



# MAXURETHANE<sup>®</sup>

## INJECTION-LV

### **FLEXIBLE POLYURETHANE-BASED INJECTION RESIN WITH LOW VISCOSITY FOR SEALING OF COLD JOINTS AND FISSURES**

#### **DESCRIPTION**

**MAXURETHANE<sup>®</sup> INJECTION-LV (MI-LV)** is a two-component, 100% solids and solvent-free, polyurethane-based injection resin of high quality and very low viscosity which upon contact with water (5% by weight) leads an homogeneous closed cell porous structure. Thus, the resulting material has excellent waterproofing properties and high elasticity.

#### **APPLICATION FIELDS**

- Sealing of concrete structures and masonry in general using the pre-installed **MAXURETHANE<sup>®</sup> INJECTION TUBE** system composed of PVC tubes (Technical Bulletin N° 217) or using standard injection packers .
- Water cut-off, sealing and elastic filling of cracks and fissures into both dry and wet substrates for:
  - Damaged, cracked or honeycombed concrete.
  - Stone or brick masonry.
  - Below grade structures: tunnels, galleries, basements, retaining walls, foundations, etc.
  - Pipe network of drinking water: dams, water tanks, channels, swimming pools, reservoirs, etc.
  - Sewer system: sewers, manholes, utility boxes, waste water tanks, etc.
- Sealing of cold or construction joints in concrete structures.
- Plugging of small and low pressure running water leaks.

- Control of raising dampness by capillarity in masonry.

#### **ADVANTAGES**

- Very low viscosity, even during injection process which ensures a good and deep penetration into the substrate. Suitable system for sealing of shrinkage fissures.
- Easy to use. Just requires one component injection equipments.
- Approved for direct contact with drinking water.
- Does not need water for reaction, so water injection no required.
- Very good adhesion on wet or dry concrete and flexibility.
- High dimensional stability once cured. Does not shrink or swelling by dryness or wet conditions.
- High performance: No soluble in water.
- High chemical stability with long lasting and high mechanical strengths. Withstands high hydrostatic pressure.
- Solvent-free. Environmentally friendly.
- Compatible with concrete, stainless steel, plates, cable coatings and other polyurethane-based injection resins.

#### **APPLICATION INSTRUCTIONS**

For additional information, consult the Technical Dossier for injection procedure detailed in the "Introduction to **MAXURETHANE<sup>®</sup> INJECTION System**".

## Mixing

Both components of **MI-LV** are supplied in 5 kg or 25 kg drums. Thus, pour components A and B in a clean and dry container with a mixing ratio of 1:1 in volume basis and then, mix mechanically using a slow speed drill (300–600 rpm) until achieving a homogeneous product in colour and appearance. Do not mix for prolonged period nor use high-speed mixer, which may heat the mixture. Inject the mixture as soon as possible.

When the area to be injected is subjected to a high hydrostatic pressure in order to stop or reduce the running water, which could wash out the **MI-LV** before it gels, it may be possible to install a drainage system or to carry out a previous injection with a fast-reaction polyurethane resin such as **MAXURETHANE® INJECTION -/ MONO / FLEX** (Technical Bulletins N° 59, 105 and 144, respectively).

Pot Life for 1 litter of resin at 23 °C is about 1,5 hours. A low hydrostatic pressure allow a better penetration of product into both the fissures and the concrete capillarity network.

Since **MI-LV** can react with the humidity of the air, it is advisable to prepare the mixture only immediately before the injection is about to start. Mix just the quantity that the equipment is capable to inject in a reasonable time, (about 90 minutes).

## Resin injection

Since **MI-LV** does not required water or reacts mainly with the moisture existing in the substrate to be injected, so the system is suitable for one component injection equipment. It is essential to keep the equipment absolutely dry. Prevent any moisture comes into contact with the mixture in order to avoid a premature reaction of the product. If the reaction of the batch occurs while pumping, the injection machine must be immediately shut down and flushed with **MAXURETHANE® INJECTION CLEANER A** in order to avoid built-up and clogging of the equipment.

Before injecting, study the initial conditions for the substrate, the type and numbers of cracks, the hydrodynamic and hydrostatic conditions and the quality of water. So, basic

steps for the injection procedure are the followings:

1. Clean the substrate or concrete surface along the joint, crack or fissure.
2. Plan a pattern of the injection points and then, drill holes.
3. Clear the injection holes and place the injection packers.
4. Clear and seal the joints or cracks with a **MAXPLUG®/MAXREST®** fast-set repair mortar (Technical Bulletins 4 and 2, respectively).
5. Inject the polyurethane-based resin.
6. Clean the surface, tools, mixing equipment and injection equipment of resin.
7. Once resins cures, clear and fill the holes with **MAXPLUG®/MAXREST®** structural repair mortar.

Injection should be carried out with a injection pressure according with both the initial condition of the substrate and the hydrostatic pressure. Start the injection with a pressure of about 20 bars at the point of highest resistance to ensure good penetration and minimal loss of material. This usually is the lowest point in a vertical crack and the narrowest on a horizontal surface. First, fill the drill hole and then start injecting the crack, fissure o joint slowly. Due to friction, pump temperature rises and pot life for injection resins reduce, so remove it from the pump.

The most suitable procedure according with application is as follows:

- a) *Sealing of cold joint, fissures and cracks.* Resin should be injected until it leaks out from the surrounded injection packers.
- b) *Sealing of raising dampness by capillarity.* Once unsound material from surface has been removed and any damage, honeycombs or cracks have been repair with **MAXREST®**, resin will be injected up to see the filling of porous and leaking out from the surrounded injection packers.
- c) *Sealing of construction joint with the pre-installed **MAXURETHANE® INJECTION TUBE** system as*

described in the Technical Bulletin N° 217).

### **Application conditions**

Both temperature and humidity of the environment must be observed because they will determine the pot life of the already mixed batch. The higher temperature and relative humidity, the shorter is the pot life.

### **Curing**

Total reaction time at 23 °C is about 24 hours. Applications carried out at lower temperatures and humidity will require longer total reaction times.

### **Clearing and maintenance of equipment**

All tools, mixing equipment and injection pump are cleaned with **MAXURETHANE® INJECTION-LV CLEANER** immediately after use or if works are interrupted for a long period. Circulate the cleaner through pump for several minutes.

Do not use any solvent at all for personal cleaning. Instead use soap, detergents or special products.

During cleaning process, provide a good ventilation in the working area site.

### **CONSUMPTION**

Consumption varies according with two factors: filling of the tube and sealing of the construction joint. Also, both wall thickness and joint width determines the consumption in sealing of cold joints.

So, for injecting and sealing of construction joints using the **MAXURETHANE® INJECTION TUBE** system, the estimated consumption for **MI-LV** is about 1,0-3,2 kg per 10 linear meters of tube. This figure may vary depending on the roughness and surface conditions. A preliminary test on-site will determine the coverage exactly.

### **IMPORTANT INDICATIONS**

- Inject the resin when cracks and fissures are in the maximum width of their movement cycle.

- Observe the safety precautions during both the handling and the resin injection process.
- Before injecting, reduce any high hydrostatic pressure conditions to minimise a possible washout of the resin.
- Avoid premature contact of resin with water in order to avoid any reaction for product.
- For further information and other uses not specified in this Technical Bulletin consult our Technical Department.

### **PACKAGING**

Components A and B of **MAXURETHANE® INJECTION-LV** are supplied in 5 and 25 kg metallic drums.

**MAXURETHANE® INJECTION-LV CLEANER** is supplied in 11 kg metallic drums.

### **Accessories**

**DRIZORO®** supplies injection equipment consisting of manual or electric-drill powered pumps, injection packers and pressure hoses, etc. Also, other accessories, elements and PVC tube for **MAXURETHANE® INJECTION TUBE** system can be supplied.

### **STORAGE**

Twelve months in its original unopened containers in a dry and covered place, with temperatures between 5 °C and 30 °C. Protect against humidity, direct sunlight and frost.

### **SAFETY AND HEALTH**

When mixing, working and injecting with **MI-LV**, do not work without the protection of safety rubber gloves, safety clothing and goggles. While injecting, use a full face shield. Spills and blow outs could happen the same as in any other pressure injection job. If one of the components or mixture comes in contact with the eyes, rinse immediately with clean water but do not rub. In case of skin

contact, wash with abundant water and soap. If irritation persists, seek medical assistance. If ingested, seek immediate medical assistance. Do not induce vomiting. Provide a suitable ventilation in the working area. Observe the usual precautions necessary for the use and applications of this type of products.

For further information, Safety Data Sheet of **MI-LV** is available by request.

Disposal of the product and its empty packaging must be made by the final user and according to official regulations.

## TECHNICAL DATA

Characteristics of components		
Appearance	<u>Component A</u>	<u>Component B</u>
	Liquid	Liquid
Colour	Clear	Dark Brown
Density at 20 °C (g/cm <sup>3</sup> )	1,01	1,15
Flash point (°C)	> 160	> 160
Storage temperature (°C)	5/30	
Mixing ratio, A:B (by volume)	1:1	
Solid content for mixture A+B (% , by weight)	100	
Application and curing conditions		
Minimum temperature for substrate (°C)	>5	
Viscosity for mixture at 23 °C (mPa·s)	80	
Pot life at 8 °C and 23 °C (h)	6 and 1,5	
Time for total reaction at 23°C (h)	24	
Cured product characteristics*		
Expansion ratio: (Initial volume:Final volume)	Expansion without water (5 % water) 1:1-2	
Density (g/cm <sup>3</sup> )	1,08	
Shore A hardness	40	
Toxicity	No-toxic for cured form: solvent-free product	
Suitability for direct contact with drinking water	According with KTW standard	
Solubility in water	None	
Chemical resistance	Resistant to most organic solvents, diluted acids and alkalis and micro organisms	

\* Without water

## GUARANTEE

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n° 6003176 / 6003176-MA

