



# BMC

**Microfine Chemical Grout Solutions**®

ABN 90 164 457 710

## Technical Data Sheet S-12 Ultrafine Cement

S-12 is a micro-fine cement based injection grout, mortar, or binder additive, and is supplied ready to use as a dry powder. It is designed to exacting particle size parameters, and top size particles do not exceed 14 um (micron); and has a d98 of 12 um. Mean particle size is an extraordinary 1.5 um. Batch particle analysis is available on request. It is manufactured locally, the blend can be modified to customer request. It is highly durable, and due to the extreme fineness (if handled correctly), will develop an impermeable nature. Used with good quality dispersant, it will offer high early, and continued developmental strength, and also provides excellent set times. It can achieve higher strengths than chemical grouts, and standard cement powders. Due to its particle spread, it allows better penetration in tight joints, fissures and voids. It is a very economical solution for either grouting or HPC.

### Recommended Uses

S-12 is a highly permeable grout, and is suitable for low pressure injection for ground water sealing, or stabilising sand soils, to produce solid foundations for further works. It is especially suitable for grouting soils for permanent structures such as dams, tunnels and foundations. It can be used for rock injection including tunnels, caverns, and mines; and also pre or post excavation injection (civil or mining). It is especially useful for repair and rehabilitation for concrete cracks voids, or direct injection into fissures. It has many "well associated" applications. Being solely derived from cement powder it can have application in High Performance Concrete (HPC) development if desired.

### Features and Benefits

S-12 is an extremely fine cement grout, or cement. Due to the large amount of micro-fine particles (70% below 3um), S-12 has remarkable penetrative qualities. It has a Blaine surface Area of >1000cm<sup>2</sup>/gm. This allows penetration comparable to chemical grouts, or allows for accelerated strength development.

### Physical Properties

For physical and chemical properties please refer MSDS001.

#### Particle Gradation

<1um - 40% 12um - 98%  
<2um - 55% 15um - 100%  
<5um - 80% d50 = 1.4um

#### Set Times

Initial set: 60 – 160 minutes  
Final set: 120 – 240 minutes

3 Day Mortar Bar Strength: 49.7 MPa

#### Water Cement Ratio

Assuming consumer uses material in conjunction with a dispersing agent (water reducing admixture WRA); water/cement ratio can vary between 60-150% BWOC

#### Bleed

(Maximum) 1%





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### Application and Mixing

It is assumed the user will understand the requirement of blending the material with a dispersing agent to deflocculate the powders. The use of a dispersing agent (WRA) will lessen the inter-particle reaction in water, which will reduce the particles' tendency to naturally clump together; thereby reducing the overall water requirement and will create a more workable mix. It is assumed the addition of WRA's will be between 1.0 – 2.0% by weight of cement. A recommended dispersant is Bisflow-NS5L.

**Mixing:** Should be undertaken in an efficient mixer. For best results it is recommended to use a high speed colloidal mixer, and it is further suggested the minimum rpm for such mixers should be 1500 rpm.

**Suggested method:** Fill mixer with water; add S-12 and mix for approximately 2 minutes, add WRA and mix for a further 1 minute approximately. Transfer to agitator or feed vessel.

### Storage and Shelf Life

If S-12 is kept in its original packaging in a dry environment, shelf life of 12 months is to be expected. This time may be reduced if the product is subject to high temperatures or humidity. Bulker bags are expected to remain covered in plastic until use.

### Packaging

S-12 is packaged in 20kg bags or 1.0/1.2 tonne bulker bags. Other packaging options are available on request. Packing slips will state batch manufacture date.

### Disclaimer

The technical information and application advice summarised in this document is based on our current practical knowledge. Intending users should read this TDS as well as the MSDS and consider the information provided in the context of how the product will be handled and used in the workplace, including in conjunction with other products. We accept no responsibility for loss or injury caused by improper use, incompetent preparation or ordinary wear and tear. Our responsibility for product sold is subject to our standard terms and conditions; no warranty expressed is implied as Si Powders has no control over mix design, handling or use of the product.

