

DHP-2000 **Rigid Polyurethane Foam**

*High pressure water Waterstops · Leakage Crack Waterstops
1 Component Type Polyurethane Waterstops for Filling*

Product Information

DHP-2000 is a single component hydrophobic water cut-off grout and soil stabilization grout based on a MDI (methylene-dephenylisocyanate) polyurethane.

Upon contact with water DHP-2000 reacts to a foam while expanding its volume up to 30 times.

The cured material is semi flexible and of a constant volume. Since water is not a component of the foam structure, the cured material is essentially not effected by water or dryness. The reacted material does not shrink or swell.



Characteristics

- Contraction rate after hardening is the lowest in this industry.
- By using small amount of distinctive additive that is invented by our research team, hardened foam won't get decomposed in water.
- Since it forms high density Closed Cell Foam, nor water and moisture can penetrate into it.
- It is very easy to remove hardened substances of flowed Foam Waterstop out of crack spot.
- Since it has low viscosity, it is easy to inject

Usage

- All concrete structure's cracked leakage spot with no vibration for waterstop repair.

Application Area

Use for the cracks water stop of concrete structures and water stop treatment for joint areas, wet areas and areas of considerable leaks, and can be used in the following areas.

- Waterstops for leaking section of basement parking lot and underground concrete structure.
- Waterstops for crack leakage section of structure caused by vibration.
- Waterstops for leakage of concrete joint section.
- Waterstops for leakage section where humidity and dryness is mixed up together.

DHP-2000 Property Data

Classification	Base Value	Test Method
Exterior Appearance	Brown Transparent Liquid	
Mixing Rate	1 Component Type	
Viscosity(mPa,s)	260 ± 50	KS M 2555
Specific Gravity	1.14 ± 0.05	KS M 0004
Tensile Strength(N/mm ²)	1.4 or more	KS M 3734
Elongation Percentage	30% or Under	KS M 6518
Packing Unit	20KG / 10KG	
Foaming Percentage	3300%	

Reaction Data on a Different Temperature Conditions

Temperature Conditions	5℃	15℃	25℃	30℃
Foaming Starts(sec)	50	27	19	15
Foaming Ends(sec)	320	245	208	67
Foaming Percentage	2800	3300	3500	3800
Viscosity	900	450	255	195

Using Materials



1)High Pressure Injection Packer



2)Injecting Equipment for polyurethane resin injection

Daehwa Precision Co.,Ltd.

Suntechcity Bldg. #110~#114, Sangdaewon, Jungwon-gu, Seongnam-si, Gyeonggi-do, Korea
tel : 82 31 777 1155 / fax : 82 31 777 1150 www.daehwa.info e-mail : daehwa89@yahoo.co.kr

- 1) It is specially designed to endure high pressure that is applied. Injected resin won't flow backward and this packer is also specially designed not to leak resin around stabilized and fixed packer.
- 2) This is 1 component type high-pressure injection equipment that is specially manufactured to fill on a leakage and fracture spot by using polyurethane foam and epoxy injection material.

Construction Guideline

• Preforation

Perforate around leaking and fracturing spot and fixate packer. Normally when injecting polyurethane foam, it is injected through packer generally. During the perforation use hammer drill and make holes with same diameter. External diameter of Drill Bit should be 10mm. Perforation angle between concrete surface and crack should keep 45 degree angle or under. If it is possible, then make position of perforation hole that contacts crack as thick as $1/2 \sim 2/3$ of concrete thickness. If the concrete thickness is less than 10cm then directly perforate to fractured spot. If the thickness is 10cm~50cm, perforate in the distance of $1/5$ thickness of the concrete. Conduct it around fractured spot with 20cm interval and perforate in zigzag.

• Packer Installation

Select the suitable packer out of various kinds of packers that suits the most according to field circumstance. And use T-box and firmly tighten up the packer to perforated hole and make sure not to bounce off by counter pressure. (It might get damaged if it is tightened too hard.)

• Polyurethane Injection

Inject **DHP-2000 Rigid Polyurethane Foam** by using high-pressure injection equipment or grease gun. Maintain initial injection pressure about 40kg/cm^2 and keep injecting until waterstop material flows out through fractured spot. Halt injecting for a few minutes when **DHP-2000 Rigid Polyurethane Foam** flows out grossly between cracks during first PACKER injection, then injected foam will foam completely and it will become as seal material. For next injection operation, **DHP-2000 Rigid Polyurethane Foam** will fill up the cracks well enough. After 5 minutes, start to re-inject. You can ignore the chemicals that leaks out little bit, even you can check injection status. If the crack is very big then conduct sealing before injection.

If the waterstop is injected properly, make sure to check the following steps in orders.

- Does the water inside of the crack come out caused by Polyurethane Foam Waterstop injection!
- Does the injected Foam react with water and come out from the cracks after gradually foaming!
- Finally, does the undiluted liquid of Polyurethane Foam slides out between the cracks before it starts foaming!

If it is so then the injection is properly done.

- Removing Packer

Use vice pliers as a tool or bend off or use hammer to remove it.

If there is wet spot left then inject Polyurethane Foam again.

- Finishing Opreation

Remove DHP-2000 Rigid Polyurethane Foam that is smeared around cracked area. Seal with flexible sealing material (DH-CF30 Crack Cover Material)

Cleaning

All the equipments and tools that are used for this operation should be cleaned when the operation is finished. Detergent such as M.E.K, Acetone, Xylene, Toluene and urethane thinner should be used when cleaning. If the Foam is smeared on your skin during the performance, wash it immediately with flowing water. Used injection equipment should need to be stored after filling up the hose, pump and medical fluid container with Engine Oil and Oil Pressure Oil.

Cautions

When you treating medical fluid, make sure you wear protective helmet, goggle clothes and other protective devices.

If the medical fluid is smeared on your skin, wash it off immediately and clean up with soapy water.

All the hand tools and equipments that are used for this operation should be cleaned with thinner thoroughly.

If you are working in sealed room, then make sure to conduct constraint ventilation for clean air.

If the medical fluid is smeared on your skin and causes skin trouble, then you should go see specialist for prescription.

If the temperature is below 5℃, then you must artificially raise up the temperature of medical fluid. This way you can get proper Pot Life.

If the atmosphere temperature is high and the area is humid, Pot Life of medical fluid quickens. On the contrary, Pot Life will slow down in low temperature area.

Be aware of it before you conduct the operation.

Storing Method

Recommended temperature for storage is 10~25℃ with no moisture. Store it in cool area. Storing period is about 6 months in sealed condition however it can be corrupted according to storing area and conditions. Preferably use it as soon as possible.

This product is packed with nitrogen gas. Once seal is removed, then use it as soon as possible.