

# MasterRoc MP 323

Solvent-free, low viscosity, hydrophilic grout for rock injection and consolidation of sandy and silty strata

## Material Description

**MasterRoc MP 323** is a sodium stabilised colloid of silica oxide nanoparticles in a sol form. By adding a second accelerating component to the sol the negatively charged nanoparticles can be made to collide and coalesce to form an impermeable stiff gel. The product is suitable for pumping as one-component or as two-components with in-line mixing.

## Areas of Application

- Ground improvement
  - Permeability reduction
  - Strength increase
  - Stabilisation of fluvial sands and silts
  - Reducing risk of liquefaction
- Low pressure permeation grouting of granular materials:
  - TBM launching and reception shafts
  - Preinjection prior to X-passage excavation
  - Toe grouting and curtain grouting of ERS
  - Plug grouting of shafts and boxes
  - TAM (Sleeve) grouting with double packers
  - Lance Grouting
- Fissure grouting of rock strata to permanently reduce water ingress:
  - Preinjection of shafts and tunnels
  - Toe grouting and curtain grouting of ERS

## Characteristics & Benefits

- Very low viscosity ensures excellent permeation at low pressure.
- By varying the accelerator dosage consistent and precise gel times for periods of between a minute to days are possible, ensuring complete filling of voids and a reduction in losses due to gravity.
- Both components are non-toxic and the product is suitable for use in most environmentally sensitive areas.
- The benign nature of the mixed product enables excavation of treated ground to continue without special precautions for chemical exposure and no additional measures for spoil disposal.

- Hydrophilic properties ensure good bonding to wet surfaces.
- Stable and continuous strength gain over time.
- Very little synerisis in wet conditions.
- Simple mixing and handling on site.

## Technical Data

### MasterRoc MP 323

Colour	Clear to Opaque
Viscosity (20°C)	<12 mPa.s
Density (20°C, AP-005)	1.19 – 1.21 kg/l
pH (20°C, AP-009)	8.8 to 10.0
SiO <sub>2</sub> concentration	30 ± 1%

### MasterRoc MP 320 Series Accelerator

Colour	Clear
Viscosity (20°C, AP-014)	~1 mPa.s
Density (20°C, AP-005)	1.07kg/l
pH (20°C, AP-009)	7

### Mixed Material (mix dependent)

Colour	Whitish/clear
Viscosity (20°C, AP-014)	~5 mPa.s
Density (20°C, AP-005)	~1.2 kg/l
pH (20°C, AP-009)	~9 dependent on mixing ratio

## Application

The mixture of **MasterRoc MP 323** and the **MasterRoc MP 320 Accelerator** is normally workable between +5°C and +40°C. Gel times can be adjusted by changing the ratio of **MasterRoc MP 323** to **MasterRoc MP 320 Accelerator** (10% solution of NaCl), however the gel time of the product is also affected by temperature of both components, the intensity of the mixing



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and temperature of the ground into which it will be injected. Laboratory gel time testing at application representative temperatures is required to plan effective grouting parameters.

## Batch Mixing

Low intensity mixers / agitators should be used to blend the two components. Always add the **MasterRoc MP 320 Accelerator** at the required ratio to the **MasterRoc MP 323** sol, not the other way around, ensuring the **MasterRoc MP 323** is continuously stirred during the addition of the **MasterRoc MP 320 Accelerator**.

## Inline Mixing

Inline mixing of the two-components can be advantageous in some applications, particularly fissure grouting, where a dual stop criteria of volume and back pressure is often used. A static mixer will be required to blend the two components. Positive displacement pumps equipped with flow meters should be used.

## Injection Method

To achieve controlled, targeted injection into sands and gravels, it is advised to use double packers within tube à manchette injection tubes (often referred to as "TAMs", "SPPs" or Groutsleeves) with port centers dependent on the fineness of soils, and degree of stabilization required.

In soft granular materials, upstage injection through driven lances can also be an effective delivery method.

High pressure injection for fissure grouting in hard rock strata should be done through appropriately sized mechanical or hydraulic packers.

## Gel Time

The gel time is defined as the point at which a significant increase is detected in viscosity. The gel time may be adjusted by varying the ratio of **MasterRoc MP 320 Accelerator** to the **MasterRoc MP323**. In Fig 1 below is an example of a constant  $\text{SiO}_2$ .

## Cleaning of Injection Equipment

All equipment can be cleaned with fresh water.

## Packaging

MasterRoc MP 323 - 250kg drums/1250kg IBC  
MasterRoc MP 320 series accelerator - 210 kg drums

## Storage & Shelf Life

In unopened, tightly closed original containers, the components of **MasterRoc MP 323** may be stored for up to 18 months, if kept dry and within a temperature range of +5 to +35 °C. Protect from sunlight.

## Precautions

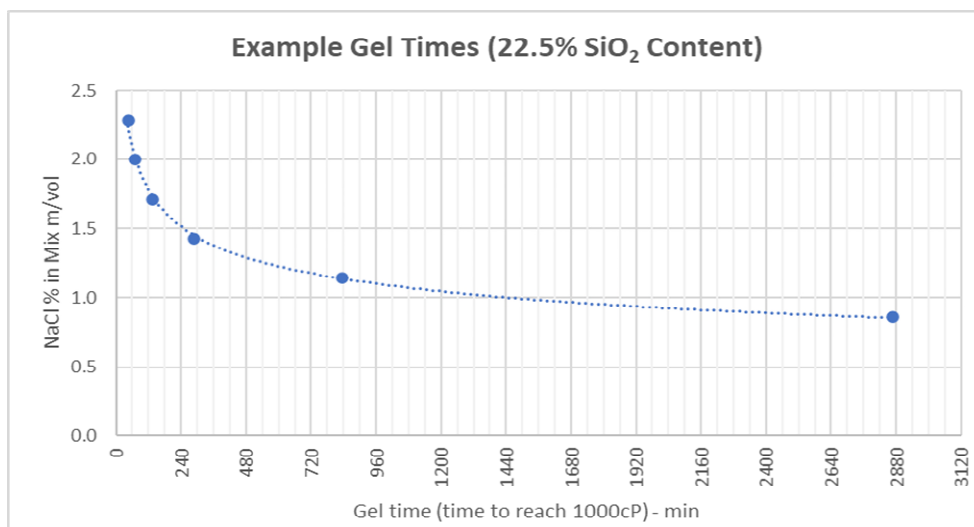
For the full health and safety hazard information and how to safely handle and use this product, make sure that you obtain a copy of the Safety Data Sheet (SDS) from our office or website.



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**Figure 1**



## Disclaimer

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