DRIZORO® Construction Products

MAXURETHANE® INJECTION MONO

ONE-COMPONENT POLYURETHANE INJECTION RESIN FOR STOPPING OF LEAKS AND CONSOLIDATION OF SOILS

DESCRIPTION

MAXURETHANE® INJECTION MONO is one-component, 100% solids, and solvent-free polyurethane-based injection resin which reacts quickly with water to produce an expanding foam with a semi rigid and homogeneous closed cell porous structure which has excellent waterproofing properties and strong bonding seal.
MAXURETHANE® INJECTION MONO is a water reactive, non hydrophilic but hydrophobic resin type, thus the resulting foam does not absorb water and will not be affected by water dryness: it will not shrink or swell.
The gel time of the product is adjustable by adding a certain percentage of ***MAXURETHANE® INJECTION MONOCAT*** accelerator.

APPLICATION FIELDS

- Water cut-off, sealing and filling of cracks and fissures into wet substrates or subjected to high hydrostatic pressure conditions with running water leaks for:
  - Damaged, cracked or honeycombed concrete.
  - Stone or brick masonry.
  - Below grade structures: tunnels, galleries, basements, retaining walls, foundations, etc.
  - Pipe network and retaining structures of drinking water: dams, water tanks, channels, swimming pools, reservoirs, etc.
  - Sewer system: sewers, manholes, utility boxes, waste water tanks, etc.
- Sealing and filling of cold, construction or expansion joints in concrete structures.
- Plugging of running water leaks.
- Filling of large cavernous spaces, voids and cracks in stone substrates or concrete structures.
- Stabilization of soils.

ADVANTAGES

- Easy to use. Just requires one-component injection equipments.
- Hydrophobic system: reacts with the flowing water or humidity present in the substrate. No water injection is required.
- Low viscosity, even during injection process which ensures a good and deep penetration into the substrate.
- Very good adhesion on wet or dry concrete.
- High dimensional stability once cured. Does not shrink or swelling by dryness or wet conditions.
- High expanding ratio, up to 15 times its original volume when exposed to moisture.
- High performance: Not soluble in water.
- High chemical stability with long lasting and high mechanical strengths. Withstands high hydrostatic pressure.
- Solvent-free. Environmentally friendly.
- Gel time adjustable depending on the amount of ***MAXURETHANE® INJECTION MONOCAT*** added to resin.

APPLICATION INSTRUCTIONS

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

Mixing

MAXURETHANE® INJECTION MONO is supplied in 5 kg or 25 kg drums and it should mixed with a suitable amount of catalyst.

The catalyst ***MAXURETHANE® INJECTION CAT*** is supplied separately to allow adjustment of the gel time and to provide a longer shelf life. From 2% to 10% by weight of catalyst is recommended, being the optimum percentage that one has been checked on site. If critical high pressure water intrusions are present, ***MAXURETHANE® INJECTION MONO*** must react immediately as it comes into contact with water. In order to accelerate the reaction rate, a 10% of catalyst must be used. On the opposite, a slightly catalysed product, i.e. 2%, will assure a good penetration when very fine capillary cracks are injected.

Induction time for 1 litter of resin mixed with a 5% of catalyst at 20 °C is about 20 seconds . A low hydrostatic pressure allows a better penetration of product into both the fissures and the concrete capillarity network.

Since ***MAXURETHANE® INJECTION MONO*** 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. Nevertheless, already mixed and catalysed resin could be stored for 3-4 days in bottles or pails if perfectly closed.

Resin injection

Since ***MAXURETHANE® INJECTION MONO*** does not required water or it reacts mainly with the moisture existing in the substrate to be injected, so the system is suitable for one component injection equipment.

Hydrophobic resins, such as ***MAXURETHANE® INJECTION MONO*** do not need large amounts of water for the reaction unlike hydrophilic materials that is a simultaneous injection of water is not necessary. Only if the area of application seems to be dry, pre-injection of water is recommended.

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*** 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 an 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 or joint slowly. Due to friction, pump temperature rises and the induction for injection resins reduce, so remove the resin from the pump.

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 induction time.

Curing
Total reaction time for resin mixed with a 5% of catalyst at 20 °C is about 2 minutes. 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 CLEANER*** immediately after use or if works are interrupted for a long period. Circulate the cleaner through pump for several minutes. Once the product cures, only it can be removed with mechanical means.
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 the use. 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.
- Avoid premature contact of resin with water in order to avoid any reaction before injection.
- For further information and other uses not specified in this Technical Bulletin consult our Technical Department.

PACKAGING

MAXURETHANE® INJECTION MONO is supplied in 5 kg and 25 kg metallic drums.
MAXURETHANE® INJECTION MONOCAT is supplied in 5 kg and 25 kg metallic drums.
MAXURETHANE® INJECTION CLEANER is supplied in 5 l and 25 l metallic drums.

Accessories
DRIZORO® can supply the injection equipment consisting of manual or electric-drill powered pumps, injection packers and pressure hoses, etc.

STORAGE

Six months in its original unopened containers in a dry and covered place, protected from humidity, direct sunlight and frost, at temperatures above 5 ºC.

SAFETY AND HEALTH

When mixing, working and injecting with ***MAXURETHANE® INJECTION MONO***, 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 for ***MAXURETHANE® INJECTION MONO*** 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	Resin	Catalyst
Appearance	Viscous liquid	Liquid
Colour	Dark brown	Clear/ yellowish
Density at 20 °C, DIN 53 217/1-2 (g/cm^3)	1,11 ± 0,05	0,95 ± 0,05
Solids content, DIN 53189 (%, by weight)	99,2 ±0,5	> 99
Viscosity at 20 °C, DIN 53 019/1 (mPa·s)	400 ±80	< 500
Flash point (°C)	> 200	> 100
Catalyst percentage (%, by weight of A+B mixture)	2 – 10	
Application and curing conditions		
Induction time with 2% / 5% / 10% of catalyst (s)	40 / 19 / 10	
Time for total reaction with 2% / 5% / 10% of catalyst (s)	5-9 min / 120 / 55	
Cured product characteristics*		
Expansion ratio: (Final volume:Initial volume)	10-20:1	
Density in free foaming (kg/m^3)	30	
Compressive strength (kg/cm^2)	30-150	
Shrinkage	None	
Toxicity	No-toxic for cured form: solvent-free product	
Solubility in water	None	
Chemical resistance	Resistant to most organic solvents, diluted acids and alkalis and micro organisms	

* Data at 20 °C and 50% R.H.

GUARANTEE

The information contained in this leaflet is based on our experience and technical knowledge, obtained through laboratory testing and from bibliographic material. ***DRIZORO®, S.A***. reserves the right to introduce changes without prior notice. Any use of this data beyond the purposes expressly specified in the leaflet will not be the Company's responsibility unless authorised by us. We shall not accept responsibility exceeding the value of the purchased product. The data shown on consumptions, measurement and yields are for guidance only and based on our experience. These data are subject to variation due to the specific atmospheric and jobsite conditions so reasonable variations from the data may be experienced. In order to know the real data, a test on the jobsite must be done, and it will be carried out under the client responsibility. We shall not accept responsibility exceeding the value of the purchased product. For any other doubt, consult our Technical Department. This version of bulletin replaces the previous one

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DRIZORO, S.A.
C/ Primavera 50-52 Parque Industrial Las Monjas
28850 TORREJON DE ARDOZ – MADRID (SPAIN)
Tel. 91 676 66 76 - 91 677 61 75 Fax. 91 675 78 13
e-mail: info@drizoro.com Web site: drizoro.com