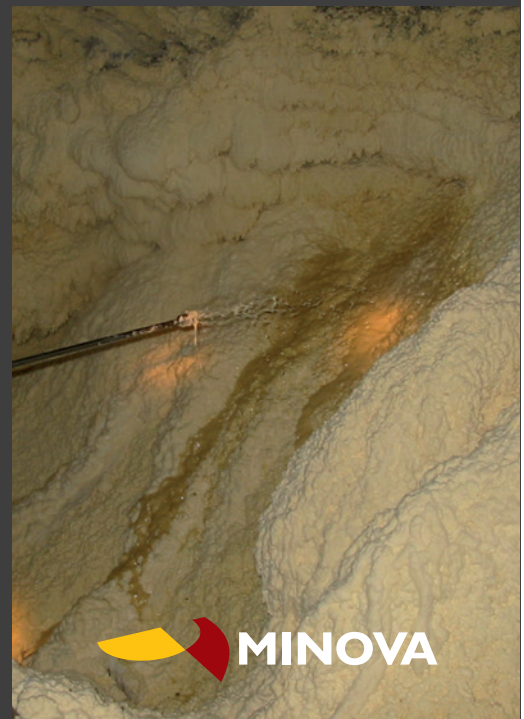


# INNOVATIVE INJECTION CHEMICALS.



# SECURING PERFORMANCE. TOGETHER.

Minova is an international producer of high-performance ground support products for the mining, construction and energy industries.

Our products are engineered to provide safety, efficiency and certainty to your operations, wherever you are.

We provide tailored solutions for a variety of applications, whatever it takes.

We can help you increase project performance and overcome application challenges through a wide range of products that are secure in any conditions, wherever you need to go.

# INJECTION CHEMICALS.

With over 40 years of global experience in the development, manufacture and licensed application of these products, we are uniquely positioned to offer you the highest performing solution to meet the demands of your project.

For many decades Minova injection chemicals have been successfully used in underground mining to consolidate fractured strata and prevent water ingress. Our range includes polyurethane (PUR), urea silicate and phenolic based systems. Our polyurethane products can be injected under high pressure and our cavity filling resin systems rapidly fill underground voids when timing is critical.

## KEY FEATURES

- Variety of grades to suit numerous application situations
- Low viscosity allowing good penetration into small fissures
- Excellent adhesive strength forming strong bond with strata
- Quick reaction time to reduce migration and loss of material
- Yields to ground pressure, accommodating subsequent movement
- High mechanical resistance gives improved support of strata
- Consolidates both brittle and wet fractures and water bearing strata
- Seals against water with hydrostatic pressures

over **40 years**  
of global experience

with development and manufacture  
of these systems

foaming reaction  
starts **within  
seconds**

with GEOFOAM rapidly expanding system

**FOAMING RESIN  
SYSTEMS REQUIRE  
MINIMAL, IF ANY,  
CONTAINMENT  
FORMWORK AND  
CAN BE PLACED  
AT A RATE OF  
UP TO 50m<sup>3</sup> PER  
HOUR**



Filling a cavity with Geofoam®

## STRATA INJECTION



**BEVEDOL®/BEVEDAN®** is a foaming PUR injection system for the consolidation, stabilisation and sealing of highly convergent wet or dry strata. The low viscosity mixture penetrates the smallest fissures with a quick reaction time. Different grades of Bevedol are distinguished by colour coding.

### ADVANTAGES

Low viscosity product allowing good penetration into the smallest fissures

Excellent adhesive power which forms strong bond with strata

Quick reaction time helps reduce migration and loss of material

Yields to ground pressure, accommodates subsequent ground movement.



**CARBOMINE** is an extremely fast reacting, alkaline phenolic resin injection system. Its high bond strength allows for solidification of dry or slightly moist strata. The low viscosity mixture allows good penetration into the smallest fissures.

### ADVANTAGES

Very low exothermic reaction

Low viscosity allowing good penetration into small fissures

Excellent adhesive strength forming strong bond with strata

No exothermic reaction when in contact with water



**GEOFLEX®** is a non foaming, urea silicate injection system with extremely high bond strength. Ideal for strata injection, sealing of injection anchors and stabilisation of debris. Forms a non-porous elastic silicate that minimises leakage and will not absorb any water.

### ADVANTAGES

Rapid reaction and strength development

Tough & flexible material with high adhesive strength after 1 hour

Resistant to acids, alkalis, brines and many solvents

Fire resistant material with high elasticity

## CAVITY FILLING



**CARBOFILL®** is a two component phenolic foam resin for the rapid filling of cavities in underground roadways and longwalls. Its rapid reaction time and high foam factor minimises the need for formwork and reduces transport and handling.

### ADVANTAGES

Low formaldehyde emissions during product reaction - fire resistant

Can be used to form temporary ventilation seals

Product allows injection as well as spraying techniques

Injection against water flow possible



**GEOFOAM®** is a rapidly reacting and strongly expanding urea silicate resin system for immediate stabilisation and filling. Rapid reaction time and high foam factor minimises the need for formwork and reduces transport and handling.

### ADVANTAGES

Dual purpose system for strata injection and cavity filling

Fast reaction against inflow of pressured water

Allows application at lower temperatures

Injection system with flame protection and CFC free

## PRODUCT SPECIFICATIONS / TYPICAL RESULTS

Property	Bevedol	Bevedan	Carbomine A	Carbomine B	Geoflex A	Geoflex B	Carbofill A	Carbofill B	Geofoam A	Geofoam B
Density (g/cm <sup>3</sup> )	1.03	1.23	1.29	1.05	1.48	1.14	1.29	1.54	1.45	1.22
Colour	honey	dark brown	dark brown/red	light brown	colourless	brown	beige-brown	blue-black	colourless	brown
Viscosity (mPas)	280±40	210±70	170±30	10±2	260±40	150±30	200-900	<100	260±40	150±30
Flash Point (°C)	200	200	na	100	na	>100	na	na	-	200
Property of Mixture Mix Ratio	1:1		4:1		1:1		4:1		1:1	
Foam Factor	1.0-5.0		1.0-5.0		na		22-26		15-30	
Maximum Temp of Reaction (°C)	100-150		40-50		80-90		<90		80-90	
Adhesive Strength (MPa)	> 3		7.3		5.8		na		5.8	
Flexural Strength (MPa)	90		14		24		na		na	
Compressive Strength (MPa)	20		10		30		0.06		0.1	
Tensile Strength (MPa)	45		na		na		na		na	
Modulus of Elasticity @ 7 days (MPa)	na		na		250		na		250	
Reaction Time @ 25°C (s)	30-80		120		225		<10		20±10	
End of Foaming @ 25°C (s)	na		na				190±50		45±15	

### APPLICATION SERVICES

Minova maintains product stock, equipment, and several teams of fully trained and highly experienced personnel, who are available at short notice to complete emergency strata injection, water stopping and cavity filling applications.

Our contract services division maintains a large fleet of application equipment including pumps, hoses, equipment/material PODS and injection consumables. All equipment and processes are fully risk assessed and industry standard safe operating procedures (SOP's) exist for all materials, equipment and applications techniques.

### SYSTEM APPROVALS

All strata injection chemical systems are LOBA and NSW DII licensed and approved for injection in underground coal mines. All systems hold the German Authority Permit (LOBA compliant). Application of Minova chemicals must be performed by or under the guidance of Minova operators.

### QUALITY CONTROL

The superior quality of our injection chemical systems is assured through a four-part quality control program:

1. Raw Material Testing
2. In-process quality control testing
3. Finished product acceptance testing
4. Quality system management to ISO 9001:2015

All quality control testing is completed by trained personnel using industry recognised equipment, regularly calibrated by an independent and authorised testing company in accordance with our quality management system.

*Injection chemicals contain various substances that can be harmful. Review the MSDS prior to handling or product use. For further information see the relevant Technical Data or Safety Data sheet, copies of which are available on our website.*

**NEW SOUTH WALES**

Kurri Kurri  
Smithfield  
Nowra

**QUEENSLAND**

Mackay

**SOUTH AUSTRALIA**

Adelaide

**WESTERN AUSTRALIA**

Perth

**Customer Service:**

1800 Minova / 1800 646 682 (free call within Australia)

1300 Minova / 1300 646 682 (local call Australia)

1300 FaxMinova / 1300 329 646

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