

THERMAL-CHEM CRACK INJECTION PRODUCTS 2, 201, 212 and 213

Injection Resins

PRODUCT DESCRIPTION

Thermal-Chem Injection Resins are two component, low viscosity and gel consistency epoxy resin systems designed to bond wood, steel and concrete.

The low viscosity epoxies will penetrate the full depth of fissures as narrow as 0.002 inches when properly pumped. The gel viscosity epoxies will fill cracks as wide as 0.250 inches (.05mm) without sagging.

Thermal-Chem Injection Resin, Product 2, is the most versatile of the four resin systems. It is a high modulus, low viscosity, 100% solids, 100% reactive system that is wetter than water and bonds with both chemical and mechanical adhesion properties to concrete and can be utilized for both narrow or wide void applications on dry or moist surfaces.

Thermal-Chem Injection Resin Gel, Product 201, is a gel formulation of Product No. 2, used for wide void applications only.

Thermal-Chem Injection Resin, Product No. 212, shares the same properties as Product No 2 with the benefit of being heat resistant up to 400°F (204°C).

Thermal-Chem Injection Resin Gel, Product No. 213 is a gel formulation of Product No 212 used for wide void applications. This product has been modified with lower molecular weight resins and higher temperature amines to increase its heat resistant capabilities.

TYPICAL PHYSICAL PROPERTIES

PHYSICAL PROPERTIES		
	Product Nos. 2, 212	Product No. 201, 213
ASTM C881 Compliance		
Type	I, IV	I, IV
Grade	1	3
Classes: 0°F to 140°F (-18°C to 60°C)	A+B+C	A+B+C
Potlife, 100 g. (1), mins.		
40°F (4°C), Class A	8	8
50°F (10°C), Class B	8	8
77°F (25°C), Class C	15	15
Consistency, inches	N/R	No sag
ACI 503.4-79	Complies	Complies
Bond Strength (ASTM C882)	Passes	Passes
Thermal compatibility (ASTM C884)	Passes	Passes
Shrinkage (ASTM C883)	Passes	Passes
Absorption, 24 hrs. % (ASTM D570)		
Class A, below 40°F (4°C)	0.24	0.31
Class B, 40°F to 60°F (4°C to 15°C)	0.19	0.20
Class C, above 60°F (15°C)	0.19	0.21
Compressive Strength* (ASTM C39, AASHTO T22)		
77°F (25°C)	4560 psi	4400 psi
33°F (1°C)	4400 psi	4300 psi
0°F (-18°C)	4380 psi	--
77°F (25°C) Control Cylinders	4390 psi	--

Tensile Strength*: (ASTM C496 AASHTO T198)		
77°F (25°C)	670 psi	530 psi
33°F (1°C)	670 psi	670 psi
0°F (-18°C)	660 psi	--
77°F (25°C) Control Cylinders	665 psi	--
Flexural Strength*: (ASTM C78 AASHTO T97)		
77°F (25°C)	750 psi	680 psi
33°F (1°C)	750 psi	680 psi
0°F (-18°C)	700 psi	--
77°F (25°C)	750 psi	--

PRODUCT USE

The Injection Resins are designed to weld cracked concrete, bond steel to concrete, wood and other non-porous structural building materials together. Other uses include bolt and anchor grouting, base plate grouting, filling of honeycombed and sand streaked areas within the concrete structure and hollow plane delaminations. The resins are especially suited for fresh or salt underwater environments.

Thermal-Chem Products Required for Crack Repair:

- **Narrow Void (less than 1/8")** - Use the appropriate low viscosity injection resin
- **Wide Void (1/8" to 3/8")** - Use the appropriate gel formulation of injection resin.

ADVANTAGES

- Usable at low pumping pressures of 14 psi (1 ATM) on moist or dry surfaces and 20 psi (1.5 ATM) plus the water head pressure for underwater applications.
- Low pressures, combined with excellent flow characteristics and surface-wetting abilities, displace free water from within cracks.
- Injection resins are capable of adhesion, cure and development of compressive, tensile and

flexural strengths that equal or exceed that of Portland cement concrete at temperatures down to 32°F (-0°C) and up to 140°F (60°C).

- Excellent pot life.
- Its balanced properties upon curing will not cause stresses to the concrete.
- The resin system will penetrate into fissures as small as 0.002 inches (0.05mm).

LIMITATIONS

- Do not thin the epoxy with solvents.
- Do not apply on ice or frost covered surfaces.
- Prolonged storage above 100°F (38°C) may shorten shelf life.
- Use Thermal-Chem Injection Resins 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.
- Do not use below 32°F (0°F).

CURED APPEARANCE

Thermal-Chem Injection Resins cure to provide a dense, non-porous, non-shrinking, non-expanding material with a color of light amber.

***Modifications:** The concrete specimen shall be of the size indicated in the ASTM or AASHTO test procedure. The concrete shall be molded and cured per ASTM C192, AASHTO T126, then broken by the same ASTM test to verify value of the concrete specimen. Each specimen shall then be taped or wired together, sealed and placed in the desired temperature environment and injected. The specimen must be injected and returned to the temperature environment within 15 minutes. The specimen shall be kept at the temperature environment until the time of testing. All testing must take place within 15 minutes of removal from temperature environment, or the specimen shall be discarded. All testing must be by a recognized independent concrete testing laboratory.
N/R = Not required by ASTM C881

Gel Time Measurements in Cracked Concrete [77°F (25°C)]

Crack Width	Time
1/8" (3.175 mm)	2 hrs. 35 mins.
1/4" (6.35 mm)	2 hrs. 20 mins.
1/2" (12.70 mm)	1 hr. 09 mins.
3/4" (19.05 mm)	0 hrs. 17 mins.
1" (25.40 mm)	0 hrs. 13 mins.

APPLICATION

Refer to Technical Bulletin - Thermal-Chem Crack Repair System for detailed Installation Directions and Equipment Options.

AVAILABILITY

Products are manufactured and available in bulk and cartridges with static mixing nozzles through Thermal-Chem Corporation, 2120 Roberts Drive, Broadview, IL 60155 U.S.A.

Tel: 847/288-9090 ■ 800/635-3773
Fax: 847/288-9091
E-Mail: sales@thermalchem.com
Website: www.thermalchem.com

To order, specify product name, number, container size and quantity. Product sizes: one gallon unit, 5 gallon unit and 65 gallon drum.

STORAGE

All Thermal-Chem products should be stored elevated from the floor on pallets, in an environment that maintains a constant temperature above 36°F (2°C). Do not allow Thermal-Chem products to freeze.

TECHNICAL/SPECIFICATION SERVICES

Additional Product Data, complete Technical Support and Product Specifications are all available through Thermal-Chem Corporation.

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, at Thermal-Chem's sole discretion, replace or refund the original purchase price (if payment was made in accordance with Thermal-Chem's payment and credit terms) of any product proved defective or non-conforming. Satisfactory results depend not only upon quality products but also upon many factors beyond our control. **THE PARTIES AGREE THAT THE REPLACEMENT OR REFUND OF PRODUCT PAYMENT FOR DEFECTIVE PRODUCT OR NON-CONFORMING GOODS IS THE SOLE AND EXCLUSIVE REMEDY.** 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 ninety (90) 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.