

# Nitofill PU 1F

## Single component highly elastic foaming crack injection resin for water stopping

### Uses

Used for injecting into leaking cracks in concrete to stop the flow of moving water. When in contact with water, Nitofill PU 1F creates a pressurized foam material to provide an effective system for crack sealing in wet conditions, water retaining structures, tanks, sump-pits, manholes, basements, canals, retaining walls,...etc.).

Nitofill PU 1F can also be used as a two component system with 1 to 1 water volume to inject into dry, moving non-structural cracks

### Advantages

- Truly 1 component, does not require mixing or the addition of catalyst
- Reacts rapidly with water to produce water resistant foam to seal cracks
- Provides permanent elastic seal
- Non-toxic when cured.
- Low viscosity allows penetration into fine cracks.
- Excellent adhesion properties to a range of construction materials.
- Suitable for single component injection pumps

### Description

Nitofill PU 1F is a one-part liquid pre-polymerized polyurethane resin injection grout. When in contact with water, the resin reacts to form an elastic expanding foam barrier that blocks the flow of water in leaking cracks.

The system is ideal for movement of the substrate in excess of 10%. Nitofill PU 1F is designed to withstand wet-dry cycles and thermal movements

### Technical Support

Fosroc offers a comprehensive range of high performance, high quality repair, maintenance and construction products. In addition, Fosroc offers a technical support package to specifiers, end-users and contractors as well as on-site technical assistance in locations all over the world.

### Design Criteria

Nitofill PU 1F is designed to stop the movement of water in cracked concrete. Crack widths as small as 0.2 mm can be treated dependent on water flow.

### Properties

The following properties were obtained at a temperature of 25°C.

Test Method	Typical Result
Gel Time	: 20 seconds
Foaming Time	: 180 seconds
Density	: 1.1 Kg/L
Viscosity	: 400 mPa.s
Solids Content	: 100%
Expansion volumetric factor 1/1 water	: 350 - 400%

### Specification clause

#### Water-stopping crack injection resin

The foam water-stopping crack injection resin shall be Nitofill PU 1F, a one part foaming liquid pre-polymerized polyurethane. When mixed in the proportions supplied and injected into cracks in concrete, the resin shall react with moving water to form an elastic foam water-stopping barrier.

The water-stopping injection resin shall have the following properties; Gel time  $\leq 15s$ , foaming time  $\leq 180s$ ; viscosity of  $250 \pm 50$  mPa.s, at 25°C; specific gravity of  $1.12 \pm 0.06$ .

#### Preparation

Clean area of concrete so cracks are identifiable

If water flow permits, clean the surface adjacent to the cracks and remove any dust, unsound or contaminated material, plaster, oil, paint, grease, corrosion deposits or algae.

The surface should preferably be prepared using high pressure water jetting or light abrasive blasting, followed by thorough washing to remove dust and remaining particles. Dirt alone may be removed with wire brushes or similar mechanical means.

Blow the cracks and treated surface with oil free air or flush with clean water to ensure complete removal of all dust and loose particles.

#### Application Instructions

It is recommended to use packers especially when injecting against running water. Other techniques may be used, but are application specific.

#### Fixing injection packers

Exact spacing of injection ports, pump type and even injection technique will vary depending upon a number of factors, including crack width, concrete depth and water pressure. These will change even within the same project. The following should be used as a guide.

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Drill to suit the specific dimensions of the packers. The holes should be spaced at 150 to 500mm intervals depending on the crack width, depth and pressure of water. Drilling should be done at 45° angle and bisect the crack line at the center of the concrete if possible. If rebar is struck, stop drilling and move drilling point to adjacent area.

Where possible, stagger the injection points on both sides of the crack. In the case of a wall or slab which is cracked all the way through, packers shall be located on both sides with those at the back placed at midway points between those at the front.

Where practical the surface of the cracks between the packers shall be sealed with Nitomortar TC2000, 30 mm to 40 mm wide and 2 mm to 3 mm thick. Both sides of any cracks which go all the way through a wall or slab shall be sealed in this way. Consult your local Fosroc office for further information.

**Please note:** Where water flow is severe the epoxy putty application can be omitted.

One end of the injection hose shall be attached to the lowest packer on vertical cracks or to either end of horizontal cracks. Each crack shall be treated in a single continuous operation. Sufficient material shall, therefore, be made ready prior to the commencement of the work.

## Nitofill PU 1F application

Make sure not to open the pack until the area of application is ready. There may be a skin formation on the surface but the liquid underneath will be satisfactory for use during the stated pot-life of the product.

Nitofill PU 1F should be injected with standard injection equipment having closed containers. The grout requires the presence of water in order to react and harden. If there is no water ingress at that time, cracks should be pre-injected with water.

Nitofill PU 1F is suitable for use with all common 1 component application equipment, typically an electric pump will yield the best results when injecting against hydrostatic water pressure.

Inject Nitofill PU 1F along the line of the crack methodically, ensuring that the material is working its way along to the next point. If injecting vertical cracks it is generally advised to begin at the bottom of the crack and work upwards.

Take care not to over pressurize injection as this may lead to further cracking of the concrete or displacement of packers.

## Finishing & Making good

Once the injection process has finished, remove injection packers and fill with Renderoc Plug or other appropriate Renderoc material. Scrape off any foam residue from the cracks and dispose of appropriately.

## Notes

The success of water stopping injection is largely dependent upon the skill of the applicator. Fosroc therefore recommends that an experienced applicator is selected to undertake these works to the required standard.

Exact spacing of injection ports, pump type and even injection technique will vary depending upon a number of factors, including crack width, concrete depth and water pressure. These will change even within the same project. Refer to products Method Statement for further information.

Excess material should be safely reacted with water to produce an inert Polyurethane foam, and disposed of appropriately.

## Limitation

If any doubts arise concerning temperature, application or substrate conditions, the local Fosroc office should be consulted.

## Cleaning

Nitofill PU 1F should be removed from tools, equipment and mixers with Fosroc Solvent 102 immediately after use. Hardened material can only be removed mechanically.

## Supply

<b>Nitofill PU 1F</b>	: 20 KG pail
<b>Renderoc Plug</b>	: 1, 4.5 & 25 KG pail
<b>Fosroc Solvent 102</b>	: 5 and 20 litre cans

## Yield

<b>Nitofill PU 1F</b>	: approx. 18 L
<b>Renderoc Plug</b>	: 0.5 L / KG

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## Storage

### Shelf life

Nitofill PU 1F has a shelf life of 12 months if kept in a dry store in the original, unopened containers.

### Storage conditions

Store in dry conditions in the original unopened containers. Nitofill PU 1F is sensitive to humidity. Store away from frost and heat in a dry area, ideal storage temperature between 5°C and 30°C

## Precautions

### Health and Safety

During use of Nitofill PU 1F avoid contact with skin and eyes and inhalation of vapour. Wear suitable protective clothing, gloves and eye/face protection. Wearing respiratory protection is highly recommended

Should accidental skin contact occur, remove immediately with a resin removing cream followed by soap and water. **Do not** use solvent. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed seek medical attention immediately - **do not** induce vomiting. Use only in well ventilated areas. In case of insufficient ventilation wear suitable respiratory protective clothing.

Renderoc Plug contains cement powder which when mixed or becomes damp release alkalis which can be harmful to skin. During use avoid inhalation of dust and contact with skin and eyes. Wear suitable protective clothing, gloves and eye/face protection.

## Fire

Renderoc Plug is non-flammable. Fosroc Solvent 102 and Nitofill PU 1F and are flammable. Keep away from sources of ignition. No smoking. In the event of fire extinguish with CO<sup>2</sup> or foam. Do not use near open flames or smoke during use.

## Flash points

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<b>Fosroc Solvent 102</b>	: 33°C
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<b>Fosroc Nitofill PU 1F</b>	: 107°C
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For further information, refer to the Product Material Safety Data Sheet.

## Additional information

Fosroc manufactures a wide range of products specifically designed for the repair and refurbishment of damaged reinforced concrete. This includes hand-placed and spray grade repair mortars, fluid micro-concrete, chemical resistant epoxy mortars and a comprehensive package of protective coatings. In addition, a wide range of complementary products is available. This includes joint sealants, waterproofing membranes, grouting, anchoring and specialized flooring materials.

Fosroc has also produced several educational training videos which provide more details about the mechanisms which cause corrosion within reinforced concrete structures and the solutions which are available to arrest or retard these destructive mechanisms.

Further information is available from the publication. Concrete Repair and Protection. The 'Systematic Approach', available in seven language formats.

For further information about products, training videos or publications, contact the local Fosroc office



### Important note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions for the Supply of Goods and Services, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification of information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation of information given by it.

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