



CHEM-UNDERWATER INJECT

100% Solids, 45% Elongation & 25 Minutes Pot Life
Epoxy Crack Injection System for Underwater Applications

PRODUCT DESCRIPTION

CHEM-UNDERWATER INJECT is a two component, ready-to-use, clear and solvent free epoxy injection resin system with a medium viscosity. Both the resin and hardener components are formulated and ideal for sealing static and live cracks, which are exposed to stresses of impact or changing temperatures. The product meets ASTM C-881, Type II, Grade I, Class B & C.

FIELDS OF APPLICATION

CHEM-UNDERWATER INJECT is a unique epoxy injection resin system designed to repair wet structural crack above the water line or underwater. The product is also featured with an elongation of 45%, which allows the application of sealing dormant and live cracks subjected to limited movements.

The product can be extensively used in the following applications:

- Columns and beams, above/below grade.
- Bridges, decks and underpasses.
- Floors, basements and piles.
- Piers, tunnels, abutments.
- Expansion and construction joints.
- Sewage and waste water treatment plants.
- Desalination plants.
- Water reservoir, tanks, etc.
- Storm water systems.

PRODUCT FEATURES

- Waterproof.
- No shrinkage.
- High strength.
- Solvent-free.
- Excellent adhesion.

PACKAGING

Product	Packaging
CHEM-UNDERWATER INJECT	2 GAL (7.57 LITER) UNIT Part A: 1 Gal (3.785 Liters) Can Part B: 1 Gal (3.785 Liters) Can
	10 GAL (37.85 LITER) UNIT Part A: 5 Gal (19.85 Liters) Can Part B: 5 Gal (19.85 Liters) Can

TECHNICAL DATA

Properties un-mixed 77°F (25°C)

Property	Part A - Resin	Part B - Hardener
Solids	100 %	100 %
Color	Clear	Amber
Density, LB/GAL (KG/L)	8.5 (1.03)	8.0 (0.97)
Shelf life	1 year	1 year
Mix ratio; A: B	1:1 by volume	

Properties mixed at 77°F (25°C)

Property	Value	ASTM Method
Density, LB/GAL (KG/LITER)	8.7 (1.05)	D-1475
Pot Life, (3 oz)	25 minutes	N/A
Shore Hardness, D	65-D	D-2240
Tensile strength, Psi (MPa), 7 days	3080 (20)	D-638
Compressive Strength @ 7 Days, Psi (MPa)	5674 (38.6)	D-695
Flexural Strength @ 7 Days, Psi (MPa)	4560 (31)	C-348
Bond Strength to Concrete @ 24 hours, Psi (MPa)	510 (3.5)	C-321
Elongation	45 %	D-638
Water absorption, (24 hours)	0.25%	N/A

APPLICATION DATA

Consumption: 2 gallons (7.57 Liters) mixture of CHEM-UNDERWATER INJECT can seal approximately 80 linear feet (24.8 meters) of crack with 1 mm width and 1 ft (30.48 cm) depth.

Limitations:

Minimum substrate Temperature	+5°C (41°F)
Minimum temperature of product for mixing	+15°C (59°F)
Minimum temperature for curing	+5°C (41°F)
Maximum temperature exposure for prolonged period	+65°C (149°F)

Pre-treatment of Substrate: the substrates must be sound, preferably dry, clean and free from oil and grease. All loose material and laitance along the crack should be removed with suitable hand tools such as needle gun, wire brushes or angle grinders.

Injection Packers: two types of injection packers are available, adhesive (surfaces) packers and drilled packers. The selection of the packer type depends on the thickness of the substrate and the nature of the crack (width, depth, shape and propagation). The crack nature will affect the operating pressure used in the injection process. Normally, drilled packers can be operated at higher pressures than adhesive packers.

Types of packers available:

	Description
Drilled Packers	M6 x 70
	M6 x 115
Adhesive Packers	M88 x 1-48d 1140
	Cone head nipple M8-1146N

Setting Injection Ports: the crack nature and substrate will affect the distance between the packers. Generally, packers should be installed at distances of 20cm to 50 cm along the crack length.

Adhesive Packers can be bonded using CHEM-GEL R crack sealing compound. CHEM-GEL R is a unique compound that cures in damp and wet conditions. Adhesive packers are

recommended for wide or surface cracks and clear in nature cracks and when the substrate thickness is small. Injection of minor cracks is possible but subject to site inspection and demonstrations and will be dependent on a slow and low operating injecting pressures.

Drilled Packers can be recommended for both dry and wet concrete and for all sizes and nature of cracks. Drilled packers can be installed along the crack length or alternating on both sides of the crack length. When drilling on the side of the crack at 45° inclination a special care must be taken in insuring that drilled holes crosses the crack section.

Sealing of Cracks: After the completion of surface preparation and drilling the injection ports, clean the surface and injection ports adequately by dry and oil free compressed air. Adhesive packers should be fixed using CHEM-GEL R crack sealing compound. Drilled packers are installed and tightened in the drilled ports. Seal the crack length completely by applying a minimum of 50 mm band of CHEM-GEL R crack sealing compound. Allow the applied CHEM-GEL R to cure for minimum 8-12 hours before commencing the injection process.

Mixing: Find a suitable dry clean container for mixing, pour both component "A" and "B" and mix thoroughly using a low speed electric drill with mixing paddle (maximum 300 rpm). Mix from side to side and top to bottom until a fully homogeneous mixture is obtained.

Mixing time: Approximately 3-4 minutes.

Pot Life: The prepared mix should be used up immediately at least within 25 minutes @ 77°F (25°C).

Injection: Pour the mixture of CHEM-UNDERWATER INJECT into a suitable injection pump. For a wall, commence the injection at the lowest point. For a slab, commence the injection at one side of the crack then progress to the adjacent packer, until the whole crack length is completely injected.

Due to the low viscosity and long pot life of CHEM-UNDERWATER INJECT and with the adequate injection pressure, the injection resin will flow, fill and seal all voids and subsiding cracks.

Curing: Allow CHEM-UNDERWATER INJECT to cure for at least 48 hours. Remove the adhesive packers with a hammer or cut-off the drilled packers using angle grinder. The cured CHEM-UNDERWATER INJECT can be removed from the concrete surfaces using angle grinder with concrete grinding disc or by flame scaling method with blow torch and scraping out the burnt CHEM-GEL R.

Other Applications

- Gravity Feed Cracks: Route "V" notch in the crack using angle grinder. Clean the hole adequately using compressed air, then pour CHEM-UNDERWATER INJECT into the "V" notch, until the crack is completely filled.

- Epoxy Mortar: CHEM-UNDERWATER INJECT can be mixed with up to four parts by volume of Silica Sand to produce a Mortar mix. Before application of the mortar the concrete surface must be primed with a pure mix of CHEM-UNDERWATER INJECT.

- Grout: CHEM-UNDERWATER INJECT can be used as grouting material for bolts and anchor bars. The hole diameter should not be more than 3 mm larger than the bolt or bar diameter. Before grouting, the hole must be thoroughly cleaned with compressed air.

CLEANING

Tools and equipment must be cleaned immediately after use, with CHEM-CRETE BLENDED SOLVENT, Xylene, Toluene, etc. **Caution:** Solvents are flammable also they may affect the seals of injection pumps if exposed to solvent for longer period.

STORAGE

The product can be stored in a dry, cool place for one year in unopened original packaging. Do not store below +10 °C or in direct sunlight.

SAFETY PRECAUTIONS

After full cure CHEM-UNDERWATER INJECT is physiologically harmless. Keep the resin and hardener away from the eyes, mouth and skin. Do not breathe in vapors. The uncured mixture can cause irritation of the skin. For best protection, wear rubber or plastic gloves. In case of contamination, wipe away resin or hardener immediately from the skin using paper towels and then wash with soap and water or hand cleaning detergent.

TECHNICAL ASSISTANCE

Please contact International Chem-Crete Corporation for Technical Personnel.

WARRANTY

LIMITED WARRANTY: International Chem-Crete Inc. warrants that, at the time and place we make shipment, our materials will be of good quality and will conform to our published specifications in force on the date of acceptance of the order.

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