps with static mixer, pressure up. to 100 atm.
Start of reaction	: 1-2 minutes
Complete reaction	: after 5 –10minutes
Max. reaction temperature	: 90 – 100°C (for a mass of 200 gr.)
Compressive strength	: 28 - 30 N/mm <sup>2</sup>
Flexure strength	: 5.50-6.18 N/mm <sup>2</sup>
Shelf life	: 1 year, stored in their original tightly closed containers at temperatures in the range from +5°C to +35°C.
Service temperature*	: -40°C/+100°C

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**NOTE.** Components A and B must be stirred well before use to homogenize settled additives. The viscosity of component A may significantly increase at low temperatures.

The information provided here is based on our best knowledge at the time of publication but does not imply any warranty for users, given the numerous application possibilities beyond our own control. User should therefore perform tests to assess the suitability of the product for the intended application.

*\*Service temperature: it's the "working temperature" of the product; that is to say, the temperature to which can resist the product once it has been applied.*

### APPLICATION METHOD

Components A and B are delivered ready-to-use. They are injected in the proportion of 1:1 by volume, using a two component injection pump equipped with a static in-line mixer.

The GL140 is a pump that is well suited to be used for water sealing in tunnelling, mining and buildings even under bounded conditions.

It is a pneumatic driven single acting plunger pump. It works according to the principle of pressure transmission. The pump consists of a pneumatic drive component and a high pressure component.

The separation of drive and high pressure component prevents the contact between resin and drive component.

This pump is optimal suited for the use of all 2 component injection resins of GLOBALCHIMICA. These are e.g. the 2 component polyurethane resin GLOBALFOAM-PU-NF or the silicate resin GLOBALFOAM-SP, GLOBALSTONE and GLOBALSTONE-LV

The GL140 is a high-capacity pump for works in construction pits, mining and tunnelling. The capacity of this pneumatically driven double plunger pump is suited for pumping the resins on long distances.

For the working with this pump a compressor with air capacity of 120 m<sup>3</sup> per hour and a pressure of 6 bar is necessary. The valve technique of the pump is specially designed for the application of GLOBALCHIMICA polyurethane and silicate resins. This guarantees an optimal and constant dosing in volume ratio 1:1.

### SPECIAL REQUIREMENT

The curing reaction time is significantly dependent on the temperature of the resin and the injected strata.

Please store both components prior to application at a minimum temperature of 15°C.

To achieve the best mixing of the components during injection, the inclusion of a static in-line mixer in connection with the mixing head or in the packer is essential. The length of the static mixer should be approximately 320 mm for correct mixing.

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### **Warnings:**

*The product does not stand frost (especially component A) and must be stored at temperatures between +5°C and + 35 °C.*

*In case the product is transported at lower temperatures, the product must be conditioned for at least 12 hours at +15/20°C, until it reaches the temperature of 15°C. Then it can be used. The ideal application temperature is between 15 and 30°C.*

*Component B contains isocyanate and it is therefore sensitive to humidity. It is preferable to use the entire content of the can once opened in order to avoid damp absorption while stocking.*

*Cans with component A always have a black lid; cans with component B (isocyanate) always have a red lid.*

*Please keep to the recommended storage procedures.*

*For applications at temperatures below 10/15°C, product and pump must be kept in a heated warehouse/container and conditioned at 15°C before application.*

*Taking this precaution and using special pipes with heating mantle, it is possible to inject the product at temperatures below 0°C ( for any applications at extreme weather conditions, we suggest to contact the technical office at Globalchimica srl).*

*In case the product is stored at temperatures exceeding +40°C, please be aware that reaction time drastically decreases, causing a probable clogging of the mixing coil; we therefore suggest to condition both component A and B storing them for some hours at lower temperatures (below 30°C).*

*In winter time, we suggest transportation inside insulated containers.*

### PACKING

23kg+20kg

