

**SOFT ROCK MINING / HARD ROCK MINING / TUNNELING**

**CARBOPUR WF**

**TWO-COMPONENT POLYURETHANE INJECTION SYSTEM**

**DESCRIPTION**

A fast reacting, two-component polyurethane (PUR) injection system consisting of CarboPur WF A and CarboPur WF B. Metered in a 1:1 volume ratio via a pump unit and injection gun into the strata. The two components mix in the gun, which initiates the reaction of the product. The low viscosity mixture penetrates the smallest fissures, hardens and ensures the consolidation and sealing of the area submitted to treatment.



Figure 1: CarboPur WF Part A and Part B

**APPLICATION AND USES**

The consolidation, stabilisation and sealing of highly convergent strata.

- Consolidation in dry, wet and water bearing strata.
- Sealing against water under hydrostatic pressure from strata, dams or shaft walls and salt water.
- Repair of wet shafts, tunnels, channels and walls
- Consolidation of brittle and fractured ground.
- Many more specialised applications

**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.
- High mechanical resistance gives improved support of strata.
- CFC and halogen free

**TECHNICAL DATA**

Typical Properties	
Component A Density @ 25°C	1.03 g/cm <sup>3</sup>
Component B Density @ 25°C	1.23 g/cm <sup>3</sup>
Component A Viscosity @ 25°C	290 ± 50 mPa·s
Component B Viscosity @ 25°C	200 ± 50 mPa·s
Adhesive Strength	>2MPa
Flexural Strength (unfoamed)	90MPa
Compressive Strength (unfoamed)	80MPa
Tensile Strength (unfoamed)	45MPa
Component A colour	Honey
Component B colour	Dark Brown

**APPLICATION METHOD**

Application must be performed by Minova operators who have been trained in accordance with Minova PUR training manual.

The two components are pumped by a dual component pump at the volumetric ratio 1:1; they are mixed thoroughly in a static mixer unit prior to injection into strata via a packer installed in a previously drilled borehole.

In contact with water, the resin foams up. The following reaction mix displaces then the preceding one. Since the mixture does not meet any more water, it hardens without foaming to form a pore-free material. Thus, a water-tight shell is foamed which, in turn, is surrounded by a zone consolidated by foamed-up polyurethane. This means that only one application cycle with one material is necessary for arriving at permanent sealing and consolidation.

With strong outflow of water or in case of cold water we recommend use CarboPur WFA or WT. Those three resins can be combined with each other

The mixed resin penetrates the structure to be sealed. The major part of water in there is displaced due to the hydrophobicity and the viscosity of the resin. Traces of water make the resin foam.

According to its contact with water, the resin foams up more or less. Thus, the mechanical properties vary a lot. The cured resin is resistant against many acids, alkali and salt brines as well as organic solvents (if in doubt consult your nearest Minova representative).

It needs to be assured that the product temperature is between 15 – 30°C before processing and during application.

When the material is warmed up, local overheating, e. g. at the container wall, must be avoided.

**Limitations**

- Material must be applied within the temperature range 5°C to 40°C.
- Application must fall within the guidelines of the Coal Mine’s Regulation Act with respect to ventilation.
- Queensland - Mine Manager’s Rules apply.

**SAFETY INSTRUCTIONS AND LIMITATIONS**

Observe the usual precautionary measures for handling chemicals, see MSDS CarboPur WF component A and CarboPur component B.

If the product is strong cooled down (< 0 °C) or at short notice lower temperatures (< -10 °C), it should be warmed up before application to the recommended processing temperature.

**Reaction Data**

Without contact to water

Temperature	15°C	25°C
Foam Factor	1.0 – 1.2	1.0 – 1.2
Setting Time	1’30”±20”	55” ± 15”

With contact to water (1% relative mix)

Temperature	15°C	25°C
Foam Factor	3 ± 0.5	3 ± 0.5
Setting Time	1’40” ± 20”	1’40” ± 20”

These figures are given as a guide and may vary with site application conditions.

**Yield**

The quantity of material required to fill each injection hole will depend on depth of hole, nature of strata, mining conditions, etc. A maximum of 200 kg of product can only be injected into each hole. (As per Department of Mineral Resources regulations in NSW coal mines).

**PACKAGING AND TRANSPORTATION**

Supplied in colour coded drums with handle and secure cover lid

Product	Drum Size	Drum Colour
CarboPur WF Component A	21 kg	White
CarboPur WF Component B	24kg	Blue

## STORAGE AND SHELF LIFE

At least six months from date of delivery when stored in a dry place between 10 °C and 30 °C. When this time is exceeded, we recommend having the material checked by Minova for compliance with specification.

The local legislation on storage needs to be considered.

## STORAGE CONDITIONS

Store in a cool, dry place between 10 °C and 30 °C away from direct sunlight. Avoid humidity entering by storing in a ventilated room and keeping seals tightly closed when not in use.

## HEALTH AND SAFETY

For further information see the relevant material safety data sheet, copies of which are available on [www.minovaglobal.com](http://www.minovaglobal.com)

## TECHNICAL SUPPORT

We provide technical advisory service by a team of specialists in the field. The service includes on site assistance and advice on evaluation trials and laboratory work.

### Available Certificates & Expertise

1. Report on mechanical properties (adhesive shear, adhesive flexural strength, penetration capacity) (DMT MinTec, Essen, 1995)
2. Material test report on permeability of water (DMT, 2001)
3. Material test report on tensile strength (CTF, 2000)
4. Material test report on flexural strength (CTF, 2000)
5. Material test report on E-modulus (CTF, 2000)
6. Research of shear strength (DMT, MinTec, 1999)
7. Expertise on groundwater and drinking water compatibility according to German regulations (Hygiene-Institut, Gelsenkirchen, 2002)
8. Expertise on groundwater compatibility (Hygiene-Institut, Gelsenkirchen, 2004)
9. Opinion about compatibility to tunnel sealing sheets (MPA Darmstadt, 2001)
10. EN 12715:2000 Execution of special geotechnical work - Grouting

The above data have been gathered on the basis of thorough research to our best knowledge and with consideration of the present state of our extensive experience. No liability or warranties can be derived from, and in the context within this data sheet.

## MANUFACTURER

Minova Australia Pty Ltd  
George Booth Drive, Kurri Kurri, NSW 2327

An ISO 9001:2015 Quality Management  
Certificated Company



FS 603747

## ADDITIONAL INFORMATION

Minova Australia offers a comprehensive range of products, all of which have been developed after extensive research and testing on a global scale via our international network of operations. These products include:

- Resin anchor systems
- High yield grouts and foams
- High volume output grouts
- Monolithic chock systems
- High performance cable bolt grouts
- Polyurethane resin systems
- Binder systems and accelerators for backfilling
- Pre-packaged high build spray cements
- Sprayable coatings for ventilation control
- Water stop grouts
- Ventilation formwork systems including: Meshblock, Gunmesh, Tecmesh and Tecplastic
- Grout mixers and batchers both air and hydraulically operated
- Flexible high strength membrane for strata support
- Contract Installations
- Flexible membranes for strata support and waterproofing applications

## **CUSTOMER SERVICE**

[sales\\_au@minovaglobal.com](mailto:sales_au@minovaglobal.com)

1800 646 682 (1800 Minova)

1300 646 682 (1300 Minova)

+61 2 49395159 (International)

## **LEARN MORE**

Click on the website links to learn more about Minova and their solutions.

[About Minova](#)

[Lokset Resin Capsules](#)

[Anchoring Grouts](#)

[High Volume Output Grouts](#)

[Injection Chemicals](#)

[Sprayed Cements](#)

[Steel and Fibreglass](#)

[Mesh](#)

[Ventilation & Air Control](#)

[Surface to Seam](#)

[UniPass Bolting Technologies](#)

[Pre-Driven Recovery Roadway](#)

[Optimised Ore Recovery](#)

## **DISCLAIMER**

All information contained in this document is provided for informational purposes only and is subject to change without notice. Since Minova cannot anticipate or control the conditions under which this information and its products may be used, each user should review the information in the specific context of the intended application. To the maximum extent permitted by law, Minova specifically disclaims all warranties express or implied in law, including accuracy, non-infringement, and implied warranties of merchantability or fitness for a particular purpose. Minova specifically disclaims, and will not be responsible for, any liability or damages resulting from the use or reliance upon the information in this document.

The Minova Logo is a registered trademark.

© Minova Australia Pty Ltd

® Registered trademark of Minova International Limited