

## Injection Systems - Step One : The Right Product

The choice of the right material can make all the difference in injection applications. There are many different product groups available and within those groups again there are quality grades you should be aware of. The major groups in chemical injection are polyurethanes, epoxies and acrylate gels.

In order to make the right material choice, you need to gather important data about the application and conditions. (Dry/wet, seepage/leakage/gushing, structural, non-structural, crack size, voids, joints, damp surfaces, below grade above grade, drinking water certification, and so on ... you get the picture.)

Polyurethane Grouts are the primary group of products used for waterproofing injection. They are divided into two major categories consisting of hydrophobic and hydrophilic grouts. The main difference is characterized by the reaction with water. Hydrophobic materials only use small amounts of water as a reactive component. The cured material is essentially free of water making it very resistant to post-cure shrinkage.

Hydrophilic grouts can incorporate large amounts of water into their structure, thereby creating a gel with a variable water content. The incorporated water can evaporate in a dry environment causing the cured hydrophilic material to shrink. The capacity of the material for shrinking and swelling due to absorption and evaporation may decrease in time and leave the hydrophilic grouts more vulnerable to physical and chemical breakdown. Based on our extensive lab and field testing along with our many years of experience, we recommend hydrophobic resins for concrete crack injection and hydrophilic grouts only where moisture content of the environment is guaranteed, such as in soil injection and curtain injection.

Hydrophobic grouts such as WEBAC Corp. 151, 157, 1572, 1403, 1405 are the most versatile and can be applied with single component equipment.

WEBAC 151 and 157 are polyurethane water-activated foams. The spectrum of application is extremely wide for these products. Both materials can be adjusted to stop water almost instantly, as well as reacting very slowly allowing for superior penetrations into fine cracks. These foams work well in concrete cracks and in injections behind structures where they stabilize the soil and create a waterproof membrane to protect the structure.

Not all polyurethane resins are designed to foam. WEBAC 1403 PU resin is a two-component product that does not need water to react. The product cures to a very flexible solid sealant in dry areas. Water is not necessary, but does not inhibit the reaction if it is present. WEBAC 1403 and other products of the 1400 line are primarily used for hairline crack injection, and for areas that are partially wet or even completely dry at the time of application. WEBAC 1403 is fully compatible with the foaming polyurethanes and is often used in combination to make a custom material for your application.



**WEBAC Corp.**  
**Concrete Solutions Products**  
**are used in over 40 countries**

WEBAC *FLEXGEL*, a hydrophilic grout, can be mixed with large quantities of water, up to 15 times by volume. It is an extremely economic material for curtain/bladder injections behind walls and for manhole and sewer/drain pipe injections. WEBAC *FLEXGEL* is a foam and gel, all in one product. Small amounts of water (up to three times by volume) cause the material to react into a foam. Higher water content results in a solid, extremely flexible gel.

Polyurethane grouts are becoming more popular and used in areas where epoxy injection had been dominant. The reasons are obvious. PU grouts work very well in wet areas where they offer superior bond strength and sealing capabilities. They typically require only single component equipment and are flexible allowing expansion and contraction. The degree of durability and the ability to withstand chemicals and bacteria is comparable to that of epoxy resins.

Wherever concrete has to be sealed, polyurethanes are the first choice. The spectrum for PU-grout applications is extremely wide. It includes residential work such as leaky basement repair, sealing of pools and concrete balconies and countless applications in commercial areas such as tunnels, bridges and parking garages. Cracks in below grade walls are injected, and liquid membranes behind walls are created with polyurethanes by curtain injection. Drinking and wastewater tanks are being sealed as well as leaky manholes and pipes.

The injection can be done from the negative-side without digging and without access to the waterside. Polyurethanes work in the crack and behind the structure where they create a reliable barrier to prevent further water intrusion. In combination with packers, inject pipes and inject-tubes, grouts offer a dimension of applications unmatched by any other injection material.

Environmental issues are important to us as well. WEBAC Corp. supplies you with NSF products certified for potable water contact that carry the label of the Underwriters Lab.

