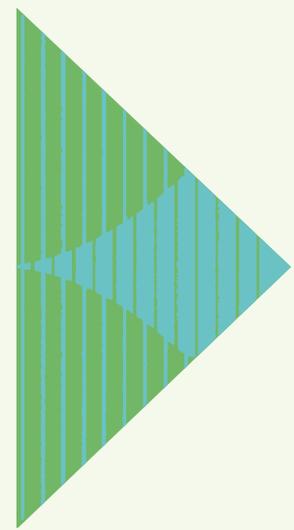


IMPERGEN R-FLEX

Tech. Sh. IMP17

Hydroswelling LINE



Technology for the permanent sealing of joints and cracks, also in structures subject to movement and with the presence of water.

Description

Highly-reliable technology for the permanent sealing of cold joints, joints subject to movement and the filling of cavities and fissures in concrete and masonry structures subject to water permeation. The technology provides for the injection inside a structure of special, hydro-expandable, synthetic prepolymers with a medium-low level of viscosity capable of expanding (>2000%) and permanently sealing the area involved. IMPERGEN prepolymers are resistant to aggressive environmental action and can produce permanent, semi-flexible (R) or flexible (FLEX) sealing.

Fields of application

Sealing of cavities and also very fine cracks and fissures in concrete and masonry.

Treatment of cracks and joints subject to movement in reinforced concrete in underground car parks, tunnels, underground railway constructions, foundations, tunnels and structures below grade.

Sealing of joints with water leakage.

Waterproofing and the consolidation of tunnel vaulting, wells, pipelines and tanks. Waterproofing and consolidation of damaged concrete.

Technology suitable for use with drinking water.

Creation of technical joints in cold joints by means of injection with the Impergen FLEX TUBE IFT 'tuboline'.

Technical data

TYPE	R	FLEX
Spec. weight	1,13 g/cm ³	1,10 g/cm ³
Dry residue	100%	100%
Resin viscosity a 20°C	260 mPas	500 mPas
Accelerator viscosity 25°C	11 mPas	10 mPas
Free expansion	> 2000%	> 800%
Chemical resistance (water, acids and weak bases, min. oils, fungus and bacteria, petroleum derivatives, wastewater)	resistant	resistant
Adhesion to concrete, brickwork, mortar, metal, plastic	good	good
Toxicity	none	none

Instructions for use

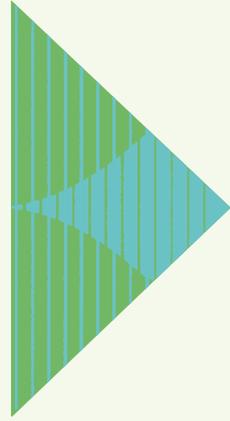
IMPERGEN technology requires specific training on the part of the operator who applies these materials. After a careful analysis of the operation to be carried out, a work plan and schedule is prepared; this may differ depending on the type of process. In general, holes are drilled in the concrete near the damaged part or cold joint, where Jet-type injectors connected to an injection pump are positioned. Water is then injected with a separate pump for prior saturation of the joint or fissures/cracks and to clean the same. A variable-weight percentage of accelerator (see table) is then added to the resin, which is thoroughly mixed (the general recommendation is to perform an on-site test to verify the material reaction time). Then inject the product, using a single-component, manual or electric pump until the joint or crack is completely filled, repeating the operation if necessary at higher pressures. Any spilled material is removed together with the injectors. Close off the holes. Wash the pumps with the IMPERGEN CLEAN thinner. For very fine cracks very low viscosity formulations are available. In the presence of heavy water seepage formulations of the hydrophilic type are available with a high water-molecule complexing capacity. Contact our technical office for specific project or intervention requirements.

Average reaction time of the Impergen R resin with variable percentages of accelerator depending on temperature

(typical resin package. Weight ratios). (I)

Accelerator %	6%	8%	10%
Temperature			
10°C	1' 40"	1' 30"	1' 20"
15°C	1' 25"	1' 15"	1' 10"
20°C	1' 20"	1' 10"	1' 05"

(I) An on-site resin reaction-time test is generally recommended.



Consumption

Depending on the type of operation to be carried out, also with on-site tests.

Packaging

IMPERGEN R-FLEX resin: drum.

IMPERGEN ACC R-FLEX accelerator: pail

For required quantities refer to the instructions on the packaging.

Precaution

The product reacts with water with the formation of CO₂.

Operators should wear gloves and use safety glasses as a protection against splashing, which may irritate the eyes.

Any parts of the body that accidentally come into contact with the resin must be carefully washed with water.

The product safety sheet contains further information.

Storage

IMPERGEN can be preserved in the sealed original packaging for at least 8 months. Open packs can be used for only a limited period of time and can not be reused. Protect against very low/freezing temperatures, sources of heat and the presence of water or high humidity.

Specifications

Type of intervention

Permanent sealing of fissures/cracks, casting layers and construction joints (also subject to movement) and in the presence of water leakage.

Technical specifications

The supply and application of a hydro-expandable sealant of the IMPERGEN type, providing for permanent waterproofing by means of injection with suitable airless pumps inside cracks and joints (also in dynamic systems) subject to water infiltration.

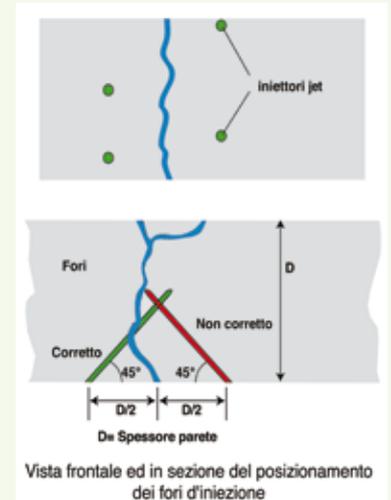
Drill holes with a diameter of approximately 15-20 mm in the concrete. These should be inclined at an angle of 45° in relation to the plane orthogonal with respect to the wall, and at a distance from the fissure and/or cold joint equal to half the wall thickness and with a depth that will vary but in any case will be sufficient to ensure interception of the fissure. The holes will be bored with a variable sequence in accordance with the existing situation and in any case with a pitch not exceeding 90 cm. (on average, 50 cm). The Jet-type injectors are then installed.

Water under pressure is then introduced into the cracks in order to remove all types of loose material and saturate internal surfaces. If necessary, seal the fissures/cracks with a rapid cement formulation of the RAPID PLUG type. Subsequently, following catalysis with a suitable accelerator, inject the hydro-expandable resin of the IMPERGEN R-FLEX type with a bottom-up application or in sequence on the horizontal plane.

The injection pressure will also depend on the conditions of the structure and may vary from 15 to 180 bar. Product consumption will be approx. 1 litre per ml of facing for a 1-mm fissure thickness. At the end of the injection process remove excess material and the injectors.

Close the holes. The supply and application of sealant by means of injection per linear metre of fissure and/or cold joint

€ / m



Head Office

Via Retrone,39 - 36067 Altavilla Vicentina - VI - Italy

tel. +39 0444.522797- fax +39 0444.348692

info@gpintech.com

www.english.gpintech.com

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Rev. Tech. Sh. IMP17/01/14.