



Structural Injection

Otherwise known as permeation grouting or vertical barrier injection

Structural Injection involves saturating the structure of a wall (joints and porous materials) with a moisture and water-resistant resin. A carefully executed injection ensures the waterproofing and strengthening of the wall.

Required products:

- ❖ Resin: ResinBau CrackFlex / EasyInject
- ❖ ResinBau CrackOn.5 / optional InjectGrout 4035
- ❖ Injection packers
- ❖ Drills
- ❖ Injection pump
- ❖ Hamm-pack® PI-Cleaner pump cleaner

Drilling a grid of holes:

- ❖ Injection hole diameter: $\varnothing 12 - \varnothing 14\text{mm}$
 - ❖ Hole spacing: 15 x 15cm to 25 x 25cm, with each horizontal row shifted halfway (alternating), try to avoid joints.
 - ❖ Drilling angle: 0° to 45°
 - ❖ First two rows in the direction of the foundation at 45° angle
 - ❖ Subsequent rows at 0° to 30° angle, depending on the quality and thickness of the wall, and joints.
 - ❖ Drill depth: wall thickness minus 5 - 10cm
- ❖ If you come across cavities in the wall: Mark the cavity with chalk where it is noticeable while drilling. Use ResinBau InjectGrout 4035 to fill those gaps (gravitationally or under pressure) and remember to dampen the drilled hole. After 48 hours, drill through them again.
- ❖ For large empty spaces in the wall structure, defects, cracks, and incomplete joints, fill them with ResinBau CrackOn.5 non-shrink grout before conducting injection. Clean the holes before mounting the injection packers. Use water to remove the moist debris.

Drilling technique:

Since walls of thickness 50cm or more are common, the principle of 20cm working drilling should be applied to extend the life of the drill bit. For example, a 60cm drilled hole would use a 12/250/310 drill bit, the subsequent drill would use a 12/400/450 bit, and the final drill would use a 12/550/600 bit.



❖ Install injection packers:

- If you are using steel packers*:

embed the injection packers in the injection holes (for example, the Hamm-pack® PI-SPH 12/110 injection packer is placed under the injection hole with a diameter of 12mm), the length of the packer does not matter for standard injection*. We suggest installing packers with a pre-applied magnetic strip coating (PRE/FPRE) for easier observation of the injection process. The magnetic strip is provided separately.

-If you are using plastic packers**:

we suggest installing the injection packer in only one hole, which allows for observation of the injection process.

*For more information on injection packers, please refer to our "**ResinBau Steel Injection Packers**" instruction.

For more information on injection packers, please refer to our "ResinBau Plastic Injection Packers**" instruction.

Injection:

❖ Check if the pump is working correctly and "prime" the pressure gauge to protect it from being clogged with resin*** (Hamm-pack® Pi-Saver).

❖ Fresh resin principle:

a) if you are using ResinBau EasyInject resin - remember that the catalyst is water, but also moisture from the air, monitor the working time, pour a small amount of resin into the pump and immediately close the container and the resin. If you store an opened 1K resin, keep it in an inverted container and use it as soon as possible.

b) if you are using ResinBau CrackFlex resin - water and moisture also significantly accelerate the reaction time, but the mixing triggers the start of the process. Thoroughly mix the two components of the resin and immediately close the container and the resin. You can find the mixing calculator on the website: www.resinbau.com

Fresh resin provides the best properties, which results in better distribution in the structure (the resin is easier to "push" and fill in the spaces). Take advantage of this.

❖ **Perform the injection in rows** (starting from the bottom row and moving up). Install the pre-applied coating magnet on the injection packer. Start injecting. The best results are achieved by starting with low pressure and gradually increasing it if necessary. Watch for any water or resin appearing in the neighboring packer. If it appears, stop the injection and install the magnet on the "vented packer."

❖ The working pressure should be appropriate for the task at hand. You can find more information on this topic in our instruction manual "**ResinBau - Pressure and Flow.**"

❖ After injecting 5-8 packers, we recommend repeating the saturation with resin for those packers.

❖ After 24 hours from the injection, remove the packers and close the holes with ResinBau CrackOn.5 mortar.

*** You can find more information on pump maintenance in our instruction manual "**ResinBau Maintenance and Cleaning.**"

Additional Information:

- ❖ !! Before starting the injection, familiarize yourself with the technical data sheets of the materials used !!
- ❖ !! Wear protective glasses, gloves, and clothing. Avoid contact with the skin and eyes !!
- ❖ We encourage you to familiarize yourself with our other manuals.

If there were any plaster coatings on the wall, they should be removed up to the height of moisture plus 80cm. Use a renovation plaster and vapor-permeable paints! Ensure adequate ventilation of the rooms



