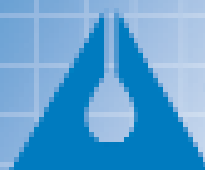


Adhesive Anchoring Systems
Bulk Adhesives and Bonding Agents
Concrete Repair Crack Injection Systems
Cementitious Products
Non-Explosive Demolition Agents



**ADHESIVES
TECHNOLOGY** corp.
Concrete Solutions for Concrete Applications

Who is Adhesives Technology?

Adhesives Technology, having been in business for nearly a quarter of a century, is one of the oldest names in the adhesives anchoring industry. U.S. Anchor Corp. acquired Adhesives Technology in 1996 and added it to the Ultrabond Adhesives division.

In late 2004, U.S. Anchor Corp. sold its interest in mechanical anchors and focused entirely on its strengths as the industry leader in adhesive anchoring systems and related products.

Our new name, Adhesives Technology Corp. (ATC), better reflects who we are and what we do best.



*In pursuing our commitment to advance ATC as a market leader we have now become singularly focused as true specialists in construction related adhesives, coatings and grouts with products like **ULTRABOND™**, **CRACKBOND™**, **SPEEDSET™**, **CRACKER™** and **HARD-ROK™**. We will strive to strengthen our already dominant position as market leading specialists providing you with unequalled service and quality products.*

It might even surprise you to know that we are the largest private label adhesive manufacturer in the Eastern United States.

This new ATC product guide contains information on all of the high performance products ATC has to offer. It is divided into five informative categories and utilizes color coded sections and product icons to enable the reader to quickly access needed information.

ADHESIVE ANCHORING PRODUCTS

*Our **ULTRABOND™** line of anchoring adhesives has earned national recognition as an industry leader and is specified by engineers and used by contractors in nearly every type of application across the country. We offer the broadest adhesive anchoring line available in today's market. Rigorous standards are in place from raw material sourcing to finished product delivery assuring you the quality, dependability and value necessary to compete in today's demanding market environment.*

ULTRABOND™
ADHESIVES TECHNOLOGY CORP.



*Industry respected brand names like **Ultrabond™**, **HS-200™** and **SpeedSet 2™** are available in a wide range of sizes and packaging including bulk and cartridge dispensing systems. Independent tests prove the consistent superior bonding strength of these adhesive systems. Their flexural strength enables them to maintain high loads under seismic or vibratory conditions. Most are odorless, corrosion resistant, non-combustible, environmentally friendly, and work well in water environments. In addition, performance in high temperatures is unparalleled.*

SPEEDSET 2™
ADHESIVES TECHNOLOGY CORP.

BONDING & COATINGS



Typically not offered by other suppliers, it is these products that help widen the gap between ATC and the competition. These specially manufactured adhesives offer the critical formulations needed in today's demanding, heavily engineered applications. The diversity in bulk packaging provides the user with the right product and the most cost effective delivery solution.

CRACK INJECTION CONCRETE REPAIR



*ATC's **CRACKBOND™** structural crack injection concrete repair system expands our already broad adhesive offering even further.*

***CRACKBOND™** is formulated for repairing fine through medium cracks and is available in different viscosities and in both cartridge and bulk packaging.*

CRACKBOND™
ADHESIVES TECHNOLOGY CORP.

CONCRETE DEMOLITION



*The **CRACKER™** is a unique product that is in a class all its own. It is a powdered non-explosive cracking agent that can crack concrete or stone within four hours. It is simply mixed with water and poured into predrilled holes in concrete. It is quiet, safe and offers the user solutions to demolition when other conventional methods are not an option.*

THE CRACKER™
ADHESIVES TECHNOLOGY CORP.

CEMENTITIOUS PRODUCTS



*Seven products make up the popular **Hard-Rok™** line. Formulations include money saving alternatives for anchoring and grouting, patching, general concrete repair and active water leaks. Unlike other competing products, the*

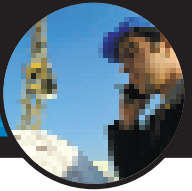
*ATC **Hard-Rok™** line contains no gypsum. This allows for confident use in both interior and exterior applications with no additional labor or preparation.*

Hard-Rok™

Whatever products you chose, you can be assured that extensive product testing from independent sources ensure the integrity and quality of all ATC brand products. For your convenience, satellite warehouses with ample inventory are sure to have the products you need in stock and ready for immediate delivery. To aid you in selling, our Regional Sales Managers and on-site engineers conduct frequent customer sales training sessions and establish "pull-through" marketing. This brings our customers up to date on new technologies, products and opportunities.

*We'd like to thank you for taking the time to get familiar with our company and the products we offer. Please call us and experience the real reason why our customers prefer to do business with **Adhesives Technology...** Our people.*

Get to know us. You'll like the way we strive, everyday, to earn your business and become your partner in successful, profitable growth.



Catalog #0106

All product pages can be viewed and downloaded in PDF format on our website at www.atc.ws.



ULTRABOND™

ADHESIVES TECHNOLOGY CORP.

High strength adhesive systems for anchoring and doweling. Available in 6, 9, 11, 22, and 53 ounce cartridge systems and bulk kits. 1:1 ratio.



SPEEDSET 2™

ADHESIVES TECHNOLOGY CORP.

Fast curing anchoring and doweling adhesive. Offers a fast bolt up time and unsurpassed dispensing rate even in colder weather. Available in 28 ounce systems. 10:1 ratio



HS-200

ADHESIVES TECHNOLOGY CORP.

High strength adhesive systems for anchoring and doweling. Available in 16 & 33 ounce cartridge systems. 2:1 ratio.

CRACKBOND™

ADHESIVES TECHNOLOGY CORP.



Crack injection concrete repair product for concrete restoration. Broad viscosity range to handle every application.



THE CRACKER™

ADHESIVES TECHNOLOGY CORP.

Non-explosive cracking agent used for the quiet and safe demolition of concrete or stone.



Hard-Rok™



Seven products make up the popular **Hard-Rok™** line. Formulations include money saving alternatives for anchoring and grouting, patching, repairing and water leakage.



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ADHESIVE ANCHORING PRODUCTS

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| ANCHORING & DOWELING - ADHESIVE PRODUCTS | | Working Time (min.) | Cure Time (hr.) | Ultimate Tension Loads* (lbs.) | Page |
|--|-----------------------------------|---------------------|-----------------|--------------------------------|-------|
| Product | Features | | | | |
| HS-200 | Extensive Approvals & Testing | 20 | 4 | 18,374 | 8-11 |
| Ultrabond 1 | Greatest Strength | 20 | 4 | 22,328 | 12-15 |
| Ultrabond 1300 | Economical and Popular | 20 | 2 | 14,146 | 16-17 |
| Ultrabond 2 | Long Working Time - Cartridge | 25 | 10 | 17,953 | 20-21 |
| Ultrabond 2000 | Pourable LV Epoxy - Long Pot Life | 40 | 10 | | 36 |
| Ultrabond 2300 | Longest Working Time | 40 | 10 | 14,500 | 22-23 |
| Ultrabond 3 | Fast Cure Cold Weather Epoxy | 5 | 1.5 | 13,384 | 24 |
| SpeedSet 2 | All Weather / Fast Cure Adhesive | 7 | 1 | 12,074 | 18-19 |
| Glass Capsules | High Strength Capsule | NA | 20 min | 15,884 | 28-29 |
| EZ Set Capsules | Easy Hammer In Capsule | NA | 20 min | 10,708 | 28-29 |

*1/2" threaded rod at 9D in 2000 psi concrete

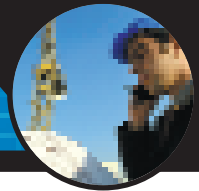


BONDING & COATINGS

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| BONDING & COATING | | ASTM C881-99 | | | |
|-------------------|-----------------------------------|----------------|-------|-------|-------|
| Product | Features | Type | Grade | Class | Page |
| Ultrabond 1300 | Fast Cure - Non-Sag | I, II, IV, V | 3 | B, C | 16-17 |
| Ultrabond HS410F | Fast Cure Non-sag Paste | I, II | 3 | B, C | 35 |
| Ultrabond 2000 | Long Pot Life - Thin Pourable, LV | I, II, IV, V | 1 | B, C | 36 |
| Ultrabond 2100 | Long Pot Life - Pourable, MV | I, II, IV, V | 2 | B, C | 37 |
| Ultrabond 2300 | Long Pot Life - Non-Sag | I, II, IV, V | 3 | C | 22-23 |
| Ultrabond 5000 | Longest Pot Life - Thinnest, LV | See Data Sheet | 1 | C | 38 |
| Ultrabond 5100 | Longest Pot Life - Pourable, MV | See Data Sheet | 2 | C | 38 |
| Ultrabond 5400L | Segmental Precast - Paste | VI | 3 | D | 39 |
| Ultrabond 5400 | Segmental Precast - Paste | VI | 3 | E | 39 |
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CRACK INJECTION CONCRETE REPAIR

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| CRACK INJECTION | | ASTM C881-99 | | | |
|-----------------|--------------------------------------|--------------|-------|---------|-------|
| Product | Features | Type | Grade | Class | Page |
| CG-300 | Capping Gel – Cartridge | I, II, IV, V | 3 | A, B, C | 46-47 |
| CP-1400 | Capping Paste – Bulk | I, II | 3 | B, C | 48-49 |
| LR-321 | Injectable Low Viscosity Resin | I, II, IV, V | 1 | C | 50-51 |
| LR-321G | Injectable Thixotropic Gel | I, II | 2 & 3 | C | 52-53 |
| SLV-302 | Injectable Super Low Viscosity Resin | I, II, IV, V | 1 | A, B, C | 54-55 |

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NON-EXPLOSIVE DEMOLITION AGENTS

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| CRKR | Concrete Demolition Products | 4 hours at 72° | 56-57 |

CEMENTITIOUS PRODUCTS

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| Anchoring Cement Directions | 60-61 |
| Construction Grout | 62-63 |
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| Vertipatch | 68-69 |
| GP Patch 20 | 70 |
| Master Plug | 71 |



CEMENTITIOUS PRODUCTS

ASTM C881-99

| Product | Description | Features/Uses | Page |
|---------|--|--------------------------------------|-------|
| HR-50 | Anchoring Cement | Anchoring, Balcony & Hand Rails | 59-61 |
| HR-CG | Construction Grout | General Purpose Grouting | 62-63 |
| HR-PG | Precision Grout | Grouting-Pumpable | 64-65 |
| HR-SPL | Super Patch Lg | Patching vehicle exposed areas | 66-67 |
| HR-SP | Super Patch (Co-Poly) | Patching vehicle exposed areas | 66-67 |
| HR-VP | VertiPatch | Vertical Patching | 68-69 |
| HR-GPP | General Purpose Patch | Patching step, slabs | 70 |
| HR-MPF | Master Plug Fast Initial Time = 1 min. | Plugs water leaks in concrete - Fast | 71 |
| HR-MP | Master Plug Initial Time = 1 to 3 min. | Plugs water leaks in concrete | 71 |

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| Terms and Conditions | 72 |
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ANCHORING TERMINOLOGY

ACI: American Concrete Institute

Adhesive Anchors (anchor): A fastener placed in hardened concrete or masonry that derives its holding strength from a chemical adhesive compound placed between the wall of the hole and the embedded portion of the anchor.

AISC: American Institute of Steel Construction

Allowable Load: The recommended factor. The load that is used in design with a factor of safety already applied. Also called the safe working load. (4:1 or 25% is generally used)

Anchor Spacing (S): The measure between anchors, centerline to centerline distance.

ANSI: American National Standards Institute

ASTM: American Society for Testing and Materials

Base Material: The substrate (e.g. – concrete, CMU, etc.) into which adhesive or mechanical anchors are installed.

CAMA: Concrete Anchor Manufacturers Association

Concrete Compressive Strength (f'_c): The compressive load carrying capacity (strength) of concrete used in design expressed in pounds per square inch (psi) or mega Pascal (MPa).

Concrete Masonry Unit (CMU): A hollow or solid masonry unit made from cementitious materials, water, and aggregates.

Cracked Concrete/Masonry: Concrete or masonry elements cracked by tensile stresses caused by external loads, including loads induced by anchors, or restraint due to deformations induced by temperature or concrete shrinkage. This definition applies to elements with existing cracks and elements with potential for cracking.

Creep Test: An anchor is set and subjected to prolonged constant tension or compression loading at a constant elevated temperature. Deformation is recorded at specified time intervals and a creep vs. time diagram is plotted. Slope of curve at any point is called the creep rate.

Critical Edge Distance (C_{cr}): The minimum edge distance at which the maximum load capacity of an anchor is obtained.

Critical Spacing (S_{cr}): The minimum anchor spacing distance at which the full load-bearing capacity of an anchor is obtained without influence of neighboring anchors.

Cure Time (Load Time): The length of time required to apply the allowable load to the anchor. (25% of ultimate load)

Dynamic Load: A loading condition that is subject to movement or vibration.

Edge Distance (C): The measure between the anchor centerline and the free edge of the concrete or masonry member. (Refer to Critical Edge Distance and Minimum Edge Distance)

Embedment Depth (h_{ef}): Distance from test member surface to installed end of anchor, measured prior to setting of the anchor.

Expansion Anchor (Anchor): A mechanical fastener placed in hardened concrete or assembled masonry, designed to expand in a self-drilled or predrilled hole of a specified size and engage the sides of the hole in one or more locations to develop shear and/or tension resistance to applied loads without grout, adhesive or dry pack.

Final Cure Time (Working Time): The length of time required for an adhesive to develop its ultimate load.

Gel Time: The elapsed time at which an adhesive begins to increase in viscosity from a flowable material to a non-movable semi-solid, as set forth in ASTM C881.

ICC: International Code Conference. New combined code agency of ICBO (International conference of Building Officials), SBCCI (Southern Building Code Congress International), and BOCA (Building Officials Code Administrators).

Load Time: See Cure Time.

Minimum Edge Distance (C_{min}): The minimum edge distance at which the component edge does not break away when the anchor is set, expanded or loaded at service loads.

Minimum Spacing (S_{min}): The minimum anchor spacing distance at which the base material will not be damaged when multiple anchors are set, expanded or loaded at service loads.

Oblique Load: A load that is applied to an anchor which can be resolved into tension and shear components.

Pot Life: The length of time a mixed adhesive remains workable (flowable) before hardening in a 1 gallon mass.

Shear Load: A load applied perpendicular to the axis of an anchor.

Spacing Distance (S): The measure between the anchor centerline of one anchor to the centerline of another anchor. (Refer to Critical Spacing Distance and Minimum Spacing Distance)

Static Load: A loading condition in which no movement occurs. It is considered a dead load.

Tension Load: The load applied along the longitudinal axis of the anchor.

Torque: A measurement of the resistance to the turning of the nut or bolt. It is measured in units of foot-pounds (ft-lbs)

Thixotropic: The ability of a gel to become less viscous (resistant to flow) under pressure and thicken when pressure is released.

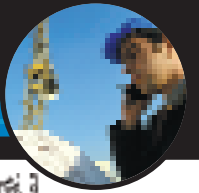
Ultimate Load: The maximum load that an anchor can sustain until failure.

Uncracked Concrete/Masonry: Concrete or masonry elements where analysis indicates no cracking ($f_t < f_r$) due to service loads or deformations. For concrete, f_r is defined in UBC Section 1909.5.2.3 or ACI-318-99, Section 9.5.2.3 (IBC). For masonry, f_r is defined in UBC Section 2108.2.4.6 or IBC Section 2108.7.5.

Yield Strength: The point when the steel rod starts to stretch or deflect.

Working Time: The elapsed time at which the adhesive in the nozzle begins to increase in viscosity from a flowable material to a non-movable semi-solid.

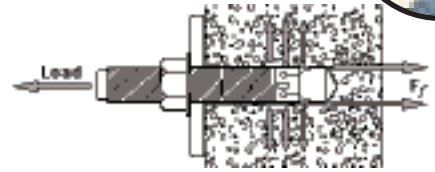
GENERAL ANCHORING INFORMATION



ANCHORING PRINCIPLES

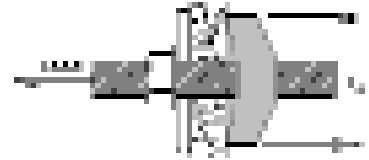
FRICTION TYPE ANCHOR

Expansion pressure causes friction between the anchor and the hole wall, this friction is greater than the applied load.



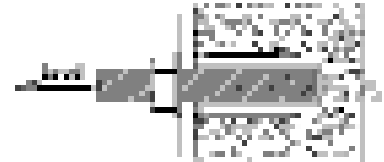
KEYING TYPE ANCHOR

Anchor design permits the product to hold by keying the applied tension load and transmitting to, and held directly by the base material.



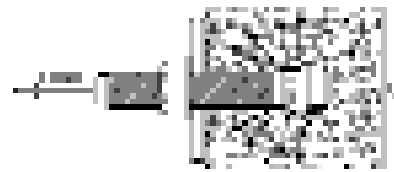
BONDING ANCHOR

Adhesive resin bonds mechanically and/or chemically to the hole wall and the anchor rod. The adhesive bond strength is always the same or greater than the applied load.



COMBINED FRICTION & KEYING HOLD

Anchor expansion systems of good design compress the base material by means of expansion pressure to such an extent that a keying effect helps take up the forces.



BASE MATERIALS

NORMAL WEIGHT CONCRETE

This concrete is made from Portland cement, coarse and fine aggregates, water, and various admixtures. The proportioning of these ingredients controls the compressive strength of the concrete.

LIGHTWEIGHT CONCRETE

This concrete consists of the same components as normal weight concrete, except it is made with lightweight aggregate. Steel decking commonly uses lightweight concrete as a structural fill. Lightweight concrete weight is not to exceed 115 pcf.

CONCRETE MASONRY UNITS (CMU)

A hollow or solid masonry unit made from cementitious materials, water, and aggregates. Block with a minimum 75% solid cross section is called solid block even though it contains hollow cores. Some CMU walls have steel reinforcing bars placed in the hollow cores, and the cores are filled with grout. These walls are called grout filled CMU.

LOADING PRINCIPLES SINGLE ANCHOR

TENSION - A load that is applied parallel to the length of the anchor.

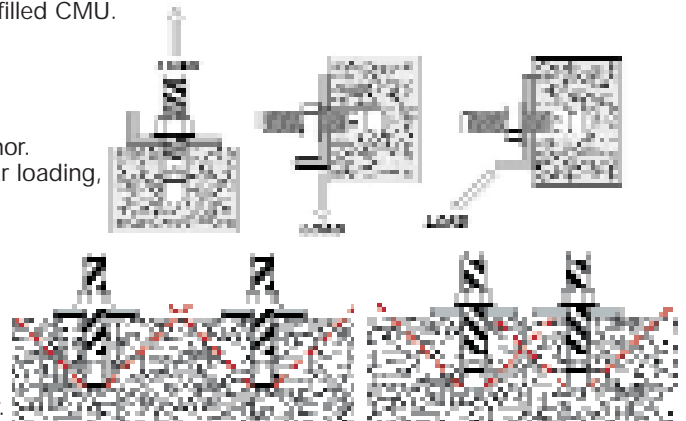
SHEAR - A load that is applied perpendicular to the length of the anchor.

OBLIQUE - A load that is applied in both a Tensile loading and a Shear loading, also known as Combined Loading.

LOADING PRINCIPLES MULTIPLE ANCHOR

CRITICAL SPACING - The distance between two anchors that each individual anchor will not influence the other anchors.

MINIMUM SPACING - The distance between two anchors that is less than critical spacing where a reduction factor can be applied for recognition. This configuration yields a reduced efficiency of the anchor.



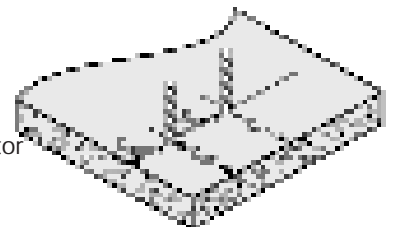
EDGE DISTANCE

CRITICAL EDGE

The minimum edge distance at which the maximum load capacity of an anchor is obtained.

MINIMUM EDGE

The distance that an anchor is placed closer to the edge than critical edge where a reduction factor can be applied for recognition. This configuration yields a reduced efficiency of the anchor.



ANCHORING ADHESIVES



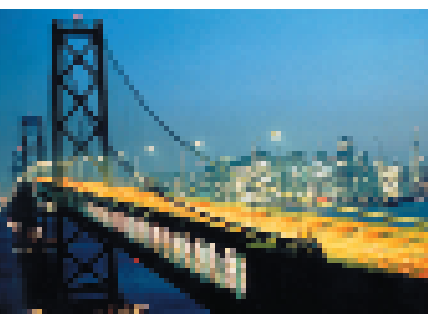
Denver International Airport,
Denver Colorado

Ultrabond 1 & 2 were selected for the construction of the runways and ramp systems.



U.S. Naval Base,
Norfolk, Virginia

Ultrabond 2 was selected for the installation of 80,000 overhead dowels in the rebuilding of 5 concrete piers.



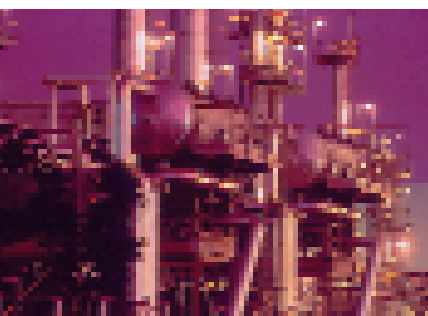
Oakland Bay Bridge
Oakland, California

HS-200 was selected for a variety of renovation and repair projects.



Long Key Bridge
Long Key, Florida

Ultrabond 2 was used for the installation of the precast concrete barrier rails for the full length of the bridge.



Texaco Refinery
Port Arthur, Texas

Ultrabond 2 was selected to anchor refinery structures, systems and equipment.

For years, **Ultrabond™** and **HS-200™** construction adhesives have been widely recognized as the industry's leading epoxy systems.

And for good reason.

Both products consistently outperform the competition. This unbiased claim is easily substantiated by conducting a comparison between our published I.C.B.O. reports and our competitors. No one comes close when comparing tension test values. In addition, our in-service temperature reports are unparalleled and are the most impressive in the industry.

SpeedSet2 helps round out our product offering by providing our customers with a fast setting adhesive for use in both high and low temperatures. Even at low temperatures the product's dispensing rate is exceptional.

Our outstanding products and formulas are the result of years of research and development combined with only the best of available raw materials. Our formulas are constantly analyzed to control and confirm uniform high quality. In addition to our own testing, countless numbers of independent tests, including those performed by the U.S. Navy and D.O.T.s in most states, consistently confirm the superiority of our products.

In tests* conducted by Martin Marietta for NASA, **Ultrabond™** outperformed all other competing systems.

After reviewing our product guide, we're sure you'll agree that Adhesives Technology Corp. is your best and most complete choice for all your adhesive anchoring needs.

* Space science services test report –
REF. 2065



**53 oz. Ultrabond
Formula 1300 System**
on the job for the
**Metro Rapid
Transit Authority.**
Used in over 100,000 holes
over 10 miles of track.



ULTRABOND™

ADHESIVES TECHNOLOGY CORP.

High strength adhesive systems for anchoring and doweling. Available in three premier formulas and numerous specialty formulas of varying viscosities and gel times. Available in 6, 10, 11, 22, and 53 ounce cartridge systems. Bulk material is offered in sizes from 102 ounce to 2, 10 and 100 gallon kits. 1:1 ratio,

RECOMMENDED APPLICATIONS

General Construction

- Rebar doweling into concrete
- Anchoring threaded rod or rebar into brick, block and stone
- Attaching steel angles or ledgers to brick or block
- Attaching sill plates to concrete
- Stadium and auditorium seating
- Quick-setting crack injection surface sealer
- Injection resin to repair cracks in concrete
- Bonding concrete to concrete
- Facade pinning
- Concrete repairs and patching

Highway Construction

- Highway guard rails
- Pavement highway reflectors
- Railings and fences
- Rebar doweling for highway widening and repair projects
- Light poles
- Highway sign installations

Bridge Construction

- Rebar doweling into concrete
- Highway lane ties
- Concrete repairs/patching
- Guard rails and fences
- Pavement reflectors

Water and Sewage Treatment

- Anchoring in corrosive environments
- Pipe supports and brackets
- Anchoring filtering equipment and pumps
- Anchoring vibratory equipment and pumps

Seismic Applications

- Seismic retrofit
- Brick ties
- Structural shoring or bracing to brick

Marine Construction

- Concrete dock repairs
- Bridge pier reinforcement
- Pier cap repairs
- Mooring cleats
- Underwater anchoring
- Anchoring bumpers

Plant Maintenance

- Anchoring vibratory equipment and conveyers
- Machinery anchoring
- General plant maintenance
- Anchoring in corrosive environments
- Railings and fences
- Supports and bracket for pipes
- Floor repairs

Railroad Construction

- Support brackets for rail systems
- Railroad concrete tie repairs
- Third rail anchoring

Correctional Facilities

- Pick-proof sealants for doors and windows
- Pipe supports and brackets

Underwater applications

- Ideal for underwater anchoring, doweling and repairs.



HS-200

ADHESIVES TECHNOLOGY CORP.

The HS-200 formula is a high strength adhesive for anchoring and doweling. Available in 16 & 33 ounce cartridges. 2:1 ratio.



SPEEDSET2™

ADHESIVES TECHNOLOGY CORP.

Fast curing anchoring and doweling adhesive. Offers a fast bolt up time and unsurpassed dispensing rate even in colder weather. Available in 28 ounce systems. 10:1 ratio



BULK

The majority of Adhesives Technology Corp.'s adhesive formulas are also available in bulk. This provides the lowest cost per ounce and is

usually the preferred method of packaging for large jobs. Certain formulas are typically easier to apply utilizing bulk methods (see Bonding & Coating section, page 33).

HS-200

Quick Selection Guide

| | |
|---------------------|--------------|
| Tension Load (1/2") | 18,374 lbs.* |
| Working Time (75°F) | 20 min. |
| Cure Time (75°F) | 4 hrs. |
| Temperature Range | 35°F - 115°F |

Description

*1/2" threaded rod
at 9D in 2000 psi
concrete

HS-200 is a two component (**2:1 ratio**), 100% solids, high modulus, structural epoxy gel. It is a solvent free, no odor, high strength, moisture insensitive, non-sag epoxy system. The resin and hardener are uniformly dispensed from a dual cartridge system and mixed simultaneously through a mixing nozzle or available in bulk. **HS-200** is an excellent choice where a **high strength** adhesive with **maximum field reliability** is desired.



Ordering Information

| Size | 16 oz. | 33 oz. |
|---------------------------|------------------|------------------|
| Part # | A16-HS200 | A33-HS200 |
| Manual Dispensing Tool | TM16HD | TM33HD |
| Pneumatic Dispensing Tool | TA16HD-C | TA33HD-C |
| Case Qty. | 20 | 10 |
| Pallet Qty. | 720 | 360 |

See pages 26 and 27 for additional accessories.

Sizes Available

- Available in 16 and 33 oz. dual cartridge systems
- Bulk sizes include 1 (102 oz.), 3, 15 and 150 gallon kits

Features & Advantages

- High strength adhesive and one of the strongest in the industry
- Long working time with a quick cure time
- Moisture insensitive — May be used in damp environments
- May be used in concrete, hollow block, brick, clay and stone
- Perfect for vertical, horizontal, overhead and screen applications
- Structural bonding of concrete to concrete
- Seismic anchoring and bracing

Applications

- High strength anchoring and doweling
- Bonding agent (metal, concrete, brick, wood, stone, block)
- Pick proof sealant — windows, doors, locks, etc. (e.g. Correctional Facilities)
- Concrete Repair — (see Bonding and Coatings Section)

Approval / Listings

ICC (formerly ICBO) — ER-4398
SBCCI — Report No. 2055
COLA — RR-24799
CalTrans Approval
Various DOT's — Call for listing
Independent Laboratory Tested: Meets ASTM C881-99:
Type I, II, IV and V, Grade 3, Class A, B and C
Metro-Dade 05-0627.02



PERFORMANCE INFORMATION

Independent ASTM C881-99 Technical Data

| Properties | ASTM | 35°F | 40°F | 60°F | 73°F |
|----------------------------------|-------|---------------|---------|---------|-------|
| Compressive Yield Strength – psi | D695 | 14,660 | 14,530 | 15,260 | — |
| Compressive Modulus – psi | D695 | 322,690 | 294,420 | 321,830 | — |
| Tensile Strength – psi | D638 | 7,130 | 7,490 | 7,080 | 7,330 |
| Elongation - % | D638 | 1.7 | 1.7 | 1.5 | 1.9 |
| Bond Strength – psi | C882 | 2,100 | 2,000 | 2,400 | 2,500 |
| Consistency | C881 | Non-Sag Gel | | | |
| Heat Deflection Temperature - °F | D648 | 152 (7 day) | | | |
| Water Absorption - % | D570 | 0.06 (24 hr.) | | | |
| Linear Coefficient of Shrinkage | D2566 | 0.002 | | | |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 2:1 |
| Color | Gray |
| Storage | Below 95°F |

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

HS-200 • ADHESIVE ANCHORING PRODUCTS



ICC – HS-200 has been tested in accordance with the ICC Acceptance Criteria for Adhesive Anchors in Concrete and Masonry Elements (AC508). HS-200 is recognized for the following uses:

- Static Loads
- Seismic / Wind Loading for Threaded Rod and Rebar
- Long Term Creep at Elevated Temperature
- Static Loading at Elevated Temperature
- Damp Holes
- Freeze Thaw Conditions
- Critical and Minimum Edge and Spacing Distances

TENSION LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | Allowable, Based on Steel Strength | | | |
|-----------------------------|---|-------------------------------|------------------------------|-------------------------------|------------------------------------|--------------------------|---------------------------|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | ASTM A36 (lbs.) | ASTM A307 GRADE C (lbs.) | ASTM A193 GRADE B7 (lbs.) | 304/316 SS (lbs.) |
| 3/8 | 7/16 | 1 11/16 3 3/8 4 1/2 | 3,037 8,214 9,277 | 759 2,054 2,319 | 2,115 | 2,185 | 4,555 | 3,645 |
| 1/2 | 9/16 | 2 1/4 4 1/2 6 | 5,696 18,374 22,224 | 1,424 4,594 5,556 | 3,775 | 3,885 | 8,100 | 6,480 |
| 5/8 | 3/4 | 2 13/16 5 5/8 7 1/2 | 9,680 26,581 34,819 | 2,420 6,645 8,705 | 5,870 | 6,075 | 12,655 | 10,125 |
| 3/4 | 7/8 | 3 3/8 6 3/4 9 | 12,388 38,414 44,725 | 3,097 9,604 11,181 | 8,455 | 8,750 | 18,225 | 12,390 |
| 7/8 | 1 | 3 15/16 7 7/8 10 1/2 | 16,107 52,393 66,130 | 4,027 13,098 16,533 | 11,510 | 11,905 | 24,805 | 16,865 |
| 1 | 1 1/8 | 4 1/2 9 12 | 21,606 60,837 72,540 | 5,402 15,209 18,135 | 15,030 | 15,550 | 32,400 | 22,030 |
| 1 1/4 | 1 3/8 | 5 5/8 11 1/4 15 | 31,142 82,281 106,186 | 7,786 20,570 26,547 | 23,490 | 24,295 | 50,620 | 34,425 |

TENSION AND SHEAR LOADS FOR REBAR - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Rebar Size | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | | | Allowable, Based on Steel Strength, Grade 60 | |
|------------|---|-------------------------------|------------------------------|-------------------------------|----------------------------|-----------------------------|--|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | Tension Load (lbs.) | Shear Load (lbs.) |
| #4 | 5/8 | 4 1/2 | 18,975 | 4,744 | 12,121 | 3,030 | 4,710 | 3,060 |
| #5 | 3/4 | 5 5/8 | 31,555 | 7,889 | 20,597 | 5,149 | 7,365 | 4,740 |
| #6 | 7/8 | 6 3/4 | 39,109 | 9,777 | 30,114 | 7,529 | 10,605 | 6,730 |
| #7 | 1 | 7 7/8 | 47,523 | 11,881 | 34,302 | 8,575 | 14,430 | 9,180 |
| #8 | 1 1/8 | 9 | 55,937 | 13,984 | 38,489 | 9,622 | 18,850 | 12,085 |

SHEAR LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | Allowable, Based on Steel Strength | | | |
|-----------------------------|---|-------------------------------|----------------------------|-----------------------------|------------------------------------|--------------------------|---------------------------|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | ASTM A36 (lbs.) | ASTM A307 GRADE C (lbs.) | ASTM A193 GRADE B7 (lbs.) | 304/316 SS (lbs.) |
| 3/8 | 7/16 | 3 3/8 | 7,072 | 1,768 | 1,090 | 1,125 | 2,345 | 1,870 |
| 1/2 | 9/16 | 4 1/2 | 12,230 | 3,058 | 1,935 | 2,000 | 4,170 | 3,330 |
| 5/8 | 3/4 | 5 5/8 | 23,190 | 5,798 | 3,025 | 3,130 | 6,520 | 5,210 |
| 3/4 | 7/8 | 6 3/4 | 31,853 | 7,963 | 4,355 | 4,505 | 9,390 | 6,390 |
| 7/8 | 1 | 7 7/8 | 34,953 | 8,738 | 5,930 | 6,135 | 12,780 | 8,680 |
| 1 | 1 1/8 | 9 | 54,924 | 13,731 | 7,745 | 8,010 | 16,690 | 11,340 |
| 1 1/4 | 1 3/8 | 11 1/4 | 73,427 | 18,357 | 12,100 | 12,515 | 26,075 | 17,730 |

HS-200

TENSION - EDGE DISTANCE - 4.5D* EMBEDMENTS

| | Anchor Diameter | | | | | | |
|---------------|----------------------------|-------|-------|--------|-------|--------|--------|
| | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" | 1 1/4" |
| Ultimate Load | 3,037 | 5,969 | 9,680 | 12,388 | 6,107 | 21,606 | 31,142 |
| Edge Distance | Reduction Multiplier Table | | | | | | |
| 3/4" | 0.57 | | | | | | |
| 1" | 0.63 | | | | | | |
| 1 1/4" | 0.69 | 0.59 | | | | | |
| 1 1/2" | 0.75 | 0.64 | 0.57 | | | | |
| 1 3/4" | 0.82 | 0.69 | 0.61 | 0.57 | | | |
| 2" | 0.88 | 0.74 | 0.65 | 0.60 | 0.57 | | |
| 2 1/4" | 0.94 | 0.79 | 0.69 | 0.63 | 0.60 | 0.57 | |
| 2 1/2" | 1.00 | 0.83 | 0.73 | 0.67 | 0.62 | 0.59 | |
| 2 3/4" | | 0.88 | 0.77 | 0.70 | 0.65 | 0.62 | |
| 3" | | 0.93 | 0.80 | 0.73 | 0.68 | 0.64 | 0.58 |
| 3 1/4" | | 0.98 | 0.84 | 0.76 | 0.70 | 0.67 | 0.60 |
| 3 1/2" | | 1.00 | 0.88 | 0.79 | 0.73 | 0.69 | 0.62 |
| 3 3/4" | | | 0.92 | 0.82 | 0.76 | 0.71 | 0.64 |
| 4" | | | 0.96 | 0.86 | 0.79 | 0.74 | 0.66 |
| 4 1/4" | | | 1.00 | 0.89 | 0.81 | 0.76 | 0.68 |
| 4 1/2" | | | | 0.92 | 0.84 | 0.79 | 0.69 |
| 4 3/4" | | | | 0.95 | 0.87 | 0.81 | 0.71 |
| 5" | | | | 0.98 | 0.89 | 0.83 | 0.73 |
| 5 1/4" | | | | 1.00 | 0.92 | 0.86 | 0.75 |
| 5 1/2" | | | | | 0.95 | 0.88 | 0.77 |
| 5 3/4" | | | | | 0.97 | 0.90 | 0.79 |
| 6" | | | | | 1.00 | 0.93 | 0.81 |
| 6 1/4" | | | | | | 0.95 | 0.83 |
| 6 1/2" | | | | | | 0.98 | 0.85 |
| 6 3/4" | | | | | | 1.00 | 0.87 |
| 7" | | | | | | | 0.89 |
| 7 1/2" | | | | | | | 0.92 |
| 8" | | | | | | | 0.96 |
| 8 1/2" | | | | | | | 1.00 |

* D = Bolt/Rod Diameter

TENSION - SPACING DISTANCE - 9D* EMBEDMENTS

| | Anchor Diameter | | | | | | |
|------------------|----------------------------|--------|--------|--------|--------|--------|--------|
| | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" | 1 1/4" |
| Ultimate Load | 8,214 | 18,374 | 26,581 | 38,414 | 52,393 | 60,837 | 82,281 |
| Spacing Distance | Reduction Multiplier Table | | | | | | |
| 1 3/4" | 0.73 | | | | | | |
| 2" | 0.75 | | | | | | |
| 2 1/2" | 0.78 | 0.74 | | | | | |
| 3" | 0.81 | 0.77 | 0.74 | | | | |
| 3 1/2" | 0.85 | 0.79 | 0.76 | 0.73 | | | |
| 4" | 0.88 | 0.81 | 0.78 | 0.75 | 0.73 | | |
| 4 1/2" | 0.91 | 0.84 | 0.79 | 0.77 | 0.75 | 0.73 | |
| 5" | 0.94 | 0.86 | 0.81 | 0.78 | 0.76 | 0.74 | |
| 5 1/2" | 0.97 | 0.89 | 0.83 | 0.80 | 0.77 | 0.75 | |
| 6" | 1.00 | 0.91 | 0.85 | 0.81 | 0.79 | 0.77 | 0.74 |
| 6 1/2" | | 0.93 | 0.87 | 0.83 | 0.80 | 0.78 | 0.75 |
| 7" | | 0.96 | 0.89 | 0.85 | 0.81 | 0.79 | 0.76 |
| 7 1/2" | | 0.98 | 0.91 | 0.86 | 0.83 | 0.80 | 0.77 |
| 8" | | 1.00 | 0.93 | 0.88 | 0.84 | 0.81 | 0.78 |
| 9" | | | 0.97 | 0.91 | 0.87 | 0.84 | 0.79 |
| 10" | | | 1.00 | 0.94 | 0.90 | 0.86 | 0.81 |
| 11" | | | | 0.97 | 0.92 | 0.89 | 0.83 |
| 12" | | | | 1.00 | 0.95 | 0.91 | 0.85 |
| 13" | | | | | 0.98 | 0.93 | 0.87 |
| 14" | | | | | 1.00 | 0.96 | 0.89 |
| 15" | | | | | | 0.98 | 0.91 |
| 16" | | | | | | 1.00 | 0.93 |
| 17" | | | | | | | 0.95 |
| 18" | | | | | | | 0.97 |
| 19" | | | | | | | 0.99 |
| 20" | | | | | | | 1.00 |

* D = Bolt/Rod Diameter

TENSION - EDGE DISTANCE - 9D* EMBEDMENTS

| | Anchor Diameter | | | | | | |
|---------------|----------------------------|--------|--------|--------|--------|--------|--------|
| | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" | 1 1/4" |
| Ultimate Load | 8,214 | 18,374 | 26,581 | 38,414 | 52,393 | 60,837 | 82,281 |
| Edge Distance | Reduction Multiplier Table | | | | | | |
| 1 3/4" | 0.73 | | | | | | |
| 2" | 0.75 | | | | | | |
| 2 1/2" | 0.79 | 0.74 | | | | | |
| 3" | 0.83 | 0.77 | 0.73 | | | | |
| 3 1/2" | 0.87 | 0.80 | 0.75 | 0.73 | | | |
| 4" | 0.91 | 0.83 | 0.78 | 0.75 | 0.72 | | |
| 4 1/2" | 0.95 | 0.86 | 0.80 | 0.77 | 0.74 | 0.72 | |
| 5" | 0.99 | 0.89 | 0.83 | 0.79 | 0.76 | 0.74 | |
| 5 1/2" | 1.00 | 0.92 | 0.85 | 0.81 | 0.78 | 0.75 | |
| 6" | | 0.95 | 0.88 | 0.83 | 0.79 | 0.77 | 0.73 |
| 6 1/2" | | 0.98 | 0.90 | 0.85 | 0.81 | 0.78 | 0.74 |
| 7" | | 1.00 | 0.93 | 0.87 | 0.83 | 0.80 | 0.75 |
| 7 1/2" | | | 0.95 | 0.89 | 0.85 | 0.81 | 0.77 |
| 8" | | | 0.98 | 0.91 | 0.86 | 0.83 | 0.78 |
| 9" | | | 1.00 | 0.95 | 0.90 | 0.86 | 0.80 |
| 10" | | | | 0.99 | 0.94 | 0.89 | 0.83 |
| 11" | | | | 1.00 | 0.97 | 0.92 | 0.85 |
| 12" | | | | | 1.00 | 0.95 | 0.88 |
| 13" | | | | | | 0.98 | 0.90 |
| 14" | | | | | | 1.00 | 0.93 |
| 15" | | | | | | | 0.95 |
| 16" | | | | | | | 1.00 |

* D = Bolt/Rod Diameter

TENSION - SPACING DISTANCE - 12D* EMBEDMENTS

| | Anchor Diameter | | | | | | |
|------------------|----------------------------|--------|--------|--------|--------|--------|---------|
| | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" | 1 1/4" |
| Ultimate Load | 9,277 | 22,224 | 34,819 | 44,725 | 66,130 | 72,540 | 106,186 |
| Spacing Distance | Reduction Multiplier Table | | | | | | |
| 1 3/4" | 0.82 | | | | | | |
| 2" | 0.83 | | | | | | |
| 2 1/2" | 0.85 | 0.83 | | | | | |
| 3" | 0.88 | 0.84 | 0.82 | | | | |
| 3 1/2" | 0.90 | 0.86 | 0.84 | 0.82 | | | |
| 4" | 0.92 | 0.88 | 0.85 | 0.83 | 0.82 | | |
| 4 1/2" | 0.94 | 0.89 | 0.86 | 0.84 | 0.83 | 0.82 | |
| 5" | 0.96 | 0.91 | 0.88 | 0.85 | 0.84 | 0.83 | |
| 5 1/2" | 0.98 | 0.92 | 0.89 | 0.87 | 0.85 | 0.84 | |
| 6" | 1.00 | 0.94 | 0.90 | 0.88 | 0.86 | 0.84 | 0.82 |
| 6 1/2" | | 0.96 | 0.91 | 0.89 | 0.87 | 0.85 | 0.83 |
| 7" | | 0.97 | 0.93 | 0.90 | 0.88 | 0.86 | 0.84 |
| 7 1/2" | | 0.99 | 0.94 | 0.91 | 0.89 | 0.87 | 0.84 |
| 8" | | 1.00 | 0.95 | 0.92 | 0.89 | 0.88 | 0.85 |
| 9" | | | 0.98 | 0.94 | 0.91 | 0.89 | 0.86 |
| 10" | | | 1.00 | 0.96 | 0.93 | 0.91 | 0.88 |
| 11" | | | | 0.98 | 0.95 | 0.92 | 0.89 |
| 12" | | | | 1.00 | 0.97 | 0.94 | 0.90 |
| 13" | | | | | 0.99 | 0.96 | 0.91 |
| 14" | | | | | 1.00 | 0.97 | 0.93 |
| 15" | | | | | | 0.99 | 0.94 |
| 16" | | | | | | 1.00 | 0.95 |
| 17" | | | | | | | 0.97 |
| 18" | | | | | | | 0.98 |
| 19" | | | | | | | 0.99 |
| 20" | | | | | | | 1.00 |

* D = Bolt/Rod Diameter

HS-200 • ADHESIVE ANCHORING PRODUCTS



TENSION - EDGE DISTANCE - 12D* EMBEDMENTS

| | Anchor Diameter | | | | | | |
|---------------|----------------------------|--------|--------|--------|--------|--------|---------|
| | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" | 1 1/4" |
| Ultimate Load | 9,277 | 22,224 | 34,819 | 44,725 | 66,130 | 72,540 | 106,186 |
| Edge Distance | Reduction Multiplier Table | | | | | | |
| 1 3/4" | 0.75 | | | | | | |
| 2" | 0.77 | | | | | | |
| 2 1/2" | 0.79 | 0.76 | | | | | |
| 3" | 0.81 | 0.78 | 0.76 | | | | |
| 3 1/2" | 0.84 | 0.80 | 0.77 | 0.75 | | | |
| 4" | 0.86 | 0.81 | 0.79 | 0.77 | 0.75 | | |
| 4 1/2" | 0.89 | 0.83 | 0.80 | 0.78 | 0.76 | 0.75 | |
| 5" | 0.91 | 0.85 | 0.81 | 0.79 | 0.77 | 0.76 | |
| 5 1/2" | 0.94 | 0.87 | 0.83 | 0.80 | 0.79 | 0.77 | |
| 6" | 0.96 | 0.89 | 0.84 | 0.81 | 0.80 | 0.78 | 0.76 |
| 6 1/2" | 0.99 | 0.91 | 0.86 | 0.83 | 0.81 | 0.79 | 0.76 |
| 7" | 1.00 | 0.93 | 0.87 | 0.84 | 0.82 | 0.80 | 0.77 |
| 7 1/2" | | 0.94 | 0.89 | 0.85 | 0.83 | 0.81 | 0.78 |
| 8" | | 0.96 | 0.90 | 0.86 | 0.84 | 0.81 | 0.79 |
| 9" | | 1.00 | 0.93 | 0.89 | 0.86 | 0.83 | 0.80 |
| 10" | | | 0.96 | 0.91 | 0.89 | 0.85 | 0.81 |
| 11" | | | 0.99 | 0.94 | 0.91 | 0.87 | 0.83 |
| 12" | | | 1.00 | 0.96 | 0.93 | 0.89 | 0.84 |
| 13" | | | | 0.99 | 0.95 | 0.91 | 0.86 |
| 14" | | | | 1.00 | 0.98 | 0.93 | 0.87 |
| 15" | | | | | 1.00 | 0.94 | 0.89 |
| 16" | | | | | | 0.96 | 0.90 |
| 17" | | | | | | 0.98 | 0.92 |
| 18" | | | | | | 1.00 | 0.93 |
| 19" | | | | | | | 0.95 |
| 20" | | | | | | | 0.96 |
| 21" | | | | | | | 0.98 |
| 22" | | | | | | | 0.99 |
| 23" | | | | | | | 1.00 |

* D = Bolt/Rod Diameter

SHEAR - EDGE DISTANCE 9D* EMBEDMENTS

| | Anchor Diameter | | | | | | |
|---------------|----------------------------|--------|--------|--------|--------|--------|---------|
| | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" | 1 1/4" |
| Ultimate Load | 9,277 | 22,224 | 34,819 | 44,725 | 66,130 | 72,540 | 106,186 |
| Edge Distance | Reduction Multiplier Table | | | | | | |
| 1 3/4" | 0.30 | | | | | | |
| 2" | 0.36 | | | | | | |
| 2 1/2" | 0.46 | 0.33 | | | | | |
| 3" | 0.57 | 0.41 | 0.31 | | | | |
| 3 1/2" | 0.67 | 0.49 | 0.38 | 0.30 | | | |
| 4" | 0.78 | 0.57 | 0.44 | 0.36 | 0.30 | | |
| 4 1/2" | 0.88 | 0.65 | 0.50 | 0.41 | 0.34 | 0.29 | |
| 5" | 0.99 | 0.72 | 0.57 | 0.46 | 0.39 | 0.33 | |
| 5 1/2" | 1.00 | 0.80 | 0.63 | 0.51 | 0.43 | 0.37 | |
| 6" | | 0.88 | 0.69 | 0.57 | 0.48 | 0.41 | 0.31 |
| 6 1/2" | | 0.96 | 0.76 | 0.62 | 0.52 | 0.45 | 0.35 |
| 7" | | 1.00 | 0.82 | 0.67 | 0.57 | 0.49 | 0.38 |
| 7 1/2" | | | 0.88 | 0.72 | 0.61 | 0.53 | 0.41 |
| 8" | | | 0.94 | 0.78 | 0.66 | 0.57 | 0.44 |
| 9" | | | 1.00 | 0.88 | 0.75 | 0.65 | 0.50 |
| 10" | | | | 0.99 | 0.84 | 0.72 | 0.57 |
| 11" | | | | 1.00 | 0.93 | 0.80 | 0.63 |
| 12" | | | | | 1.00 | 0.88 | 0.69 |
| 13" | | | | | | 0.96 | 0.76 |
| 14" | | | | | | 1.00 | 0.82 |
| 15" | | | | | | | 0.88 |
| 16" | | | | | | | 0.94 |
| 17" | | | | | | | 1.00 |

* D = Bolt/Rod Diameter

For multiple spacing and/or edge distances, the total reduction factor (F) is the product of all spacing reduction factors (f_s) and all edge reduction factor (f_e):

$$F = x f_{s1} \times f_{s2} \dots f_{sn} \times f_{e1} \times f_{e2} \dots f_{en}$$

REDUCTION FACTOR FOR REDUCED SPACING AND EDGE DISTANCES FOR THREADED ROD

| Embedment Depth | Edge Distance Factor, Tension Only | | | Edge Distance Factor, Shear Only | | | Spacing Factor, Tension Only | | |
|-----------------|------------------------------------|---------------|----------|----------------------------------|---------------|----------|------------------------------|---------------|-------|
| | C_{CR} | C_{MIN} | f_{RN} | C_{CR} | C_{MIN} | f_{RV} | S_{CR} | S_{MIN} | f_A |
| 4.5 x D | 1.5 x h_{ef} | .5 x h_{ef} | 0.57 | 1.5 x h_{ef} | - | - | 2 x h_{ef} | - | - |
| 9 x D | 1.5 x h_{ef} | .5 x h_{ef} | 0.72 | 1.5 x h_{ef} | .5 x h_{ef} | 0.29 | 1.75 x h_{ef} | .5 x h_{ef} | 0.69 |
| 12 x D | 1.5 x h_{ef} | .5 x h_{ef} | 0.75 | 1.5 x h_{ef} | .5 x h_{ef} | 0.29 | 1.75 x h_{ef} | .5 x h_{ef} | 0.72 |

h_{ef} = The anchor embedment depth

D = The diameter of the rod

C = The measure between the anchor center line and the free edge

C_{CR} = The least edge distance where no reduction would be applied

C_{MIN} = The least edge distance for which recognition is desired

S = The measure between anchors from center line to center line

S_{CR} = The least spacing between anchors where no reduction would be applied

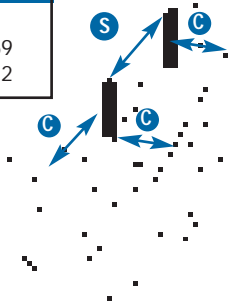
S_{MIN} = The least spacing between anchors for which recognition is desired

f_{RN} , f_{RV} = Load reduction factors to be applied when: $C_{MIN} \leq C < C_{CR}$

f_A = Load reduction factors to be applied when: $S_{MIN} \leq S < S_{CR}$

C = Edge Distance

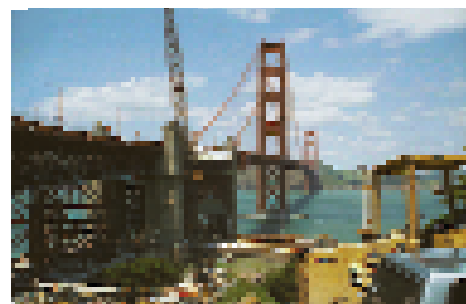
S = Spacing Distance



ON THE JOB with HS-200

GOLDEN GATE BRIDGE SEISMIC RETROFIT

Seismic retrofit construction is underway on the famous Golden Gate Bridge. This phase of the project involves the two San Francisco anchorages, Pylon S1 and Pylon S2. The current phase (Phase II) started in September of 2001 and incorporates the installation of 20,000 dowels. HS-200 was selected after a side-by-side strength comparison was conducted by an independent laboratory. HS-200 was selected only after it was determined to be the strongest and most reliable epoxy system as compared to all other systems presented.



ULTRABOND 1

Quick Selection Guide

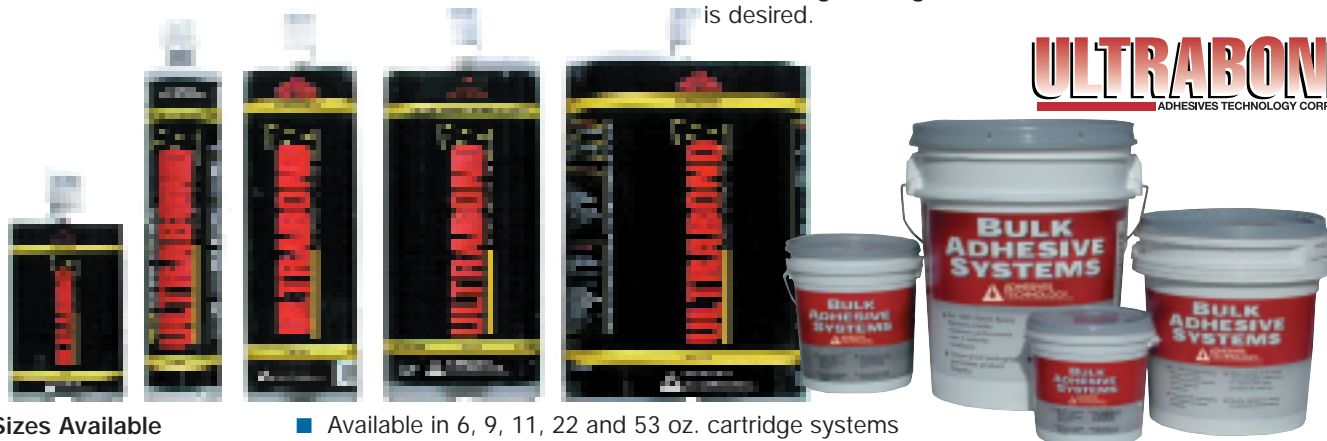
| | |
|---------------------|--------------|
| Tension Load (1/2") | 22,328 lbs.* |
| Working Time (75°F) | 20 min. |
| Cure Time (75°F) | 4 hrs. |
| Temperature Range | 35°F - 115°F |

Description

*1/2" threaded rod
at 9D in 2000 psi
concrete

Ultrabond 1 is a two component (1:1 ratio), 100% solids, high modulus, structural epoxy gel. It is a solvent free, no odor, high strength, moisture insensitive, non-sag epoxy system. The resin and hardener are uniformly dispensed from a dual cartridge system and mixed simultaneously through a mixing nozzle or available in bulk. **Ultrabond 1** is an excellent choice where a **high strength** adhesive with **maximum field reliability** is desired.

ULTRABOND 1
ADHESIVES TECHNOLOGY CORP.



Sizes Available

- Available in 6, 9, 11, 22 and 53 oz. cartridge systems
- Bulk sizes include 1 (102 oz.), 2, 10 and 100 gallon kits

Applications

- Highest strength adhesive and one of the strongest in the industry
- Long working time with a quick cure time
- Moisture insensitive - May be used in underwater environments
- May be used in concrete, hollow block, brick, clay and stone
- Perfect for vertical, horizontal, overhead & screen applications
- Seismic anchoring and bracing
- Surface crack repair

Features & Advantages

- High strength anchoring and doweling
- Bonding agent (metal, concrete, brick, wood, stone, block)
- Pick proof sealant - windows, doors, locks, etc. (e.g. Correctional Facilities)
- Concrete Repair - (see Bonding and Coatings Section)

Approval / Listings

ICC (formerly ICBO) - ER-4996
SBCCI - Report No. 2055
COLA - RR-25265
Various DOT's - Call for listing
Independent Laboratory Tested: Meets ASTM C881-99:
Type I, II, and V, Grade 3, Class B and C
Metro-Dade 05-0627.02

PERFORMANCE INFORMATION

Independent ASTM C881-99 Technical Data

| Properties | ASTM | Results |
|----------------------------------|-------|-----------------|
| Compressive Yield Strength - psi | D695 | 9,880 (7 day) |
| Compressive Modulus - psi | D695 | 191,280 (7 day) |
| Tensile Strength - psi | D638 | 6,790 (7 day) |
| Elongation - % | D638 | 1.9 (7 day) |
| Bond Strength - psi | C882 | 1,100 (2 day) |
| | C882 | 1,640 (14 day) |
| Consistency | C881 | Non-Sag Gel |
| Heat Deflection Temperature - °F | D648 | 134 (7 day) |
| Water Absorption - % | D570 | 0.40 (24 hrs) |
| Linear Coefficient of Shrinkage | D2566 | 0.003 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray |
| Storage | Below 95°F |



Independent test reports available upon request. For technical support call Adhesives Technology Corp.

ULTRABOND1 • ADHESIVE ANCHORING PRODUCTS



REDUCTION FACTOR FOR EDGE DISTANCES FOR THREADED ROD

| Embedment Depth | Edge Distance Factor, Tension Only | | | Edge Distance Factor, Shear Only | | | Spacing Factor, Tension Only | | |
|-----------------|------------------------------------|--------------------|----------|----------------------------------|--------------------|----------|------------------------------|-----------|-------|
| | C_{CR} | C_{MIN} | f_{RN} | C_{CR} | C_{MIN} | f_{RV} | S_{CR} | S_{MIN} | f_A |
| $9 \times D$ | $1.5 \times h_{ef}$ | $.5 \times h_{ef}$ | 0.54 | $1.5 \times h_{ef}$ | $.5 \times h_{ef}$ | 0.25 | $1.75 \times h_{ef}$ | - | - |

h_{ef} = The anchor embedment depth

C = The measure between the anchor center line and the free edge

C_{MIN} = The least edge distance for which recognition is desired

S_{CR} = The least spacing between anchors where no reduction would be applied

f_{RN} , f_{RV} = Load reduction factors to be applied when: $C_{MIN} \leq C < C_{CR}$

D = The diameter of the rod

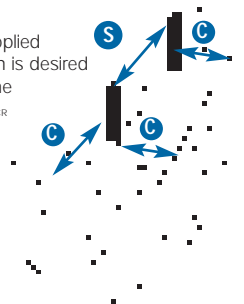
C_{CR} = The least edge distance where no reduction would be applied

S_{MIN} = The least spacing between anchors for which recognition is desired

S = The measure between anchors from center line to center line

f_A = Load reduction factors to be applied when: $S_{MIN} \leq S < S_{CR}$

C = Edge Distance
 S = Spacing Distance



ICC – Ultrabond 1 has been tested in accordance with the ICC Acceptance Criteria for Adhesive Anchors in Concrete and Masonry Elements (AC58). Ultrabond 1 is recognized for the following uses:

- Static Loads
- Seismic / Wind Loading
- Long Term Creep at Elevated Temperature
- Static Loading at Elevated Temperature
- Damp Holes
- Freeze Thaw Conditions
- Critical and Minimum Edge and Spacing Distances

TENSION LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | Allowable, Based on Steel Strength | | | |
|-----------------------------|---|-------------------------------|------------------------------|-------------------------------|------------------------------------|--------------------------|---------------------------|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | ASTM A36 (lbs.) | ASTM A307 GRADE C (lbs.) | ASTM A193 GRADE B7 (lbs.) | 304/316 SS (lbs.) |
| 3/8 | 7/16 | 3 3/8 | 9,248 | 2,312 | 2,115 | 2,185 | 4,555 | 3,645 |
| 1/2 | 9/16 | 4 1/2 | 22,328 | 5,582 | 3,775 | 3,885 | 8,100 | 6,480 |
| 5/8 | 3/4 | 5 5/8 | 29,950 | 7,488 | 5,870 | 6,075 | 12,655 | 10,125 |
| 3/4 | 7/8 | 6 3/4 | 39,278 | 9,820 | 8,455 | 8,750 | 18,225 | 12,390 |
| 7/8 | 1 | 7 7/8 | 53,862 | 13,466 | 11,510 | 11,905 | 24,805 | 16,865 |
| 1 | 1 1/8 | 9 | 62,697 | 15,674 | 15,030 | 15,550 | 32,400 | 22,030 |
| 1 1/4 | 1 3/8 | 11 1/4 | 88,594 | 22,149 | 23,490 | 24,295 | 50,620 | 34,425 |

SHEAR LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | Allowable, Based on Steel Strength | | | |
|-----------------------------|---|-------------------------------|----------------------------|-----------------------------|------------------------------------|--------------------------|---------------------------|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | ASTM A36 (lbs.) | ASTM A307 GRADE C (lbs.) | ASTM A193 GRADE B7 (lbs.) | 304/316 SS (lbs.) |
| 3/8 | 7/16 | 3 3/8 | 7,189 | 1,797 | 1,090 | 1,125 | 2,345 | 1,870 |
| 1/2 | 9/16 | 4 1/2 | 12,863 | 3,216 | 1,935 | 2,000 | 4,170 | 3,330 |
| 5/8 | 3/4 | 5 5/8 | 22,855 | 5,714 | 3,025 | 3,130 | 6,520 | 5,210 |
| 3/4 | 7/8 | 6 3/4 | 32,304 | 8,076 | 4,355 | 4,505 | 9,390 | 6,390 |
| 7/8 | 1 | 7 7/8 | 36,214 | 9,054 | 5,930 | 6,135 | 12,780 | 8,680 |
| 1 | 1 1/8 | 9 | 52,151 | 13,038 | 7,745 | 8,010 | 16,690 | 11,340 |
| 1 1/4 | 1 3/8 | 11 1/4 | 69,011 | 17,253 | 12,100 | 12,515 | 26,075 | 17,730 |

TENSION AND SHEAR LOADS FOR REBAR - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Rebar Size | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | | | Allowable, Based on Steel Strength, Grade 60 | |
|------------|---|-------------------------------|------------------------------|-------------------------------|----------------------------|-----------------------------|--|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | Tension Load (lbs.) | Shear Load (lbs.) |
| #4 | 5/8 | 4 1/2 | 23,203 | 5,801 | 11,242 | 2,811 | 4,710 | 3,060 |
| #5 | 3/4 | 5 5/8 | 32,326 | 8,082 | 21,032 | 5,258 | 7,365 | 4,740 |
| #6 | 7/8 | 6 3/4 | 44,481 | 11,120 | 32,294 | 8,074 | 10,605 | 6,730 |
| #7* | 1 | 7 7/8 | 49,647 | 12,412 | 35,438 | 8,860 | 14,430 | 9,180 |
| #8 | 1 1/8 | 9 | 54,812 | 13,703 | 38,582 | 9,646 | 18,850 | 12,085 |

*Values were interpolated from #6 and #8 rebar testing.

ULTRABOND 1

Ordering Information

| Size | 6 oz. | 9 oz. | 11 oz. | 22 oz. | 53 oz. |
|---------------------------|-------|--------------|--------|----------|----------|
| Part # | A6-1 | A9-1 | A11-1 | A22-1 | A53-1 |
| Manual Dispensing Tool | TM6 | Caulking Gun | TM11 | TM22HD | N/A |
| Pneumatic Dispensing Tool | N/A | N/A | N/A | TA22HD-C | TA53HD-C |
| Case Qty. | 20 | 20 | 20 | 12 | 6 |
| Pallet Qty. | 1400 | 720 | 1280 | 768 | 216 |

TENSILE - EDGE DISTANCE - 9D* EMBEDMENTS

| | Anchor Diameter | | | | | | |
|---------------|------------------|--------|--------|--------|--------|--------|--------|
| | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" | 1 1/4" |
| Ultimate Load | 9,248 | 22,328 | 29,948 | 39,276 | 53,860 | 62,696 | 88,592 |
| Edge Distance | Multiplier Table | | | | | | |
| 1 3/4" | 0.55 | | | | | | |
| 2" | 0.58 | | | | | | |
| 2 1/4" | 0.62 | 0.54 | | | | | |
| 2 1/2" | 0.65 | 0.57 | | | | | |
| 2 3/4" | 0.69 | 0.59 | | | | | |
| 3" | 0.72 | 0.62 | 0.56 | | | | |
| 3 1/4" | 0.76 | 0.64 | 0.58 | | | | |
| 3 1/2" | 0.79 | 0.67 | 0.60 | 0.55 | | | |
| 3 3/4" | 0.83 | 0.69 | 0.62 | 0.57 | | | |
| 4" | 0.86 | 0.72 | 0.64 | 0.58 | 0.54 | | |
| 4 1/4" | 0.90 | 0.74 | 0.66 | 0.60 | 0.56 | | |
| 4 1/2" | 0.93 | 0.77 | 0.68 | 0.62 | 0.57 | 0.54 | |
| 4 3/4" | 0.97 | 0.80 | 0.70 | 0.63 | 0.59 | 0.55 | |
| 5" | 1.00 | 0.82 | 0.72 | 0.65 | 0.60 | 0.57 | |
| 5 1/4" | | 0.85 | 0.74 | 0.67 | 0.62 | 0.58 | |
| 5 1/2" | | 0.87 | 0.76 | 0.68 | 0.63 | 0.59 | |
| 5 3/4" | | 0.90 | 0.78 | 0.70 | 0.65 | 0.60 | 0.55 |
| 6" | | 0.92 | 0.80 | 0.72 | 0.66 | 0.62 | 0.56 |
| 6 1/4" | | 0.95 | 0.82 | 0.73 | 0.67 | 0.63 | 0.57 |
| 6 1/2" | | 0.97 | 0.84 | 0.75 | 0.69 | 0.64 | 0.58 |
| 6 3/4" | | 1.00 | 0.86 | 0.77 | 0.70 | 0.65 | 0.59 |
| 7" | | | 0.88 | 0.78 | 0.72 | 0.67 | 0.60 |
| 7 1/4" | | | 0.90 | 0.80 | 0.73 | 0.68 | 0.61 |
| 7 1/2" | | | 0.92 | 0.82 | 0.75 | 0.69 | 0.62 |
| 7 3/4" | | | 0.94 | 0.84 | 0.76 | 0.70 | 0.63 |
| 8" | | | 0.96 | 0.85 | 0.78 | 0.72 | 0.64 |
| 8 1/4" | | | 0.98 | 0.87 | 0.79 | 0.73 | 0.65 |
| 8 1/2" | | | 1.00 | 0.89 | 0.80 | 0.74 | 0.66 |
| 8 3/4" | | | | 0.90 | 0.82 | 0.76 | 0.67 |
| 9" | | | | 0.92 | 0.83 | 0.77 | 0.68 |
| 9 1/4" | | | | 0.94 | 0.85 | 0.78 | 0.69 |
| 9 1/2" | | | | 0.95 | 0.86 | 0.79 | 0.70 |
| 9 3/4" | | | | 0.97 | 0.88 | 0.81 | 0.71 |
| 10" | | | | 1.00 | 0.89 | 0.82 | 0.72 |
| 10 1/2" | | | | | 0.92 | 0.84 | 0.74 |
| 11" | | | | | 0.95 | 0.87 | 0.76 |
| 11 1/2" | | | | | 0.98 | 0.90 | 0.78 |
| 12" | | | | | 1.00 | 0.92 | 0.80 |
| 12 1/2" | | | | | | 0.95 | 0.82 |
| 13" | | | | | | 0.97 | 0.84 |
| 13 1/2" | | | | | | 1.00 | 0.86 |
| 14" | | | | | | | 0.88 |
| 14 1/2" | | | | | | | 0.90 |
| 15" | | | | | | | 0.92 |
| 15 1/2" | | | | | | | 0.94 |
| 16" | | | | | | | 0.96 |
| 16 1/2" | | | | | | | 0.98 |
| 17" | | | | | | | 1.00 |

* D = Bolt/Rod Diameter

See pages 26 and 27 for additional accessories.

ANOTHER FIRST FROM ATC

THE NEW EZ-MIX SYSTEM

Our company was the first to introduce a single cartridge epoxy system to the marketplace back in 1988. The product (later named the EZ10) took the country by storm and was instrumental in inducting many eager distributors into the quickly expanding adhesive anchoring market.

In the Spring of 2003 we introduced the industry's first single cartridge epoxy system that requires **NO PUMPING**. This single cartridge epoxy system can be used in any standard caulking gun and, unlike its predecessor (the EZ10), requires no pumping to mix the product. The epoxy mixes in the same manner as with other systems, through a static mixing tube. The product can also be resealed which means that any remaining material can be saved for later use.

To help distributors increase their sales on this product, point of purchase counter display boxes are shipped with every order.



Independent test reports available upon request. For technical support call Adhesives Technology Corp.



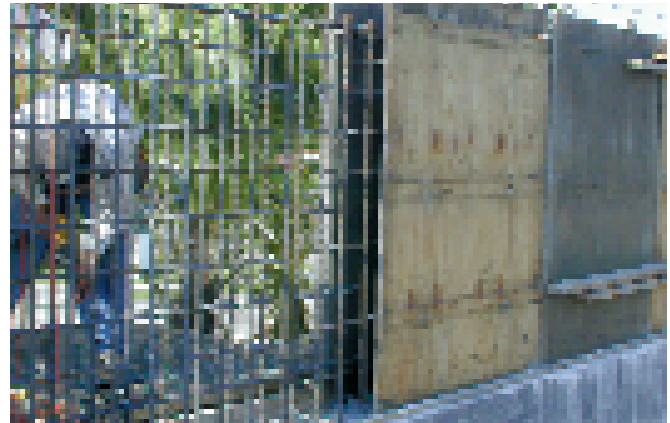
ON THE JOB

with Ultrabond 1

FLORIDA D.O.T. BARRIER EXTENSION

For neighborhood safety reasons, the height on an existing highway barrier needed to be raised. This utilized the practice of securing new concrete to old concrete. First the rebar must be installed into the top of the old barrier. Holes are drilled and then filled with **Ultrabond 1** using a pneumatic

dispensing tool. While one worker fills the holes, others install the rebar. The rebar cage is then completed and wood forms are constructed around the rebar. Finally, the concrete is poured, allowed to set and the forms are removed.



ULTRABOND 1300

Quick Selection Guide

| | |
|---------------------|--------------|
| Tension Load (1/2") | 14,146 lbs.* |
| Working Time (75°F) | 20 min. |
| Cure Time (75°F) | 2 hrs. |
| Temperature Range | 40°F - 110°F |

*1/2" threaded rod
at 9D in 3000 psi
concrete

Description

Ultrabond 1300 is a two component (1:1 ratio), 100% solids, high modulus, structural epoxy gel. It is a solvent free, low odor, high strength, moisture insensitive, non-sag epoxy system. The resin and hardener are uniformly dispensed from a dual cartridge system and mixed simultaneously through a mixing nozzle or available in bulk.



ULTRABOND 1300
ADHESIVES TECHNOLOGY CORP.

Sizes Available

- Sizes available in 22 and 53 oz. dual cartridge systems. One free nozzle included with every 22 oz. cartridge
- Bulk sizes include 1 (102 oz.), 2, 10 and 100 gallon kits

Features & Advantages

- Long working time with a quick 2 hour cure time
- Moisture insensitive - May be used in damp environments
- May be used in concrete, hollow block, brick, clay and stone
- Perfect for vertical, horizontal, overhead and screen applications
- Structural bonding of concrete to concrete

Applications

- High strength anchoring and doweling
- Bonding agent (metal, concrete, brick, wood, stone, block)
- Pick proof sealant - windows, doors, locks, etc. (e.g. Correctional Facilities)
- Concrete Repair - (see Bonding and Coatings Section)

Approval / Listings

Various DOT's - Call for listing
Independent Laboratory Tested: Meets ASTM C881-99:
Type I, II, IV and V, Grade 3, Class B and C
Metro-Dade 05-0627.02

PERFORMANCE INFORMATION

Independent ASTM C881-99 Technical Data

| Properties | ASTM | Results |
|----------------------------------|-------|-----------------|
| Compressive Yield Strength - psi | D695 | 11,890 (7 day) |
| Compressive Modulus - psi | D695 | 201,280 (7 day) |
| Tensile Strength - psi | D638 | 7,428 (7 day) |
| Elongation - % | D638 | 1.8 (7 day) |
| Bond Strength - psi | C882 | 1,410 (2 day) |
| | C882 | 2,340 (14 day) |
| Consistency | C881 | Non-Sag Gel |
| Heat Deflection Temperature - °F | D648 | 131 (7 day) |
| Water Absorption - % | D570 | 0.52 (24 hrs.) |
| Linear Coefficient of Shrinkage | D2566 | 0.004 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray |
| Storage | Below 95°F |



Independent test reports available upon request. For technical support call Adhesive Technology at 800-892-1880

ULTRABOND 1300 • ADHESIVE ANCHORING PRODUCTS



Ordering Information

| Size | 22 oz. | 53 oz. | Bulk Gal. Kit | 2 Gal. Kit | 10 Gal. Kit | 100 Gal. Kit |
|---------------------------|-----------|----------|---------------|------------|----------------|----------------|
| Part # | A22-1300N | A53-1300 | BUG-1300 | B2G-1300 | B10G-1300 | B100G-1300 |
| Manual Dispensing Tool | TM22HD | N/A | N/A | N/A | N/A | N/A |
| Pneumatic Dispensing Tool | TA22HD-C | TA53HD-C | N/A | N/A | Bulk Dispenser | Bulk Dispenser |
| Case Qty. | 12 | 6 | 1 | 1 | Packaged Each | Packaged Each |
| Pallet Qty. | 648 | 216 | 75 | 75 | 12 | 2 |

See pages 26 and 27 for additional accessories.

TENSION LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Hole Diameter (in.) | Minimum Embedment Depth (in.) | f'c = 3000 psi | | f'c = 5000 psi | | f'c = 7000 psi | |
|-----------------------------|---------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|-------------------------------|
| | | | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) |
| 3/8 | 7/16 | 3 3/8 | 9,336 | 2,334 | 10,124 | 2,531 | 10,936 | 2,734 |
| 1/2 | 9/16 | 4 1/2 | 14,146 | 3,537 | 14,512 | 3,628 | 18,400 | 4,600 |
| 5/8 | 3/4 | 5 5/8 | 19,600 | 4,900 | 20,688 | 5,172 | 29,288 | 7,322 |
| 3/4 | 7/8 | 6 3/4 | 25,052 | 6,263 | 26,864 | 6,716 | 34,764 | 8,691 |
| 7/8 | 1 | 7 7/8 | 33,376 | 8,344 | 34,328 | 8,582 | 39,524 | 9,881 |
| 1 | 1 1/8 | 9 | 41,696 | 10,424 | 41,792 | 10,448 | 52,144 | 13,036 |

SHEAR LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Hole Diameter (in.) | Minimum Embedment Depth (in.) | f'c = 3000 psi | | f'c = 5000 psi | | f'c = 7000 psi | |
|-----------------------------|---------------------|-------------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|
| | | | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) |
| 3/8 | 7/16 | 3 3/8 | 6,940 | 1,735 | 7,036 | 1,759 | 7,144 | 1,786 |
| 1/2 | 9/16 | 4 1/2 | 8,316 | 2,079 | 10,380 | 2,595 | 13,096 | 3,274 |
| 5/8 | 3/4 | 5 5/8 | 15,328 | 3,832 | 18,056 | 4,514 | 19,052 | 4,763 |
| 3/4 | 7/8 | 6 3/4 | 22,336 | 5,584 | 25,732 | 6,433 | 26,072 | 6,518 |
| 7/8 | 1 | 7 7/8 | 29,364 | 7,341 | 31,408 | 7,852 | 33,092 | 8,273 |
| 1 | 1 1/8 | 9 | 36,396 | 9,099 | 37,084 | 9,271 | 40,952 | 10,238 |

ON THE JOB

At the Cleveland Hopkins International Airport

Epoxy products used for anchoring or doweling can be found in use on virtually every airport expansion project throughout the country. The Cleveland Hopkins International Airport was no exception. This application was for the doweling of runway ties for two new 10,000 foot runways & taxiways. **Ultrabond's 1300** in 10 gallon bulk kits was the preferred formula and was dispensed from a truck mounted bulk dispensing machine. Over 10,000 dowels were used in the joining of 50 foot wide sections of runway, each two to three thousand feet long.

Epoxy is the preferred product for use in most concrete runway applications due to its high strength properties and resistance to vibration. Our 53 ounce cartridge systems or bulk adhesive packaging are usually chosen due to their time saving production benefits when large amount of dowels are being installed.

ATC's exceptional adhesive products have been used on major airport projects in almost every state in the country.



ULTRABOND SPEEDSET2

Quick Selection Guide

| | |
|---------------------|--------------|
| Tension Load (1/2") | 12,074 lbs.* |
| Working Time (75°F) | 7 min. |
| Cure Time (75°F) | 60 min. |
| Temperature Range | 20°F – 120°F |

*1/2" threaded rod
at 9D in 2000 psi
concrete

Description

SpeedSet2 is a two component (10:1 ratio), 100% solids, high modulus, structural adhesive. It is a solvent free, high strength, moisture insensitive, non-sag system. The resin and hardener are uniformly dispensed from a cartridge system and mixed simultaneously through a mixing nozzle.



SPEEDSET2TM
ADHESIVES TECHNOLOGY CORP.

Ordering Information

| | |
|---------------------------|----------|
| Size | 28 oz. |
| Part # | A28-SS2 |
| Manual Dispensing Tool | TM28HD |
| Pneumatic Dispensing Tool | TA28HD-C |
| Case Qty. | 10 |
| Pallet Qty. | 360 |

See pages 26 and 27 for additional accessories.

Sizes Available

- Available in 28 oz. cartridge systems

Features & Advantages

- Fastest Cure Time
- Moisture insensitive - May be used in damp environments
- Ideal for use in a wide range of temperatures, from 20°F to 120°F
- May be used in concrete, hollow block, brick, clay and stone
- Perfect for vertical, horizontal, overhead and screen applications

Applications

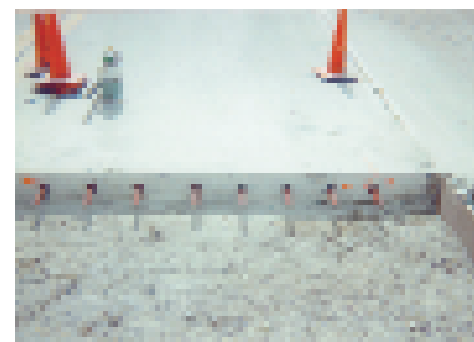
- High strength threaded rod anchoring
- Rebar doweling
- Capping material for crack injection

Approval / Listings

Various DOT's – Call for listing
Independent Laboratory Tested: Meets ASTM C881-99:
Type I, II, IV and V, Grade 3, Class A, B and C



Above photo: SpeedSet 2 is used to anchor concrete forms on an Army Corp of Engineers Project.



2 photos above: SpeedSet2 used in lane tie applications.

PERFORMANCE INFORMATION

Independent ASTM C881-99 Technical Data

| Properties | ASTM | Results |
|----------------------------------|-------|-----------------|
| Compressive Yield Strength – psi | D695 | 10,520 (14 day) |
| Compressive Modulus – psi | D695 | 201,120 (7 day) |
| Tensile Strength – psi | D638 | 7,280 (7 day) |
| Elongation - % | D638 | 1.5 (7 day) |
| Bond Strength – psi | C882 | 1,205 (2 day) |
| | C882 | 1,750 (14 day) |
| Consistency | C881 | Non-Sag Gel |
| Heat Deflection Temperature - °F | D648 | 138 (7 day) |
| Water Absorption - % | D570 | 0.23 (24 hrs) |
| Linear Coefficient of Shrinkage | D2566 | 0.02 |

| | |
|------------|------------|
| Shelf Life | 1 years |
| Mix Ratio | 10:1 |
| Color | Gray |
| Storage | Below 80°F |

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

SPEEDSET2 • ADHESIVE ANCHORING PRODUCTS



TENSION LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | Based on Steel Strength | | | |
|-----------------------------|---|-------------------------------|------------------------------|-------------------------------|-------------------------|--------------------------|---------------------------|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | ASTM A36 (lbs.) | ASTM A307 GRADE C (lbs.) | ASTM A193 GRADE B7 (lbs.) | 304/316 SS (lbs.) |
| 3/8 | 7/16 | 3 3/8 | 4,344 | 1,086 | 2,115 | 2,185 | 4,555 | 3,645 |
| 1/2 | 9/16 | 4 1/2 | 12,074 | 3,019 | 3,775 | 3,885 | 8,100 | 6,480 |
| 5/8 | 3/4 | 5 5/8 | 13,724 | 3,431 | 5,870 | 6,075 | 12,655 | 10,125 |
| 3/4 | 7/8 | 6 3/4 | 17,435 | 4,359 | 8,455 | 8,750 | 18,225 | 12,390 |
| 7/8 | 1 | 7 7/8 | 24,964 | 6,241 | 11,510 | 11,905 | 24,805 | 16,865 |
| 1 | 1 1/8 | 9 | 27,475 | 6,869 | 15,030 | 15,550 | 32,400 | 22,030 |

SHEAR LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | Based on Steel Strength | | | |
|-----------------------------|---|-------------------------------|----------------------------|-----------------------------|-------------------------|--------------------------|---------------------------|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | ASTM A36 (lbs.) | ASTM A307 GRADE C (lbs.) | ASTM A193 GRADE B7 (lbs.) | 304/316 SS (lbs.) |
| 1/2 | 9/16 | 4 1/2 | 8,952 | 2,238 | 1,935 | 2,000 | 4,170 | 3,330 |
| 5/8 | 3/4 | 5 5/8 | 15,783 | 3,946 | 3,025 | 3,130 | 6,520 | 5,210 |
| 3/4 | 7/8 | 6 3/4 | 22,614 | 5,654 | 4,355 | 4,505 | 9,390 | 6,390 |
| 7/8 | 1 | 7 7/8 | 32,033 | 8,008 | 5,930 | 6,135 | 12,780 | 8,680 |
| 1 | 1 1/8 | 9 | 41,452 | 10,363 | 7,745 | 8,010 | 16,690 | 11,340 |

TENSION AND SHEAR LOADS FOR REBAR - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Rebar Size | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | Based on Steel Strength | |
|------------|---|----------------------------|------------------------------|-------------------------------|-------------------------|-------------------|
| | Hole Diameter (in.) | Min. Embedment Depth (in.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Grade 60 | |
| | | | | | Tension Load (lbs.) | Shear Load (lbs.) |
| #4 | 5/8 | 4 1/2 | 13,232 | 3,308 | 4,710 | 3,060 |
| #5 | 3/4 | 5 5/8 | 14,473 | 3,618 | 7,365 | 4,740 |
| #6 | 7/8 | 6 3/4 | 15,714 | 3,929 | 10,605 | 6,730 |
| #7 | 1 | 7 7/8 | 30,179 | 7,545 | 14,430 | 9,180 |
| #8 | 1 1/8 | 9 | 44,644 | 11,161 | 18,850 | 12,085 |

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

ON THE JOB

with SpeedSet2

ILLINOIS D.O.T. HIGHWAY LANE TIE PROJECT

This lane tie project specified the use of **SpeedSet2** for the application of doweling new concrete to old in order to repair a damaged interstate highway. Jobs like these are a multi-step process. First the damaged section of the roadway is cut out and removed. Multiple holes for the dowels are drilled using a pneumatic drill. The holes are then filled with **SpeedSet2** and the dowels inserted. After the adhesive has set and the dowels have been sprayed with oil, the new concrete is poured into the area being repaired. The concrete is leveled and allowed to set.



ULTRABOND 2

Quick Selection Guide

| | |
|---------------------|--------------|
| Tension Load (1/2") | 17,953 lbs.* |
| Working Time (75°F) | 25 min. |
| Cure Time (75°F) | 10 hrs. |
| Temperature Range | 35°F - 110°F |

*1/2" threaded rod
at 9D in 2000 psi
concrete

ULTRABOND 2
ADHESIVES TECHNOLOGY CORP.



Description

Ultrabond 2 is a two component (1:1 ratio), 100% solids, high modulus, structural epoxy gel. It is a solvent free, no odor, high strength, moisture insensitive, non-sag epoxy system. The resin and hardener are uniformly dispensed from a dual cartridge system and mixed simultaneously through a mixing nozzle or available in bulk. **Ultrabond 2** is an excellent choice where a **high strength** adhesive with **maximum field reliability** is desired.

Ordering Information

| Size | 22 oz. | 53 oz. |
|---------------------------|----------|----------|
| Part # | A22-2 | A53-2 |
| Manual Dispensing Tool | TM22HD | N/A |
| Pneumatic Dispensing Tool | TA22HD-C | TA53HD-C |
| Case Qty. | 12 | 6 |
| Pallet Qty. | 768 | 216 |

See pages 26 and 27 for additional accessories.



Sizes Available

- Available in 22 and 53 oz. dual cartridge systems
- Bulk sizes include 1 (102 oz.), 2, 10 and 100 gallon kits

Features & Advantages

- High strength adhesive and one of the strongest in the industry
- Extended working time
- Moisture insensitive - May be used in damp environments
- May be used in concrete, hollow block, brick, clay and stone
- Perfect for vertical, horizontal, overhead and screen applications
- Seismic anchoring and bracing

Applications

- High strength anchoring and doweling
- Bonding agent (metal, concrete, brick, wood, stone, block)

Approval / Listings

ICC (formerly ICBO) - ER-4996
SBCCI - Report No. 2055
COLA - RR-25265
Various DOT's - Call for listing
Metro-Dade 05-0627.02

PERFORMANCE INFORMATION

ICBO - **Ultrabond 2** has been tested in accordance with the ICBO Acceptance Criteria for Adhesive Anchors in Concrete and Masonry Elements (AC58). **Ultrabond 2** is recognized for the following uses:

- Static Loads
- Seismic / Wind Loading
- Long Term Creep at Elevated Temperature
- Static Loading at Elevated Temperature
- Damp Holes
- Freeze Thaw Conditions
- Critical and Minimum Edge and Spacing Distances

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray |
| Storage | Below 95°F |



Independent test reports available upon request. For technical support call Adhesives Technology Corp.

ULTRABOND 2 • ADHESIVE ANCHORING PRODUCTS



TENSION LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | Based on Steel Strength | | | |
|-----------------------------|---|-------------------------------|------------------------------|-------------------------------|-------------------------|--------------------------|---------------------------|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | ASTM A36 (lbs.) | ASTM A307 GRADE C (lbs.) | ASTM A193 GRADE B7 (lbs.) | 304/316 SS (lbs.) |
| 3/8 | 7/16 | 3 3/8 | 8,637 | 2,159 | 2,115 | 2,185 | 4,555 | 3,645 |
| 1/2 | 9/16 | 4 1/2 | 17,953 | 4,488 | 3,775 | 3,885 | 8,100 | 6,480 |
| 5/8 | 3/4 | 5 5/8 | 28,356 | 7,089 | 5,870 | 6,075 | 12,655 | 10,125 |
| 3/4 | 7/8 | 6 3/4 | 38,709 | 9,677 | 8,455 | 8,750 | 18,225 | 12,390 |
| 7/8 | 1 | 7 7/8 | 48,410 | 12,103 | 11,510 | 11,905 | 24,805 | 16,865 |
| 1 | 1 1/8 | 9 | 60,648 | 15,162 | 15,030 | 15,550 | 32,400 | 22,030 |
| 1 1/4 | 1 3/8 | 11 1/4 | 90,626 | 22,657 | 23,490 | 24,295 | 50,620 | 34,425 |

SHEAR LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Based on Bond Strength, 2000 psi Normal Weight Concrete | | | | Based on Steel Strength | | | |
|-----------------------------|---|-------------------------------|----------------------------|-----------------------------|-------------------------|--------------------------|---------------------------|-------------------|
| | Hole Diameter (in.) | Minimum Embedment Depth (in.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | ASTM A36 (lbs.) | ASTM A307 GRADE C (lbs.) | ASTM A193 GRADE B7 (lbs.) | 304/316 SS (lbs.) |
| 3/8 | 7/16 | 3 3/8 | — | — | 1,090 | 1,125 | 2,345 | 1,870 |
| 1/2 | 9/16 | 4 1/2 | 13,090 | 3,273 | 1,975 | 2,000 | 4,170 | 3,330 |
| 5/8 | 3/4 | 5 5/8 | 20,892 | 5,223 | 3,025 | 3,130 | 6,520 | 5,210 |
| 3/4 | 7/8 | 6 3/4 | 31,721 | 7,930 | 4,355 | 4,505 | 9,390 | 6,390 |
| 7/8 | 1 | 7 7/8 | 36,577 | 9,144 | 5,930 | 6,135 | 12,780 | 8,680 |
| 1 | 1 1/8 | 9 | 53,165 | 13,291 | 7,745 | 8,010 | 16,690 | 11,340 |
| 1 1/4 | 1 3/8 | 11 1/4 | 83,052 | 20,763 | 12,100 | 12,515 | 26,075 | 17,730 |

ON THE JOB

with Ultrabond 2

ANCHORING OF STORAGE SILOS USING 48" RODS

Ultrabond 2 was selected to anchor 2-1/2" diameter by 48" long threaded rods to secure 30 foot tall storage silos. *Ultrabond 2* provided the long working time needed for these large diameter deep holes. The delivery system chosen was equally as important as the formula. Our pneumatic tool and special 1" (T1) OD high flow mixer assured the user the fastest flow rate with fatigue free dispensing.



Ultrabond 2250 Working time 40 minutes. Cure time 10 hours.
Texas D.O.T. approved type III and V.
Developed for anchoring and doweling.
Call for the latest information on this new product.

ULTRABOND 2300

Quick Selection Guide

| | |
|---------------------|--------------|
| Tension Load (1/2") | 14,500 lbs.* |
| Working Time (75°F) | 40 min. |
| Cure Time (75°F) | 10 hrs. |
| Temperature Range | 60°F - 110°F |

*1/2" threaded rod
at 9D in 3000 psi
concrete

Description

Ultrabond 2300 is a two component (1:1 ratio), 100% solids, high modulus, structural epoxy gel. It is a solvent free, low odor, high strength, moisture insensitive, non-sag epoxy system. The resin and hardener are uniformly dispensed from a dual cartridge system and mixed simultaneously through a mixing nozzle or available in bulk. See *Ultrabond 2000 and 2100* on page 36 & 37 in the *Bonding & Coating* section for 2000 series product best suited for bonding and coating applications.



ULTRABOND 2300
ADHESIVES TECHNOLOGY CORP.



Sizes Available

- Available in 22 and 53 oz. dual cartridge systems
- Bulk sizes include 1 (102 oz.), 2, 10 and 100 gallon kits

Features & Advantages

- High strength adhesive
- Corrosion inhibitor
- Extended working time
- Moisture insensitive - May be used in damp environments
- May be used in concrete, hollow block, brick, clay and stone
- Perfect for vertical, horizontal, overhead and screen applications
- Structural bonding of concrete to concrete

Applications

- High strength anchoring and doweling
- Bonding agent (metal, concrete, brick, wood, stone, block)
- Pick proof sealant - windows, doors, locks, etc. (e.g. Correctional Facilities)
- Concrete Repair - (*see Bonding and Coatings Section*)

Approval / Listings

Various DOT's - Call for listing
Independent Laboratory Tested: Meets ASTM C881-99:
Type I, II, IV and V, Grade 3, Class C

Performance Information

Independent ASTM C881 Technical Data

| Properties | ASTM | Results |
|----------------------------------|-------|-----------------|
| Compressive Yield Strength - psi | D695 | 10,900 (14 day) |
| Compressive Modulus - psi | D695 | 212,400 (7 day) |
| Bond Strength - psi | C882 | 1,280 (2 day) |
| | C882 | 1,910 (14 day) |
| Consistency | C881 | Non-Sag Gel |
| Heat Deflection Temperature - °F | D648 | 131 (7 day) |
| Water Absorption - % | D570 | 0.61 (24 hrs) |
| Linear Coefficient of Shrinkage | D2566 | 0.002 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray |
| Storage | Below 95°F |



Independent test reports available upon request. For technical support call Adhesives Technology Corp.

ULTRABOND 2300 • ADHESIVE ANCHORING PRODUCTS



Ordering Information

| Size | 22 oz. | 53 oz. | Bulk Gal. Kit | 2 Gal. Kit | 10 Gal. Kit | 100 Gal. Kit |
|---------------------------|----------|----------|---------------|------------|----------------|----------------|
| Part # | A22-2300 | A53-2300 | BUG-2300 | BUG-2300 | B10G-2300* | B100G-2300 |
| Manual Dispensing Tool | TM22HD | N/A | N/A | N/A | N/A | N/A |
| Pneumatic Dispensing Tool | TA22HD-C | TA53HD-C | N/A | N/A | Bulk Dispenser | Bulk Dispenser |
| Case Qty. | 12 | 6 | 1 | 1 | Packaged Each | Packaged Each |
| Pallet Qty. | 768 | 216 | 75 | 75 | 12 | 2 |

See pages 26 and 27 for additional accessories. *Also available in metal pails as B10G-2300M.

TENSION LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Hole Diameter (in.) | Minimum Embedment Depth (in.) | f'c = 3000 psi | | f'c = 5000 psi | |
|-----------------------------|---------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|-------------------------------|
| | | | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) |
| 3/8 | 7/16 | 3 3/8 | 9,336 | 2,334 | 9,728 | 2,432 |
| 1/2 | 9/16 | 4 1/2 | 14,500 | 3,652 | 14,712 | 3,678 |
| 5/8 | 3/4 | 5 5/8 | 21,804 | 5,451 | 22,460 | 5,615 |
| 3/4 | 7/8 | 6 3/4 | 29,108 | 7,277 | 30,208 | 7,552 |
| 7/8 | 1 | 7 7/8 | 37,768 | 9,442 | 40,228 | 10,057 |
| 1 | 1 1/8 | 9 | 46,432 | 11,608 | 50,252 | 12,563 |

SHEAR LOADS FOR THREADED RODS - Safety Factor "Allowable" equals 25% of Ultimate Load, 32% for steel

| Threaded Rod Diameter (in.) | Hole Diameter (in.) | Minimum Embedment Depth (in.) | f'c = 3000 psi | | f'c = 5000 psi | |
|-----------------------------|---------------------|-------------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|
| | | | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) |
| 3/8 | 7/16 | 3 3/8 | 7,216 | 1,804 | 6,852 | 1,713 |
| 1/2 | 9/16 | 4 1/2 | 9,692 | 2,423 | 10,840 | 2,710 |
| 5/8 | 3/4 | 5 5/8 | 15,024 | 3,756 | 15,220 | 3,805 |
| 3/4 | 7/8 | 6 3/4 | 20,320 | 5,080 | 19,600 | 4,900 |
| 7/8 | 1 | 7 7/8 | 30,916 | 7,729 | 26,984 | 6,746 |
| 1 | 1 1/8 | 9 | 41,468 | 10,367 | 34,364 | 8,591 |

DISPENSING TIPS

Always Balance your Cartridge

This applies to all two part adhesives



When dispensing epoxy, always balance the cartridge first. To balance the cartridge, dispense equal amounts of both the black and white material until you get an even flow. This is extremely important and must be done before attaching the mixing nozzle.

Balancing the cartridge helps assure that a uniform grey color with no streaks will be attained by the time the product reaches the tip of the nozzle.



Always dispense a small amount of epoxy off to the side before dispensing into the hole to examine the epoxy color. Do not dispense epoxy into the hole until a uniform color, free from streaks, is achieved.



ULTRABOND 3

Quick Selection Guide

| | |
|---------------------|--------------|
| Tension Load (1/2") | 13,384 lbs.* |
| Working Time (75°F) | 5 min. |
| Cure Time (75°F) | 90 min. |
| Temperature Range | 25°F – 95°F |

Description

Ultrabond 3 is a two component (1:1 ratio), 100% solids, high modulus, structural epoxy gel. It is a solvent free, high strength, moisture insensitive, non-sag epoxy system. The resin and hardener are uniformly dispensed from a dual cartridge system and mixed simultaneously through a mixing nozzle.

*1/2" threaded rod at 9D in 3000 psi concrete



Ordering Information

| | |
|---------------------------|----------|
| Size | 22 oz. |
| Part # | A22-3 |
| Manual Dispensing Tool | TM22HD |
| Pneumatic Dispensing Tool | TA22HD-C |
| Case Qty. | 12 |
| Pallet Qty. | 768 |



Sizes Available

- Available in 22 oz. dual cartridge systems

Features & Advantages

- Fastest epoxy cure time
- Formulated for cold weather applications
- May be used in concrete, brick, clay and stone
- Perfect for vertical, horizontal and overhead applications

Applications

- High strength anchoring and doweling

Approval / Listings

Various DOT's – Call for listing
Metro-Dade 05-0627.02

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray |
| Storage | Below 95°F |

PERFORMANCE INFORMATION

TENSION LOADS FOR THREADED RODS

| Threaded Rod Diameter (in.) | Hole Diameter (in.) | Minimum Embedment Depth (in.) | f'c = 3000 psi | | f'c = 5000 psi | | f'c = 7000 psi | |
|-----------------------------|---------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|-------------------------------|
| | | | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) |
| 3/8 | 1/2 | 3 3/8 | 10,900 | 2,725 | 10,900 | 2,725 | 10,740 | 2,685 |
| 1/2 | 5/8 | 4 1/2 | 13,384 | 3,346 | 14,332 | 3,583 | 18,680 | 4,670 |
| 5/8 | 3/4 | 5 5/8 | 21,692 | 5,423 | 23,364 | 5,841 | 31,192 | 7,798 |
| 3/4 | 7/8 | 6 3/4 | 30,000 | 7,500 | 32,396 | 8,099 | 40,356 | 10,089 |
| 7/8 | 1 | 7 7/8 | 39,940 | 9,985 | 42,972 | 10,473 | 46,192 | 11,548 |
| 1 | 1 1/8 | 9 | 49,880 | 12,470 | 53,544 | 13,386 | 58,096 | 14,524 |

SHEAR LOADS FOR THREADED RODS

| Threaded Rod Diameter (in.) | Hole Diameter (in.) | Minimum Embedment Depth (in.) | f'c = 3000 psi | | f'c = 5000 psi | | f'c = 7000 psi | |
|-----------------------------|---------------------|-------------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|
| | | | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) |
| 3/8 | 1/2 | 3 3/8 | 7,312 | 1,828 | 7,144 | 1,786 | 7,144 | 1,786 |
| 1/2 | 5/8 | 4 1/2 | 8,316 | 2,079 | 13,452 | 3,363 | 13,452 | 3,363 |
| 5/8 | 3/4 | 5 5/8 | 16,344 | 4,086 | 16,936 | 4,234 | 19,764 | 4,941 |
| 3/4 | 7/8 | 6 3/4 | 24,376 | 6,094 | 23,468 | 5,867 | 28,096 | 7,024 |
| 7/8 | 1 | 7 7/8 | 32,344 | 8,086 | 31,820 | 7,955 | 36,428 | 9,107 |
| 1 | 1 1/8 | 9 | 40,312 | 10,078 | 40,316 | 10,079 | 45,236 | 11,309 |

INSTRUCTIONS - ADHESIVE ANCHORING PRODUCTS



INSTALLATION INSTRUCTIONS

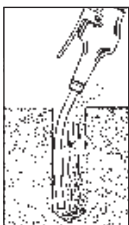
Job Site Preparation and Work Flow - To achieve the desired results, carefully follow these procedures!

- Always be sure the holes are prepared in advance before starting a new cartridge. If at all possible, schedule dispensing to consume an entire cartridge at one time with no interruption of epoxy flow.
- To achieve maximum flow and reduce fatigue, break off the nozzle to the largest diameter that will fit into the hole or screen. ■ If the hole is 5/8" diameter or larger, snap off the smaller diameter section before using.

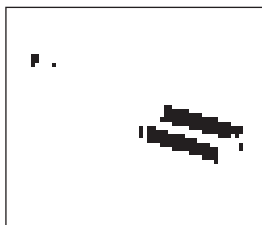
Most nozzles snap off to accommodate varying hole diameters and depths.

DUAL CARTRIDGE ANCHORING & DOWELING

1. Drill hole to proper diameter and depth. Blow out dust from the bottom of the hole. Brush the hole with a nylon brush. Blow out dust again. The hole should be clean of dust and debris.



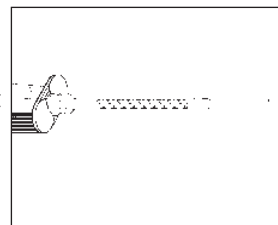
2. Insert cartridge into the gun with label-side down. This allows you to see how much material is left in the cartridge.



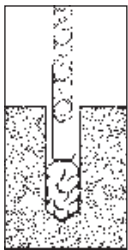
3. Remove plastic cap and black caps from the cartridge. Dispense a small amount of epoxy into a disposable container until you get an even flow of black and white material.



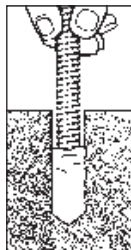
4. Place nozzle onto cartridge and then slide nut over nozzle and thread the nut onto cartridge. No nut is necessary on mixers with built-in nut. Make sure that the nozzle, nut and cartridge assembly is secure. Dispense enough epoxy into a disposable container until the color becomes a consistent gray with no streaks.



INTO CONCRETE



5. Dispense the material from the bottom of the hole. Fill approximately 1/2 - 5/8 of the hole depth while slowly withdrawing the nozzle. Fill completely full for holes totally submerged in water.



6. Insert the threaded rod or rebar to the bottom of the hole while turning clockwise. The threaded rod or rebar should be free of dirt, grease, oil, or other foreign materials. Do not disturb or bolt-up until minimum bolt-up time has passed.

INTO HOLLOW BLOCK

Repeat step 1 through 4 as shown above.



5. Insert the mixing nozzle into the bottom of the screen and completely fill while withdrawing the nozzle. Fill the screen completely all the way to the end to insure that the epoxy completely fills the screen from top to bottom when threaded rod is inserted.



6. Insert the epoxy-filled screen into the hole.



7. Insert the threaded rod or dowel to the bottom of the screen while turning clockwise. The threaded rod or rebar should be free of dirt, grease, oil or other foreign material. Do not disturb or bolt-up until minimum bolt-up time has passed.

ACCESSORIES

MANUAL AND PNEUMATIC DISPENSING TOOLS

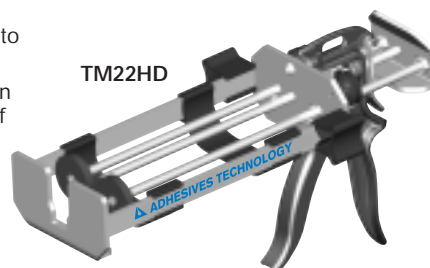
Manual Dispensing tools feature an "in-line" rod-system, combined with a specifically designed friction plate that results in exceptional force. Dispensing is faster and reduces worker exertion and fatigue. Heavy duty manual tools offer three times the dispensing power of standard tools resulting in quicker and easier dispensing of product.

Longer dispensing tool life — ATC's Redi-Fix adjustment screw technology means increased life of the gun. As the tool wears you can adjust the screw to remove the wasted motion. Provides 40% longer usage in the field.

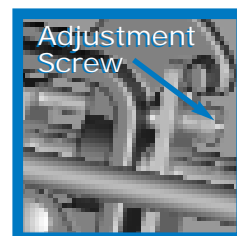
Increased durability — Unique double gripping plates and steel trigger mean increased durability and performance. Twice the functionality and reliability of competing tools with single plates.

Increased efficiency — 26:1 fast action ratio means that you'll get the job done quicker and easier with improved pump efficiency. Designed for more efficient use of hand motion resulting in fewer pumps to empty a cartridge.

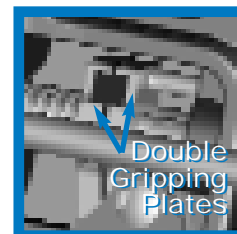
Two tools in one — Most tools can easily be converted to accept either 1:1 or 2:1 ratio cartridges



TM22HD



Adjustment Screw



Double Gripping Plates

| PROD. # | DISPENSING TOOLS | UM | PKG. QTY. |
|----------|--|----|-----------|
| TM6 | MANUAL TOOL FOR 6 OZ CARTRIDGES | EA | 1 |
| TM11 | MANUAL TOOL FOR 11 OZ CARTRIDGES | EA | 1 |
| TM16HD | HEAVY DUTY MANUAL TOOL FOR 16 OZ CARTRIDGES | EA | 1 |
| TA16HD | HEAVY DUTY PNEUMATIC TOOL FOR 16 OZ CARTRIDGES | EA | 1 |
| TM22HD | HEAVY DUTY MANUAL TOOL FOR 22 OZ CARTRIDGES | EA | 1 |
| TA22HD-C | HEAVY DUTY PNEUMATIC TOOL FOR 22 OZ CARTRIDGES | EA | 1 |
| TM28HD | HEAVY DUTY MANUAL TOOL FOR 28 OZ CARTRIDGES | EA | 1 |
| TA28 | PNEUMATIC TOOL FOR 28 OZ CARTRIDGES | EA | 1 |
| TA28HD-C | HEAVY DUTY PNEUMATIC TOOL FOR 28 OZ CARTRIDGES | EA | 1 |
| TM33HD | HEAVY DUTY MANUAL TOOL FOR 33 OZ CARTRIDGES | EA | 1 |
| TA33 | PNEUMATIC TOOL FOR 33 OZ CARTRIDGES | EA | 1 |
| TA33HD-C | HEAVY DUTY PNEUMATIC TOOL FOR 33 OZ CARTRIDGES | EA | 1 |
| TA53 | PNEUMATIC TOOL FOR 53 OZ CARTRIDGES | EA | 1 |
| TA53HD-C | HEAVY DUTY PNEUMATIC TOOL FOR 53 OZ CARTRIDGES | EA | 1 |

Pneumatic (air) tools are used when increased production is needed. In addition, they reduce the user fatigue that may occur during large jobs. All pneumatic tools feature "reverse" air power for easy removal of cartridges and heavy-duty aluminum construction. The design and materials used in our "heavy duty" tools allows for extended use and dependability in the field.



TA53HD-C



Rocket Nozzle

MIXING NOZZLES

The mixing nut is incorporated into the design of most nozzles making installation fast and easy. Our revolutionary square mixer reduces waste by 35%, while increasing flow, when compared to other high flow mixers. This new mixer produces superior mixing with its alternating left and right hand elements with intermittent flow inverters. The flow inverters effectively channel the adhesive from the walls into the center of the mixer resulting in more complete mixing. Always remember to follow application instructions. Special note:

The following table shows an offering of both fine thread and coarse thread mixing nozzles. By early 2006 most of our cartridges will be converting from a fine thread to a coarse thread design.

| PROD. # | MIXING NOZZLES | UM | PKG. QTY. | THREAD | LENGTH |
|----------|-------------------------------------|-----|-----------|--------|------------|
| T3812 | 3/8 x 1/2- Requires (MN) mixing nut | Ea. | 25 | N/A | 12" to 7" |
| T3812K | 3/8 x 1/2 for 6 oz. cartridge | Kit | 3 | N/A | 12" to 7" |
| MN | Mixing nut for above nozzles | Ea. | 1 | N/A | N/A |
| T3438S | 3/4 x 3/8 square | Ea. | 25 | Fine | 15" to 10" |
| T3438SK | 3/4 x 3/8 square | Kit | 3 | Fine | 15" to 10" |
| T3412 | 3/4 x 1/2 rocket | Ea. | 1 | Fine | 17" to 12" |
| T3412K | 3/4 x 1/2 rocket | Kit | 3 | Fine | 17" to 12" |
| T1 | 1" OD w/12" thread extension | Ea. | 1 | Fine | 15" |
| T1EXT | 12" thread extension for T1 nozzle | Ea. | 1 | Fine | 12" |
| T3438SC | 3/4 x 3/8 square- Blue elements | Ea. | 3 | Coarse | 15" to 10" |
| T3438SCK | 3/4 x 3/8 square- Blue elements | Kit | 3 | Coarse | 15" to 10" |
| T3438C | 3/4 x 3/8 square- Blue elements | Ea. | 1 | Coarse | 15" to 10" |
| T3438CK | 3/4 x 3/8 square- Blue elements | Kit | 3 | Coarse | 15" to 10" |
| T3412C | 3/4 x 1/2 rocket- Blue elements | Ea. | 1 | Coarse | 17" to 12" |
| T3412CK | 3/4 x 1/2 rocket- Blue elements | Kit | 3 | Coarse | 17" to 12" |
| T1C | 1" OD w/12" thread extension | Ea. | 1 | Coarse | 15" |



Square Nozzle

ACCESSORIES - ADHESIVE ANCHORING PRODUCTS



ADHESIVE ANCHORING SCREENS

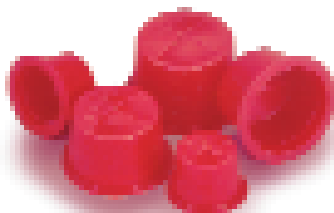
Wire Screens are used primarily in hollow block applications. Their main function is to contain the adhesive until it sets. At the jobsite, longer screens can be cut down in length if smaller screens are needed. Order screens in conjunction with the rod diameter being used. The screen diameter will be slightly larger than the rod diameter.

| PROD. # | ADHESIVE ANCHORING SCREENS | HOLE DIA. | UM | PKG. QTY. |
|---------|----------------------------|-----------|------|-----------|
| S38-4K | 3/8 X 4 (10 PACK) | 1/2 | PACK | 10 |
| S38-6K | 3/8 X 6 (10 PACK) | 1/2 | PACK | 10 |
| S38-10K | 3/8 X 10 (10 PACK) | 1/2 | PACK | 10 |
| S12-4K | 1/2 X 4 (10 PACK) | 5/8 | PACK | 10 |
| S12-6K | 1/2 X 6 (10 PACK) | 5/8 | PACK | 10 |
| S12-10K | 1/2 X 10 (10 PACK) | 5/8 | PACK | 10 |
| S58-4K | 5/8 X 4 (10 PACK) | 3/4 | PACK | 10 |
| S58-6K | 5/8 X 6 (10 PACK) | 3/4 | PACK | 10 |
| S58-10K | 5/8 X 10 (10 PACK) | 3/4 | PACK | 10 |
| S34-4K | 3/4 X 4 (10 PACK) | 7/8 | PACK | 10 |
| S34-6K | 3/4 X 6 (10 PACK) | 7/8 | PACK | 10 |
| S34-10K | 3/4 X 10 (10 PACK) | 7/8 | PACK | 10 |



RETAINING PLUGS

Retaining Plugs are for use in overhead and horizontal anchoring and doweling applications. They conveniently keep the adhesive and anchor in place while the product cures. Simply follow standard instructions for anchoring or doweling: place plug in hole – inject epoxy through plug into hole – place anchor through plug and wait for it to cure.



| PROD. # | RETAINING PLUGS | ROD. DIA. | UM | PKG. QTY. |
|---------|----------------------|-----------|----|-----------|
| RP916 | 9/16 OVERHEAD PLUG | 3/8-1/2" | C | 100 |
| RP58 | 5/8 OVERHEAD PLUG | 1/2" | C | 100 |
| RP34 | 3/4 OVERHEAD PLUG | 5/8" | C | 100 |
| RP78 | 7/8 OVERHEAD PLUG | 3/4" | C | 100 |
| RP100 | 1 OVERHEAD PLUG | 7/8" | C | 100 |
| RP118 | 1-1/8" OVERHEAD PLUG | 1" | C | 100 |
| RP114 | 1-1/4 OVERHEAD PLUG | 1 1/8" | C | 100 |

NYLON BRUSHES

Our round **Nylon Brushes** are the perfect size for cleaning drilled holes in concrete, a necessary step in the installation of all chemical anchoring systems. Wire brushes should never be used due to their tendency to smooth and polish the hole's interior and create additional dust.



| PROD. # | BRUSHES | UM | PKG. QTY. |
|---------|--------------------------------|----|-----------|
| BR3812 | NYLON BRUSH FOR 3/8 - 1/2 HOLE | EA | 1 |
| BR58100 | NYLON BRUSH FOR 5/8 - 1" HOLE | EA | 1 |

NEW CARTRIDGE UPDATE

CHANGEOVER TO COARSE THREAD DESIGN

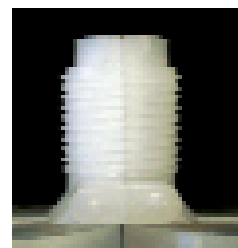
In a move to improve product field performance along with increased manufacturing capabilities, we changed over to a one-piece cartridge design with coarse threads in late 2005.

Advantages Of A Coarse Thread Design:

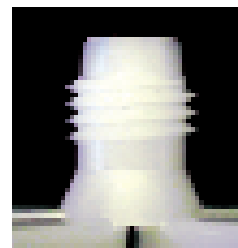
- Nozzles will thread on and off the cartridges easier and twice as fast as with fine thread nozzles
- Gummed up epoxy will clean off the threads much easier then off of fine thread cartridges
- Cross threading is less likely with coarse threads
- A one-piece cartridge design helps insure that barrels can't separate and that they won't twist in the tool.

Coarse Thread Product Identification:

1. **Cartridges:** Visual identification of coarse thread product will be easy. The difference between the two thread designs is easy to recognize. The amount of threads is reduced from 10 to 4.
2. **Packaged Product:** Our outside master case labels will all have a blue border around the label. No other product will have this blue border.
3. **Mixing Nozzles:** Our mixing elements in coarse thread nozzles will be blue. Fine thread nozzles are colorless (clear).



Fine Thread



Coarse Thread

GLASS & EZ SET CAPSULES

Quick Selection Guide

| | |
|---------------------|--------------|
| Tension Load (1/2") | 15,844 lbs.* |
| Working Time (75°F) | 5 min |
| Cure Time (75°F) | 20 min |

Description

*1/2" threaded rod at 90 in 3000 psi concrete

The **Ultrabond Glass Capsules** and **EZ Set Capsules** are a uniquely formulated two-component, high strength vinyl ester-based adhesive in a convenient single glass capsule. The **Glass Capsule** is ideal for use in a wide range of temperatures from 5°F to 90°F. The **EZ Set Capsule** is ideal for use from 25°F to 90°F. They work well and are easy to use at low temperatures and are suitable for high temperatures as well. Straight cut threaded rods can be used.

Chart for glass capsules.

Features & Advantages

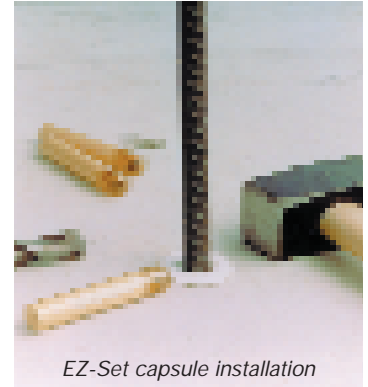
- The **Glass Capsules** are placed in the hole and the resin and catalyst are combined as a chamfered rod or rebar is spun to the bottom of the hole through the capsule. (See Instructions)
- The **EZ Set Capsules** are placed in the hole and the resin and catalyst are combined as a standard rod or rebar is driven to the bottom of the hole through the capsule. (See Instructions)
- Fast Cure and Load Times
- Pre-proportioned volumes for embedments listed
- No Waste

Applications

- High strength threaded rod anchoring
- Rebar doweling

Approval / Listings

Various DOT's – Call for listing
Metro-Dade 05-0627.02



EZ-Set capsule installation

TENSION LOADS FOR THREADED RODS INSTALLED IN NORMAL WEIGHT CONCRETE WITH ADHESIVES TECHNOLOGY CORP. ULTRABOND EZ CAPSULES

| Threaded Rod Diameter (in.) | Hole Diameter (in.) | Minimum Embedment Depth (in.) | f'c = 3000 psi | | f'c = 5000 psi | |
|-----------------------------|---------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|-------------------------------|
| | | | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) |
| 3/8 | 7/16 | 3 1/2 | 3,992 | 998 | 5,160 | 1,290 |
| 1/2 | 9/16 | 4 1/4 | 10,708 | 2,677 | 13,832 | 3,458 |
| 5/8 | 11/16 | 5 | 14,308 | 3,577 | 18,472 | 4,618 |
| 3/4 | 13/16 | 6 5/8 | 21,880 | 5,470 | 28,244 | 7,061 |
| 7/8 | 15/16 | 7 1/2 | 27,436 | 6,859 | 35,420 | 8,855 |

Glass Capsule

| °F | Cure Time (min.) |
|-------|------------------|
| 5-14 | 300 |
| 14-32 | 60 |
| 32-50 | 50 |
| 50-68 | 30 |
| + 68 | 20 |

TENSION LOADS FOR THREADED RODS INSTALLED IN NORMAL WEIGHT CONCRETE WITH ADHESIVES TECHNOLOGY CORP. ULTRABOND GLASS CAPSULES

| Threaded Rod Diameter (in.) | Hole Diameter (in.) | Minimum Embedment Depth (in.) | f'c = 3000 psi | | f'c = 5000 psi | |
|-----------------------------|---------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|-------------------------------|
| | | | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) | Ultimate Tension Load (lbs.) | Allowable Tension Load (lbs.) |
| 3/8 | 1/2 | 3 3/8 | 10,072 | 2,518 | 10,564 | 2,641 |
| 1/2 | 5/8 | 4 1/2 | 15,844 | 3,961 | 16,976 | 4,244 |
| 5/8 | 3/4 | 5 5/8 | 23,704 | 5,926 | 27,840 | 6,960 |
| 3/4 | 7/8 | 6 3/4 | 31,520 | 7,880 | 38,700 | 9,675 |
| 7/8 | 1 | 7 7/8 | 45,976 | 11,494 | 44,524 | 11,131 |
| 1 | 1 1/8 | 9 | 50,436 | 12,609 | 50,344 | 12,586 |

| | |
|------------|------------|
| Shelf Life | 1 years |
| Color | Gray |
| Storage | Below 80°F |

SHEAR LOADS FOR THREADED RODS INSTALLED IN NORMAL WEIGHT CONCRETE WITH ADHESIVES TECHNOLOGY CORP. ULTRABOND GLASS CAPSULES

| Threaded Rod Diameter (in.) | Hole Diameter (in.) | Minimum Embedment Depth (in.) | f'c = 3000 psi | | f'c = 5000 psi | |
|-----------------------------|---------------------|-------------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|
| | | | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) | Ultimate Shear Load (lbs.) | Allowable Shear Load (lbs.) |
| 3/8 | 1/2 | 3 3/8 | 6,112 | 1,528 | 7,404 | 1,851 |
| 1/2 | 5/8 | 4 1/2 | 6,904 | 1,726 | 10,152 | 2,538 |
| 5/8 | 3/4 | 5 5/8 | 11,856 | 2,964 | 18,388 | 4,597 |
| 3/4 | 7/8 | 6 3/4 | 16,812 | 4,203 | 26,624 | 6,656 |
| 7/8 | 1 | 7 7/8 | 26,948 | 6,737 | 32,088 | 8,022 |
| 1 | 1 1/8 | 9 | 37,088 | 9,272 | 37,548 | 9,387 |

Independent test reports available upon request.
For technical support call Adhesives Technology Corp.

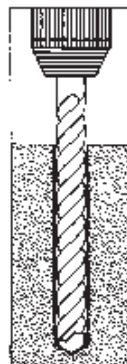


ULTRABOND GLASS CAPSULES

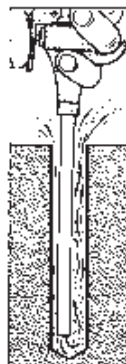


After inserting the capsule into the hole, insert hex driver onto a threaded rod. Insert the hex driver into an electric rotary hammer, break capsule and mix material. Prolonged exposure to excessive heat reduces the shelf life of chemical capsules. For this reason, storage in unairconditioned jobsite trailers is not recommended.

| ITEM CODE | CAPSULE DIAMETER | BOX/CTN QTY. | WEIGHT (LBS. PER 10) |
|-----------|------------------|--------------|----------------------|
| E38 | 3/8" | 10/500 | 2.8 |
| E12 | 1/2" | 10/500 | 4.2 |
| E58 | 5/8" | 10/500 | 6.8 |
| E34 | 3/4" | 10/500 | 14.41 |
| E78 | 7/8" | 6/96 | 20.80 |
| E100 | 1" | 6/72 | 29.80 |
| E114 | 1 1/4" | 2/20 | 58.00 |



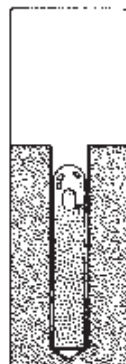
1. Drill hole to proper diameter and length.



2. Blow out dust from the bottom of the hole.



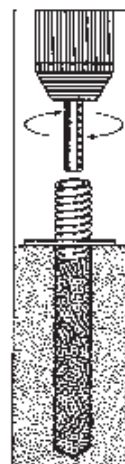
3. Brush out the hole with a nylon brush. Blow out dust once again.



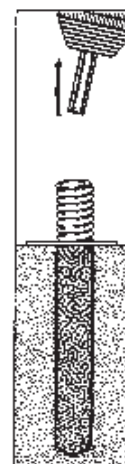
4. Insert capsule to bottom of the hole.



5. Assemble chamfered rod into drive unit of a rotary hammer drill (as shown in illus. 6).



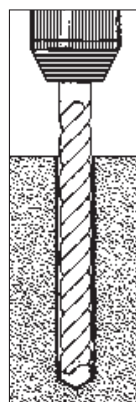
6. Drill rod to the bottom of the hole using hex driver attached to drill chuck.



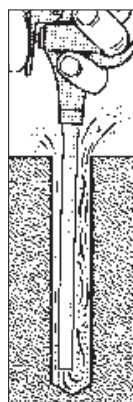
7. Without disturbing anchor, remove hex driver from anchor.

"EZ SET" CAPSULES

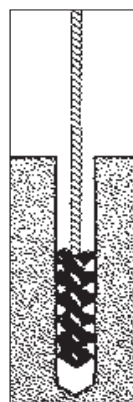
Once the capsule has been inserted into the hole, simply hammer a straight cut threaded rod or rebar through the capsule. It's that EZ. Prolonged exposure to excessive heat reduces the shelf life of chemical capsules. For this reason, storage in unairconditioned jobsite trailers is not recommended.



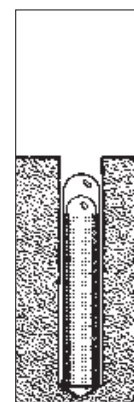
1. Drill hole to proper diameter and length.



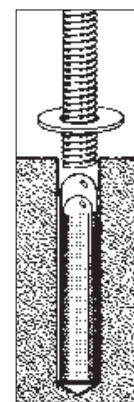
2. Blow out dust from the bottom of the hole.



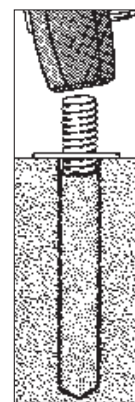
3. Brush out the hole with a nylon brush. Blow out dust once again.



4. Insert capsule to bottom of the hole.



5. Place debris protector over threaded rod and position above the hole.



6. Drive threaded rod through capsule to the bottom of the hole with a hammer.

| ITEM CODE | CAPSULE DIAMETER | BOX/CTN QTY. | WEIGHT (LBS. PER 10) |
|-----------|------------------|--------------|----------------------|
| EZ38 | 3/8" | 10/500 | .28 |
| EZ12 | 1/2" | 10/500 | .42 |
| EZ58 | 5/8" | 10/500 | .68 |
| EZ34 | 5/8" | 10/500 | 1.44 |

ESTIMATING GUIDE

USAGE ESTIMATING GUIDE AND INSTALLATION PARAMETERS

The following charts estimate the number of anchors that can be installed in a variety of embedments. For 11 oz. divide 22 oz. values by 2. For 16 oz. divide 33 oz. values by 2. For screen usage, divide final result by 2. Screens must be completely filled.

All results include a 20% minimum waste factor. Results may vary depending upon application.

INSTALLATION PARAMETERS FOR SOLID BASE MATERIALS

| Rod Diameter | Hole Diameter | Embedment | Torque (ft. - lbs.) |
|--------------|---------------|-----------|---------------------|
| 3/8" | 7/16" | 3 3/8" | 12 - 15 |
| 1/2" | 9/16" | 4 1/2" | 22 - 28 |
| 5/8" | 3/4" | 5 5/8" | 50 - 60 |
| 3/4" | 7/8" | 6 3/4" | 90 - 106 |
| 7/8" | 1" | 7 7/8" | 140 - 185 |
| 1" | 1 1/8" | 9" | 190 - 275 |
| 1 1/4" | 1 3/8" | 11 1/4" | 250 - 370 |

1 - Critical Edge - Minimum distance between anchor and edge of the concrete required to develop full load capabilities of the anchor.

2 - Critical Spacing - Minimum distance between two anchors required to develop full load capabilities of the anchor.

ESTIMATING GUIDE FOR 9 OZ. CARTRIDGE USING THREADED ROD

| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|-------------------|--------------------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 3/8 | 7/16 | 86.4 | 57.6 | 43.2 | 34.6 | 28.8 | 24.7 | 21.6 | 19.2 | 17.3 | 15.7 | 14.4 | 13.3 | 12.3 | 11.5 | 10.8 | 10.2 |
| 1/2 | 9/16 | 65.4 | 43.6 | 32.7 | 26.1 | 21.8 | 18.7 | 16.3 | 14.5 | 13.1 | 11.9 | 10.9 | 10.1 | 9.3 | 8.7 | 8.2 | 7.7 |
| 5/8 | 3/4 | 36.8 | 24.5 | 18.4 | 14.7 | 12.3 | 10.5 | 9.2 | 8.2 | 7.4 | 6.7 | 6.1 | 5.7 | 5.3 | 4.9 | 4.6 | 4.3 |
| 3/4 | 7/8 | 27.0 | 18.0 | 13.5 | 10.8 | 9.0 | 7.7 | 6.8 | 6.0 | 5.4 | 4.9 | 4.5 | 4.2 | 3.9 | 3.6 | 3.4 | 3.2 |
| 7/8 | 1 | 23.0 | 15.3 | 11.5 | 9.2 | 7.7 | 6.6 | 5.7 | 5.1 | 4.6 | 4.2 | 3.8 | 3.5 | 3.3 | 3.1 | 2.9 | 2.7 |
| 1 | 1 1/8 | 21.8 | 14.5 | 10.9 | 8.7 | 7.3 | 6.2 | 5.4 | 4.8 | 4.4 | 4.0 | 3.6 | 3.4 | 3.1 | 2.9 | 2.7 | 2.6 |
| 1 1/8 | 1 1/4 | 17.6 | 11.8 | 8.8 | 7.1 | 5.9 | 5.0 | 4.4 | 3.9 | 3.5 | 3.2 | 2.9 | 2.7 | 2.5 | 2.4 | 2.2 | 2.1 |
| 1 1/4 | 1 3/8 | 14.6 | 9.7 | 7.3 | 5.8 | 4.9 | 4.2 | 3.6 | 3.2 | 2.9 | 2.7 | 2.4 | 2.2 | 2.1 | 1.9 | 1.8 | 1.7 |



Estimating Guide for 9 oz. Cartridge using Deformed Bar

| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|-------------------|--------------------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| #3 | 7/16 | 108.0 | 72.0 | 54.0 | 43.2 | 36.0 | 30.9 | 27.0 | 24.0 | 21.6 | 19.6 | 18.0 | 16.6 | 15.4 | 14.1 | 13.5 | 12.7 |
| #4 | 5/8 | 70.6 | 47.1 | 35.3 | 28.2 | 23.5 | 20.2 | 17.6 | 15.7 | 14.1 | 12.8 | 11.8 | 10.9 | 10.1 | 9.4 | 8.8 | 8.3 |
| #5 | 3/4 | 49.0 | 32.7 | 24.5 | 19.6 | 16.3 | 14.0 | 12.3 | 10.9 | 9.8 | 8.9 | 8.2 | 7.5 | 7.0 | 6.5 | 6.1 | 5.8 |
| #6 | 7/8 | 38.6 | 25.7 | 19.3 | 15.4 | 12.9 | 11.0 | 9.6 | 8.6 | 7.7 | 7.0 | 6.4 | 5.9 | 5.5 | 5.1 | 4.8 | 4.5 |
| #7 | 1 | 34.5 | 23.0 | 17.2 | 13.8 | 11.5 | 9.8 | 8.6 | 7.7 | 6.9 | 6.3 | 5.7 | 5.3 | 4.9 | 4.6 | 4.3 | 4.1 |
| #8 | 1 1/8 | 27.2 | 18.2 | 13.6 | 10.9 | 9.1 | 7.8 | 6.8 | 6.1 | 5.4 | 5.0 | 4.5 | 4.2 | 3.9 | 3.6 | 3.4 | 3.2 |
| #9 | 1 1/4 | 22.1 | 14.7 | 11.0 | 8.8 | 7.4 | 6.3 | 5.5 | 4.9 | 4.4 | 4.0 | 3.7 | 3.4 | 3.2 | 2.9 | 2.8 | 2.6 |
| #10 | 1 1/2 | 15.3 | 10.2 | 7.7 | 6.1 | 5.1 | 4.4 | 3.8 | 3.4 | 3.1 | 2.8 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.8 |
| #11 | 1 5/8 | 13.1 | 8.7 | 6.5 | 5.2 | 4.4 | 3.7 | 3.3 | 2.9 | 2.6 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 | 1.6 | 1.5 |

ADHESIVE ANCHORING PRODUCTS



USAGE ESTIMATING GUIDE

The following charts estimate the number of anchors that can be installed in a variety of embedments. For 11 oz. divide 22 oz. values by 2. For 16 oz. divide 33 oz. values by 2. For screen usage, divide final result by 2. Screens must be completely filled.

ESTIMATING GUIDE FOR 22 OZ. CARTRIDGE USING THREADED ROD

| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 3/8 | 7/16 | 211.3 | 140.9 | 105.6 | 84.5 | 70.4 | 60.4 | 52.8 | 47.0 | 42.3 | 38.4 | 35.2 | 32.5 | 30.2 | 28.2 | 26.4 | 24.9 |
| 1/2 | 9/16 | 159.8 | 106.5 | 79.9 | 63.9 | 52.5 | 45.6 | 39.9 | 35.5 | 32.0 | 29.0 | 26.6 | 24.6 | 22.8 | 21.3 | 20.0 | 18.8 |
| 5/8 | 3/4 | 89.9 | 59.9 | 44.9 | 35.9 | 30.0 | 25.7 | 22.5 | 20.0 | 18.0 | 16.3 | 15.0 | 13.8 | 12.8 | 12.0 | 11.2 | 10.6 |
| 3/4 | 7/8 | 66.0 | 44.0 | 33.0 | 26.4 | 22.0 | 18.9 | 16.5 | 14.7 | 13.2 | 12.0 | 11.0 | 10.2 | 9.4 | 8.8 | 8.3 | 7.8 |
| 7/8 | 1 | 56.2 | 37.4 | 28.1 | 22.5 | 18.7 | 16.0 | 14.0 | 12.5 | 11.2 | 10.2 | 8.6 | 8.6 | 8.0 | 7.5 | 7.06 | 6.6 |
| 1 | 1 1/8 | 53.3 | 35.5 | 26.6 | 21.3 | 17.8 | 15.2 | 13.3 | 11.8 | 10.7 | 9.7 | 8.2 | 8.2 | 7.6 | 7.1 | 7 | 6.3 |
| 1 1/8 | 1 1/4 | 43.1 | 28.8 | 21.6 | 17.3 | 14.4 | 12.3 | 10.8 | 9.6 | 8.6 | 7.8 | 6.6 | 6.6 | 6.2 | 5.8 | 5.4 | 5.1 |
| 1 1/4 | 1 3/8 | 35.7 | 23.8 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.9 | 7.1 | 6.5 | 5.5 | 5.5 | 5.1 | 4.8 | 4.5 | 4.2 |

ESTIMATING GUIDE FOR 22 OZ. CARTRIDGE USING DEFORMED BAR

| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| #3 | 7/16 | 264.1 | 176.1 | 132.1 | 105.6 | 88.0 | 75.5 | 66.0 | 58.7 | 52.8 | 48.0 | 44.0 | 40.6 | 37.7 | 35.2 | 33.0 | 31.1 |
| #4 | 5/8 | 172.5 | 115.0 | 86.3 | 69.0 | 57.5 | 49.3 | 43.1 | 38.3 | 34.5 | 31.4 | 28.8 | 26.5 | 24.6 | 23.0 | 21.6 | 20.3 |
| #5 | 3/4 | 119.8 | 79.9 | 59.9 | 47.9 | 39.9 | 34.2 | 30.0 | 26.6 | 24.0 | 21.8 | 20.0 | 18.4 | 17.1 | 16.0 | 15.0 | 14.1 |
| #6 | 7/8 | 94.3 | 62.9 | 47.2 | 37.7 | 31.4 | 26.9 | 23.6 | 21.0 | 18.9 | 17.1 | 15.7 | 14.5 | 13.5 | 12.6 | 11.8 | 11.1 |
| #7 | 1 | 84.3 | 56.2 | 42.1 | 33.7 | 28.1 | 24.1 | 21.1 | 18.7 | 16.9 | 15.3 | 14.0 | 13.0 | 12.0 | 11.2 | 10.5 | 9.9 |
| #8 | 1 1/8 | 66.6 | 44.4 | 33.3 | 26.6 | 22.2 | 19.0 | 16.6 | 14.8 | 13.3 | 12.1 | 11.1 | 10.2 | 9.5 | 8.9 | 8.3 | 7.8 |
| #9 | 1 1/4 | 53.9 | 35.9 | 27.0 | 21.6 | 18.0 | 15.4 | 13.5 | 12.0 | 10.8 | 9.8 | 9.0 | 8.3 | 7.7 | 7.2 | 6.7 | 6.3 |
| #10 | 1 1/2 | 37.4 | 25.0 | 18.7 | 15.0 | 12.5 | 10.7 | 9.4 | 8.3 | 7.5 | 6.8 | 6.2 | 5.8 | 5.3 | 5.0 | 4.7 | 4.4 |
| #11 | 1 5/8 | 31.9 | 21.3 | 16.0 | 12.8 | 10.6 | 9.1 | 8.0 | 7.1 | 6.4 | 5.8 | 5.3 | 4.9 | 4.6 | 4.3 | 4.0 | 3.8 |

ESTIMATING GUIDE FOR 28 OZ. CARTRIDGE USING THREADED ROD

| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 3/8 | 7/16 | 268.9 | 179.3 | 134.5 | 107.6 | 89.6 | 76.8 | 67.2 | 59.8 | 53.8 | 48.9 | 44.8 | 41.4 | 38.4 | 35.9 | 33.6 | 31.6 |
| 1/2 | 9/16 | 203.3 | 135.6 | 101.7 | 81.3 | 67.8 | 58.1 | 50.8 | 45.2 | 40.7 | 37.0 | 33.9 | 31.3 | 29.0 | 27.1 | 25.4 | 23.9 |
| 5/8 | 3/4 | 114.4 | 76.3 | 57.2 | 45.8 | 38.1 | 32.7 | 28.6 | 25.4 | 22.9 | 20.8 | 19.1 | 17.6 | 16.3 | 15.3 | 14.3 | 13.5 |
| 3/4 | 7/8 | 84.0 | 56.0 | 42.0 | 33.6 | 28.0 | 24.0 | 21.0 | 18.7 | 16.8 | 15.3 | 14.0 | 12.9 | 12.0 | 11.2 | 10.5 | 9.9 |
| 7/8 | 1 | 71.5 | 47.7 | 35.7 | 28.6 | 23.8 | 20.4 | 17.9 | 15.9 | 14.3 | 13.0 | 11.9 | 11.0 | 10.2 | 9.5 | 8.9 | 8.4 |
| 1 | 1 1/8 | 67.8 | 45.2 | 33.9 | 27.1 | 22.6 | 19.4 | 16.9 | 15.1 | 13.6 | 12.3 | 11.3 | 10.4 | 9.7 | 9.0 | 8.5 | 8.0 |
| 1 1/8 | 1 1/4 | 54.9 | 36.6 | 27.5 | 22.0 | 18.3 | 15.7 | 13.7 | 12.2 | 11.0 | 10.0 | 9.2 | 8.4 | 7.8 | 7.3 | 6.9 | 6.5 |
| 1 1/4 | 1 3/8 | 45.4 | 30.2 | 22.7 | 18.1 | 15.1 | 13.0 | 11.4 | 10.1 | 9.1 | 8.2 | 7.6 | 7.0 | 6.5 | 6.0 | 5.7 | 5.3 |

Estimating Guide for 28 oz. Cartridge using Deformed Bar

| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| #3 | 7/16 | 336.1 | 224.1 | 168.1 | 134.5 | 112.0 | 96.0 | 84.0 | 74.7 | 67.2 | 61.1 | 56.0 | 51.7 | 48.0 | 44.8 | 42.0 | 39.5 |
| #4 | 5/8 | 219.6 | 146.4 | 109.8 | 87.8 | 73.2 | 62.7 | 54.9 | 48.8 | 43.9 | 39.9 | 36.6 | 33.8 | 31.4 | 29.3 | 27.5 | 25.8 |
| #5 | 3/4 | 152.5 | 101.7 | 76.3 | 61.0 | 50.8 | 43.6 | 38.1 | 33.9 | 30.5 | 27.7 | 25.4 | 23.5 | 21.8 | 20.3 | 19.1 | 17.9 |
| #6 | 7/8 | 120.0 | 80.0 | 60.0 | 48.0 | 40.0 | 34.3 | 30.0 | 26.7 | 24.0 | 21.8 | 20.0 | 18.5 | 17.1 | 16.0 | 15.0 | 14.1 |
| #7 | 1 | 107.2 | 71.5 | 53.6 | 42.9 | 35.7 | 30.6 | 26.8 | 23.8 | 21.4 | 19.5 | 17.9 | 16.5 | 15.3 | 14.3 | 13.4 | 12.6 |
| #8 | 1 1/8 | 84.7 | 56.5 | 42.4 | 33.9 | 28.2 | 24.2 | 21.2 | 18.8 | 16.9 | 15.4 | 14.1 | 13.0 | 12.1 | 11.4 | 10.6 | 10.0 |
| #9 | 1 1/4 | 68.6 | 45.8 | 34.3 | 27.5 | 22.9 | 19.6 | 17.2 | 15.3 | 13.7 | 12.5 | 11.4 | 10.6 | 9.8 | 9.2 | 8.6 | 8.1 |
| #10 | 1 1/2 | 47.7 | 31.8 | 23.8 | 19.1 | 15.9 | 13.6 | 11.9 | 10.6 | 9.5 | 8.7 | 7.9 | 7.3 | 6.8 | 6.4 | 6.0 | 5.6 |
| #11 | 1 5/8 | 40.6 | 27.1 | 20.3 | 16.2 | 13.5 | 11.6 | 10.2 | 9.0 | 8.1 | 7.4 | 6.8 | 6.2 | 5.8 | 5.4 | 5.1 | 4.8 |



All results include a 20% minimum waste factor. Results may vary depending upon application.



ESTIMATING GUIDE

USAGE ESTIMATING GUIDE

The following charts estimate the number of anchors that can be installed in a variety of embedments. For 11 oz. divide 22 oz. values by 2. For 16 oz. divide 33 oz. values by 2. For screen usage, divide final result by 2. Screens must be completely filled.

ESTIMATING GUIDE FOR 33 OZ. CARTRIDGE USING THREADED ROD

| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 3/8 | 7/16 | 316.9 | 211.3 | 158.5 | 126.8 | 105.6 | 90.6 | 79.2 | 70.4 | 63.4 | 57.6 | 52.8 | 48.8 | 45.3 | 42.3 | 39.6 | 37.3 |
| 1/2 | 9/16 | 239.7 | 159.8 | 119.8 | 95.9 | 79.9 | 68.5 | 59.5 | 53.3 | 47.9 | 43.6 | 39.9 | 36.9 | 34.2 | 32.0 | 30.0 | 28.2 |
| 5/8 | 3/4 | 134.8 | 89.9 | 67.4 | 53.9 | 44.9 | 38.5 | 33.7 | 33.7 | 27.0 | 24.5 | 22.5 | 20.7 | 19.3 | 18.0 | 16.9 | 15.9 |
| 3/4 | 7/8 | 99.0 | 66.0 | 49.5 | 39.6 | 33.0 | 28.3 | 24.8 | 24.8 | 19.8 | 18.0 | 16.5 | 15.2 | 14.1 | 13.2 | 12.4 | 11.7 |
| 7/8 | 1 | 84.3 | 56.2 | 42.1 | 33.7 | 28.1 | 24.1 | 21.1 | 21.1 | 16.9 | 15.3 | 14.0 | 13.0 | 12.0 | 11.2 | 10.5 | 9.9 |
| 1 | 1 1/8 | 79.9 | 53.5 | 39.9 | 32.0 | 26.6 | 22.8 | 20.0 | 20.0 | 16.0 | 14.5 | 13.3 | 12.3 | 11.4 | 10.7 | 10.0 | 9.4 |
| 1 1/8 | 1 1/4 | 64.7 | 43.1 | 32.4 | 25.9 | 21.6 | 18.5 | 16.2 | 16.2 | 12.9 | 11.8 | 10.8 | 10.0 | 9.2 | 8.6 | 8.1 | 7.6 |
| 1 1/4 | 1 3/8 | 53.5 | 35.7 | 26.7 | 21.4 | 17.8 | 15.3 | 13.4 | 13.4 | 10.7 | 9.7 | 8.9 | 8.2 | 7.6 | 7.1 | 6.7 | 6.3 |

ESTIMATING GUIDE FOR 33 OZ. CARTRIDGE USING DEFORMED BAR

| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| #3 | 7/16 | 396.2 | 264.1 | 198.1 | 158.5 | 132.1 | 113.2 | 99.0 | 88.0 | 79.2 | 72.0 | 66.0 | 60.9 | 56.6 | 52.8 | 49.5 | 46.6 |
| #4 | 5/8 | 258.8 | 172.5 | 129.4 | 103.5 | 86.3 | 73.9 | 64.7 | 57.5 | 51.8 | 47.1 | 43.1 | 39.8 | 37.0 | 34.5 | 32.4 | 30.4 |
| #5 | 3/4 | 179.7 | 119.8 | 89.9 | 71.9 | 59.9 | 51.4 | 44.9 | 39.9 | 35.9 | 32.7 | 30.0 | 27.7 | 25.7 | 24.0 | 22.5 | 21.1 |
| #6 | 7/8 | 141.5 | 94.3 | 70.7 | 56.6 | 47.2 | 40.4 | 35.4 | 31.4 | 28.3 | 25.7 | 23.6 | 21.8 | 20.2 | 18.9 | 17.7 | 16.6 |
| #7 | 1 | 126.4 | 84.3 | 63.2 | 50.6 | 42.1 | 36.1 | 31.6 | 28.1 | 25.3 | 23.0 | 21.1 | 19.4 | 18.1 | 16.9 | 15.8 | 14.9 |
| #8 | 1 1/8 | 99.9 | 66.6 | 49.9 | 39.9 | 33.3 | 28.5 | 25.0 | 22.2 | 20.0 | 18.2 | 16.6 | 15.4 | 14.3 | 13.3 | 12.5 | 11.7 |
| #9 | 1 1/4 | 80.9 | 53.9 | 40.4 | 32.4 | 27.0 | 23.1 | 20.2 | 18.0 | 16.2 | 14.7 | 13.5 | 12.4 | 11.6 | 10.8 | 10.1 | 9.5 |
| #10 | 1 1/2 | 56.2 | 37.4 | 28.1 | 22.5 | 18.7 | 16.0 | 14.0 | 12.5 | 11.2 | 10.2 | 9.4 | 8.6 | 8.0 | 7.5 | 7.0 | 6.6 |
| #11 | 1 5/8 | 47.9 | 31.9 | 23.9 | 19.1 | 16.0 | 13.7 | 12.0 | 10.6 | 9.6 | 8.7 | 8.0 | 7.4 | 6.8 | 6.4 | 6.0 | 5.6 |

ESTIMATING GUIDE FOR 53 OZ. CARTRIDGE USING THREADED ROD

| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 3/8 | 7/16 | 509.0 | 339.3 | 254.5 | 203.6 | 169.7 | 145.4 | 127.3 | 113.1 | 101.8 | 92.5 | 84.8 | 78.3 | 72.7 | 67.9 | 63.6 | 59.9 |
| 1/2 | 9/16 | 384.9 | 256.6 | 192.4 | 154.0 | 128.3 | 110.0 | 96.2 | 85.5 | 77.0 | 70.0 | 64.1 | 59.2 | 55.0 | 51.3 | 48.1 | 45.3 |
| 5/8 | 3/4 | 216.5 | 144.3 | 108.3 | 86.6 | 72.2 | 62.2 | 54.1 | 48.1 | 43.3 | 39.4 | 36.1 | 33.3 | 30.9 | 28.9 | 27.1 | 25.5 |
| 3/4 | 7/8 | 159.1 | 106.0 | 79.5 | 63.6 | 53.0 | 45.3 | 39.8 | 35.3 | 31.8 | 28.9 | 26.5 | 24.5 | 22.7 | 21.2 | 19.9 | 18.7 |
| 7/8 | 1 | 135.3 | 90.2 | 67.7 | 54.1 | 45.1 | 38.8 | 33.8 | 30.1 | 27.1 | 24.6 | 22.6 | 20.8 | 19.3 | 18.0 | 16.9 | 15.9 |
| 1 | 1 1/8 | 128.3 | 85.5 | 64.1 | 51.3 | 42.8 | 36.1 | 31.6 | 28.1 | 25.3 | 23.0 | 21.1 | 19.4 | 18.1 | 16.9 | 15.8 | 14.9 |
| 1 1/8 | 1 1/4 | 103.9 | 69.3 | 52.0 | 41.6 | 34.6 | 29.1 | 25.6 | 22.8 | 20.8 | 18.9 | 17.3 | 16.0 | 14.8 | 13.9 | 13.0 | 12.2 |
| 1 1/4 | 1 3/8 | 85.9 | 57.3 | 42.9 | 34.4 | 28.6 | 23.6 | 20.6 | 18.6 | 17.2 | 15.6 | 14.3 | 13.2 | 12.3 | 11.5 | 10.7 | 10.1 |

Estimating Guide for 53 oz. Cartridge using Deformed Bar

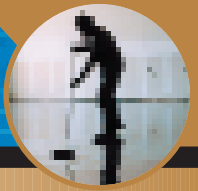
| Rod Dia. (in.) | Hole Dia. (in.) | Embedment Depth (in.) | | | | | | | | | | | | | | | |
|----------------|-----------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|
| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| #3 | 7/16 | 636.3 | 424.2 | 318.1 | 254.5 | 212.1 | 181.1 | 159.1 | 141.4 | 127.3 | 115.7 | 106.0 | 97.9 | 90.9 | 84.8 | 79.5 | 74.9 |
| #4 | 5/8 | 415.7 | 277.1 | 207.8 | 166.3 | 138.6 | 118.8 | 103.9 | 92.4 | 83.1 | 75.6 | 69.3 | 64.0 | 59.4 | 55.4 | 52.0 | 48.9 |
| #5 | 3/4 | 288.7 | 192.4 | 144.3 | 115.5 | 96.2 | 82.5 | 72.2 | 64.1 | 57.7 | 53.5 | 48.1 | 44.4 | 41.2 | 38.5 | 36.1 | 34.0 |
| #6 | 7/8 | 227.2 | 151.5 | 113.6 | 90.9 | 75.7 | 64.9 | 56.8 | 50.5 | 45.4 | 41.3 | 37.9 | 35.0 | 32.5 | 30.3 | 28.4 | 26.7 |
| #7 | 1 | 203.0 | 135.3 | 101.5 | 81.2 | 67.7 | 58.0 | 50.7 | 45.1 | 40.6 | 36.9 | 33.8 | 31.2 | 29.0 | 27.1 | 25.4 | 23.9 |
| #8 | 1 1/8 | 160.4 | 106.9 | 80.2 | 64.1 | 53.5 | 45.8 | 40.1 | 35.6 | 32.1 | 29.2 | 26.7 | 24.7 | 22.9 | 21.4 | 20.0 | 18.9 |
| #9 | 1 1/4 | 129.9 | 86.6 | 65.0 | 52.0 | 43.3 | 37.1 | 32.5 | 28.9 | 26.0 | 23.6 | 21.7 | 20.0 | 18.6 | 17.3 | 16.2 | 15.3 |
| #10 | 1 1/2 | 90.2 | 60.1 | 45.1 | 36.1 | 30.1 | 25.8 | 22.6 | 20.0 | 18.0 | 16.4 | 15.0 | 13.9 | 12.9 | 12.0 | 11.3 | 10.6 |
| #11 | 1 5/8 | 76.9 | 51.2 | 38.4 | 30.7 | 25.6 | 22.0 | 19.2 | 17.1 | 15.4 | 14.0 | 12.8 | 11.8 | 11.0 | 10.2 | 9.6 | 9.0 |



All results include a 20% minimum waste factor.



BONDING & COATING



Adhesives Technology Corp. offers a broad line of **Ultrabond adhesives** for bonding and coating. They are available in a variety of viscosities, gel and cure times to meet the requirements of specific job applications. Some of the adhesives mentioned in this section may be used for anchoring and doweling as well as other applications.

Viscosities of the **Ultrabond** products are available in low, medium, non-sag gel and paste consistencies. Important aspects to consider when selecting an adhesive for a bonding or coating application are: job specifications (i.e. ASTM - C881-99), gel/pot life, cure times and product viscosity. Developed to meet and exceed ASTM and DOT's highest specifications, **ATC** is continually adding high quality products to solve problems and meet the needs in the field.

The chart below is a quick reference guide for choosing the correct formula. More detailed information on each formula can be found in the following pages.

Call for information on additional formulas not listed in this catalog.

BONDING & COATING ADHESIVES

Typical Applications

- Structural bonding of hardened concrete to hardened concrete
- Structural bonding of new concrete to hardened concrete
- Use as a bonding agent for a variety of materials (concrete, brick, block, stone, metals and alloys, wood, plastic, fiberglass, etc.)
- Mix with sand to create a trowelable mortar
- Concrete Repair and spall patching material
- For anchoring and doweling using bulk packaging
- Concrete coating for bridge and parking decks and other concrete surfaces
- As a segmental precast adhesive



ATC Products ASTM - C881-99 QUICK REFERENCE GUIDE

| | |
|------------------------------|--|
| Ultrabond 1300 | - Type I, II, IV, V, Grade 3, Class B, C |
| Ultrabond HS410F | - Type I, II, Grade 3, Class B, C |
| Ultrabond 2000 | - Type I, II, IV, V, Grade 1, Class B, C |
| Ultrabond 2100 | - Type I, II, IV, V, Grade 2, Class B, C |
| Ultrabond 2300 | - Type I, II, IV, V, Grade 3, Class C |
| Ultrabond 5000 / 5100 | - Call for technical information |
| Ultrabond 5400/L/H | - Type VI, Grade 3, Class D, E, F |

ASTM - C881-99 QUICK REFERENCE GUIDE

| | | | | | |
|----------------|---|----------------|---------------|---------------------------------|---------------|
| Type I | For use in non-load bearing application for bonding hardened concrete to hardened concrete and other materials, and as a binder in epoxy mortars or epoxy concrete. | | | | |
| Type II | For use in non-load bearing application for bonding freshly mixed concrete to hardened concrete. | | | | |
| Type IV | For use in load bearing application for bonding hardened concrete to hardened concrete and other materials, and as a binder in epoxy mortars or epoxy concrete. | | | | |
| Type V | For use in load bearing application for bonding freshly mixed concrete to hardened concrete. | | | | |
| Type VI | For bonding and sealing segmental precast elements with internal tendons and for span-by-span erection when temporary post tensioning is applied. | | | | |
| Grade 1 | Low Viscosity — (0 cps - 2,000 cps) | Class A | Below 40° F | Class D (for Type VI) | 40° F - 65° F |
| Grade 2 | Medium Viscosity — (2,000 cps - 10,000 cps) | Class B | 40° F - 60° F | Class E (for Type VI) | 60° F - 80° F |
| Grade 3 | Non-Sagging Consistency | Class C | Above 60° F | Class F (for Type VI) | 75° F - 90° F |

GENERAL BONDING & COATING INSTRUCTIONS

Surface Preparations – The surface must be sound, clean and free of contaminants such as oil, grease, dust, dirt and debris. For best bond, acid etching, shot blasting or other mechanical blasting methods are highly recommended. For best results, surface should be clean and dry. Some formulas may be used on damp surfaces; call for detailed instructions. Any freestanding water must be removed.

Note: For complete instructions for Bonding and Coating applications ask for **Adhesives Technology Corp.'s Technical Bulletin "Complete Bonding and Coating Application Procedures"**. For details on Typical Applications (see listing on previous page) – consult individual product technical data sheets.

Mixing Instructions:

When Mixing Entire Proportioned Bulk Kit – Pre-mix each component "A" and "B" separately until a homogenous consistency is achieved. Using a drill and jiffy mixer on low speed (400 rpm), mix all of part "A" with all of part "B" until a uniform color with no streaks is achieved (approximately 2 – 3 minutes). Make sure to scrape the sides and bottom to thoroughly mix all contents. Mix the epoxy in correct proportions. Do not whip or stir air into the mixture. Begin to use the mixed epoxy as soon as it is thoroughly mixed.

When Mixing Smaller Volumes – Pre-mix each component "A" and "B" separately until a homogenous consistency is achieved. Measure out the correct proportions (by volume) of resin (Part A) and hardener (Part B). Mix only the amount of material that can be used within the recommended gel time/pot life. Mix together until the entire mixture is uniform and consistent gray color with no streaks (approximately 2 – 3 minutes). The epoxy may be completely hand mixed, or for larger quantities, see the above directions. Begin to use the mixed epoxy as soon as it is thoroughly mixed.

Cartridge Mixing – Please see Anchoring and Doweling Section (pg 25) figures 2-4.

Coverage / Usage:

| Thickness (1000 mils = 1 in.) | Coverage / Gallon |
|-------------------------------|-------------------|
| 1/100" = 10 mils | 160 sq. ft. |
| 1/50" = 20 mils | 80 sq. ft. |
| 1/32" = 31 mils | 51 sq. ft. |
| 1/16" = 62.5 mils | 25.5 sq. ft. |
| 1/8" = 125 mils | 12.8 sq. ft. |
| 1/4" = 250 mils | 6.4 sq. ft. |



Note: For ease of mixing product at the jobsite and to reduce product waste, all gallon kits contain 102 oz.

Limitations:

- Minimum substrate temperature is 40° F.
- Do not thin. Solvents will prevent proper cure.
- Use only oven-dried aggregate.
- Contact Technical Services for any further questions.
- Mixed epoxy must be used before the stated gel time or pot life has elapsed. Failure to do so will result in hardened and unusable epoxy that must be discarded. See formula gel time or pot life to determine the working time for each formula. Gel and cure times dramatically lengthen at lower temperatures.

Clean Up:

Tools and equipment may be cleaned with solvents such as xylene, toluene, acetone or carburetor cleaner. These are excellent products for removing adhesives that have not completely hardened. Spray lubricants such as WD40 are excellent to coat the moving parts with after clean up. Care must be taken when using these solvents. Follow manufacturers handling procedures. Any good hand cleaner or wipe product will work well to clean the epoxy off your hands.

Safety:

Consult individual MSDS for each product – Contact Customer Service.

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

ULTRABOND HS410F • BONDING & COATING



Quick Selection Guide

| | |
|-------------------|--------------|
| Gel Time (75°F) | 7 min. |
| Cure Time (75°F) | 4 hrs. |
| Temperature Range | 40°F - 115°F |

Description

ULTRABOND HS410F (Quick Set) is a balanced blend of state of the art epoxy resins that combine to form a tough, creep resistant, fast grout with a wide range of job-site uses. The non-sag, creamy consistency makes it ideal for surface filling, bolt grouting and capping cracks. **ULTRABOND HS410F** is moisture insensitive and will adhere to moist or damp surfaces. (To attain maximum bond, however, it is always better to work on dry surfaces.)

40°F - 115°F Application Temperature Range

ULTRABOND HS410F
ADHESIVES TECHNOLOGY CORP.

PASTE

Conforms to ASTM C881
Type I, II, Grade 3, Class B, C

Sizes Available

- Bulk sizes include 1 (102 oz.) and 2, 10 and 100 gallon kits

Features & Advantages

- High modulus, structural
- Non sag epoxy paste
- Moisture insensitive
- 100% solids epoxy
- Fast setup time

Mixing

Mix only the amount of material that can be used within 5-7 minutes. If proportioning material at job-site it is critical to mix at a 1:1 ratio by volume (A to B). Mix contents of component "B" (1 part by volume) into component "A" (1 parts by volume), mix thoroughly for approximately 2 - 3 minutes using any suitable mixer such as a putty knife or trowel. You are now ready to apply. Use immediately to prevent material waste.

Uses

- Anchor bolt grouting
- Surface patching
- Capping cracks/mounting ports
- Bonding concrete, metal, wood and stone
- Decorative stone/tile adhesive



HS410F being used on an estate as a decorative stone adhesive.

PERFORMANCE INFORMATION

Independent ASTM C881-99 Technical Data

| Properties | ASTM | Results |
|----------------------------------|------|----------------|
| Compressive Yield Strength - psi | D695 | 8,500 (7 day) |
| Tensile Strength - psi | D638 | 1,850 (7 day) |
| Bond Strength - psi | C882 | 2,450 (14 day) |
| Consistency - cps | C881 | Paste |
| Heat Deflection Temperature - °F | D648 | 139 (7 day) |

APPLICATION INSTRUCTIONS

Bonding broken concrete: Mix epoxy according to instructions above. With gloved hand or stiff paint brush place thin coat of mixed epoxy on each piece to be bonded, press firmly together and secure until epoxy is cured. Grind smooth if desired for cosmetics.

Surface filler: Mix as above then place in void or crack with putty knife or tongue depressor, trowel, or squeegee to desired thickness. Leave slightly over full if exact surface match is necessary, then grind smooth with right angle grinder after curing.

Crack injection paste: Place mixed epoxy over port base and face of crack, leaving no gaps or holes. Allow to cure before injecting.

Ordering Information

| Size | Bulk Gal. Kit | 2 Gal. Kit | 10 Gal. Kit | 100 Gal. Kit |
|-------------|---------------|------------|--------------|--------------|
| Part # | BUG-HS410F | B2G-HS410F | B10G-HS410F | B100G-HS410F |
| Case Qty. | 1 | 1 | Packaged Ea. | Packaged Ea. |
| Pallet Qty. | 75 | 75 | 12 | 2 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray Tint |
| Storage | Below 95°F |

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

ULTRABOND 2000

Quick Selection Guide

| | |
|-------------------|--------------|
| Gel Time (75°F) | 30 min. |
| Cure Time (75°F) | 10 hrs. |
| Temperature Range | 40°F – 100°F |

Description

Ultrabond 2000 is a multipurpose, two component (2:1 ratio), 100% solids, high modulus, structural epoxy. It is a solvent free, no odor, high strength, moisture insensitive, low viscosity epoxy system. **Ultrabond 2000** has been independently laboratory tested and meets or exceeds ASTM C881 specifications.

ULTRABOND 2000
ADHESIVES TECHNOLOGY CORP.

POURABLE ANCHORING & BONDING EPOXY

Sizes Available

- Available in 16 and 33 oz. dual cartridge systems for deep hole applications (*special order*)
- Bulk sizes include 1 (102 oz.) and 3, 15 and 150 gallon kits

Features & Advantages

- Exceptional Strength
- Low Viscosity - pourable, self leveling epoxy
- Corrosion inhibiting
- Long working time
- Convenient easy mix ratio A:B = 2:1 by volume

Applications

- Bonding agent (metal, concrete, brick, wood, stone, block)
- Structural Adhesive for concrete, masonry, wood, metal, etc.
- Concrete Repair – Epoxy resin binder for epoxy mortar patching
- Vertical anchoring of rebar, dowels and threaded rod into solid substrates
- High strength anchoring and doweling – (*see Anchoring and Doweling Section*)
- Mix with sand to create a trowelable mortar

Approval / Listings

Various DOT's – Call for listing
Independent Laboratory Tested: Meets ASTM C881-99:
Type I, II, IV and V, Grade 1, Class B and C



PERFORMANCE INFORMATION

Independent ASTM C881-99 Technical Data

| Properties | ASTM | 48°F | 65°F |
|----------------------------------|-------|----------------|---------|
| Compressive Yield Strength – psi | D695 | 10,040 | 10,125 |
| Compressive Modulus – psi | D695 | 200,820 | 201,080 |
| Tensile Strength – psi | D638 | 7,020 | 7,150 |
| Elongation – % | D638 | 1.2 | 1.8 |
| Bond Strength – psi | C882 | 1,250 (2 day) | |
| | C882 | 1,730 (14 day) | |
| Consistency – cps | C881 | 1800 | |
| Heat Deflection Temperature – °F | D648 | 136 (7 day) | |
| Water Absorption - % | D570 | 0.38 (24 hrs.) | |
| Linear Coefficient of Shrinkage | D2566 | 0.002 | |



Ordering Information

| Size | Bulk Gal. Kit | 3 Gal. Kit | 15 Gal. Kit | 150 Gal. Kit |
|-------------|---------------|--------------|--------------|--------------|
| Part # | BUG-2000 | B3G-2000 | B15G-2000 | B150G-2000 |
| Case Qty. | 1 | Packaged Ea. | Packaged Ea. | Packaged Ea. |
| Pallet Qty. | 75 | 24 | 8 | 1 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 2:1 |
| Color | Amber Tint |
| Storage | Below 95°F |

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

ULTRABOND 2100 • BONDING & COATING



Quick Selection Guide

| | |
|-------------------|--------------|
| Gel Time (75°F) | 30 min. |
| Cure Time (75°F) | 10 hrs.. |
| Temperature Range | 40°F – 100°F |

Description

Ultrabond 2100 is a multipurpose, two component (1:1 ratio), 100% solids, high modulus, structural epoxy. It is a solvent free, no odor, high strength, moisture insensitive, medium viscosity epoxy system. **Ultrabond 2100** has been independently laboratory tested and meets or exceeds ASTM C881 specifications.

ULTRABOND 2100
ADHESIVES TECHNOLOGY CORP.

POURABLE EPOXY

Sizes Available

- Bulk sizes include 1 (102 oz.) and 10 and 100 gallon kits

Features & Advantages

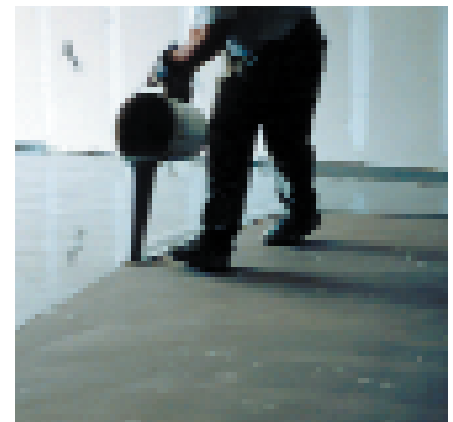
- Exceptional Strength
- Medium Viscosity - pourable, self leveling epoxy
- Corrosion inhibiting
- Long working time
- Convenient easy mix ratio A:B = 1:1 by volume

Applications

- Bonding agent (metal, concrete, brick, wood, stone, block)
- Structural Adhesive for concrete, masonry, wood, metal, etc.
- Concrete Repair – Epoxy resin binder for epoxy mortar patching
- Vertical anchoring of rebar, dowels and threaded rod into solid substrates
- Corrosion inhibiting floor coating
- Mix with sand to create a trowelable mortar

Approval / Listings

Various DOT's – Call for listing
Independent Laboratory Tested: Meets ASTM C881-99:
Type I, II, IV and V, Grade 2, Class B and C



PERFORMANCE INFORMATION

Independent ASTM C881-99 Technical Data

| Properties | ASTM | 48°F | 65°F |
|----------------------------------|-------|----------------|---------|
| Compressive Yield Strength – psi | D695 | 10,030 | 10,100 |
| Compressive Modulus – psi | D695 | 200,420 | 201,190 |
| Tensile Strength – psi | D638 | 7,080 | 7,210 |
| Elongation – % | D638 | 1.4 | 1.9 |
| Bond Strength – psi | C882 | 1,130 (2 day) | |
| | C882 | 1,690 (14 day) | |
| Consistency – cps | C881 | 9,000 | |
| Heat Deflection Temperature - °F | D648 | 135 (7 day) | |
| Water Absorption - % | D570 | 0.42 (24 hrs.) | |
| Linear Coefficient of Shrinkage | D2566 | 0.003 | |

Ordering Information

| Size | Bulk Gal. Kit | 10 Gal. Kit | 100 Gal. Kit |
|-------------|---------------|--------------|--------------|
| Part # | BUG-2100 | B10G-2100 | B100G-2100 |
| Case Qty. | 1 | Packaged Ea. | Packaged Ea. |
| Pallet Qty. | 75 | 12 | 2 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray Tint |
| Storage | Below 95°F |

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

Adhesives Technology Corp. ■ Tel: 800-892-1880 ■ www.atc.ws

ULTRABOND 5000

ULTRABOND 5100

Quick Selection Guide

| | |
|-------------------|--------------|
| Gel Time (75°F) | 60 min. |
| Cure Time (75°F) | 10 hrs. |
| Temperature Range | 60°F – 100°F |

ULTRABOND 5000
ADHESIVES TECHNOLOGY CORP.

POURABLE EPOXY

Technical Data

| | | | |
|----------------------|-------------|-----------|--------------|
| Compressive Strength | 7 day Cure | ASTM D695 | 10,800 psi |
| Tensile Strength | 7 day Cure | ASTM D638 | 8,000 psi |
| Bond Strength | 2 day Cure | ASTM C882 | 1,800 psi |
| Bond Strength | 14 day Cure | | 3,300 psi |
| Linear Shrinkage | | | <0.003 cm/cm |
| Heat Deflection | 7 day Cure | ASTM D638 | 121° F |

Description Ultrabond 5000 is a multipurpose, two component (2:1 ratio), 100% solids, high modulus, structural epoxy. It is a solvent free, no odor, high strength, moisture insensitive, super low viscosity epoxy system. 800 - 1,200 cps.

Sizes Available ■ Bulk sizes include 1 (102 oz.) and 3, 15 and 150 gallon kits

Features & Advantages ■ Exceptional Strength
■ Super Low Viscosity - pourable, self leveling epoxy
■ Corrosion inhibiting
■ Long working time
■ Convenient easy mix ratio A:B = 2:1 by volume

Applications ■ Bonding agent (metal, concrete, brick, wood, stone, block)
■ Structural Adhesive for concrete, masonry, wood, metal, etc.
■ Concrete Repair - Epoxy resin binder for epoxy mortar patching

Ordering Information

| Size | Bulk Gal. Kit | 3 Gal. Kit | 15 Gal. Kit | 150 Gal. Kit |
|-------------|---------------|--------------|--------------|--------------|
| Part # | BUG-5000 | B3G-5000 | B15G-5000 | B150G-5000 |
| Case Qty. | 1 | Packaged Ea. | Packaged Ea. | Packaged Ea. |
| Pallet Qty. | 75 | 24 | 8 | 1 |

PERFORMANCE INFORMATION

Call for the latest test data.

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 2:1 |
| Color | Amber Tint |
| Storage | Below 95°F |

Quick Selection Guide

| | |
|-------------------|--------------|
| Gel Time (75°F) | 60 min. |
| Cure Time (75°F) | 10 hrs. |
| Temperature Range | 60°F – 100°F |

ULTRABOND 5100
ADHESIVES TECHNOLOGY CORP.

POURABLE EPOXY

Technical Data

| | | | |
|-----------------------|--------|-----------|---------------------|
| Compressive Strength | 7 days | ASTM C695 | 9,16 lbs., min. |
| Tensile Strength | 7 days | ASTM D638 | 3,511 psi, min. |
| Bond Strength | | ASTM C882 | 1,600 psi @ 2 days |
| Bond Strength | | ASTM C882 | 2,600 psi @ 14 days |
| Linear Shrinkage | | | <0.003 cm/cm |
| Heat Deflection Temp. | | ASTM D648 | 122° F |

Description Ultrabond 5100 is a multipurpose, two component (1:1 ratio), 100% solids, high modulus, structural epoxy. It is a solvent free, no odor, high strength, moisture insensitive, medium viscosity epoxy system. 7,000 - 10,000 cps.

Sizes Available ■ Bulk sizes include 1 (102 oz.) and 2, 10 and 100 gallon kits

Features & Advantages ■ Extra long working time
■ Exceptional Strength
■ Medium Viscosity - pourable, self leveling epoxy
■ Corrosion inhibiting
■ Convenient easy mix ratio A:B = 1:1 by volume

Applications ■ Bonding agent (metal, concrete, brick, wood, stone, block)
■ Structural Adhesive for concrete, masonry, wood, metal, etc.
■ Concrete Repair - Epoxy resin binder for epoxy mortar patching

Ordering Information

| Size | Bulk Gal. Kit | 2 Gal. Kit | 10 Gal. Kit | 100 Gal. Kit |
|-------------|---------------|------------|--------------|--------------|
| Part # | BUG-5100 | B2G-5100 | B10G-5100 | B100G-5100 |
| Case Qty. | 1 | 1 | Packaged Ea. | Packaged Ea. |
| Pallet Qty. | 75 | 75 | 12 | 2 |

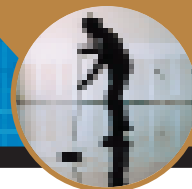
PERFORMANCE INFORMATION

Call for the latest test data.

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray Tint |
| Storage | Below 95°F |

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

ULTRABOND 5400L/5400/5400H



Quick Selection Guide

| Ultrabond | 5400L | 5400 | 5400H |
|--------------------------|-----------|-----------|-----------|
| Gel Time (gallon) - min. | 31 @ 65°F | 31 @ 80°F | 31 @ 90°F |
| Temperature Range - °F | 40 - 65 | 60 - 80 | 75 - 90 |

ULTRABOND 5400[™]
ADHESIVES TECHNOLOGY CORP.

SEGMENTAL PRECAST ADHESIVES

Sizes Available

- Bulk sizes include 1 (102 oz.) and 2, 10 and 100 gallon kits

Features & Advantages

- Extended gel (working) time
- Moisture insensitive - May be used in damp environments
- Perfect for vertical, horizontal, and overhead applications
- Structural bonding of concrete to concrete
- High strength epoxy adhesive
- Corrosion Inhibitor

Applications

- Segmental Precast Adhesive
- Bonding agent (concrete, masonry, brick, wood, stone, block, metal)
- Concrete Repair

Approval / Listings

Various DOT's - Call for listing
Independent Laboratory Tested: Meets ASTM C881-99:
Type VI, Grade 3, Class D, E and F

Description Ultrabond 5400L, Ultrabond 5400 and 5400H are a two component (1:1 ratio), 100% solids, high modulus, structural epoxy pastes. They are solvent free, low odor, high strength, moisture insensitive, non-sag epoxy systems. **Ultrabond 5400L** is specifically formulated for use in lower temperatures. **Ultrabond 5400H** is for higher temperatures. The **Ultrabond 5400** formulas have been independently laboratory tested and meets or exceeds ASTM C881 specifications. *This product available by special order only. Call for details.*



PERFORMANCE INFORMATION

Independent ASTM C881-99 Technical Data

| Properties | ASTM | Results |
|----------------------------------|-------|-----------------------------------|
| Compressive Yield Strength - psi | D695 | 2,120 (1 day) 6,780 (2 day) |
| Compressive Modulus - psi | D695 | 42,800 (1 day) 135,910 (2 day) |
| Tensile Strength - psi | D638 | 7,320 |
| Elongation - % | D638 | 1.8 |
| Bond Strength - psi | C882 | 1,300 (2 day) 1,790 (14 day) |
| Consistency | C881 | Non-Sag Gel |
| Heat Deflection Temperature - °F | D648 | 138 (7 day) |
| Water Absorption - % | D570 | 0.46 (24 hrs.) |
| Linear Coefficient of Shrinkage | D2566 | 0.002 |
| Contact Strength - psi | C882 | 1,220 (2 day) |



Ordering Information

| Size | Bulk Gal. Kit | 2 Gal. Kit | 10 Gal. Kit | 100 Gal. Kit |
|------------------|---------------|------------|--------------|--------------|
| Part # for 5400L | BUG-5400L | B2G-5400L | B10G-5400L | B100G-5400L |
| Part # for 5400 | BUG-5400 | B2G-5400 | B10G-5400 | B100G-5400 |
| Part # for 5400H | BUG-5400H | B2G-5400H | B10G-5400H | B100G-5400H |
| Case Qty. | 1 | 1 | Packaged Ea. | Packaged Ea. |
| Pallet Qty. | 75 | 75 | 12 | 2 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray Tint |
| Storage | Below 95°F |

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

Adhesives Technology Corp. ■ Tel: 800-892-1880 ■ www.atc.ws

CRACK INJECTION

Adhesives Technology Corp., known throughout the construction industry for innovative dual chamber epoxy cartridge systems, now offers a complete line of **Structural Crack Injection epoxy formulations**. The products come in an easy to use, low cost cartridge system or economical bulk systems. So, whether you are specifying the repair of thousands of lineal feet of crack in a parking structure, or repairing a leaky foundation wall, **Adhesives Technology Corp.'s CRACKBOND** is the system of choice.

WHAT is Structural Crack Injection?

Structural Crack Injection does more than just waterproof a crack. It reintegrates a cracked wall, beam, column, slab or other element into a single structural unit. The process of **Structural Crack Injection** is straight forward. A high strength epoxy polymer is injected, usually under pressure, to fill the void space of the crack. As the epoxy travels through the crack, it flushes moisture from the inner crack surfaces. When it cures, the epoxy crosslinks inside the crack, bonding itself to both crack faces, providing a structural bridge across the crack that is superior in strength to the concrete.

WHY Choose Structural Crack Injection?

There are two primary reasons for choosing structural crack injection. First, cracks may reduce the strength of a member and could contribute to structural failure.

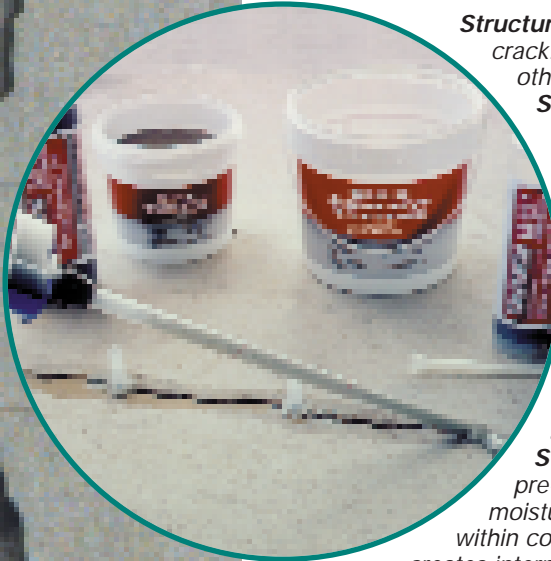
Structural Crack Injection can return a member to its pre-crack strength. Second, cracks provide a passage for moisture and corrosive salts to access the reinforcing steel within concrete elements. Rust diminishes steel strength and creates internal pressures because it has greater volume than the steel it consumes. Internal pressures may lead to further cracking within the concrete, increased moisture intrusion and corrosion, reducing the useful life of the structure.

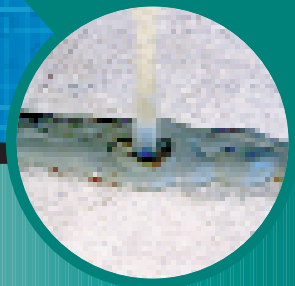
WHERE is Structural Crack Injection Appropriate?

Cracks in structural elements are characterized as "dormant" or "working." Dormant cracks may occur from cure shrinkage, stabilized settlement, or one-time overload events such as earthquakes and floods. Because there is no movement at a dormant crack-line, structural crack injection is recommended. By contrast, working cracks are those which form due to inadequate joint design. The concrete moves periodically at the crack-line in response to external conditions like temperature swings, soil heaving, or changes in load. **Structural Crack Injection** fuses the member back together, preventing movement at the crack-line. Thus, **Structural Crack Injection** can be used to repair working cracks when proper joints are added to redirect movement. It is important to determine whether the crack is "dormant" or "working" before injecting the crack.

HOW to Structurally Repair a Crack?

Structural Crack Injection of walls, columns and vertical surfaces can be described in three steps (see page 42). First, the injection port is mounted along the crack-line and the crack is "capped" using a **Adhesives Technology Corp.** gel or paste epoxy. Second, the cap is allowed to cure and an appropriate **Adhesives Technology Corp.** injection epoxy is selected (see Application Product Guide chart on page 44 for cap curing schedule and recommended injection epoxy). Third, the **Adhesives Technology Corp. CRACKBOND epoxy** is injected from one end of the crack to the other, one port at a time. Injection of each port is complete when clean polymer flows from the next port in sequence. The injection port is plugged, before moving to the next port. The process is repeated until the crack is completely injected.





ON THE JOB WITH CRACKBOND

Harriet Pullman Carolan, the daughter of the Pullman railroad car manufacturer had **The Carolands**, a 98 room mansion, built in 1917 in Hillsborough, California on 550 acres of land.

At the time, it was the largest single family home west of the Mississippi River. The chateau, modeled after the **Vaux-le-Vicomte**, was designed by French architect Ernest Sanson and supervised by Willis Polk of San Francisco.

Over the years, the structure's integrity has been compromised mainly due to seismic activity. Both the interior and exterior needed to go through a labor intensive restoration process. On the exterior face, many large cracks (see photo on far left) could be seen throughout the structure.

To repair the damage, the stucco exterior first had to be stripped off. The cracks that ran through the brick underneath were capped with **CG-300 Capping Gel** and then injected with **LR-321 Epoxy Injection Resin**. Over 1,000 linear feet of crack was injected. The stucco was later re-applied.



CG-300 Capping Gel
MODERATE TEMPERATURE/
STANDARD SET FORMULA
35°F - 115°F Application
Temperature Range



LR-321 Injection Resin
LOW VISCOSITY FORMULA
50°F - 110°F Application
Temperature Range



LR-321G Injection Gel
MEDIUM VISCOSITY FORMULA
THIXOTROPIC GEL
50°F - 110°F Application
Temperature Range



**SLV-302 Penetrating Epoxy
Injection Resin**
SUPER LOW VISCOSITY
FORMULA
35°F - 110°F Application
Temperature Range



CP-1400 Capping Paste
MODERATE TEMPERATURE/
STANDARD SET FORMULA
40°F - 115°F Application
Temperature Range

CRACK INJECTION PROCEDURES

I. DESCRIPTION

The **Crackbond Epoxy Crack Injection System** is a unique, high quality, low cost method of structurally re-bonding cracked concrete and wood members. Because structural epoxy has excellent adhesion to both concrete and wood surfaces, and has superior physical properties, epoxies are capable of restoring the cracked member to its pre-crack strength. If properly installed, any new failure of the structure will typically occur in the concrete or wood, not within the epoxy.

II. EXAMINATION OF CRACK

Before a repair is attempted, the crack should be analyzed to determine the type of repair that is required. Cracks in concrete and wood members are classified as either active (moving) or dormant. Dormant cracks may occur from cure shrinkage, stabilized settlement, or one-time overload events such as earthquakes or floods. For dormant cracks in a structure that is to be rehabilitated, structural crack injection is recommended. By contrast, active cracks are those which are caused by inadequate design, seasonal heaving, temperature swings or repeated over-loading. Since structural crack injection reintegrates the cracked member, preventing movement at the crack-line, it would be necessary to install joints to redirect this movement if structural crack repair is desired.

III. INJECTION MATERIALS REQUIRED

Proper injection requires the right equipment. The required materials are a capping epoxy (such as **CG-300** or **CP-1400**), injection resin or paste, injection ports, dispenser, wire brush, protective eye glasses, gloves, tongue depressors or putty knife and proper injection kit or mixer nozzles with retainer nuts and check valves.

IV. SELECT MATERIAL

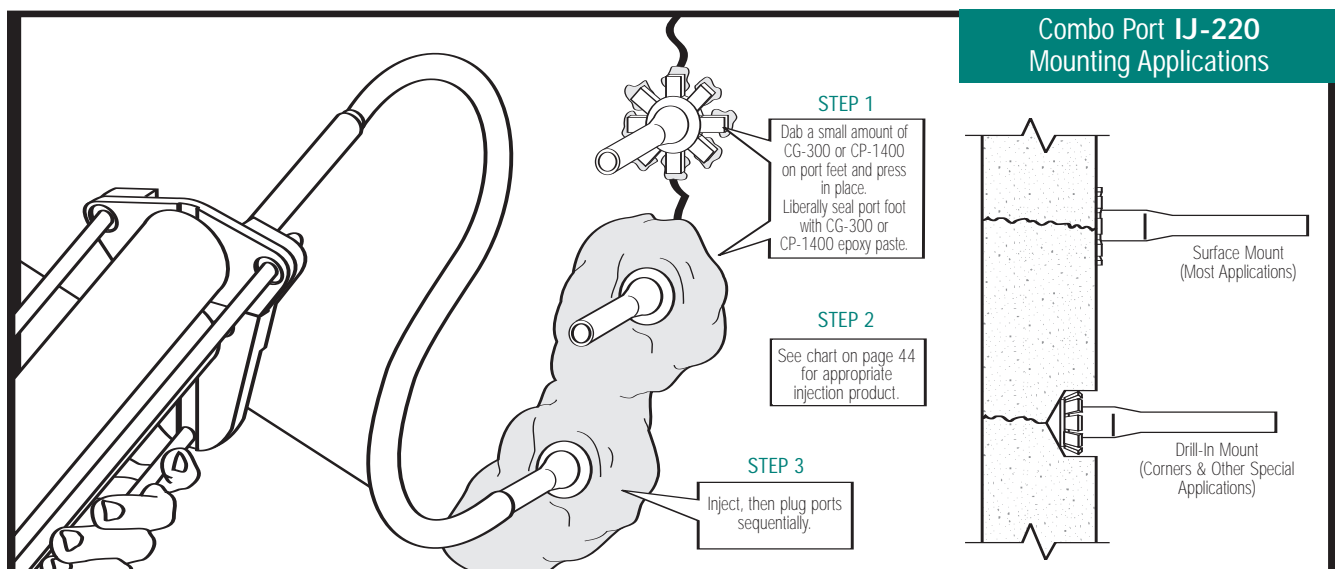
For cracks where both sides can be sealed, consider the injection epoxy to use based on the width of the crack you will be injecting and the substrate temperature. Product **CG-300** or **CP-1400** are typically used for wide crack repairs, and **LR-321G Gel** is typically used to repair medium sized cracks, while **LR-321** and **SLV-302** are excellent products for repairing hair-line cracks. For cracks in blind walls (those which can only be accessed from one side), products like **CG-300**, **CP-1400**, or **LR-321G Gel** typically are used, to prevent run-out of material at the blind side. For more specific details, please use the chart on page 44 to determine your injection epoxy.

V. PREPARE THE CRACK FACE

Using a wire brush, gently clean the wood or concrete surface surrounding the crack, so that the crack is not plugged with debris, and that the surface near the crack will bond well to the epoxy paste. Be careful not to plug the crack entry with any concrete dust or foreign matter when preparing the crack face.

VI. MOUNTING PORTS & CAPPING CRACK

Using one of two methods, affix the ports to the crack at a spacing approximately the same as the thickness (depth) of the cracked member. The port spacing may be varied slightly to locate open spots along the crack face or it may be reduced if blind-wall run-out is a potential problem. There are several methods of attaching the injection ports to the surface of the crack. The most effective method of attachment is to dab a small amount of the epoxy paste or gel onto the "feet" of the injection port, sticking it in place over the crack face, being careful not to plug the port's access to the crack with epoxy. An alternative method of attachment is to lightly tap a nail into the crack, pinning each port in place prior to spreading the epoxy capping paste. When excessive pressure is required to properly inject the crack, it may be required to attach the port using the drill in method. This is done by drilling a hole (1/2" - 3/4" diameter) at the port location, inserting the port and then sealing with the epoxy paste. **CG-300** or **CP-1400** paste epoxy is then dispensed over the crack and smoothed over with a putty knife, or similar tool. Care must be taken to seal the entire length of the crack, especially covering the "feet" of the injection ports, to hold them firmly in place and prevent leaking under pressure during injection. The epoxy paste must be allowed to cure prior to starting the injection. Time of cure is dependent upon both substrate temperature as well as epoxy material used. Please see specific product data sheet for epoxy cure schedules.



CRACK INJECTION & CONCRETE REPAIR



VII. INJECTING THE CRACK

There are two widely used strategies for crack injection. One very simply involves starting at one end of the crack (the bottom if it is a vertical crack) and injecting until good clean epoxy is coming out of the next port. The operator then plugs the first port, and begins injection at the second port, until clean epoxy runs from the third port, and so on. Alternatively, injection can be started at the widest part of the crack and worked into the thinner crack regions.



Here, a column is capped and ready for injection.



Capping a crack with CG-300.

Following the injection, some owners will require that the epoxy cap be removed from the exposed crack face. This can be accomplished with a right angle grinder, if proper dust protection and control steps are taken. The paste cap can also be removed by a “weed burner” torch, which can apply enough heat to make the epoxy soft and removable with a square-nose shovel, or similar tool. Care must be taken with this method not to over heat the concrete. If the removal of the cap is not required, do not do it unnecessarily as it is a labor intensive step.

VIII. QUALITY CONTROL

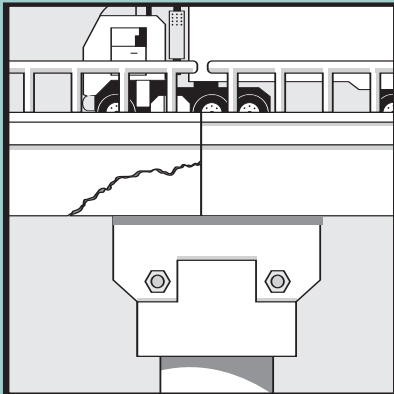
It is critical that the applicator make certain that the injected epoxy be on ratio and well mixed. The cartridge system does much to simplify the assurance of this. However, if an air tool is being used care should be taken not to run the regulated air pressure to the dispenser above manufacturer’s recommended limits, or cartridge leakage can occur. Also, the first material dispensed from the cartridge must be discarded, to account for the fact that either epoxy or curing agent will precede the second component initially coming from the cartridge. It is a good idea to retain a test bead of epoxy into a plastic bag or small bottle periodically during the job. This will provide verification that the epoxy being injected will cure properly. On many jobs, the taking of core samples through the crack is required to verify full penetration and cure of the epoxy resin. This is an advisable procedure for the applicator to follow, whether or not the engineer or owner require it as proof-positive of good workmanship. The cored holes are generally repaired with cementitious or epoxy mortar grout.

IX. UNUSUAL CIRCUMSTANCES

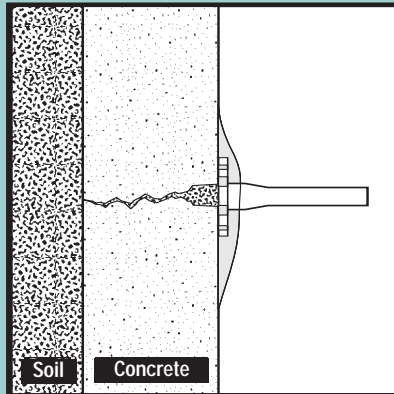
It is possible to successfully inject into wet cracks with limited compromise of bond strength, if certain procedures are followed. If the presence of water, unusual temperature, or abnormal substrate like brick or stone present themselves on a crack injection project, we would encourage you to call the manufacturer to seek additional advice. These instructions are intended to offer a broad overview of the crack injection procedures, and are not intended as a complete manual for all circumstances. Every effort is made here-in to accurately relate appropriate injection procedures, but this is in no way acts of bond or guarantee of work performed under these descriptions. For further information, we encourage you to call **Adhesives Technology Corp.**

APPLICATION PRODUCT GUIDE

LOAD BEARING STRUCTURES



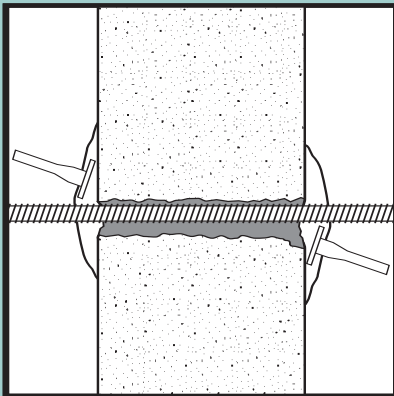
BLIND-SIDE CRACK INJECTION



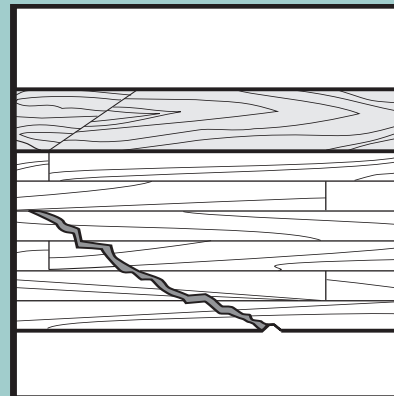
INPLANE MASONRY



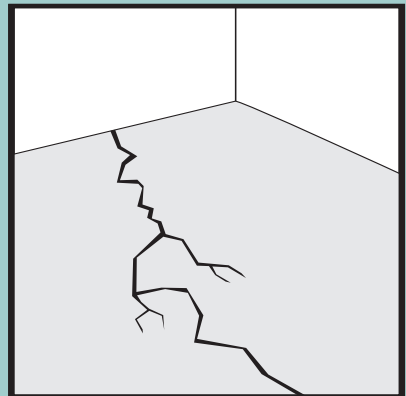
TENDON THROUGH-BOLT



GLUE-LAM & WOOD INJECTION



GRAVITY FILL ON-GRADE SLAB REPAIR



| APPLICATION | CG-300 | | | CP-1400 | | | LR-321 | | LR-321G | | SLV-302 | | |
|---|--------|----|----|---------|----|----|--------|----|---------|----|---------|----|----|
| Mounting Injection Ports and Capping Cracks | | | | | | | | | | | | | |
| Injecting Load Bearing Structures | | | | | | | | | | | | | |
| Injecting Blind-Side Cracks | | | | | | | | | | | | | |
| Injecting In-Plane Masonry | | | | | | | | | | | | | |
| Injecting Tendon Through-Bolts | | | | | | | | | | | | | |
| Injecting Glue-Lam Beams and Wood Members | | | | | | | | | | | | | |
| Gravity Filling-Cracks on Grade | | | | | | | | | | | | | |
| Injecting into Hollow Rock-Bolts | | | | | | | | | | | | | |
| Anchoring Dowels into Concrete and Masonry | | | | | | | | | | | | | |
| CRACK WIDTH INJECTION GUIDE | | | | | | | | | | | | | |
| Narrow Cracks - 1/400" - 1/8" | | | | | | | | | | | | | |
| Medium Cracks - 1/32" - 3/8" | | | | | | | | | | | | | |
| Wide Cracks - 1/8" - 5/8" | | | | | | | | | | | | | |
| WORKING TIME (Fahrenheit) | | | | | | | | | | | | | |
| Approx. Time to Work with Mixed Epoxy (minutes) | 75 | 50 | 35 | 75 | 50 | 40 | 75 | 50 | 75 | 50 | 75 | 50 | 35 |
| CURE SCHEDULE (Fahrenheit) | | | | | | | | | | | | | |
| Capping Epoxy Cure Time (hours) | 4 | 8 | 24 | 4 | 8 | 24 | | | | | | | |
| Full Cure Time for Injection Epoxy (hours) | 24 | 48 | 60 | 24 | 48 | 60 | 40 | 48 | 40 | 48 | 24 | 48 | 72 |
| PACKAGING SYSTEMS | | | | | | | | | | | | | |
| Cartridges | | | | | | | | | | | | | |
| Bulk Packaging | | | | | | | | | | | | | |

• Recommended - most applications

○ Recommended - limited applications

CRACK INJECTION & CONCRETE REPAIR



ASTM PRODUCT QUICK REFERENCE GUIDE (American Society for Testing Materials)

Standard C881 reflects a description of construction epoxies

Type = Use, Grade = Viscosity, Class = Use temperature range

| PRODUCT | TYPE | GRADE | CLASS |
|-----------------------------|---------------|-------|---------|
| LR-321 Injection Resin | I, II, IV & V | 1 | C |
| LR-321G Injection Gel | I & II | 2 | C |
| SLV-302 Low Viscosity Resin | I, II, IV & V | 1 | A, B, C |
| CG-300 | I, II, IV & V | 3 | A, B, C |
| CP-1400 | I & II | 3 | B, C |

| TYPE | DESCRIPTION | USE |
|------|------------------|--|
| I | Non-load bearing | For bonding hardened concrete to hardened concrete |
| II | Non-load bearing | For bonding new concrete to hardened concrete |
| IV | Load bearing | For bonding hardened concrete to hardened concrete |
| V | Load bearing | For bonding new concrete to hardened concrete |

Grade Codes — 1 = Low Viscosity (0-2,000 cps) 2 = Medium Viscosity (2,000-10,000 cps) 3 = Non Sag

Class Codes — A = below 40°F B = between 40-60°F C = above 60°F

*C881 testing in progress. Call for latest information

GLUE-LAM BEAM REPAIRS

Adhesives Technology Corp.'s **CRACKBOND** products **CG-300**, **CP-1400**, **LR-321**, and **LR-321G Gel** are recommended for use in the crack-injection repair of glue-lam beams. These epoxy products are typically used in the repair of concrete cracks, among other uses. Because structural epoxy has excellent adhesion to wood and superior physical properties, epoxies are capable of restoring the beam to its pre-crack strength. If properly installed, any new failure of the beam will typically occur in wood to wood cohesion, not within the epoxy.

The following are guidelines only. For proper in depth injection details, please refer to the **Crack-Injection Procedures** technical data sheet.

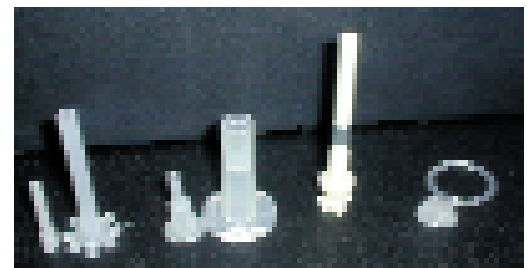
The proper injection procedures for the injection of cracks in wood is the same as that for concrete. The crack should be cleaned if possible (with clean air or water). The exposed crack faces should be cleaned and capped with **CG-300** epoxy paste while at the same time Injection ports must be set in the cap (about every 8 inches for most applications). After the cap has reached adequate strength to resist the injection back-pressure, the injection epoxy is dispensed in a port by port fashion until the void is filled. Unless a particular port leads to a "blind" section of the crack, injection materials will surface at the adjacent ports, indicating penetration. The filled port is plugged and the adjacent port is injected.

The epoxy product selected for injection is matched to the crack width. Wide cracks 0.125" or wider are generally filled with **CG-300** or **CP-1400** gel or paste, whereas fine cracks are injected with the low viscosity resin **LR-321**. The product **LR-321G Gel** is a medium viscosity injection material and is used in medium sized cracks. The pattern of injection may follow one of two procedures (low port to high port) or (region of widest crack exposure toward finer sections). The injection material should be given adequate time to cure before loading, per specific data sheet information. Appropriate job-site Quality Control techniques may sometimes include coring a section of material spanning the crack, or less invasive, obtaining periodic samples of the material being dispensed to show goodness of cure.

If we may assist further in clarifying an appropriate procedure for crack injection in wood, please contact us at 800-892-1880.

ACCESSORIES FOR ALL CRACKBOND PRODUCTS

| | DISPENSING TOOLS | UM | PKG QTY |
|-----------|---|------|---------|
| TM16HD | HEAVY DUTY MANUAL TOOL FOR 16 OZ CARTRIDGES | EA | 1 |
| TA16HD-C | HEAVY DUTY PNEUMATIC TOOL FOR 16 OZ CARTRIDGES | EA | 1 |
| | MIXING NOZZLES AND ACCESSORIES | UM | PKG QTY |
| T3438 | MIXING NOZZLE 3/4 X 3/8 FOR CG-300 | EA | 1 |
| T5838-H | MIXING NOZZLE 5/8 X 3/8 FOR LR-321G | EA | 1 |
| MN | MIXER NUT FOR ALL SYSTEMS | EA | 1 |
| T38XLK | 3/8 MIXER KIT W/NUT & FLOW CONTROL (3 EACH) | Kit | 3 |
| T38XLKB | 3/8 MIXER FOR LR-321 & SLV-302 w/nuts and flow controls | Bulk | 25 |
| IJ-220 | COMBO SURFACE/DRILL INJECTION PORT | EA | 1 |
| CBSP | SURFACE INJECTION PORT | EA | 1 |
| CBDP | DRILLED-IN INJECTION PORT CRIMPED (DRILL 1/2") | EA | 1 |
| INJ-KS-16 | 1/4" INJ. KIT FOR LR-321-16 with 3' extension tubing | EA | 1 |
| CBFC | CRACKBOND PART FLOW CONTROL | EA | 1 |



*Various Ports and Flow Control
Left to right:
IJ-220, CBSP, CDBP, CBFC*

CG-300 CAPPING GEL

Moderate Temperature/Standard Set Formula

35°F - 115°F Application Temperature Range

Description

CRACKBOND CG-300 is a two-component, 100% solids, high modulus, structural epoxy gel adhesive. Its high viscosity, non-sag, creamy consistency makes it ideal for surface filling, sealing/capping and mounting ports in crack-injection applications. A long pot life and quick strength gain upon cure gives workers maximum application time and reduces wasted product. **CG-300** is moisture insensitive and will adhere to moist or damp surfaces. (For maximum bond, it is always better to work on dry surfaces).

Uses

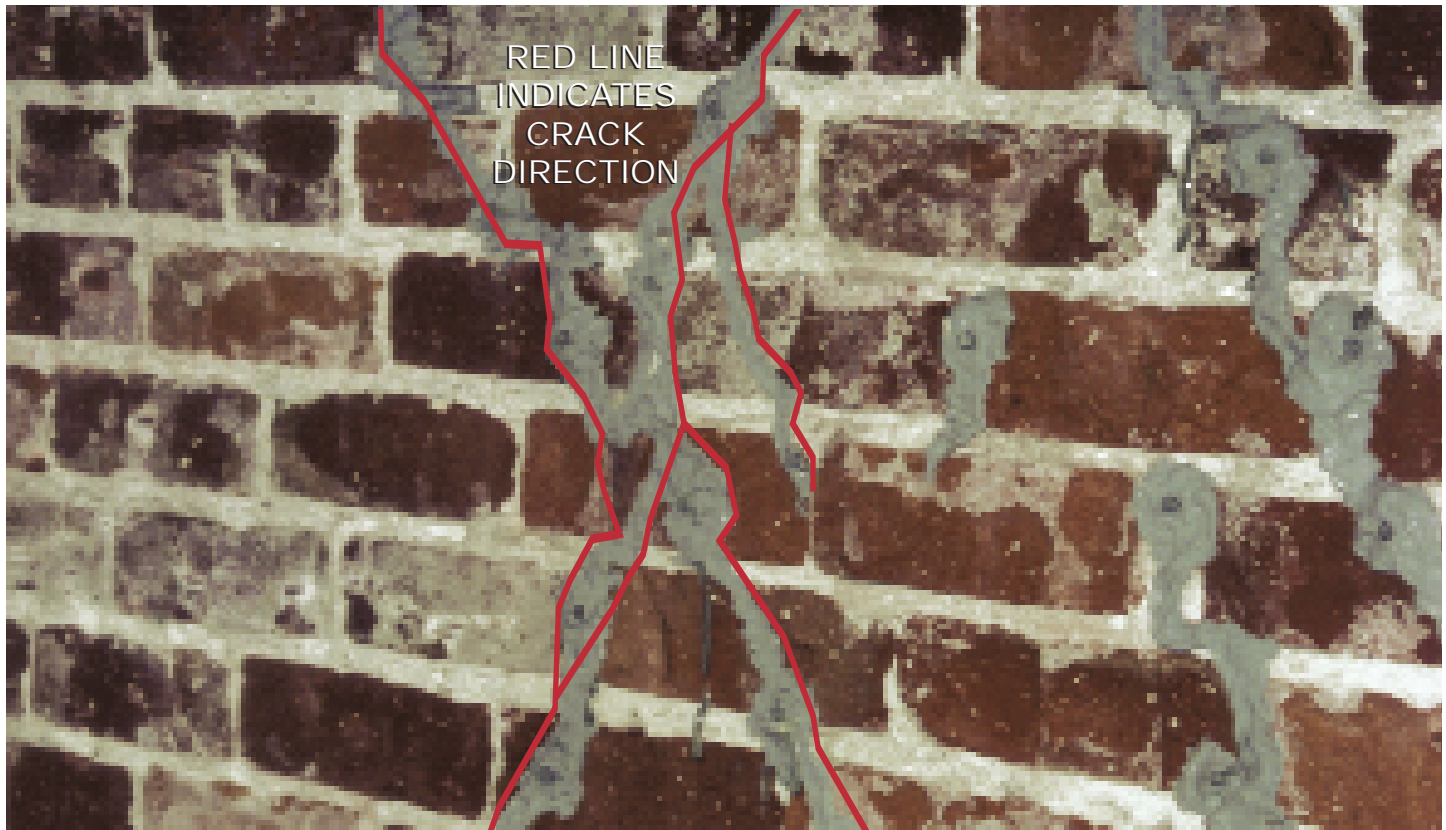
- Anchor grouting-threaded rod, rebar
- Dowels into concrete & masonry
- Seismic anchoring & bracing
- Mounting injection ports & capping cracks
- Injecting blind side cracks
- Injecting load bearing structures
- Bonding concrete, wood and masonry
- Glue-lam beam repairs
- Pick-proof sealant for windows, doors, security bars, etc.

Features & Advantages

- Convenient cartridge packaging
- No manual mixing or job-site proportioning
- Manual or pneumatic dispensing systems
- High-modulus, structural, non-sag epoxy gel
- Available in hand mix kits
- Cures at temperatures down to 35°F
- 100% solids epoxy



Meets ASTM C881-99
Type I, II, IV, V, Grade 3, Class A, B, C
Independently tested



NOTE: **CG-300** will cure at a faster rate in warmer temperatures. When dispensing, do not allow mixed epoxy to sit idle in nozzle for more than a minute if planning to continue use. If epoxy begins curing in nozzle, replace with new one. Continuous use of gelled nozzle will result in excess pressure to dispenser and cartridge which may shorten life of tool or cause plunger leakage in cartridge.

CG-300 • CRACK INJECTION & CONCRETE REPAIR



| | |
|--|--|
| CARTRIDGE CONDITIONS | For optimum results-warm cartridge to 60° - 80° F at time of application. |
| ANCHOR-HOLE CONDITIONS | Anchor hole must be clean and free of dust, oil or any other contaminants. |
| MINIMUM SUBSTRATE TEMPERATURE DURING APPLICATION - USE OF THERMOMETER RECOMMENDED | 35° F or warmer. Below 35° F, have concrete warmed using heater or heat gun and keep covered to maintain warmth. DO NOT USE DIRECT FLAME. |
| CARTRIDGE ACCESSORIES | Use with T3438 mixer nozzle. Dispense with TM16HD manual dispenser or TA16HD-C pneumatic dispenser. |
| USE WITH MANUAL DISPENSER | Do not dispense epoxy through gelled mixer nozzle. If epoxy gels in nozzle, replace nozzle before continuing. When dispensing, only apply pressure to trigger as needed, excessive amounts of pressure may result in cartridge plunger leakage or short tool life. |
| USE WITH PNEUMATIC DISPENSER | Must be used with an air pressure regulator. Do not exceed 80 psi to dispenser. Do not dispense epoxy through gelled mixer nozzle. |

| CURE SCHEDULE | | |
|----------------|---------------|-------------|
| CONCRETE TEMP. | WORKING TIME* | LOAD TIME** |
| 110° F | 4 minutes | 4 hours |
| 75° F | 15 minutes | 24 hours |
| 45° F | 30 minutes | 48 hours |
| 35° F | 35 minutes | 60 hours |

* Working Time -Time before epoxy begins to gel.
 ** Load Time -Time to obtain standard load strength. Epoxy may continue to cure and gain chemical resistance for up to 7 days.



CG300 being applied to cap the crack.

| Ordering Information | | | | |
|---------------------------|-----------|---------------|----------------|--------------|
| Size | 16 oz. | Bulk Gal. Kit | 15 Gal. Kit | 150 Gal. Kit |
| Part # | A16-CG300 | BUG-CG300 | B15G-CG300 | B150G-CG300 |
| Manual Dispensing Tool | TM16HD | N/A | N/A | N/A |
| Pneumatic Dispensing Tool | TA22HD-C | N/A | Bulk Dispenser | Bulk |
| Dispenser Case Qty. | 20 | 1 | Packaged Ea. | Packaged Ea. |
| Pallet Qty. | 720 | 75 | 8 | 1 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 2:1 |
| Color | Gray |
| Storage | Below 95°F |

WARNING: Uncured resins contain some materials that may be toxic. Prolonged contact with skin tissue may cause a rash. Prevent all contact with skin. Wash regularly with warm soap and water or waterless hand cleaner. Use rubber gloves, protective clothing and eye goggles. Use skin barrier creams when possible. Avoid all contact with eyes. If contact occurs, flush with warm water for 15 minutes. Call a physician immediately.



Appearance of finished crack after capping material has been ground off.

CP-1400 CAPPING PASTE Moderate Temperature/Set Formula



Conforms to ASTM C881
Type I, II, Grade 3, Class B, C

40°F - 115°F Application Temperature Range

Description

CRACKBOND CP-1400 (Standard Set) is a balanced blend of state of the art epoxy resins that combine to form a tough, creep resistant grout with a wide range of job-site uses. The non-sag, creamy consistency makes it ideal for surface filling, bolt grouting and capping cracks. **CRACKBOND CP-1400** is moisture insensitive and will adhere to moist or damp surfaces. (To attain maximum bond, however, it is always better to work on dry surfaces.) For epoxy paste with a faster gel time, see 1400F in our Bonding and Coating Section on page 35.

Mixing

Mix only the amount of material that can be used within 8 - 10 minutes. If proportioning material at job-site it is critical to mix at a 1:1 ratio by volume (A to B). Mix contents of component "B" (1 part by volume) into component "A" (1 parts by volume), mix thoroughly for approximately 2 - 3 minutes using any suitable mixer such as a putty knife or trowel. You are now ready to apply. Use immediately to prevent material waste.

Uses

- Anchor bolt grouting
- Surface patching
- Capping cracks/mounting ports
- Bonding concrete, metal, wood

Features & Advantages

- High modulus, structural
- Non sag epoxy paste
- Moisture insensitive
- 100% solids epoxy

APPLICATION INSTRUCTIONS

Bonding broken concrete: Mix epoxy according to instructions above. With gloved hand or stiff paint brush place thin coat of mixed epoxy on each piece to be bonded, press firmly together and secure until epoxy is cured. Grind smooth if desired for cosmetics.

Surface filler: Mix as above then place in void or crack with putty knife or tongue depressor, trowel, or squeegee to desired thickness. Leave slightly over full if exact surface match is necessary, then grind smooth with right angle grinder after curing.

Crack injection paste: Place mixed epoxy over port base and face of crack, leaving no gaps or holes. Allow to cure before injecting.



CP-1400 • CRACK INJECTION & CONCRETE REPAIR



SURFACE PREPARATIONS

All surfaces to be bonded must be cleaned and free of dirt, oil, concrete dust or other foreign matter in order to obtain maximum bond.

INITIAL CURE TIME

| DEGREES F | 50° | 80° | 90° |
|----------------------|---------|----------|---------|
| Pot-life, 1pint mass | 30 min. | 5-6 min. | 3 min. |
| Gel time 1/4" thick | 3 hrs. | 1 hr. | 45 min. |

APPLICATION TEMPERATURE RANGE

| | |
|---------------------|--------|
| Minimum Temperature | 40° F |
| Maximum Temperature | 110° F |

CURING CHARACTERISTICS - CP-1400

To get maximum working life from **CRACKBOND CP-1400**, mix only the amount you can use within the pot-life period noted for your particular application temperature. Please note, the larger the mass of epoxy mixed, the quicker the material will cure. Spread the product out on a palette while working with it to extend the gel time. Do not use the product after it begins to gel. Discard and mix a new batch. The following tables should be used for estimating pot-life only. The substrate temperature will be an important factor in curing speed.



Capping crack with bulk CP-1400

Ordering Information

| Size | Bulk Gal. Kit | 2 Gal. Kit | 10 Gal. Kit | 100 Gal. Kit |
|-----------------|---------------|------------|--------------|--------------|
| Part# | Bug-CP1400 | B2G-CP1400 | B10G-CP1400 | B100G-CP1400 |
| Case Quantity | 1 | 1 | Packaged Ea. | Packaged Ea. |
| Pallet Quantity | 75 | 24 | 12 | 2 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 1:1 |
| Color | Gray |
| Storage | Below 95°F |

CURED PROPERTIES

| | |
|---|---|
| SLANT SHEAR STRENGTH - ASTM C881/882 2,450 psi | COMPRESSIVE STRENGTH - ASTM D-695 8,500 psi |
| HEAT DEFLECTION TEMPERATURE - ASTM D-648 139° F | TENSILE STRENGTH - ASTM D-638 1,850 psi |

Helpful Hints/Cleanup: For Tools and equipment, wash with M.E.K. or Toluene immediately after use. Soak contaminated tools in carburetor cleaner. For hands, use a waterless hand cleaner. Citrus based cleaners such as Zep MVP work very well.

WARNING: Uncured resins contain materials that may be toxic. Prolonged contact with skin tissue may cause a rash. Prevent all contact with skin. Wash regularly with soap and warm water or waterless hand cleaner. Use rubber gloves, protective clothing, and eye goggles. Use skin barrier creams when possible. Avoid all contact with eyes. If contact with eyes occurs, wash immediately with warm water for 15 minutes and call a physician. Ask your Distributor for a material safety data sheet before working with product.



Capping crack with bulk CP-1400

LR-321 INJECTION RESIN Low Viscosity Formula

50°F - 110°F Application Temperature Range

Description

CRACKBOND LR-321 is a two component, 100% solids, high modulus, structural epoxy adhesive. It is formulated for use as an injection resin for cracks in wood and concrete structures that are hairline to medium sized in width. **LR-321** has the viscosity of a light oil, and a low surface tension, allowing it to deeply penetrate fine cracks. It cures to a solid with no shrinkage, and bonds to both surfaces of the crack, bonding the structure back to its original monolithic strength. This bond forms a permanent polymeric adhesion that cannot re-emulsify, and forms a moisture barrier that is resistant to chlorides, corrosion, water, grease, alkalies, salt and mild non-organic acids. **LR-321** is moisture insensitive and will adhere to moist or damp surfaces. (For maximum bond, it is better to work on dry surface).

Uses

- Pressure injection of hairline cracks
- In parking garages & foundation walls
- Structural concrete welding
- Pre-stressed membrane repairs-bridges, reservoirs, dams, etc.
- Gravity feeds cracks repairs
- Bonding woods, concrete & steel

Features & Advantages

- Convenient cartridge packaging-self mix
- Delivery system (no job-site mixing)
- Manual or pneumatic dispensing systems
- Available in bulk packaging & hand mix kits
- Moisture insensitive
- High modulus, structural epoxy resin
- Low viscosity system

*Meets or Exceeds ASTM C881-99
Type I, II, IV, V, Grade 1, Class C
Independently tested*

CRACK INJECTION INSTRUCTIONS

1. Required materials: Injection epoxy, capping epoxy, injection ports, dispenser, wire brush, tongue depressors or putty knife and injection kit or mixer nozzles.
2. Thoroughly clean crack face and immediate area with wire brush. Remove any debris, paint or broken concrete.
3. Port placement: There are two methods of mounting ports (surface mount & drill-in mount). Surface mounting is done in most circumstances while drill-in mounting is used when higher injection pressures are required.
4. Surface Mounting: One method of surface mounting is to dab a small amount of epoxy to the feet of the port and place onto face of crack making certain not to block crack entry. Another method is to lightly tap a nail into the crack, pinning ports in place, prior to sealing crack face.
5. Drill in Mounting: For drill in mounting, drill a hole at port location (1/2" - 3/4" diameter), insert port and secure with capping epoxy.
6. Capping Crack: After ports have been placed, insert cartridge of capping epoxy into dispenser (if using pneumatic, an air pressure regulator must be used). Adjust air pressure to 20 psi and dispense until both components are present at tip of cartridge. Increase air pressure if desired to a maximum of 80 psi. Attach mixer nozzle and again dispense a small amount of material until an even solid gray mix is achieved. Place a bead of epoxy over the crack and smooth with tongue depressor, making sure to seal off crack and cover all edges of injection ports, making sure there are no pinholes.

7. If crack is accessible on back side, seal with capping paste epoxy. If back side is inaccessible (blind side) it may be necessary to inject with a medium viscosity or high viscosity paste product.
8. Allow capping epoxy to cure before injecting crack.
9. Injecting Crack: Insert injection epoxy cartridge into dispenser, if using a pneumatic, adjust air pressure to about 5-10 psi. Dispense until both components are present at tip of cartridge. Attach injection kit or mixer nozzle to cartridge. With gun facing in downward direction, again dispense a small amount of material until uniform solid color is achieved.
10. Attach nozzle or injection kit to mounted port, starting at bottom port for cracks that run vertical or at the widest area for cracks that run horizontal.
11. Dispense material and at same time check for leaks and resin movement into the crack. When material appears at the next adjacent port, plug the port being injected and move to next port. Continue procedure until complete. Leave the hose attached to the last port on each crack for 30 seconds under pressure to assure the crack is completely full.
12. Allow at least 24 hours to cure. The removal of the surface paste may be done with a small chipping gun or right angle grinder.

LR-321 • CRACK INJECTION & CONCRETE REPAIR



| | |
|--|--|
| MINIMUM SUBSTRATE TEMPERATURE DURING APPLICATION - USE OF THERMOMETER RECOMMENDED | 50° F. or warmer. Below 50° F, have concrete warmed using heater or heat gun and keep covered to maintain warmth. DO NOT USE DIRECT FLAME. |
| CARTRIDGE ACCESSORIES | Use with T38XLK mixer nozzle, CBFC (flow control) and MN retainer nut. Dispense with TM16HD manual dispenser or TA16HD-C pneumatic dispenser. |
| USE WITH MANUAL DISPENSER | When dispensing, only apply pressure to trigger as needed, excessive amounts of pressure may result in cartridge plunger leakage or short tool life. Do not dispense epoxy through gelled mixer nozzle. If epoxy gels in nozzle, replace nozzle before continuing. |
| USE WITH PNEUMATIC DISPENSER | Must be used with an air pressure regulator. Do not exceed 35 psi to dispenser. Do not dispense epoxy through gelled mixer nozzle. |

| EPOXY SPECIFICATIONS | | | | | |
|----------------------|-------|---------------------|-------------|-------------|--------------------------|
| COMPONENT | COLOR | MIX RATIO | VISCOSITY | DENSITY | CHEMICAL MAKE-UP |
| "A" component | Clear | 2 parts by volume | 500-600 cps | 9.3 lbs/gal | 100% epoxy resin |
| "B" component | Amber | 1 part by volume | 250-300 cps | 8.4 lbs/gal | modified polyamine resin |
| Mixed | Amber | 2:1 ratio by volume | 350-450 cps | 9 lbs/gal | 100% true epoxy |

| CURE SCHEDULE | | | |
|----------------|------------|--------------|-------------|
| WORKING TIME * | | | |
| CONCRETE TEMP. | CARTRIDGE | 1 GALLON KIT | LOAD TIME** |
| 90° F | 4 minutes | 2-3 minutes | 36 hours |
| 75° F | 15 minutes | 3-5 minutes | 40 hours |
| 50° F | 30 minutes | 5-8 minutes | 48 hours |

* Working Time - Amount of time to work with mixed epoxy before gelling occurs
 ** Load Time - Time to obtain standard load strength. Epoxy may continue to cure and gain chemical resistance for up to 7 days.



The capping material is ground off after the crack is repaired.

Warning: Uncured resins contain some materials that may be toxic. Prolonged contact with skin tissue may cause a rash. Prevent all contact with skin. Wash regularly with warm soap and water or waterless hand cleaner. Use rubber gloves, protective clothing and eye goggles. Use skin barrier creams when possible. Avoid all contact with eyes. If contact occurs, flush with warm water for 15 minutes. Call a physician immediately.

| Independent ASTM C881-99 Technical Data | | |
|---|-----------|----------------|
| Shelf Life | | 2 years |
| Storage Conditions | | below 95° F |
| Color | | Amber Tint |
| Temperature Range | | 60° F - 110° F |
| Mixing Ratio: A:B (Volume) | | 2:1 |
| Compressive Strength - 7 days | ASTM D695 | 10,200 psi |
| Compressive Modulus Strength - 7 days | | 202,430 psi |
| Bond Strength - 2 days | ASTM C882 | 1,250 psi |
| Bond Strength - 14 days | | 1,680 psi |
| Water Absorption - 24 hrs | ASTM D570 | 0.28 % |
| Linear Shrinkage | | 0.002 cm/cm |
| Tensile Strength - 7 days | ASTM D638 | 7,220 psi |
| Elongation at Break - 7 days | | 1.8% |
| Heat Deflection Temperature | ASTM D648 | 134° F |

| Ordering Information | | | | |
|---------------------------|-----------|---------------|----------------|----------------|
| Size | 16 oz. | Bulk Gal. Kit | 15 Gal. Kit | 150 Gal. Kit |
| Part# | A16-LR321 | BUG-LR321 | B15G-LR321 | B150G-LR321 |
| Manual Dispensing Tool | TM16HD | N/A | N/A | N/A |
| Pneumatic Dispensing Tool | TA22HD-C | N/A | Bulk Dispenser | Bulk Dispenser |
| Case Quantity | 20 | 1 | Packaged Ea. | Packaged Ea. |
| Pallet Quantity | 720 | 75 | 8 | 1 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 2:1 |
| Color | Amber |
| Storage | Below 95°F |

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

Adhesives Technology Corp. ■ Tel: 800-892-1880 ■ www.atc.ws

LR-321G INJECTION RESIN

Medium Viscosity Thixotropic Formula

50°F - 110°F Application Temperature Range



Description

CRACKBOND LR-321 Gel is a two component, 100% solids, high modulus, structural epoxy adhesive. It is formulated for use as an injection gel for cracks in wood and concrete structures. **LR-321G Gel** is a multi-viscosity epoxy that acts as a liquid when dispensed through a mixer nozzle and acts as a gel when idle, making it ideal for blind side crack repair projects. These thixotropic properties also allow it to bridge cracks that range in size from 1/32" - 3/8" in width. It cures to a solid with no shrinkage, and bonds to both surfaces of a crack, welding the structure back to its original monolithic strength. This bond forms a permanent polymeric adhesion that cannot re-emulsify, and forms a moisture barrier that is resistant to chlorides, corrosion, water, grease, alkalies, salt and mild inorganic acids.

LR-321G Gel is moisture insensitive and will adhere to moist or damp surfaces. (For maximum bond, it is better to work on a dry surface).

Uses

- Pressure injection of medium-sized cracks
- In parking garages & foundation walls
- Structural concrete welding
- Pre-stressed membrane repairs-bridges, reservoirs, dams, etc.
- Bonding woods, concrete & steel
- Blindside cracks

Features & Advantages

- Convenient cartridge packaging-self mix
- Delivery system (no job-site mixing)
- Manual or pneumatic dispensing systems
- Available in bulk packaging & hand mix kits
- Moisture insensitive
- High modulus, structural epoxy gel

CRACK INJECTION INSTRUCTIONS

1. Required materials: Injection epoxy, capping epoxy, injection ports, dispenser, wire brush, tongue depressors or putty knife and injection kit or mixer nozzles.

2. Thoroughly clean crack face and immediate area with wire brush. Remove any debris, paint or broken concrete.

3. Port placement: There are two methods of mounting ports (surface mount & drill-in mount). Surface mounting is done in most circumstances while drill-in mounting is used when higher injection pressures are required.

4. Surface Mounting: One method of surface mounting is to dab a small amount of epoxy to the feet of the port and place onto face of crack making certain not to block crack entry. Another method is to lightly tap a nail into the crack, pinning ports in place, prior to sealing crack face.

5. Drill in Mounting: For drill in mounting, drill a hole at port location (1/2" - 3/4" diameter), insert port and secure with capping epoxy.

6. Capping Crack: After ports have been mounted, insert cartridge of capping epoxy into dispenser (if using pneumatic, an air pressure regulator must be used). Adjust air pressure to 20 psi and dispense until both components are present at tip of cartridge. Increase air pressure if desired to a maximum of 80 psi. Attach mixer nozzle and again dispense a small amount of material until an even solid gray mix is achieved. Place a bead of epoxy over the crack and smooth with tongue depressor, making sure to seal off crack and cover all edges of injection ports, making sure there are no pinholes.

7. If crack is accessible on back side, seal with capping paste epoxy. If back side is inaccessible (blind side) it may be necessary to inject with a medium viscosity or high viscosity paste product.

8. Allow capping epoxy to cure before injecting crack.

9. Injecting Crack: Insert injection epoxy cartridge into dispenser, if using a pneumatic, adjust air pressure to about 5-10 psi. Dispense until both components are present at tip of cartridge. Attach injection kit or mixer nozzle to cartridge. With gun facing in downward direction, again dispense a small amount of material until uniform solid color is achieved.

10. Attach nozzle or injection kit to mounted port, starting at the bottom port for cracks that run vertical or at the widest area for cracks that run horizontal.

11. Dispense material and at same time check for leaks and resin movement into the crack. When material appears at the next adjacent port, plug the port being injected and move to next port. Continue procedure until complete. Leave the hose attached to the last port on each crack for 30 seconds under pressure to assure the crack is completely full.

12. Allow at least 24 hours to cure. The removal of the surface paste may be done with a small chipping gun or right angle grinder.

LR-321G • CRACK INJECTION & CONCRETE REPAIR



| | |
|--|--|
| MINIMUM SUBSTRATE TEMPERATURE DURING APPLICATION - USE OF THERMOMETER RECOMMENDED | 50° F or warmer. Below 50° F, have concrete warmed using heater or heat gun and keep covered to maintain warmth. DO NOT USE DIRECT FLAME. |
| CARTRIDGE ACCESSORIES | Use with T5838-H mixer nozzle, adapter and MN retainer nut. Dispense with TM16HD manual dispenser or TA16HD-C pneumatic dispenser. |
| USE WITH MANUAL DISPENSER | When dispensing, only apply pressure to trigger as needed, excessive amounts of pressure may result in cartridge plunger leakage or short tool life. Do not dispense epoxy through gelled mixer nozzle. If epoxy gels in nozzle, replace nozzle before continuing. |
| USE WITH PNEUMATIC DISPENSER | Must be used with an air pressure regulator. Do not exceed 35 psi to dispenser. Do not dispense epoxy through gelled mixer nozzle. |

| EPOXY SPECIFICATIONS | | | | | |
|----------------------|-------|---------------------|---------------|--------------|--------------------------|
| COMPONENT | COLOR | MIX RATIO | VISCOSITY | DENSITY | CHEMICAL MAKE-UP |
| "A" component | White | 2 parts by volume | 2000-2500 cps | 9.8 lbs/gal | 100% epoxy resin |
| "B" component | Black | 1 part by volume | 500-550 cps | 8.58 lbs/gal | modified polyamine resin |
| Mixed | Gray | 2:1 ratio by volume | 1500-1800 cps | 9.39 lbs/gal | 100% true epoxy |

| CURE SCHEDULE | | | |
|----------------|------------|--------------|-------------|
| WORKING TIME* | | | |
| CONCRETE TEMP. | CARTRIDGE | 1 GALLON KIT | LOAD TIME** |
| 90° F | 20 minutes | 3-5 minutes | 36 hours |
| 75° F | 25 minutes | 5-7 minutes | 40 hours |
| 60° F | 30 minutes | 7-8 minutes | 44 hours |
| 50° F | 40 minutes | 8-9 minutes | 48 hours |

* Working Time - Amount of time to work with mixed epoxy before gelling occurs
 ** Load Time - Time to obtain standard load strength. Epoxy may continue to cure and gain chemical resistance for up to 7 days.

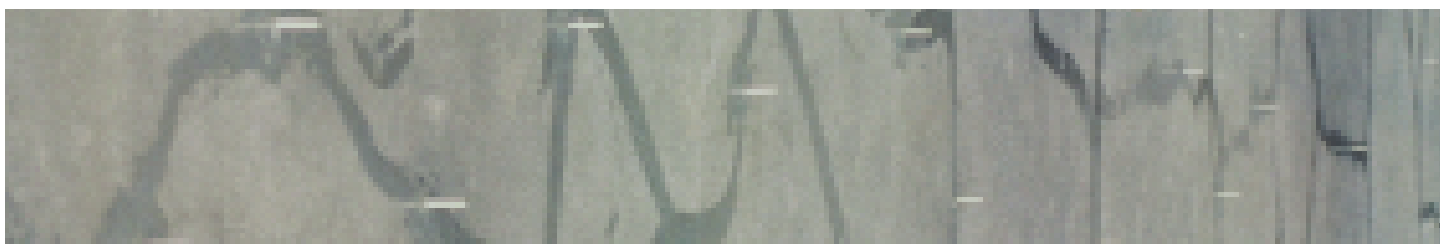


| CURED PROPERTIES | |
|--|---|
| SLANT SHEAR STRENGTH - ASTM C881/882 3,500 psi (concrete failure, all tests) | COMPRESSIVE STRENGTH - ASTM D-695 9,000 psi |
| HEAT DEFLECTION TEMPERATURE - ASTM D-648 125° F | TENSILE STRENGTH - ASTM D-638 5,000 psi |

Warning: Uncured resins contain some materials that may be toxic. Prolonged contact with skin tissue may cause a rash. Prevent all contact with skin. Wash regularly with warm soap and water or waterless hand cleaner. Use rubber gloves, protective clothing and eye goggles. Use skin barrier creams when possible. Avoid all contact with eyes. If contact occurs, flush with warm water for 15 minutes. Call a physician immediately.

| Ordering Information | | | | |
|---------------------------|------------|---------------|----------------|----------------|
| Size | 16 oz. | Bulk Gal. Kit | 15 Gal. Kit | 150 Gal. Kit |
| Part# | A16-LR3216 | BUG-LR321G | B15G-LR321G | B150G-LR321G |
| Manual Dispensing Tool | TM16HD | N/A | N/A | N/A |
| Pneumatic Dispensing Tool | TA22HD-C | N/A | Bulk Dispenser | Bulk Dispenser |
| Case Quantity | 10 | 1 | Packaged Ea. | Packaged Ea. |
| Pallet Quantity | 720 | 75 | 8 | 1 |

| | |
|------------|-------------|
| Shelf Life | 2 years |
| Mix Ratio | 2:1 |
| Color | Gray |
| Storage | Below 95° F |



The crack is capped and ready for injection.

SLV-302 PENETRATING Super Low Viscosity Formula

35°F - 100°F Application Temperature Range

Description

CRACKBOND SLV 302 is a two component, 100% solids, high modulus, structural epoxy adhesive. It is formulated for use as an injection resin or penetrating resin for hairline to medium sized cracks in wood and concrete structures. **SLV 302** has the viscosity of a very light oil, and a low surface tension, allowing it to deeply penetrate fine cracks. It cures to a solid with no shrinkage, and bonds to both surfaces of the crack, welding the structure back to its original monolithic strength. This bond forms a permanent polymeric adhesion that cannot re-emulsify, and forms a moisture barrier that is resistant to chlorides, corrosion, water, grease, alkalis, salt and mild non-organic acids.

Uses

- Gravity feed crack repairs
- Pressure injection of hairline cracks
- In parking garages & foundation walls
- Structural concrete welding
- Pre-stressed membrane repairs-bridges, reservoirs, dams, etc.
- Bonding woods, concrete & steel

Features & Advantages

- Convenient cartridge packaging-self mix
- Delivery system (no job-site mixing)
- Manual or pneumatic dispensing systems
- Available in bulk packaging & hand mix kits
- Moisture insensitive
- High modulus, structural epoxy gel
- Super low viscosity system

*Meets or Exceeds ASTM C881-99
Type I, II, IV, V, Grade 1, Class A, B & C
Independently tested*

Cracks should be repaired as soon as they are detected to prevent water damage to the structure.

MIXING INSTRUCTIONS

Cartridges: Insert cartridge into dispenser, if using a pneumatic, an air pressure regulator must be used with air pressure set to approximately 5 - 10 psi. Dispense cartridge until both the "A" and "B" components are present at tip of cartridge. Attach mixer nozzle and again dispense a small amount of material until a uniform solid mix is achieved. Adjust air pressure if desired to a maximum of 35 psi. You are now ready to use for your application.

Bulk: Mix only the amount of material that can be used within its pot life. If proportioning material at job-site it is important to mix at a 2:1 ratio by volume (A to B). Pour contents of component "B" (1part by volume) into component "A" (2 parts by volume), mix thoroughly for approximately 2 - 3 minutes with a low speed (400 - 600 rpm) drill with a paint blade mixer attached. You are now ready to use for your application. Use immediately to prevent material waste.

APPLICATION INSTRUCTIONS

Gravity Feed Crack Repair - On grade Slabs: For best results, all cracks that are to be repaired should be vee-notched and cleaned, removing any dust, grease curing compounds, foreign matter and standing water. Pour the mixed SLV-302 resin into the vee-notched cracks and allow to penetrate, continuing to add as necessary.

Pressure Injection: The face of the crack must be cleaned with a wire brush, have injection ports mounted and spaced accordingly and sealed with CG-300 epoxy paste.

Bulk material can be used in a high pressure pump set at a 2:1 ratio. Packaged in 102 ounce kits and 5 gallon kits (1155 cubic inches)

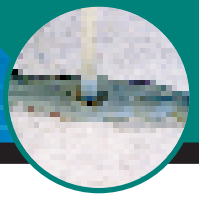
The 16.5 oz cartridge systems can be used in the **CRACKBOND TA16HD-C pneumatic dispenser** or the **TM16HD manual dispenser** for low pressure injection. 16.5 oz cartridge systems yields 29.75 cubic inches.

Ordering Information

| Size | 16 oz. | Bulk Gal. Kit | 15 Gal. Kit | 150 Gal. Kit |
|---------------------------|------------|---------------|----------------|----------------|
| Part# | A16-SLV302 | BUG-SLV302 | B15G-SLV302 | B150G-SLV302 |
| Manual Dispensing Tool | TM16HD | N/A | N/A | N/A |
| Pneumatic Dispensing Tool | TA22HD-C | N/A | Bulk Dispenser | Bulk Dispenser |
| Case Quantity | 10 | 1 | Packaged Ea. | Packaged Ea. |
| Pallet Quantity | 720 | 75 | 8 | 1 |

| | |
|------------|------------|
| Shelf Life | 2 years |
| Mix Ratio | 2:1 |
| Color | Amber Tint |
| Storage | Below 95°F |

SLV-302 • CRACK INJECTION & CONCRETE REPAIR



| | |
|--|--|
| STORAGE CONDITIONS | Store dry at 50° to 90° F - DO NOT LET FREEZE. ALWAYS ROTATE INVENTORY. |
| MINIMUM SUBSTRATE TEMPERATURE DURING APPLICATION - USE OF THERMOMETER RECOMMENDED | 35° F or warmer. Below 35° F, have concrete warmed using heater or heat gun and keep covered to maintain warmth. DO NOT USE DIRECT FLAME. |
| CARTRIDGE ACCESSORIES | Use with T38XLK mixer nozzle, CBFC (flow control) and MN retainer nut. Dispense with TM16HD manual dispenser or TA16HD pneumatic dispenser. |
| USE WITH MANUAL DISPENSER | When dispensing, only apply pressure to trigger as needed, excessive amounts of pressure may result in cartridge plunger leakage or short tool life. Do not dispense epoxy through gelled mixer nozzle. If epoxy gels in nozzle, replace nozzle before continuing. |
| USE WITH PNEUMATIC DISPENSER | Must be used with an air pressure regulator. Do not exceed 35 psi to dispenser. Do not dispense epoxy through gelled mixer nozzle. |

| EPOXY SPECIFICATIONS | | | | | |
|----------------------|-------|---------------------|-----------|-------------|--------------------------|
| COMPONENT | COLOR | MIX RATIO | VISCOSITY | DENSITY | CHEMICAL MAKE-UP |
| "A" component | Clear | 2 parts by volume | 200 cps | 9.3 lbs/gal | 100% epoxy resin |
| "B" component | Amber | 1 part by volume | 175 cps | 8.4 lbs/gal | modified polyamine resin |
| Mixed | Amber | 2:1 ratio by volume | 190 cps | 9 lbs/gal | 100% true epoxy |

| CURE SCHEDULE | | | |
|----------------|------------|--------------|-------------|
| WORKING TIME * | | | |
| CONCRETE TEMP. | CARTRIDGE | 1 GALLON KIT | LOAD TIME** |
| 90° F | 4 minutes | 2-3 minutes | 36 hours |
| 75° F | 10 minutes | 3-5 minutes | 40 hours |
| 50° F | 30 minutes | 5-8 minutes | 48 hours |
| 40° F | 35 minutes | 8-10 minutes | 72 hours |

* Working Time - Amount of time to work with mixed epoxy before gelling occurs
 ** Load Time - Time to obtain standard load strength. Epoxy may continue to cure and gain chemical resistance for up to 7 days.

| Independent ASTM C881-99 Technical Data | | | | |
|---|-----------|------|----------------|------|
| Shelf Life | | | 2 years | |
| Storage Conditions | | | below 95° F | |
| Color | | | Amber Tint | |
| Temperature Range | | | 35° F - 110° F | |
| Mixing Ratio A:B (Volume) | | | 2:1 | |
| Compressive Strength - 7 days | ASTM D695 | 65°F | 10,180 psi | |
| | | 35°F | 10,090 psi | |
| Compressive Modulus Strength - 7 days | | 65°F | 202,410 psi | |
| | | 35°F | 201,020 psi | |
| Bond Strength - 2 days | ASTM C882 | | 1,210 psi | |
| Bond Strength - 14 days | | | 1,670 psi | |
| Water Absorption - 24 hrs | ASTM D570 | | 0.21 % | |
| Linear Shrinkage | | | 0.003 cm/cm | |
| Tensile Strength / Elongation - 7 days | ASTM D638 | 65°F | 7,280 psi | 1.8% |
| | | 35°F | 7,040 psi | 1.2% |
| Heat Deflection Temperature | ASTM D648 | | 135° F | |

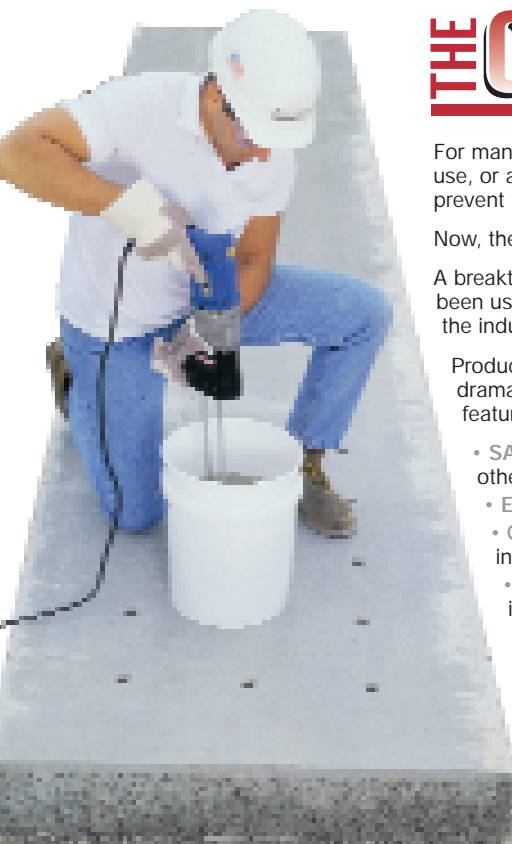


Concrete barrier repair.

Independent test reports available upon request. For technical support call Adhesives Technology Corp.

Warning: Uncured resins contain some materials that may be toxic. Prolonged contact with skin tissue may cause a rash. Prevent all contact with skin. Wash regularly with warm soap and water or waterless hand cleaner. Use rubber gloves, protective clothing and eye goggles. Use skin barrier creams when possible. Avoid all contact with eyes. If contact occurs, flush with warm water for 15 minutes. Call a physician immediately.

DEMOLITION



THE CRACKER[™]
ADHESIVES TECHNOLOGY CORP.

THE SIMPLE SOLUTION

For many demolition jobs, traditional methods are simply not an option. Safety considerations may preclude their use, or a high level of precision may be critical. And occasionally, the complexity of permitting procedures can prevent timely completion.

Now, there is an effective and easy solution: **The Cracker**, a non-explosive cracking agent.

A breakthrough in demolition technology, **The Cracker** can crack any hard rock or reinforced concrete. It has been used the world over for several years, and is now distributed by **Adhesives Technology** - known throughout the industry for bringing the newest and most innovative products to its customers.

Produced in powder form, **The Cracker** need only be mixed with water and poured into pre-drilled holes for dramatic results. Despite its impressive strength, **The Cracker** is valued most for its other advantageous features:

- **SAFE** — Above all, **The Cracker** provides a remarkably high safety factor as compared with explosives and other demolition methods. When used properly, both flyrock and vibration are eliminated.
- **EASY** — No permits or special pre-conditions are necessary for its use or transportation.
- **QUIET** — Ideal for use in or near occupied buildings, **The Cracker** requires no heavy machinery and involves no blasting.
- **NON-TOXIC** — **The Cracker** is a lime-based product and is completely safe for the environment. As it is 100 percent biodegradable in its final form, unused material may simply be poured into the ground or diluted with cool water.
- **ECONOMICAL** — As the flyrock characteristic of most demolition methods is eliminated with **The Cracker**, little or no cost is incurred for dust and debris containment. Labor requirements for application are also minimal.



A non-explosive way to crack concrete and rock in just 4 hours!



DRILL

Hole diameters range from 1 1/4" to 1 1/2", with spacing and depth dependent on the strength of the material. Holes must be completely cleared of dust. Guidelines are provided for specific hole placement to achieve best cracking patterns.



Mix

Following pre-determined guidelines, **The Cracker** is mixed with water in amounts and at temperatures dependent upon the temperature of the material being broken.



POUR

All holes are filled to the top, beginning with the outer holes and working toward the center. Tarps are recommended if personnel will remain in the area or if the holes will be exposed to rain or sunlight in high temperatures.



Bank vault application

When the guidelines are strictly adhered to, the agent will achieve a cracking pressure of more than 12,000 psi. Depending upon project conditions, results can be achieved in four hours.

APPLICATIONS

The Cracker is a universal product which may not only be substituted for explosives, hydraulic wedges, rock-breakers, and concrete-crackers, but can also be used in many places where other methods are impractical.

- Near Historical Buildings
- Hospitals • Tunnels • Bank Vaults

CRACKER APPLICATION QUESTIONS

Customers interested in purchasing The Cracker for specific jobs should first obtain this important information.

1) What temperature will the substrate be that is being demolished?

72° F and above require a 1 1/4" hole to be drilled, below 72° F requires a 1 1/2" hole. This also helps determine water temperature. Use ice water in hot weather and warmer water in cold weather.

2) What is the size & shape of the object to be demolished? How many pieces must it be broken into and into what size pieces?

These questions are important so that hole patterns can be established. The size piece needed is usually determined by the method being used to take away the broken concrete.

3) Is the substrate reinforced?

This determines hole spacing. Standard hole spacing is twelve inches. Heavily reinforced concrete could decrease this down to 6-8 inches. Unreinforced concrete that's not that hard (5000 psi. or less) may increase the spacing to 14 inches.

4) Is there a free edge?

The substrate must have a free edge to crack to or one must be created.

QUICK REFERENCE DO'S AND DON'TS

- Do measure 1 liter water to one 5kg (large) container of **The Cracker** when the temperature is at or below 72°F
- Do measure 1.16 liters of water to one 5kg (large) container of **The Cracker** when the temperature is at or above 73°F
- Do use a drill and a mud mixer to mix the product
- Do drill the correct diameter hole based on temperature
- Do use proper hole spacing based on substrate hardness & reinforcement
- Do fill the hole completely with the mixed product
- Do drill holes to 85 percent depth of the substrate to be demolished
- Do clear the area of personnel or cover the filled holes after the mixed product has been poured
- Don't use hot water in substrate temperatures over 72 degrees
- Don't look into a hole that has been filled with mixed **Cracker** product until after the cracking process is completed or for at least six hours-which ever is longer.

Be sure to read the **CRACKER TECHNICAL MANUAL** now available as a pdf download on our web site.



Many applications for **The Cracker** involve breaking up of rock. This massive rock was wearing out a new bit every week on a 2500 lb. rock breaker. Blasting in this area was prohibited. The Cracker was the perfect solution.

Seven products make up the popular **Hard-Rok™** line. Formulations include money saving alternatives for anchoring and grouting, patching, general concrete repair and active water leaks. Unlike other competing products, the **ATC Hard-Rok™** line contains no gypsum. This allows for confident use in both interior and exterior applications with no additional labor or preparation.



*Stronger than concrete! Hard-Rok during product testing. The concrete clearly gives way while **Hard-Rok™** is still holding fast.*



***Hard-Rok™** Anchoring Cement for railing applications.*

PRODUCT DESCRIPTION

Anchoring Cement is a high strength, fast setting, non-metallic, non-shrink cementitious product for anchoring and grouting in indoor/outdoor applications. Sets harder than concrete in less than one hour. **Page 59**

Construction Grout is a non-metallic non-shrink grouting material, suitable for all grouting requirements. It is both non-corrosive and non-staining and produces a controlled, positive expansion from time of placement. **Page 62**

Precision Grout is specially formulated for precision non-shrink industrial applications where metallic, gas forming, and sand-cement grouts are unsuitable. This non-shrink, non-metallic grout does not contain chloride and can be used in a range of consistencies from plastic to fluid. **Page 64**

Super Patch is a two-component latex modified mortar, specifically designed to provide fast and durable repairs to vehicle exposed concrete surfaces. **Page 66**

VertiPatch is single-component; polymer modified vertical and overhead repair system. **VertiPatch** forms an integral bond to existing concrete, develops rapid strength and restores structural integrity. **Page 68**

GP Patch 20 is a fast setting, non-shrink, cementitious patching material designed for horizontal and vertical applications. The product has been formulated to be placed in consistencies ranging from putty to plastic. **Page 70**

Master Plug is a fast setting cementitious hydraulic cement material for stopping active water leakage through cracks, faults and holes in masonry and concrete. Due to its rapid setting characteristics, **Master Plug** may also be used under water. Available in two fast setting formulas **Page 71**

USES

- Setting railings and posts
- Anchoring machinery
- Sign installation
- Grouting of precast or prestressed concrete
- General purpose grouting
- Heavy equipment and base plates
- Pre-cast Tee joints
- Structural cracks
- Post tensioned cables
- Bearing Plates
- Structural columns
- Resurfacing of vehicle exposed concrete surfaces
- Driveways, bridge decks, parking structures
- Vertical and overhead patching system
- Dense Material can be layered up to 12"
- Restores structural integrity
- Spall repairs
- Driveways
- Trowelable in horizontal and vertical applications
- Stops active water leakage
- Repairs basement walls, water tanks, mines, swimming pools, chimneys

ANCHORING CEMENT - CEMENTITIOUS PRODUCTS



High Strength Exterior/Interior Anchoring Cement

- Non-Shrink Fast Setting Cementitious Product
- Harder Than Concrete In One Hour
- Perfect for Fence and Railing Applications

Ordering Information

| Part# | Product | Packaging | Pallet Qty |
|-------|------------------|-------------|------------|
| HR-50 | Anchoring Cement | 50 lb. pail | 36 |

Description

HARD-ROK™ Anchoring Cement is a high strength, fast setting, non-shrink, nonmetallic cementitious product used for anchoring and grouting applications. This hydraulic cement is quickly and easily mixed with water to either a pourable or putty-like consistency.

Uses

HARD-ROK™ Anchoring Cement is specifically formulated for anchoring threaded rods, bolts, rebar, railings, signs, posts, parking meters, & machinery in concrete, brick, stone and other substrates. It is effective for patching holes and cracks in concrete floors, masonry walls, roads and sidewalks and for re-pointing mortar joints. **HARD-ROK™ Anchoring Cement** expands, insuring high bond strength.

Product Features

- Fast Initial set of 12 minutes at 75°F. when mixed to free-flowing consistency. Is stronger then concrete in less than 60 minutes, which eliminates wasteful downtime.
Note: Higher temperatures will accelerate set time and lower temperatures will extend it.
- Ideal for interior and exterior applications.
- Contains no metals to rust and cause unsightly stains. In addition, it is alkaline and will not promote rusting of iron or steel.
- Compressive strength over 11,000 psi. (6,000 psi. after one day) insures a firm bed in grouting applications. A 2" cube can support 22 tons.
- Mixed to a free flowing consistency for grouting, patching spalls, or holes in floors.
HARD-ROK™ Anchoring Cement flows like pancake batter eliminating the labor required in Roding or vibrating to eliminate voids.
- Mixed to a plastic pourable consistency to support railings and posts.
- Mixed to a putty-like consistency, **HARD-ROK™ Anchoring Cement** may be troweled into areas where minimal slump is desired insuring optimum performance in horizontal or vertical applications.
- No wasted time scrubbing or roughening of the hole with a stiff wire brush is necessary. Eliminating the mess created by soaking with water and then flushing out the dust with water.
- No wasted time soaking the hole in water for 30 to 60 minutes prior to use. Eliminates wasted time (30-60 minutes) while the concrete soaks in water and eliminates the need to remove freestanding water.
- Withstands water erosion and when submerged in water provides performance similar to high quality concrete. Does not contain gypsum or any water sensitive materials.
- Only water needs to be added eliminating longer mixing times, additional training and jobsite inventory often associated with other products requiring additional additives.

HARD-ROK ULTIMATE TENSION LOAD VALUES

f'c = 3000psi

Headed Bolt (Grade 8)*

| Anchor Dia. (in) | Min. Embedment Depth | Hole Dia. (in) | Ultimate Load |
|------------------|----------------------|----------------|---------------|
| 1/2 | 4 1/2 | 1 | 20,576 |
| 5/8 | 5 5/8 | 1 1/4 | 31,859 |
| 3/4 | 6 3/4 | 1 1/2 | 43,141 |

Independent testing according to ASTM E488

* B7 Threaded rods with nut and no washer will yield equivalent values to headed bolts

COMPRESSION STRENGTH

When mixed to a pourable consistency

| Age | Compressive Strength (psi) |
|---------|----------------------------|
| 1 Hour | 4,750 |
| 1 Day | 6,000 |
| 3 Days | 7,000 |
| 7 Days | 9,000 |
| 28 Days | 11,250 |

HARD-ROK™ was independently tested in accordance with ASTM specifications.



Hard-Rok™ ANCHORING CEMENT

DIRECTIONS FOR USING HARD-ROK™ ANCHORING CEMENT

How to Mix Hard-Rok™ Anchoring Cement

Always use a clean container. Never add sand, gravel or other foreign substance to **HARD-ROK™ Anchoring Cement**. This can weaken the product and effect setting. Mix no more product than can be used in 12 minutes at 75°F.

Two Consistencies:

HARD-ROK™ Anchoring Cement may be used in a fluid consistency for pouring or putty-like consistency for application with putty knife or trowel. Each consistency provides high strength.

Fluid (Pourable) Consistency: 12 Minute Set Time

For best results, measure accurately. Max ratio is 4:1. The correct amount of potable water is 2.56 fl oz for each 1 lb of Hard-Rok or 1.6 pts (25.6 fl oz) for 10 lbs. or 1 gallon water (4-qts or 128 fl oz, 3.785 liters) for 50 lbs. For railing and posts use 2.3 fl oz water per lb. Measure the amount of **HARD-ROK™ Anchoring Cement** and water to be mixed. If measuring is not possible use minimum water required to produce desired consistency. Add all of the water to the mixing container first then mix in the **Hard-Rok Anchoring Cement** using a mud mixer, putty knife or trowel for 2 to 3 minutes for a uniform consistency with no lumps.

Plastic Consistency: 5 Minute Set Time

For best results, measure accurately. The correct amount of potable water for plastic consistency is 2.16 fl oz for each 1 lb. of **Hard-Rok Anchoring Cement** or 1.35 pts (21.6 fl oz) for 10 lbs. or 3.375 qts (108 fl oz, 3.19 liters) for 50 lbs. If measuring is not possible, use minimum water required to produce putty consistency. Add all of the water to the mixing container first then mix in the **Hard-Rok Anchoring Cement** using a mud mixer, putty knife or trowel for 2 to 3 minutes for a uniform consistency with no lumps. For plastic pourable consistency for railings and posts use 2.3 fl. oz. of water per lb.

IMPORTANT: DO NOT retemper or add additional amounts of water as the mix begins to set up. Additionally, do not add excess amounts of water. Excess water reduces strength, durability, and increases set time as with any hydraulic cement product. Follow ACI and ICRI recommended guidelines for best results.

Coverage or usage per cubic inch.

1 lb of **HARD-ROK™ Anchoring Cement** will fill 15 cubic inches.

How to Anchor bolts, Railings, Posts and Rods in Concrete, Brick or Stone

1. Drill the hole to proper depth. Blow out dust from the bottom of the hole. Brush the hole with a nylon brush. Finally, blow out dust again using compressed air or vacuum the hole clean. Hole **MUST** be free of dust before proceeding.
2. If the hole is wet blow out all freestanding water with compressed air or vacuum out. Leave the hole clean.
3. Mix the **HARD-ROK™ Anchoring Cement** in a CLEAN CONTAINER. (See Above - "How to Mix **HARD-ROK™ Anchoring Cement**")
4. For all vertically down anchoring and doweling either consistency may be used. (See Above - "How to Mix **HARD-ROK™ Anchoring Cement**"). Pour the cement into the hole filling to the top then insert threaded rod or rebar to bottom of hole while turning clockwise or if preferred fill the space around the bolt to the top. Do not disturb for a minimum of 30 minutes at 75°F or apply load for a minimum of 60 minutes.
5. For anchoring in vertical walls, use the putty consistency (See Above - "How to Mix **HARD-ROK™ Anchoring Cement**"). Fill the hole with the putty-like product first. Then tamp the bolt or stud into place. If the product becomes too fluid because of the tamping process and sags out of place, let it stand for a few moments and it will stiffen. Then smooth out the surface around the bolt with a putty

knife or spatula. Do not disturb for a minimum of 30 minutes at 75°F or apply load for a minimum of 60 minutes.

How to Prepare Concrete for Grouting and Patching

Preparation: The surface must be sound, clean, and free of debris and oil. Concrete must be shot blast, scarified or scaled to provide clean, freshly exposed aggregate. The concrete over which the **HARD-ROK™ Anchoring Cement** is to be installed must be saturated with water at the time of application. However, any freestanding water that has accumulated must be removed by compressed air or vacuuming. Follow ACI and ICRI recommended guidelines for best results.

Grouting: When mixed to a fluid consistency, **HARD-ROK™ Anchoring Cement** flows readily. (See How to Mix for details) Therefore, proper confining devices should be provided for all openings before the first batch is mixed. Work should progress continuously without interruption so that the entire area to be grouted is completely filled before the mortar begins to stiffen. It is best to work from a side outward until the entire form is filled. Reinforcing rods or wire mesh may be used where desired.

HOW TO PATCH SPALLS, HOLES OR CRACKS IN CONCRETE & MASONRY

For dependable performance, **HARD-ROK™ Anchoring Cement** should be installed at a minimum thickness of 1/2 inch. When repairing areas over 3 inches thick pea gravel must be added. Thin sections or "feather edges" are not recommended.

Crack Repair: Cracks should be cleaned out to remove any debris or loose particles. When repairing a crack, saw cut or chisel down the edges at 90° a minimum of 1/2 inch in depth. The crack must be saturated with water prior to application. However, any freestanding water that has accumulated must be removed by compressed air or vacuuming.

Spall Repair: The surface must be sound, clean, and free of debris and oil. When repairing a spall or hole, saw cut or chisel down the edges at 90° a minimum of 1/2 inch in depth. Concrete must be shot blast, scarified or scaled to provide clean, freshly exposed aggregate. The concrete over which the **HARD-ROK™ Anchoring Cement** is to be installed must be saturated with water at the time of application. However, any freestanding water that has accumulated must be removed by compressed air or vacuuming.

Note: For best results always use epoxy bonding agent Ultrabond 2000 or 2100. Do not saturate with water if a bonding agent is being used.

1. Mix the **HARD-ROK™ Anchoring Cement** in a CLEAN CONTAINER. For floor surfaces, use the fluid consistency. (See "How to Mix **HARD-ROK™ Anchoring Cement**").
2. When the cement begins to thicken (about 15 minutes), smooth out any imperfections in the surface with a spatula or cement trowel.
3. Foot traffic and light trucking may be resumed immediately. For heavy trucking, allow 4 hours before resuming traffic.

SAFETY PRECAUTIONS

May cause skin irritation. Contains Portland Cement. The use of gloves and safety glasses is recommended. Avoid eye contact or prolonged contact with the skin. Wash thoroughly after handling. In case of eye contact, flush with plenty of water for at least 15 minutes. Consult a physician immediately.

KEEP OUT OF REACH OF CHILDREN

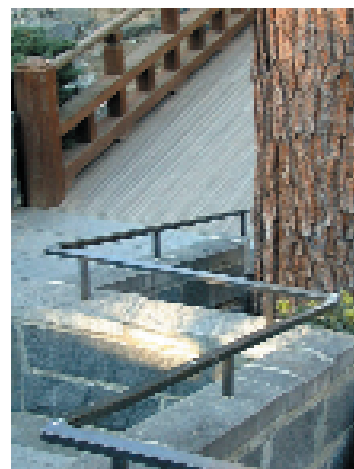
CEMENTITIOUS PRODUCTS



Ideal for railing and fence applications when mixed to a plastic pourable consistency. Able to support the rail, fence or post in a matter of minutes after setting. Also maybe used for grouting, patching spalls, or holes in floors. In addition, the pouring characteristics make it well suited for the largest applications.

APPLICATION ADVANTAGES OVER COMPETING PRODUCTS

- No need to make the hole wider at the bottom than the top by wobbling the drill to undercut the bottom.
- No wasted time scrubbing or roughening of the hole with a stiff wire brush is necessary.
- No wasted time soaking the hole in water for 30 to 60 minutes prior to use. Eliminates the wasted time (30 to 60 minutes) while the concrete is soaking and eliminates the need to remove freestanding water. Additionally, eliminates the mess created by soaking with water and then flushing out the dust.
- No strength loss or deterioration when submerged in water. It provides performance similar to high quality concrete. No painting with waterproof paint or sealer is necessary. **Hard-Rok** does not contain gypsum or any water sensitive materials.
- Only water needs to be added: Eliminating longer mixing times and jobsite inventories of needed additives; No dispensing tools or mixing nozzles are needed as with epoxy and other adhesive systems.
- No need to drill extremely large diameter holes. Only slightly larger holes are needed. **Hard-Rok™** is the only cementitious product allowing small diameter holes for high strength anchoring.
- Select from iron and aluminum railings, pvc tubing, wood, rebar, smooth dowels, headed bolts, threaded rod with nut attached (no washer needed) to accomplish your anchoring project.
- No crowning or coating is necessary. This product is ideal for interior or exterior use, unlike most other competitive products. **Hard-Rok™** may even be used underwater.
- Will not shrink as other competitive products can do. **Hard-Rok™** will trowel level and stay level.
- Uses smaller hole diameters than is needed by other competitive products, saving a great deal of money on material and labor.
- Ultra high pull-out strength as shown by our independent Tension Load tests (listed on Page 59 Sheet). Provides the highest strength and durability.



HARD-ROK™ ANCHORING CEMENT PRODUCT VOLUME SAVINGS

| Anchored Object Dia. (in) | Embedment Depth (in) | Hole Dia.* 1/4" Greater than Object Dia. (in) | Product Volume Savings | Hole Dia.* 1/2" Greater than Object Dia. (in) | Product Volume Savings | Competition** Recommended Hole Dia. (in) |
|---------------------------|----------------------|---|------------------------|---|------------------------|--|
| 1/2 | 1 1/2 | 3/4 | 44% | 1 | — | 1 |
| 3/4 | 2 1/4 | 1 | 56% | 1 1/4 | 31% | 1 1/2 |
| 1 | 2 1/2 | 1 1/4 | 61% | 1 1/2 | 44% | 2 |
| 1-1/4 | 2 5/8 | 1 1/2 | 64% | 1 3/4 | 51% | 2 1/2 |
| 1-1/2 | 2 3/4 | 1 3/4 | 66% | 2 | 56% | 3 |
| 2 | 5 | 2 1/4 | 68% | 2 1/2 | 61% | 4 |

*Recommended Installation Parameters: Railing and Fence Applications

**Majority of Competition recommend a Hole Diameter that is 2x the Anchored Object Diameter.

**Hard-Rok™**

CONSTRUCTION GROUT

PRODUCT DESCRIPTION

Construction Grout is a non-metallic non-shrink grouting material, suitable for all grouting requirements. It is both non-corrosive and non-staining. The precise blending of proprietary ingredients in **Construction Grout** produces a controlled, positive expansion from time of placement.

GENERAL USES

Construction Grout is excellent for grouting precast or pre-stressed concrete; interior or exterior equipment; and machinery subject to moisture, high humidity and chemical spillage.

- Power Plants
- Petrochemical Plants
- Transmission towers
- Paper Mills
- General purpose grouting: heavy equipment and base plates, structural columns,
- Pump and equipment bases

FEATURES

Construction Grout contains specially graded, fine, select silica aggregates; cement; shrinkage compensating ingredients; and plasticizing and water-reducing agents. Strength, dimensional stability, flowability, workability and setting characteristics are assured by careful blending in ATC's own plants under rigid quality control standards.

- High Early strength
- Non-Shrink
- Non-rusting
- Excellent freeze-thaw resistance
- Interior/exterior applications

STANDARDS

Construction Grout conforms to requirements of Corps of Engineers CRD C 621 and ASTM C 1107

INSTRUCTIONS FOR USE

Surface Preparation: Surfaces must be free from form oil, grease or any loose materials. If the concrete surface is defective or has laitance, it must be cut back to a sound base.

Base plate preparation:

It is essential that area is clean and free from oil, grease, and scale. Air pressure relief hole should be provided to allow venting of any isolated high spots.

Leveling Shims:

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

Pre-soaking:

Several hours prior to grouting, the clean area should be flooded with fresh water. Immediately prior to grouting, any free-standing water should be removed with air to blow out boltholes and pockets.

Approximate Yield:

.43 cu ft. per 50 lb bag.

*Setting time fluid consistency:
Initial set time approximately 4 hours 30 minutes
Final set time approximately 5 hours 30 minutes*

TYPICAL PERFORMANCE DATA

| WATER REQUIRE- MENTS PER 50 LBS | 5.0-7.0 pints 2.4-3.3 liters 5.2-7.3 lbs. 2.4-3.3 kg. | | 7.0-8.0 pints 3.3-3.8 liters 7.3-8.3 lbs. 3.3-3.8 kg. | | 8.0-9.0 pints 3.8-4.3 liters 8.3-9.4 lbs. 3.8-4.3 kg. | | VOLUME CHANGE ASTM c109 | |
|--|--|-----|--|-----|--|-----|-------------------------------|----------|
| | COMPRESSIVE STRENGTH ATSM C109 | | | | | | | |
| | PLASTIC ¹ | | FLOWABLE ² | | FLUID ³ | | | % CHANGE |
| | PSI | MPA | PSI | MPA | PSI | MPA | | |
| 1 DAY | 3500 | 23 | 3000 | 21 | 1500 | 11 | 0.02 | |
| 3 DAYS | 5500 | 38 | 4800 | 33 | 3200 | 22 | 0.03 | |
| 7 DAYS | 7000 | 48 | 6500 | 45 | 4500 | 31 | 0.03 | |
| 28 DAYS | 8500 | 59 | 7500 | 52 | 7000 | 48 | 0.03 | |

Ordering Information

| Part# | Product | Packaging | Pallet Qty |
|-------|--------------------|------------|------------|
| HR-CG | Construction Grout | 50 lb. bag | 60 |

Mixing:

The amount of water added to obtain the desirable consistency must be precise, and an accurate measuring method must be employed. Consistencies described conform to CRD-C621-83. According to the desired grout consistency, the amount of water required for each 50 lb. bag of Construction Grout is:

- | | | |
|--------------------------|--------------------------|--------------------------|
| ■ Plastic | ■ Flowable | ■ Fluid |
| 50 lbs. grout | 50 lbs. grout | 50 lbs. grout |
| 5.00 to 7.00 pints water | 7.00 to 8.00 pints water | 8.00 to 9.00 pints water |
| 5.20 to 7.30 lbs. | 7.30 to 8.30 lbs. | 8.30 to 9.40 lbs. |
| 2.40 to 3.30 liters | 3.30 to 3.80 liters | 3.80 to 4.30 liters |

In cold conditions warm water (95-110°F) may be used to accelerate the strength development.

CEMENTITIOUS PRODUCTS



APPLICATION

For best results, a mechanically powered grout mixer should be used. For small quantities of 1-2 bags, a slow speed electric drill with a suitable paddle is recommended.

It is essential that machine mixing capacity and labor availability is adequate to enable the grouting operation to be carried out continuously. This may require the use of a holding tank with provision for gentle agitation to maintain fluidity. The selected water content should first be accurately measured into the mixer. Slowly add the total contents of a bag. Mix continuously for 5 minutes, making sure that a smooth, even consistency is obtained. Place the grout within 5 minutes of mixing to gain the full benefit of the expansion process. Where large volumes have to be placed **Construction Grout** may be pumped. A heavy-duty diaphragm pump is recommended for this purpose.

For deep applications (over 2"), a clean 3/8" (1cm) pea gravel should be added to the grout:

| | |
|----------------------|---------------|
| 2" to 5" application | 25% by weight |
| Over 5" application | 50% by weight |

COVERING AND PLACING

A 50 lb. Unit of **Construction Grout** will yield approximately .43 cubic foot. When placing **Construction Grout** or any other grout, a continuous grout flow is essential. Sufficient grout must be available prior to starting and the time taken to pour a batch must be regulated to the time taken to prepare the next.

Pouring and placing grout should be from one side only to eliminate voids in the cured grout by entrapment of air or surplus pre-soaking water. A grout head must be maintained at all times so that a continuous grout front is achieved.

Curing:

Upon completion of the grouting operation, exposed areas, which are not to be cut back, should be thoroughly cured using normal concrete curing methods and practice.

PACKAGING

- 50 lb. bags

LIMITATIONS/WARNINGS

Not recommended for placing below 35°F. Do not re-temper. Do not vibrate. Do not use any additives including accelerators, water reducers, or air entraining agents.

Do not use water temperature exceeding 80°F.

Refer to material safety data sheet prior to use.

Avoid direct contact with skin and eyes. Product contains Portland Cement. May cause irritation and possibly cement burns. Wash exposed skin area promptly with water. In case of eye contact, flood eyes repeatedly with water and call physician. Do not take internally. Harmful if ingested. Keep product out of reach of children.

TECHNICAL SERVICES

Adhesives Technology's Technical Service Department provides complete product and technical support.



Mixer being used with electric drill.

Hard-Rok™ PRECISION GROUT

PRODUCT DESCRIPTION

Precision Grout is specially formulated for precision non-shrink industrial applications where metallic, gas forming, and sand-cement grouts are unsuitable. This non-shrink, non-metallic grout does not contain chloride and can be used in a range of consistencies from plastic to fluid.

GENERAL USES

Precision Grout is ideally suited for a wide range of applications requiring strength and durability including:

- Heavy equipment and machinery bases
- Structural Columns
- Pump & Equipment Bases
- Pre-Cast Tee joints
- Re-pointing mortar joints
- Structural Cracks
- Bearing Plates
- Fence Posts, Rail Posts and Seating Bolts
- Post Tensioned Cables
- Anchoring Railings, Threaded Rods, Bolts, and Dowels

INSTRUCTIONS FOR USE

Surface Preparation:

Surfaces must be free from oil, grease or any loose materials. If the concrete surface is defective or has laitance, it must be cut back to a sound base.

Base plate preparation:

It is essential that area is clean and free from oil, grease, and scale. Air pressure relief hole should be provided to allow venting of any isolated high spots.

Leveling Shims:

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

Pre-soaking:

Several hours prior to grouting, the clean area should be flooded with fresh water. Immediately prior to grouting, any free-standing water should be removed with air to blow out boltholes and pockets.

Approximate Yield: .43 cu ft. per 50 lb bag.

Mixing:

The amount of water added to obtain the desirable consistency must be precise, and an accurate measuring method must be employed. Consistencies described conform to CRD-C621-83. According to the desired grout consistency, the amount of water required for each 50 lb. Bag of **Precision Grout** is:

- | | | |
|--------------------------|--------------------------|--------------------------|
| ■ Plastic | ■ Flowable | ■ Fluid |
| 50 lbs. grout | 50 lbs. grout | 50 lbs. grout |
| 5.00 to 7.00 pints water | 7.00 to 8.00 pints water | 8.00 to 9.00 pints water |
| 5.20 to 7.30 lbs. | 7.30 to 8.30 lbs. | 8.30 to 9.40 lbs. |
| 2.40 to 3.30 liters | 3.30 to 3.80 liters | 3.80 to 4.30 liters |

In cold conditions, warm water (95-110°F) may be used to accelerate the strength development.

FEATURES

Precision Grout contains specially graded, fine, select silica aggregates; cement; shrinkage compensating ingredients; and plasticizing and water-reducing agents. Strength, dimensional stability, flowability, workability and setting characteristics are assured by careful blending in Adhesives Technology's own plants under rigid quality control standards.

- High Early strength
- Non-Shrink
- Non-rusting
- Excellent freeze-thaw resistance
- Interior/exterior applications

STANDARDS

Precision Grout conforms to requirements of Corps of Engineers CRD C 621 and ASTM C 1107

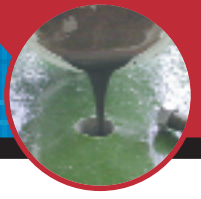
Ordering Information

| Part# | Product | Packaging | Pallet Qty |
|-------|-----------------|------------|------------|
| HR-PG | Precision Grout | 50 lb. bag | 60 |

TYPICAL PERFORMANCE DATA

| WATER REQUIRE- MENTS PER 50 LBS | 5.0-7.0 PINTS 2.4-3.3 LITERS 5.2-7.3 LBS. 2.4-3.3 KG. | | 7.0-8.0 PINTS 3.3-3.8 LITERS 7.3-8.3 LBS. 3.3-3.8 KG. | | 8.0-9.0 PINTS 3.8-4.3 LITERS 8.3-9.4 LBS. 3.8-4.3 KG. | | VOLUME CHANGE ASTM C109 | | |
|--|--|----------------------|--|-----------------------|--|--------------------|-------------------------------|----------|-----|
| | COMPRESSIVE STRENGTH ATSM C109 | | | | | | | | |
| | | PLASTIC ¹ | | FLOWABLE ² | | FLUID ³ | | % CHANGE | |
| | | PSI | MPA | PSI | MPA | PSI | | | MPA |
| 1 DAY | 4000 | 28 | 3500 | 24 | 2500 | 15 | 0.03 | | |
| 3 DAYS | 6000 | 38 | 5500 | 38 | 4500 | 31 | 0.04 | | |
| 7 DAYS | 8500 | 59 | 7500 | 52 | 6000 | 41 | 0.04 | | |
| 28 DAYS | 11000 | 78 | 8500 | 59 | 7500 | 52 | 0.04 | | |

CEMENTITIOUS PRODUCTS



Application:

For best results, a mechanically powered grout mixer should be used. For small quantities of 1-2 bags, a slow speed electric drill with a suitable paddle is recommended.

It is essential that machine mixing capacity and labor availability is adequate to enable the grouting operation to be carried out continuously. This may require the use of a holding tank with provision for gentle agitation to maintain fluidity. The selected water content should first be accurately measured into the mixer. Slowly add the total contents of **Precision Grout** bag. Mix continuously for 5 minutes, making sure that a smooth, even consistency is obtained. Place the grout within 5 minutes of mixing to gain the full benefit of the expansion process. Where large volumes have to be placed **Precision Grout** may be pumped. A heavy-duty diaphragm pump is recommended for this purpose.



Commercial grout mixer

For deep grouting or patching applications (over 2"), a clean 3/8" (1cm) pea gravel should be added to the grout:

| | |
|----------------------|---------------|
| 2" to 5" application | 25% by weight |
| Over 5" application | 50% by weight |

NOTE: Do not add pea gravel for anchoring, doweling, fence post or railing applications.

Covering and Placing:

A 50 lb. Unit of **Precision Grout** will yield approximately .43 cubic foot.

When placing **Precision Grout** or any other grout, a continuous grout flow is essential. Sufficient grout must be available prior to starting and the time taken to pour a batch must be regulated to the time taken to prepare the next.

Pouring and placing grout should be from one side only to eliminate voids in the cured grout by entrapment of air or surplus pre-soaking water. A grout head must be maintained at all times so that a continuous grout front is achieved.

Curing:

Upon completion of the grouting operations, exposed areas, which are not to be cut back, should be thoroughly cured using normal concrete curing methods and practice.

PACKAGING

- 50 lb. bags

Limitations/Warnings

Not recommended for placing below 35°F. Do not re-temper. Do not vibrate. Do not use any additives including accelerators, water reducers, or air entraining agents. Do not use water temperature exceeding 80°F. Refer to material safety data sheet prior to use. Avoid direct contact with skin and eyes. Product contains Portland Cement. May cause irritation and possibly cement burns. Wash exposed skin area promptly with water. In case of eye contact, flood eyes repeatedly with water and call physician. Do not take internally. Harmful if ingested. Keep product out of reach of children.

TECHNICAL SERVICES

Adhesives Technology's Technical Service Department provides complete product and technical support.



Grout used for Tie Back application



Grout used for Post Tensioning



Hard-Rok™ SUPER PATCH

PRODUCT DESCRIPTION

Super Patch is a two-component latex modified mortar, specifically designed to provide fast and durable repairs to vehicle exposed concrete surfaces.

GENERAL USES

Typical applications include resurfacing of:

- Concrete pavement
- Ramps
- Driveways
- Garage or warehouse floors
- Bridge decks
- Parking structures

Ordering Information

| Part# | Product | Packaging | Pallet Qty |
|--------|-------------|------------------|------------|
| HR-SP | Super Patch | 50 lb. bag & jug | 60 |
| HR-SPL | Super Patch | 60 lb. pail | 36 |

FEATURES

Special Hydraulic Cement – Extended working time, 1/2 hour at 70°F (21°C). Rapid strength development for quick return to traffic, less down time. High strength for commercial repairs.

Acrylic Polymer Latex Cement – Dramatically improves tensile, flexural, and bond strengths. Increases resilience. Reduces permeability.

Controlled Shrinkage – Counteract drying shrinkage. Excellent volume stability. Reduces internal stresses.

System Teamwork – Repair large areas without cracks or disbonding. Excellent resilience to: deicing chemicals, freeze-thaw cycling, traffic abrasion, and water or chloride penetration.

INSTRUCTIONS FOR USE

Surface Preparation:

GENERAL TRAFFIC SURFACE REPAIRS: Saw-cut the repair area edges to provide a minimum depth, but avoid cutting reinforcement. Remove all loose, unsound, or contaminated concrete from repair area to provide minimum depth. If reinforcement is exposed, clean off corrosion to bright metal by sand blasting or power wire brushing. Bonding substrate should be clean, sound and moderately rough prior to repairing.

REPAIRS: Saw-cut repair area edges to partial, minimum depth, but avoid cutting reinforcement. Remove loose, unsound, or contaminated concrete. Provide approximately 1" of clearance all around exposed reinforcement. Clean all corrosion products off exposed reinforcement by sand blasting or power wire brushing.

Bring all existing joints in concrete up through topping with plastic inserts, or mark and saw-cut later. Pre-moisten all concrete bonding surfaces, then remove any excess water by air blast or blotting and allow surface water to evaporate leaving a dry surface (SSD) immediately prior to installing **Super Patch**.

Mixing:

Pre-mix latex component prior to use. Before starting mixer place **Super Patch** into mixer in the required proportions (7 pints of Co-polymer latex to 50 lbs. of powder). Start the mixer and slowly add the pre-blended dry **Super Patch** mortar into the mixer. Continue mixing for 1-2 minutes as necessary or until mixture is uniform and lump-free. Scrape down mixer sides as necessary. Do not mix for more than 3 minutes.

Aggregate Extension:

Use pea gravel/rock extension for all applications over 2" in thickness to reduce exotherm. Use a good quality, preferably rounded, 3/8" maximum size pea gravel or rock. Aggregates should be added only after mortar and latex is well mixed, then the mixing should be continued until the aggregate blends in evenly. Note: aggregate extension may diminish workability. Reduce aggregate quantity per batch if workability is not satisfactory for placement conditions.

Working time is approximately 30 minutes @ 70°F (21°C). Both hot and cold weather formulations are available.



TYPICAL PERFORMANCE DATA 72° OF 50% RH 7 PINT (7.3 LBS; 3.3 KG) OF Co-POLYMER PER 50 LB BAG OF SUPER PATCH

| Plastic | Hardened properties of SUPER PATCH | | | | | | |
|---|------------------------------------|-------------|-----------------|---------------|----------------|----------------|-----------------|
| Working Time 15 min. | Properties | Method ASTM | 3 hours PSI/MPa | 1 day PSI/MPa | 3 days PSI/MPa | 7 days PSI/MPa | 28 days PSI/MPa |
| Set Time ASTM C-266 initial - 18 min. final - 22 min. | Compressive Strength | C-109 | 1500/10 | 3500/24 | 4500/31 | 5500/38 | 6500/10 |
| Flow ACTM C-928 | Split Tensile Strength | C-496 | — | — | — | 350/2 | 480/3 |
| Durability ASTM C-672, 25 cycles visual rating 0 (none) | Flexural Strength | C-348 | — | — | 1250/9 | — | 1800/12 |
| | Slant Shear Bond | C-1042 | 500/3 | 1100/8 | — | 1800/12 | 2200/15 |
| * 1 hour strength tested after final set | Drying Shrinkage | C-157 | — | 0.008% | 0.010% | 0.009% | 0.009% |

Application:

Place by filling area slightly overfull, then consolidate by conventional methods (tamper, float or vibrator). After consolidation, strike-off surface with a straight edge. Delay final finishing until the in-place material starts to get rigid. Texture surface or close to tight finish as desired. An alternative method of placement is to overfill slightly, then to shave surface down and texture as necessary using the sharp edge of a trowel after set begins. After material sets, apply Co-polymer to surface of repair to increase wear resistance and durability.

Clean up:

Tools and mixer can be cleaned with water before mixed material sets. Clean up should be accomplished quickly as it becomes very difficult after product sets.

PACKAGING

- 50 lb bags & one- gallon jugs of co-polymer
- 60 lb pails

STORAGE AND HANDLING

Shelf Life:

When stored in a controlled environment in accordance to **ATC** recommendations and left in its original unopened container **Super Patch** will maintain its designed performance characteristics for 12 months from date of manufacture.

Storage:

Keep from freezing, do not store in temperature above 120°F.

LIMITATIONS/WARNINGS

Refer to the Material Safety Data Sheet for instructions and safe handling procedures prior to use. Contains hydraulic cement, crystalline silica, and other additives. Avoid breathing dust. **ATC** recommends use of appropriate safety equipment (gloves, dust masks, and eye protection) when working with this product. Avoid eye contact or prolonged contact with skin. If eye contact occurs, wash immediately and repeatedly with fresh water, then get prompt medical attention. Wash affected skin areas with soap and water. Keep out of reach of children.

TECHNICAL SERVICES

Adhesives Technology's Technical Service Department provides complete product and technical support.

PRODUCT DESCRIPTION

VertiPatch is single-component; polymer modified vertical and overhead repair system. **VertiPatch** forms an integral bond to existing concrete, develops rapid strength and restores structural integrity.

GENERAL USES

For use over concrete: above, on or below-grade vertical and overhead surfaces. Applications thickness can be from 1/4" to 12" by applying layers. **VertiPatch** is a very dense material and provides protection against moisture.

FEATURES

- Just add water
- Easily applied
- Permanent repair
- Rapid strength
- High bond strength
- Dimensionally stable
- Freeze/thaw resistant
- Exterior or interior applications
- Apply up to 2" in one lift

Ordering Information

| Part# | Product | Packaging | Pallet Qty |
|-------|------------|------------|------------|
| HR-VP | VertiPatch | 50 lb. bag | 60 |

STANDARDS

ASTM C 928 modified

INSTRUCTIONS FOR USE

Surface Preparation:

Remove all unsound concrete, dirt, oil, grease and all material that may inhibit bonding. The surface should be profiled by mechanical means with a minimum profile of 1/8". Substrate should be saturated surface dry (SSD) without any standing water during application.

Mixing:

For application where more than one unit is used it is recommended that a mortar mixer be used. Wet down all tools and mixer. With mixer running, add minimum amount to water to produce a stiff, plastic consistency, followed by dry powder. Allow to mix for 2 to 5 minutes. Add more water if required. DO NOT exceed 7 pints of water per 50 pounds. Mix only enough material that can be placed in twenty minutes.

Quantities of one unit or less should be mixed with a low speed drill equipped with a paddle mixer.

APPLICATION

At time of application the surface should be saturated surface dry (SSD) with no standing water. Scrub mortar into the substrate, filling all pores and voids. Working from the edge of the repair, force the material into the corners and work toward the center. Each lift should not be less than 1/4" although this may vary slightly depending on the repair area. With multiple lifts, score the top surface of each lift to produce a roughened surface for the next lift. Saturate with water and scrub fresh mortar into the preceding lift. Allow mortar to set to desired stiffness and then finish as required.

NOTE: 1. Single lift applications are preferred with **VertiPatch**. The bond is achieved with the scrub coat on a properly prepared surface.

Curing:

VertiPatch is self-curing.

Cleaning:

Water cleanup prior to cure.

PACKAGING

- 50 lb. bags

CEMENTITIOUS PRODUCTS



TYPICAL PERFORMANCE DATA 72° OF 50% RH 7 PINT (7.3 LBS; 3.3 KG) OF WATER PER 50 LB BAG OF VERTIPATCH

| Plastic | Hardened properties of VERTIPATCH | | | | | | |
|--|-----------------------------------|----------------|--------------------|---------------------|-------------------|-------------------|--------------------|
| Working Time 10-12 min. | Properties | Method ASTM | 3 hours PSI/MPa | 24 hours PSI/MPa | 3 days PSI/MPa | 7 days PSI/MPa | 28 days PSI/MPa |
| Set Time ASTM C-266 initial - 18 min. final - 22 min. | Compressive Strength | C-109 | 1500/10 | 3000/21 | 4000/28 | 5000/35 | 6500/45 |
| Flow ACTM C-928 | Split Tensile Strength | C-496 | — | — | 390/3 | — | 520/4 |
| Durability ASTM C-672, 50 cycles visual rating 0-1 | Slant Shear Bond | C-1042 | — | 970/7 | — | 1400/10 | 1800/12 |
| Packaging - 50 lb. bag (22.7 kg bag) | Length Change | C-157 | — | — | — | — | 0.002% |
| Yield - .41 cu ft/50 lb. bag (0.011cu m/22.7 kg) | | | | | | | |

LIMITATIONS/WARNING

Minimum ambient and surface temperature of 40°F and not to decrease during the application and setting period.

- Do not featheredge.
- Do not over water or retemper.
- Apply only on sound, properly prepared concrete surfaces.
- Must be mixed to uniform consistency.
- Refer to material safety data sheet prior to use.
- Avoid direct contact with skin and eyes.
- Product contains Portland Cement.
- May cause irritation and possibly cement burns.
- Wash exposed skin area promptly with water.
- In case of eye contact, flood eyes repeatedly with water and call physician.
- Do not take internally.
- Harmful if ingested.
- Keep product out of reach of children.
- Consult material safety data sheet prior to use.

TECHNICAL SERVICES

Adhesive Technology's Technical Service Department provides complete product and technical support.

Specifically formulated for vertical and overhead surfaces but can also be used in horizontal applications. Here Vertipatch is used to patch a concrete slab after the old damaged concrete is removed.





Hard-Rok™ GP PATCH 20

PRODUCT DESCRIPTION

GP Patch 20 is a fast setting, non-shrink, cementitious patching material designed for horizontal and vertical applications. The product has been formulated to be placed in consistencies ranging from putty to plastic.

GENERAL USES

GP Patch 20 can be used for a variety of concrete repairs such as columns, beams, slabs, steps, sidewalks, driveways, concrete walls and precast members. In areas of spalls **GP Patch 20** can be trowelled into place on both horizontal and vertical surfaces.

GP Patch 20 contains air entraining agents which make it well suited to freeze-thaw resistance.

FEATURES

- High strengths and excellent workability
- Easy to mix and use
- Non-corrosive, non metallic
- Wide range of mix consistencies can be attained
- Can be covered by asphalt or concrete in 60 minutes
- Resistant to a wide variety of chemicals including oil, grease, salt solutions, diesel fuel
- Fast setting
- Excellent bonding characteristics
- Volume stable

INSTRUCTIONS FOR USE

Surface Preparation: The object of good surface preparation is to achieve a clean, sound surface with a good mechanical key. All substrates should be cleaned and free of dust, plaster, oil paint, grease, corrosion deposits and any other contaminants. Excess laitance should be removed by mechanical means. Smooth substrates must be mechanically roughened by scrubbing or needle gun to provide an adequate key.

To get maximum bonding, depths of repair areas should be controlled. Extremities of repair area should be recessed at least 3/8". Any steel in the repair area should be exposed around its full circumference and cleaned to bright shiny metal to remove all loose scale and corrosion deposits.

Mixing: Water ratios of 4 qts. to 5 qts. per 50 lbs. of material will produce a mixed consistency between putty to plastic depending upon handling preference and job requirements. Add **GP Patch 20** to water and mix for 2 minutes, using a mortar mixer or by hand. Please note that mixing time, mixed consistency, and set will be affected by the temperature of the substrate, water, material and air.

Application: Before applying, dampen area with water. Leave no standing water. Force the material against the sides and bottom of the repair area. Trowel material level and allow to take initial set. In hot, dry or windy conditions use an approved ASTM C-309 Adhesives Technology Curing Compound.

Cleaning: Water cleanup prior to cure.

PACKAGING

- 50 lb. bags

| TYPICAL PERFORMANCE DATA 72° OF 50% RH 7 PINTS (7.3 LBS; 3.3 KG) OF WATER PER 50 LB BAG OF GP PATCH 20 | | | | | |
|---|------------------------------------|-------------|---------------|----------------|-----------------|
| Plastic | Hardened Properties of GP Patch 20 | | | | |
| Working Time 15 min. | Properties | Method ASTM | 1 day PSI/MPa | 7 days PSI/MPa | 28 days PSI/MPa |
| Set Time ASTM C-266 initial - 21 min. final - 30 min. | Compressive Strength | C-109 | 3000 | 5000 | 6000 |
| Flow ASTM C-109 5-10% | Split Tensile Strength | C-496 | 370 | 500 | 550 |
| Durability ASTM C-672, 25 cycles visual rating - 0 | | | | | |
| Packaging - 50 lb. bag (22.7 kg bag) | Flexural Strength | C-348 | 1000 | 1200 | 1400 |
| Yield - .42 cu ft/50 lb. bag when mixed with 3.5 quarts of water | Slant Shear Bond | C-1042 | 1200 | 1400 | 1700 |
| | Drying Shrinkage | C-157 | — | — | 0.008% |

| Ordering Information | | | |
|----------------------|-----------------------|------------|------------|
| Part# | Product | Packaging | Pallet Qty |
| HR-GPP | General Purpose Patch | 50 lb. bag | 60 |

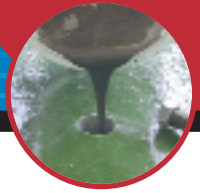
LIMITATIONS/WARNING

Not recommended for placing below 35°F. Maximum 1" per layer. Do not re-temper after initial set. Must be placed with 5 minutes after mixing. Do not add other admixtures to **GP Patch 20**. Do not apply over surfaces that are unsound, frozen or contain frost.

Avoid direct contact with skin and eyes. Product contains Portland Cement. May cause irritation and possibly cement burns. Wash exposed skin area promptly with water. In case of eye contact, flood eyes repeatedly with water and call physician. Do not take internally. Harmful if ingested. Keep product out of reach of children. Consult material safety data sheet prior to use.



Hard-Rok™ MASTER PLUG



PRODUCT DESCRIPTION

Master Plug is a fast setting cementitious hydraulic cement material for stopping active water leakage through cracks, faults and holes in masonry and concrete. Due to its rapid setting characteristics, **Master Plug** may also be used under water.

GENERAL USES

Master Plug is used for plugging leaks in concrete and masonry walls, floors and pipes.

Additional uses:

- Pointing and repairing chimneys
- General repair. Vertical & horizontal applications
- Anchoring fixtures to masonry walls
- Basement walls
- Water tanks, cisterns, mines, tunnels, swimming pools
- As a temporary plug to seal structures

FEATURES

- Quick set – 1 to 3 minutes. HR-MPF = 1 minute set
- Easy to use. Pre blended – just add water
- Non-corrosive
- Non-shrink
- Can be used under water
- Contains no calcium chloride
- Instantly mixes by hand to seal out water

TYPICAL PERFORMANCE DATA 72° OF 50% RH 1 PART WATER TO 4 PARTS MASTER PLUG

| Working Time 1 min. | Hardened Properties of Master Plug | | | |
|---|--|----------------|---------------|----------------|
| | Properties | 15 min. PSI | 7 days PSI | 28 days PSI |
| Set Time ASTM C-266 Initial - 1 min. 30 sec. Final - 2 min. 30 sec. | Compressive Strength | 1000 PSI | 3500 PSI | 6500 PSI |
| | Slant Shear Strength ASTM C-882-2000 PSI | | | |

INSTRUCTIONS FOR USE

Surface Preparation: All substrates should be clean and free from corrosion deposits or other contaminants. Any unsound or deteriorated concrete should be chipped away and the surface should be damp prior to application.

Mix: **Master Plug** with sufficient clean water to obtain a stiff putty consistency. For most applications hand mixing is preferred. Rubber gloves should be worn when performing this mixing procedure. Mix only that amount of material, which can be used within 2 to 3 minutes. Clean warm water may be used to accelerate the set of **Master Plug** and ice water to reduce the set time where required.

Application: REPAIRING LEAKS in mortar joints or cracks are easily handled. Cut out defective mortar joints or cracks to a minimum depth of 1/4". A square cut or under cut is recommended to provide sound surfaces and mechanical locking of **Master Plug**.

Press **Master Plug** firmly into place. Only minimum troweling or finishing is recommended.

STOPPING RUNNING WATER through concrete pipes or walls requires starting at the top of the crack where the water pressure is the least and installing **Master Plug** in multiple applications toward the bottom portion of the leak. The last **Master Plug** should be held in place until the leak subsides.

WALL AND FLOOR JUNCTURES may be sealed by applying **Master Plug** in a cove or triangular cant configuration.

For best results **Master Plug** should be kept damp for 10 to 15 minutes after installation.

Cleaning: Prior to curing **Master Plug** may be cleaned-up using water.

PACKAGING

- 50 lb. pails
- 10 lb. tubs

TECHNICAL SERVICES

Adhesives Technology's Technical Service Department provides complete product and technical support.

STORAGE AND HANDLING

Master Plug should be stored indoors and, when left in its original unopened package will maintain its designed performance characteristics for 12 months.

Keep out of inclement weather.

LIMITATIONS/WARNING

- Do not re-temper
- Refer to material safety data sheet prior to use.
- Avoid direct contact with skin and eyes.
- Product contains Portland Cement.
- May cause irritation and possibly cement burns.
- Wash exposed skin area promptly with water.
- In case of eye contact, flood eyes repeatedly with water and call physician.
- Do not take internally.
- Harmful if ingested.
- Keep product out of reach of children

Ordering Information

| Part# | Product | Packaging | Pallet Qty |
|--------|-------------------------|-------------|------------|
| HR-MP | Master Plug | 50 lb. pail | 36 |
| HR-MPF | Master Plug Fast 1 min. | 50 lb. pail | 36 |

TERMS & CONDITIONS

FREIGHT - In Accordance with Published Pricing

Transportation charges are prepaid from the warehouse of **Adhesives Technology Corp's** (hereinafter referred to as **ATC**) choice, to one destination in the continental United States on qualifying orders according to freight zone, and will be the carrier and routing of **ATC's** choice. All other orders are F.O.B. warehouse of shipment. Qualifying Prepaid Freight zones are as follows:

Zone A= Florida excluding the Panhandle, \$700 order

Zone B= East of the Rockies including Florida Panhandle (excluding remainder of Florida) or any satellite warehouse shipping within its service zone, \$900 order

Zone C= West of the Rockies, \$1,500 order

All bulk adhesives F.O.B. Special prepaid terms may apply at time of order. **ATC** reserves the right unconditionally to alter this policy prior to any order confirmation. All **Hard-Rok** cementitious products are F.O.B. point of warehouse. Any deviation from this policy must be agreed to by **ATC** and the Customer at the time an order is entered, and cannot be altered thereafter for said order.

MINIMUM ORDER

Minimum order shall be \$100, based on **ATC's** current Net Customer Prices. Orders of less than \$100 will be processed with a \$100 Net Invoice.

TITLE AND RISK OF LOSS

Risk of loss shall pass to the Customer upon delivery. Until payment is made in full by Customer for the product, title to the product shall remain with **ATC**. Until the total purchase price for the product sold hereunder is paid by Customer, **ATC** shall be and is hereby granted by the Customer, a purchase money security interest in such product. The Customer further agrees to execute such financing statements and other documents as **ATC** may reasonably require in order to perfect such security interest. The Customer authorizes **ATC** to file such financing statements with respect to such security interest without additional signature of the Customer wherever such filing any financing statements required by **ATC** in order to perfect its security interest herein provided for.

RETURNS

Materials returned for credit or exchange will be accepted only under the following conditions:

1. Materials must be current, cataloged or under warranty, and must have been purchased within the 6 months (3 months for Speedset products) immediately preceding the return of such materials. Specials and discontinued products, defined at the sole discretion of **ATC**, cannot be returned.
2. Prior to returning any product to **ATC**, approval and a return authorization number must be obtained. Freight carrier and routing must also be approved by **ATC**.
3. Materials received by **ATC** without prior approval and authorization number will be returned, freight collect, to the Customer. Return authorization number must be printed on outer carton.
4. All transportation charges must be paid by Customer. If **ATC** determines the product to be defective, Customer's account will be credited, including the appropriate freight charges.
5. Returning materials for credit or exchange are subject to a minimum restocking charge of 20% plus any freight expenses originally incurred by **ATC** in the delivery of said materials. The restock charge may be greater based on the circumstances of the return and will be calculated at the sole discretion of **ATC**. All returns must be in saleable condition.

TERMS

ATC's standard terms of sale are Net 30 days from date of invoice, payable in U.S. funds. Inquire about additional discount terms; e-mail address required. The invoice indicates the Customer Net (30 days) price. Freight or other charges are listed separately, and no discounts are applicable to these amounts. Any invoice remaining unpaid beyond **ATC's** stipulated terms date will be assessed a finance charge which will be indicated on the invoice and/or on a statement listing past due invoices. Any and all costs resulting from, or incurred in connection with the collection of any monies due from the buyer, including court costs, appellate court costs and reasonable attorney's fees will be the responsibility of the buyer.

ADDITIONS AND CANCELLATIONS/ BACKORDERS

1. Additions to orders already processed can only be made prior to that order being shipped. If order has shipped, the addition will be treated as a new and separate order and all standard rules and conditions regarding minimums, freight, etc. will apply.

2. Cancellations from unshipped or partially shipped orders may, at the sole discretion of **ATC**, result in adjustments to pricing, discounts or freight allowances, and may result in charge backs to the Customer.
3. Special orders are not subject to cancellations.

BACK ORDERS

Back orders of less than \$100 dollars will be shipped automatically unless cancelled, in advance of shipment, by Customer. Back ordered items will be billed at prices ruling at the time of the original order, providing the merchandise is received within 120 days of original order date, and providing there has been no substantial increase in cost to **ATC**. If **ATC** is unwilling to ship a back ordered item at the originally agreed upon price, the Customer will have the option of canceling the back order or accepting it at the new price. Under these circumstances, cancellation will not jeopardize Customer's shipping terms nor discounts on the original order. Back orders in excess of 120 days will be automatically cancelled.

DELAY

ATC shall not be liable for any failure or delay in delivery caused by any reason beyond the control of **ATC** or its suppliers. Definition of control is at the sole discretion of **ATC**. In the event of delay deemed by **ATC**, to be under its control, liability is limited to a maximum of \$150 or the cost of shipping the delayed materials expeditiously, whichever is less, and at the sole discretion of **ATC**.

WARRANTY AND LIMITATION OF LIABILITY

All warranties of the product listed herein, in the corresponding **ATC** catalog, and in any other current literature, expressed or implied, including warranties of merchantability and fitness for a particular purpose are specifically and expressly excluded, with the following exception: At its sole discretion, **ATC** will repair or replace any product which it considers to be defective in material or workmanship, excepting normal wear and tear within sixty (60) days from the date of purchase from **ATC**. **ATC** shall not be liable for any injury, loss or damage, direct, indirect, incidental or consequential or arising out of use of, misuse of, negligence, accident or inability to use any **ATC** product.

The test data and application information printed in this product guide is intended to be used as a reference only. Due to variations of base material, installation procedures and personnel, weather conditions and other factors, it is up to the user's discretion to verify the accuracy of the data listed. **ATC** will not be liable for any claim based on the use of data or other information printed in this product guide.

DIFFERING AND/OR ADDITIONAL TERMS AND CONDITIONS OF SALE

All orders are subject to acceptance by **ATC**, and may be refused by **ATC** at its sole discretion. **ATC's** offer of sale, as set forth herein, as well as the Customer's acceptance thereof by purchase, shall be limited strictly to these terms and conditions, which shall constitute the full agreement between the parties. Any additional, difference or contradictory terms or conditions which might be contained in the Customer's purchase order form shall not be of any effect, and shall not be part of this agreement between the parties without express written consent by **ATC**.

VENUE

Venue shall be in Broward County, Florida for any actions taken under these terms of sale.

ACCEPTANCE OF TERMS AND CONDITIONS

Purchase of any product sold through **ATC** implies complete and unconditional acceptance by purchaser of terms and conditions of sale as stated herein.

CUSTOMER CREDITS

All invoicing disputes that require a customer credit must be resolved within sixty days of receipt of invoice. **ATC** must be notified of all discrepancies in shipping within 72 hours.

C.O.D. SHIPMENTS

\$250 minimum order applies to all C.O.D. Shipments in excess of \$500 must be paid by cashiers check or money order.

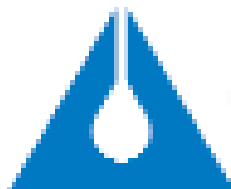
Box quantity and prices are subject to change without notice. Not responsible for typos, errors or omissions.

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