

CARTRIDGE SYSTEMS POLYURETHANE INJECTION RESINS PRODUCTS 120 and 121

CRACK REPAIR

PRODUCT NAME and DESCRIPTION

Thermal-Chem **Polyurethane Foam Injection Resins** are two-component, low viscosity polyurethane resins that foam when combined with moisture. Both products are VOC compliant and do not contain solvents.

Injection Foam – HP, Product 120 is a hydrophobic polyurethane liquid while **Injection Foam – H, Product 121** is a hydrophilic polyurethane. **Injection Foam – HP, Product 120** will cure, but will not produce foam without moisture. **Injection Foam – H, Product 121** requires moisture to foam and cure. One of the dual component cartridges are packaged with the required amount of water.

PRODUCT USE

Both of Thermal-Chem Polyurethane **Injection Foams** are designed to stop water infiltration and exfiltration through concrete by sealing moving non-structural cracks. Polyurethane Injection Foams are typically used to stop water leaks through cracked or honeycombed concrete, voids where floors and walls join, cold joints and pipe intrusions. Typical uses include residential and industrial basements, tunnels, manholes, parking decks and where concrete requires non-structural sealing to prevent water leaks. Both Injection Foams cure as tough foam capable of withstanding expansion and contractions associated with thermal cycles and crack movement. If a structural crack repair is required refer to Thermal-Chem's complete line of epoxy crack injection products.

TYPICAL PHYSICAL PROPERTIES

ADVANTAGES

PHYSICAL PROPERTIES

	Product 120	Product 121
Bond Strength		150-300 PSI
Tensile Elongation ASTM D 3574-88		400%
Tensile Elongation ASTM D 1623	45%	
Tensile Strength ASTM D 3574-86		380 PSI
Tensile Strength ASTM D 1623	31 PSI	
Shrinkage	0%	<5%
Water Absorption	<1%	
Shear Strength ASTM D 273	34 PSI	12-14 PS
Density (Core) ASTM D 1622	Free Rise 2.02 Lbs/CuFt.	10 Lbs/CuFt.
Solids	100%	100%
Viscosity	100-200 CPS	100-200 CPS
Color	Amber	Amber

- Both products are usable at low pumping pressures of 20 to 40 psi on moist or dry surfaces.
- Product 121 has been retarded so the foaming process does not occur until the material has been fully injected into a crack.
- Elongation properties of both products allow the injection of moving cracks without causing stress on the concrete and potential parallel cracking.
- Injection Foam HP, Product 120 uses the moisture in wet cracks to aid the curing process.
- Both products foam in the presence of water. Product 120 will expand 30 times its original volume. Product 121 will expand 5 times.
- Product 120 requires less than 2% water for reaction.

LIMITATIONS

- Do not apply on ice or frost covered surfaces.
- Do not use to structurally repair concrete cracks.
- Use Thermal-Chem Injection Foams only in their designated temperature and void width ranges for best results.
- If temperatures are falling below 77°F (25°C), preheat the injection resin to 70°F (20°C) before mixing components together.
- If temperatures are below freezing, preheat resin to 90°F (32°C) for quicker setting and cure.

COMPLIANCE

Both Injection Foam products meet VOC regulations and are formulated TDI free.

THERMAL-CHEM PRODUCTS REQUIRED FOR CRACK REPAIR:

- **Entry Ports** - Injection Tees and Plugs or Injections Ports and Plugs.
- **Surface Sealers** - Bonder, Product No. 4 or Super Rapid Surface Sealer, Product 421 or SurfaceSeal, Product 413 or Thermal-Chem's convenient ThermalPeel, Product 415.
- **Dispensing Tool** - Injection Resin Cartridge Dispensing Tool, Product P110
- **Non-Thermal-Chem Products** - Margin Trowel, Wire Brush, 1" Putty Knife, Drill with Wire Brush, Protective Eye Wear

SURFACE PREPARATION

Clean the surface of the crack to sound concrete. Remove all dust, efflorescence, unsound concrete and other contaminants that would be detrimental to the adhesion of the temporary or permanent seal. Concrete that has not been painted or previously treated with other materials need only be wire brushed and vacuumed.

CARTRIDGE TEMPERATURE GUIDELINE

Cartridges require no pre-blending. For best results, cartridge temperature should be between 65° F and 95° F.

CARTRIDGE PREPARATION

1. Hold cartridge in an upright position with retaining nut on top.
2. Remove retaining nut and two D-shaped plugs (do not discard).
3. Remove back-flow restrictor and place over cartridge opening.
4. Place retaining nut over mixing nozzle.
5. Place mixing nozzle with retaining nut over threaded top opening on cartridge and tighten.
6. Place cartridge in dispensing tool with cartridge throat flanges inserted into the dispensing tool slot (do not misalign).
7. Pump a portion of polyurethane (1 ounce) until proper mixing is achieved. Do not use polyurethane that is not blended.
8. Unmixed polyurethane may be saved by removing mixing nozzle and replacing 2 D-shaped plugs and retaining nut. Store in an upright position.
9. Discard used mixing nozzle. A new mixing nozzle will be required for future use.

CRACK REPAIR

1. Space injection entry tees/ports slightly less distance apart than the concrete thickness; i.e., 8" thick concrete would require a 7¼" to 7½" spacing on center between the tees.
2. Place tee over crack and apply surface sealer (i.e., Bonder, Product 4; Super Rapid Surface Sealer, Product 421; SurfaceSeal, Product 413 or ThermalPeel, Product 415) over tee/port and crack opening between tees/ports. Completely cover the base of the entry tees/ports and open crack to prevent leaking. If any of Thermal-Chem's surface sealers are used packaged in cartridges, do not use static mixing nozzles.
3. Pump desired quantity onto a piece of cardboard; mix only as much as can be applied in 5 minutes. Surface sealer must be tack-free before injection.
4. Crack Injection Process for Dry Cracks:
 - Flush the crack with water to remove debris and to prime the crack for the chemical foaming action to occur. This is critical if **Injection Foam HP, Product 120** is used. Flushing is not necessary for the chemical reaction with **Injection Foam H,**

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Product 121 as it has water packaged as part of the cartridge.

- The lowest entry tee/port on vertical or grade applications should always be injected first. Pump until clean injection liquid has passed from the next closest tee/port.
 - Plug original (first) tee/port. Begin pumping into the next adjacent tee/port (second tee/port from the bottom) until the third tee/port has passed clean injection resin. Plug the second tee/port. Move to next location and continue this pattern of pumping until all tees/ports have been injected. Then try and re-pump each entry tee/port a second time to insure the crack has been completely filled with Injection Foam.
 - Apply steady pressure on the cartridge dispensing tool, letting the spring-loaded device move the injection resin into the crack. Too much pressure can cause leaks and blowouts. Crack injection requires patience.
5. Removal of the tee and surface sealer is optional after the polyurethane has cured. If Bonder or Super Rapid Surface Sealer was used as the surface sealer, they will require grinding to remove. SurfaceSeal may be substantially removed using a hammer and chisel. ThermalPeel may be removed by just peeling. Wear appropriate eye protection when removing any surface sealers.
6. Refer to Thermal-Chem's Crack Injection Installation Guide for additional information.

GROUTING

Confine area to be grouted. Pump mixed polyurethane into void until the entire area is filled. Typically injection resin grouting should be limited to voids no larger than 3/8" to 1/2". For larger grouting applications, use Thermal-Chem's Mortar Resin, Product 3 and a select, graded silica.

CLEAN UP

Polyurethane materials are difficult to remove when set. Clean tools and equipment before the material

becomes tack-free with Mineral Spirits. Solvents are flammable. Keep away from heat, sparks and open flame. Avoid breathing vapors and permitting polyurethane or solvent to contact your skin. Skin contact should be washed immediately with soap and water.

AVAILABILITY

Products are manufactured and available through the Thermal-Chem Corporation, 2550 Edgington Street, Franklin Park, IL 60131.

Tel: 847/288-9090 or 800/635-3773
Fax: 847/288-9091
E-Mail: sales@thermalchem.com
help@thermalchem.com
Web Site: www.thermalchem.com

Cartridge packaging is as follows:

Prod. No.	Bi-Axial	Cartridge
	Cu. In.	Fl. Oz.
120	25.4	22
121	25.4	22

STORAGE

Do not allow Thermal-Chem products to freeze. Cartridge shelf life is six (6) months from date of manufacturer.

TECHNICAL SERVICES

Additional Product Data, complete Technical Support and Product Specifications are all available through Thermal-Chem Corporation; or their local representatives.

Every reasonable precaution and effort has been taken in the manufacturer of all Thermal-Chem products to comply with the published product data. Actual product performance may vary slightly due to environmental influences and/or conditions.

PRODUCT HANDLING

Read the Material Safety Data Sheet thoroughly before use.

Warning: For professional use only. Avoid contact of uncured material with skin and eyes.

Contact with skin may result in irritation. Wash skin with soap and water. If contact with eyes should occur, flush with water for 15 minutes and seek immediate medical attention.

LIMITED WARRANTY

Thermal-Chem Corporation warrants its product to be of good quality and will replace any product proved defective. Satisfactory results depend not only upon quality products but also upon many factors beyond our control. Therefore, except for such replacement, **THERMAL-CHEM CORP. MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, RESPECTING ITS PRODUCTS**, and Thermal-Chem Corporation shall have no other liability with respect thereto, including without limitation, liability for incidental or consequential damages. Any claim regarding product defect must be received in writing within one hundred and eighty (180) days from the date of shipment. No claim will be considered without such written notice or after the specified time interval. The user shall determine the suitability of the products for the intended use and assume all risks and liability in connection therewith.