

## OVERVIEW

RANSINJECT-1K is a very low viscous, pale yellow colored elastic and solvent-free polyurethane injection resin which reacts with water in a controlled manner to form a swelling, resilient adhesive solid in densities and strength appropriate to the designated task. In contact with water, a uniform, closed and therefore watertight pore structure forms, which is elastic and flexible. Reaction with water yields a flexible polyurethane foam. To be injected with a one-component pump. When injected under pressure into leaking structures, through the process of polymerization, a permanent flexible water barrier is formed. The liquid retains its initial low viscosity upon contacting water allowing it to flow without dilution. Once the RANSINJECT-1K water reaction commences, the grout expands penetrating into its surrounding and quickly cures to a tough, adhesive solid to repel the influence of underground seepage flow and solidify the objective ground which is unaffected by corrosive environments.

## PROPERTIES

- RANSINJECT-1K is used for permanent watertight sealing with some flexibility to absorb limited movement, in dry, damp or water-bearing cracks and joints in concrete, brickwork and natural stone.
- No reaction takes place unless it is in direct contact with water.
- It can be injected as a single component system.
- The free foaming expansion in contact with water is up to 40 times.
- The reaction speed (foam formation) is influenced by the temperatures of the mixed material, the structure and the contact water, plus the hydrodynamic conditions.
- In cold temperatures (< +10°C) RANSINJECT-1K can be accelerated using PU INJECTION ACCELERATOR.
- RANSINJECT-1K has very remarkable solidifying property even in ground where water flow is violent. It stops water from oozing and solidifies the ground with high strength. It imparts successful solidifying property in all types of water, such as seawater, mineral water or that containing slight acid and alkali.

- RANSINJECT-1K is extremely stable both chemically and physically and will not be damaged by any bacterium. It is completely no pollutant to the water it contacts and has no effect on potable water, fish or marine life.
- RANSINJECT-1K possesses excellent adhesiveness to solid particles and is therefore useful in landslide prevention. It does not wash away or is not diluted by the ground water.

## AREAS OF USE

RANSINJECT-1K is used for permanent watertight sealing with some flexibility to absorb limited movement, in dry, damp or water-bearing cracks and joints in concrete, brickwork and natural stone.

## INSTRUCTIONS FOR USE

The application temperature should be between 5°C to 45°C. Application procedures may vary slightly depending upon site conditions. The general recommended guidelines for the application of the system are as follows:

### Substrate Surface Preparation

Seal all visible cracks of more than 2 mm with suitable polymeric mortar.

### Application

Drill 15-22 mm holes along the side of the crack at

RANS ENGINEERING & CHEMICALS offers a comprehensive range of products and services for most concrete and finishing needs. Please contact the RANS Technical Service Department or your local RANS agent for further information, samples, demonstrations and instructor services. The information given in this leaflet is based upon laboratory research, as well as extensive field work and application. All products are sold subject to standard conditions of sale which are available on request. This information is based on RANS present state of knowledge and is intended to provide general information on RANS's products and their methods of use. The prospective user is recommended to determine the suitability of RANS's suggestions and products before adopting them on a commercial scale.

45° angle. Drill the holes to intersect the crack midway. Install injection packers in the holes and tighten. If the cracks to be injected are 10mm wide or more at the surface, pack open cell polyurethane foam saturated with RANSINJECT-1K into the crack. Spray the saturated foam with a small amount of water to activate the grout and create a surface seal. Pump RANSINJECT-1K at >20 bar into or behind fissures or into voids which are allowing water to infiltrate into unwanted areas. If voids in concrete being injected contain insufficient moisture to activate the grout inject a small amount of water prior to injecting the grout. Pump RANSINJECT-1K for approximately 15 seconds and then pause to allow the material flow into all the cracks and crevices.

Keep pumping, watch for material flow and water to appear at the surface or the next packer. When movement stops or RANSINJECT-1K appears at the next packer move to the next packer and inject. When sealing vertical cracks start at the bottom and work upward.

#### **Tools/Pump**

Use single component grouting pump for best results.

#### **Cleaning**

Uncured material may be cleaned from application tools, etc. by using solvent (Xylene or any other). Cured material can only be removed mechanically. The waterproofing process is divided into three phases:

**Injection:** The time during which the injection material flows under pressure from the pump to the desired moisture/water containing areas.

**Induction:** The time from initial mixing until the reaction starts.

**Reaction:** The period during which the mix viscosity increases and foam expansion takes place.

#### **IMPREGNATION METHOD:-**

RANSINJECT-1K is generally pumped as a single component through low pressure hand operated pumps or special high pressure pumps as required. Hoses are fitted with packers/injection nipples with valve which is sealed against back-pressure with quick-setting cement. The surface is sealed/patched properly to prevent from coming out.

RANSINJECT-1K reacts with water and expands to form a 'fluid wedge' & blocks the leakage. Even gushing leakages can be sealed without it being necessary to block the hydraulic pressure. Due to the

low viscosity and expansion during reaction even the smallest cracks, fissures and pores can be impregnated. Since the chemical reaction is very quick the results are immediately visible. When water is not naturally present in sufficient quantity to assure the desired reaction, a sufficient quantity of water is also required to be injected.

#### **CIVIL ENGINEERING WORK APPLICATION:-**

- Solidifying and strengthening of ground and rock and stopping water from oozing out.
- Preventing leakage in tunnels and tunnel segment, deep underground structures and water retaining structures.
- Stabilization of abutment and bridge piers.
- Preventing leakage through dams.
- Preventing of landslides.
- Solidifying and creating a water barrier in rock and earth fill dams.
- Back filling by impregnation for tunnel shield construction.
- Preventing air from leaking during compressed air shield construction or caisson construction.
- Facilitates supportability of pile and pier.
- Increases bearing capacity of underpinning
- Prevention of crown collapse in tunnels.

#### **BUILDING CONSTRUCTION USAGE:-**

- Prevention of water from leaking into underground (basements, tanks, sumps, pits etc.);
- Soil stabilization for foundations.
- Securing tie – back anchors for retaining walls or guys.
- Serving as sealer or liner in concrete structures.
- Preventing water from oozing from ground.
- Serving as water barrier in basement gravel bedding waterproofing system.

#### **ENVIRONMENTAL ENGINEERING AND OTHER APPLICATION:-**

- Solidifying agent to atomic, industrial and chemical waste solutions or wastewater.
- Solidifying agent for sewage and sludge removed from organic and inorganic waste dumps.
- Preservation of historical relics, harbour engineering, mining reclamation engineering etc.

#### **PRECAUTION:**

Mix/Open/Use only the required quantity of material, which can be utilized within stipulated pot life to avoid solidification.

Wash all the tools and tackles with industrial solvent immediately after the application is completed.

#### **HEALTH & SAFETY**

Avoid prolonged contact with eyes and skin. For detailed information refer to relevant material safety data sheet.

### PACKGING & STORAGE

RANSINJECT-1K is packaged in 20 Kg Pack.

Store containers in a clean dry area protected from direct sunlight and extreme heat and cold. Unopened containers can be stored for 12 months.

### TECHNICAL DATA

|   |  |
|---|--|
| <b>Product</b>  | Single Component Polyurethane Grouting   |
| <b>Form/Appearance</b>                                      | Very Low Viscous Liquid  |
| <b>Color</b>  | Pale Yellow /Light-yellowish transparent liquid  |
| <b>Density</b>  | 1.06-1.1   |
| <b>Specific Gravity(at 20°C)</b>                            | 1.06 ± 0.02  |
| <b>Viscosity(cps at 25°C)</b>                               | 200  |
| <b>Volume solids</b>  | 100% (solvent free)  |
| <b>Toxicity, Flammability, Corrosiveness &amp; Gelation</b> | Non-toxic, Non-inflammable, Non-corrosive & Highly strong elastic gel.   |
| <b>Application temperature range</b>                        | +5°C to 35°C.  |
| <b>Shelf-life</b>   | Maximum shelf life is approximately 9-12 months. Stored in cool and dry place in Sealed Containers.  |
| <b>Packaging</b>  | Its pre-packaged system available in 20kgs.  |
| <b>Storage</b>  | Material should be stored in an enclosed area and away from direct sunlight and heat. Store under controlled conditions in original containers (minimum 5°C, maximum 35°C Temperature range) |

## PICTURES/IMAGES AT GLANCE



## RANS ENGINEERING & CHEMICALS PVT. LTD

[An ISO 9001: 2015 Company]

205, GALI NO-7, A BLOCK, BRIJPURI

YAMUNA VIHAR, NEW DELHI-110094

CONTACT AT: +91-11-22170895, +91-9871393743

Website: [www.ransengineering.com](http://www.ransengineering.com)

Email: [ransengineering@gmail.com](mailto:ransengineering@gmail.com)