



CHOOSE FROM A RANGE OF POWDER AND
CONSTITUENT PRODUCTS OFFERED BY SI
POWDERS FOR ALL YOUR ARCHITECTURAL,
STRUCTURAL AND CONSTRUCTION
REQUIREMENTS.



MINING GROUTS

*CONSTRUCTION
GROUTS*

*MICRO FINE
CEMENTS*

*SPECIALITY
PRODUCTS*

SHOTCRETE

*SUPPLEMENTARY
CEMENTITIOUS
MATERIAL*

Si Powders offers suitable products for a wide variety of projects. Superior performance extends to such key areas as strength, durability and aesthetics.

With over 20 years' experience, Si Powders has established itself as an important supplier of specialty powders and cementitious products in the construction and mining industry.

Si Powders expertise in powder micronising and blending constituents is backed by a certified quality management system, ISO 9001 (QMS 40665).

This has helped establish a strong customer base that continues to grow with an ever expanding product range. This range of products includes:

- Mining grouts
- Construction grouts
- Micro-fine cements
- Specialty products
- Shotcrete
- Supplementary Cementitious Materials



OVERVIEW

Si Powders proudly offers the following products.

Blended Products:

- **Hi-X** – High Early Strength Grouts
- **Hi-Bolt** – Industry standard Grouts
- **Hi-Pak** – High Yield Grouts
- **Hi-Spec** – Specialty Grouts
- **Sew-Hi** – High strength sewer repair mortar
- **Hi-Pform** - specialty concrete mineral additive

Micro-fine cements:

- **S-12, S-30** - Type GP
- **HS-12, HS-30** - Type GB

Shotcrete:

- **Hi-Shot**
- **Hi-Shot DF/WP**
- **Hi-Shot CAS**

Supplementary Cementitious Materials:

- **FA-16**
- **Hi-Pozz**
- **Hi-Ash**
- **Silica Fume**
- **Ferro Pozz**



HI-X GROUTS

Si Powders latest addition of high performance grouts is the **Hi-X** range.

Blended with high quality ingredients, **Hi-X** is available as a top-down thixotropic or bottom-up flowable version.

The innovative use of specialty constituents allows the customers to select gel times (30 minutes to 4 hours), strength and flow parameters to suit their specific applications.

Benefits of **Hi-X** include:

- Ultra high strength
- Excellent pumpability
- Low porosity
- Non-shrink
- Lower cost compared to resin grouts.

Uses for Si Powders **Hi-X** grouts include:

- Top down or bottom up grouting
- Civil
- Mining
- Construction

	2 hour	4 hour	6 hour	1 day	7 day	28 day
Compressive Strength (MPa)	30	50	60	80	90	110



HI-BOLT GROUTS

Hi-Bolt is a purpose blended industry standard grout. Specifically developed for applications that require high strength at a reasonable price, **Hi-Bolt** offers excellent benefits.

Similarly to the Hi-X range, customers can request flowable or thixotropic grouts with varying gel times to suit their project (30 minutes to 4 hours).

Benefits of **Hi-Bolt** include:

- High early strength
- Excellent pumpability
- Low porosity for long term durability
- Non-shrink

Uses for Si Powders **Hi-Bolt** grout include:

- High early strengths
- Top-down or Bottom-up applications
- Mining
- Civil
- Construction.

	4 hour	1 hour	7 day	28 day
Compressive Strength (MPa)	>5	50	70	80



COBALT GROUTS

The **Cobalt** range includes the bronze tiered general purpose grouts. Similarly to the Hi-Bolt and Hi-X range customers can specify gel times (30 minutes to 4 hours) and the flow characteristics.

Benefits of **Cobalt grouts** include:

- Thixotropic or flowable
- Superb pumpability
- Low porosity
- Non-shrink
- Lower cost.

Uses for Si Powders **Cobalt** grouts include:

- Top-down or bottom up grouting
- Secondary support
- Mining
- Civil
- Construction.

	1 day	7 day	28 day
Compressive Strength (MPa)	>30	>60	>70



BLACKROCK GROUTS

Blackrock grouts are ready to use blended mining grouts utilizing the latest technologies. Its gel time is 2 hours, allowing extended worktimes.

Benefits of **Blackrock** include:

- Thixotropic or Free-flowing
- Superb pumpability
- Low porosity
- Non-shrink

Uses for Si Powders **Blackrock** grout include:

- Bottom up or top down grouting
- Mining
- Civil
- Construction.

	4 hour	1 day	7 day	28 day
Compressive Strength (MPa)	>20	>60	>80	>90



HI-PAK GROUTS

Si Powders is proud to introduce a range of high yield grouts to suit the specific requirements of customers.

Products in the **Hi-Pak** range include:

- **HY**
- **FPT200**
- **Foam**
- **2P**

Benefits of the **Hi-Pak** range include:

- Rapid placement and strength gain
- Non-shrink
- Large pumping distance
- Reduced transport costs of raw material.

Uses for Si Powders **Hi-Pak** range include:

- Rock fall
- Consolidation
- Ventilation control.
- Mining
- Civil
- Construction.

Typical strengths of HY grout			
W:P 1:1	1 day	7 day	28 day
Compressive Strength (MPa)	7	10	15



HI-SPEC GROUTS

The **Hi-Spec** range includes various specialty grouts that target specific applications in the mining, construction and civil area.

In order to provide customers with a range of products that complement the existing range, the **Hi-Spec** series features innovative use of constituents to deliver high-performance grouts.

Products in the **Hi-Spec** series include:

- **HS70** and **40HB**
- **Plug-it 60**
- **CGB**
- **LA55 R1** and **LA55 R2**.

Plug-it 60 is an emergency water-stopping mortar that will gel within 60 seconds. Initial on-site trials have been completed successfully and the product is awaiting full-scale production.



SEWPERIOR CAC

Sewperior CAC is Si Powders state-of-the-art sewer repair mortar designed specifically for harsh environments.

Developed to resist biogenic corrosion, **Sewperior CAC** can be used to rehabilitate sewer infrastructures and provide a protective layer to new sewers.

Incorporating a 100% calcium aluminate cement and aggregate system, **Sewperior CAC** is supplied as a ready to use dry powder for standard shotcrete equipment.

Sewperior CAC has been designed for a range of different applications and customers may order sprayable, trowelable or high early strength products.

Benefits of **Sewperior CAC** include:

- 100% premixed calcium aluminate system
- Biogenic corrosion resistance
- High early strengths
- Excellent cohesion with minimal rebound
- Aggregates do not exceed 4 mm.
- Wet and Dry Spray compatible

Sewperior CAC	1 day	3 days	7 days	28 days
Compressive Strength (MPa)	>40	>50	>60	>75



S-12 MICROFINE CEMENT

S-12 is a micro-fine General Portland cement based injection grout, mortar, or binder additive, and is supplied ready to use as a dry powder.

Si Powders uses a unique manufacturing process to fine-tune this product according to customer requirements.

Benefits of **S-12** include:

- top size particles do not exceed 14 μm
- D98 = 12 μm
- D50 = 1-2 μm
- Blaine Surface Area above 10 000.

S-12 is considered suitable for, but not limited to:

- High Performance Concrete
- Repair and rehabilitation of cracks, voids, or direct injection into fissure
- CSG applications
- Micro-cementing and grout repairs.



S-30 FINE CEMENT

S-30 is a fine General Portland injectable grout or cement additive, and is supplied ready to use as a dry powder.

Si Powders uses a unique manufacturing process to fine-tune this product according to customer requirements.

Benefits of **S-30** include:

- Top size particles do not exceed $30\mu\text{m}$
- $D_{50} = 3-4\mu\text{m}$ (50% of particles under)

S-30 is considered suitable for, but not limited to:

- Grout injection
- HPC projects
- Rock injection including tunnels, caverns
- Repair and rehabilitation for concrete cracks, voids, or direct injection into fissures.



HS-12 MICROFINE CEMENT

HS-12 is a micro-fine slag cement soil stabilisation grout and is supplied ready to use as a dry powder.

Si Powders uses a unique manufacturing process to fine-tune this product according to customer requirements.

Benefits of **HS-12** include:

- Top size particles do not exceed 14µm
- D98 = 12 µm
- D50 = 1-2 µm
- Blaine Surface Area above 10 000.

HS-12 is considered suitable for, but not limited to:

- Low pressure injection for ground water sealing
- Stabilising sandy soils
- Dams, tunnels and foundations and HPC projects
- CSG applications
- Micro-cementing and grout repairs



HS-30 FINE CEMENT

HS-30 is a fine slag cement soil stabilisation grout and is supplied ready to use as a dry powder.

Si Powders uses a unique manufacturing process to fine-tune this product according to customer requirements.

Benefits of **HS-30** include:

- Increased reactivity and early strength gains
- Top size particles do not exceed 30µm
- D50 = 3-4 µm (50% of particles under)

HS-30 is considered suitable for, but not limited to:

- Additive to Concrete
- High performance concrete
- Shotcrete/Spraycrete/Fibrecrete
- Standard pool spray
- Guniting and render mix



HI-SHOT SHOTCRETE

Hi-Shot is a pre-packaged, ready to use, cement based shotcrete mix for wet or dry applications.

Benefits of **Hi-Shot** include:

- Reduction in rebound reducing cost and time
- Easy application in dry or wet systems
- High early strength with rapid setting time.

Hi-Shot is recommended for use in mining or civil applications such as:

- Underground mining support & lining
- Ground & embankment stabilization
- Concrete repairs
- Tunnel linings & repairs
- Fireproofing.

	1 day	7 days	28 days
Compressive Strength (MPa)	>25	>45	>55

For applications that require high strengths, customers may request **Hi-Shot HS**.

	1 day	7 days	28 days
Compressive Strength (MPa)	>25	>50	>70



HI-SHOT DF SHOTCRETE

Hi-Shot DF is recommended for customers that require a dust-free shotcrete. Ideal for critical and claustrophobic spaces and areas of high safety concern.

Hi-Shot DF is available in three variations including:

CI – For situations where increased corrosion resistance is required.

MC – Recommended for marine projects where increased corrosion and salt water resistance is required.

WP – For situations where a water proofing membrane is required.

Should customers require a personalised shotcrete for a project Si Powders can offer and supply “black-box” products.

Tested in-house the personalised shotcrete can include increased coarse aggregate, be a wet or dry shotcrete and much more.

	1 day	3 days	7 days	28 days
Compressive Strength (MPa)	30	40	45	55



HI-PFORM

Hi-Pform is a trademarked specialty concrete mineral additive.

Benefits of **Hi-Pform** include:

- Extremely reactive pozzolanic properties
- Depending on mix design can help achieve compressive strengths in excess of 160 MPa.
- Increases particle packing density
- Improves rheology of cement-sized particle suspensions
- Increases the workability of most cement mixture
- Better early-age strength gains.

Hi-Pform can be used in most mining and civil applications including:

- Pre-cast panels
- Cast in-situ
- Placed concrete
- Spraycrete.



SUPPLEMENTARY CEMENTITIOUS MATERIALS

Si Powders offers a range of highly pozzolanic supplementary cementitious materials (SCM).

The use of processed supplementary cementitious materials reduces Portland cement consumption and can be used for improved concrete performance in its fresh and hardened state.

Benefits of SCM's include:

- Improved workability and trowelability
- Durability
- Strength (earlier and continued late age strength)
- Lower heat generation
- Excellent cohesion.

Uses include:

- Additive to concrete including HPC
- Shotcrete
- Standard pool spray
- Precast and tilt-panel
- Concrete structures
- Render mix designs
- Guniting mix.



SUPPLEMENTARY CEMENTITIOUS MATERIALS

Current pozzolanic SCM's offered by Si Powders include:

FA-16 is Si Powders premier ultra-fine classified fly ash (UFFA). An extremely narrow particle size distribution and a top size of 16 microns allows it to penetrate even the smallest voids.

Hi-Pozz is a micro processed, fine fly ash powder for use in a wide range of applications.

Silica Fume sourced from Si Powders is undensified silica fume and densified silica fume is available for greater bulk density, less dust and reduced shipping costs.

Ferro Pozz is a calcium silica fume a highly pozzolanic powder that has hydraulic properties. Si Powders currently owns the Australian distributor rights to this unique product.

"Australian standards currently allow up to 7.5% SCM additions for GP cement mix designs with up to 35% allowable for blended cements. The additions are therefore an economical and environmentally smart choice."



FURTHER DEVELOPMENTS

Si Powders is continuing to develop exciting new products. These include:

- **Hi-Hot**

Hi-Hot is a fast set repair mortar that provides high early strength and may be used in situations where high heat resistance and high early compressive strength is sought after. Customers may request modified mix designs to cater for special projects.



FURTHER DEVELOPMENTS

Si Powders is developing new processes to stay ahead of competition including:

- **Cement Separation**
- **Specialised Grinding Circuits**
- **Blending Station**

Cement Separation is a patent pending process incorporating the latest in separation developments. Offering a low energy process to create two highly flexible product streams, Si Powders is able to minimize waste and cost to customers.

A fully integrated **grinding circuit** has been designed by an Australian company for Si Powders. It will incorporate the existing classification and centrifuge systems and offers a 'closed-loop' design.

Si Powders latest integrated **blending plant** is highly accurate and caters for the most complex mixing options.

The Australian designed **blending plant** allows us to offer our customers any number of blended products, including 'own' mix designs or proprietary designs formulated by Si Powders.

This is further to our current mixing and packaging capabilities.



ADDITIONAL SERVICES

Si Powders is able to provide further services including:

In-house product development

We work with you to develop your bespoke product using our development expertise, product sourcing and manufacturing experience. We are able to tailor our existing products to your requirements and develop 'fit for purpose' products using our in-house laboratory.

You develop, we manufacture

Come to us with your product and we will manufacture and quality assure under license. Have peace of mind while we organise product sourcing, quality control and manufacturing.

Contract testing

We are able to provide contract materials testing for our customers. Contact us for competitive rates on mechanical tests on mortars, concretes and grouts.



QUALITY CONTROL

Quality control is at the forefront of Si Powders business. In addition to the quality management systems in place, Si Powders assures products are fit for purpose by a series of quality control tests performed at an on-site laboratory. Currently this laboratory hosts a certified Malvern Particle Size Analyser, a compression machine and other relevant equipment.

To further facilitate customer relationships and develop exciting new products, this laboratory will be upgraded in 2015 to include a larger compression testing machine, a new FT-IR spectrometer and much more.

These strategic upgrades will make future NATA certification possible.

All quality control is overseen by a team of specialists, including registered cement chemists.



*“Precise Quality Control =
Reliability of Performance”*



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