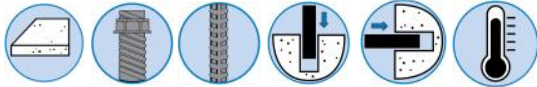


# ULTRABOND® HARD-ROK



### Product Description

ULTRABOND HARD-ROK is a rapid setting, high strength, non-shrink, non-metallic cementitious product used in anchoring and grouting applications. This hydraulic cement is quickly and easily mixed with water to produce either a pourable or trowelable consistency and has an application temperature range between 35 °F and 95 °F (2 °C - 35 °C).

### General Uses & Applications

- Anchoring threaded rod and reinforcing bar (rebar)
- Doweling applications
- Grout for heavy machinery, structural columns, bearing plates and pre-cast columns
- Banisters, guard rails, railings, signs, posts and parking meters
- Patching holes and cracks in concrete, roads and sidewalks

### Advantages & Features

- Fast setting, with full set time in 60 minutes at 70 °F (21 °C)
- Complies with ASTM C1107 when tested at 73 °F (23 °C)
- Non-shrink and non-metallic
- High flexural strength
- Bond strength outperforms rebar steel strength
- Both exterior and interior use
- Withstands water erosion

**Availability:** Adhesives Technology Corp. (ATC) products are available online and through select distributors providing all your construction needs. Please contact ATC for a distributor near you or visit [www.atcepoxy.com](http://www.atcepoxy.com) for online purchasing options or to search for a distributor by zip code.

### STANDARDS & APPROVALS

**DOT Listed**

(See ATC website for current list of Department of Transportation approvals throughout the United States)

**Color & Ratio:** Concrete Gray

**Storage & Shelf Life:** 12 months when stored in unopened containers in dry conditions. Store between 40 °F (4 °C) and 95 °F (35 °C).

**Installation & Coverage:** Manufacturer's Printed Installation Instructions (MPII) are available in this Technical Data Sheet (TDS). Due to occasional updates and revisions, always verify that you are using the most current version of the MPII. In order to achieve maximum results, proper installation is imperative. One 50 lb. pail of HARD-ROK will yield approximately 750 in<sup>3</sup> (0.43 ft<sup>3</sup>)

**Clean-Up:** Clean uncured materials from tools and equipment with water. Cured material can only be removed mechanically.

### Limitations & Warnings:

- Do not mix with solvents, sand, gravel or other foreign substances as this will weaken HARD-ROK and will affect set time
- Product should not be installed when temperature will fall below 32 °F (0 °C) within 24 hours
- If used in applications which have an aluminum base, the aluminum to be exposed to the HARD-ROK must be completely coated or sealed inside and out prior to anchoring or grouting with HARD-ROK - **Contact with exposed aluminum may cause uncontrolled expansion resulting in installation failure**
- Holes should be drilled at a distance greater than 4 inches away from edge or corner
- For anchoring applications, concrete should be a minimum of 28 days old prior to anchor installation

**Safety:** Please refer to the Safety Data Sheet (SDS) for ULTRABOND HARD-ROK published on our website. Call ATC for more information at 1-800-892-1880.

**Specification:** Anchoring cement shall be a single component, rapid setting, high strength, non-metallic cementitious product (hydraulic cement). The material must have an initial set time of 15 minutes and shall have a minimum compressive strength of 9,990 psi (68.9 MPa) per ASTM C109 at 7 days. The anchoring cement shall have a flexural strength of 1,260 psi (8.7 MPa) per ASTM C293 and tensile strength of 450 psi (3.1 MPa) per ASTM C307. Shelf life must be a minimum of 12 months. The product shall be ULTRABOND HARD-ROK from Adhesives Technology Corp., Pompano Beach, Florida.

#### ORDERING INFORMATION

**TABLE 1: ULTRABOND HARD-ROK PACKAGING**

Packaging	5 Gallon Pail
Part #	HR-AC
Pail Weight (lb.)	50
Pallet Qty. (Pail)	42
Pallet Weight (lb.)	2,265



#### MATERIAL SPECIFICATION

**TABLE 2: ULTRABOND HARD-ROK Anchor Size Installation Recommendations**

Anchor Element in.	Minimum Drill Bit Diameter in. (mm)	Maximum Drill Bit Diameter in. (mm)
1/4	1/2 (12.7)	3/4 (19.1)
3/8	5/8 (15.9)	1 (25.4)
1/2	3/4 (19.1)	1 3/4 (44.5)
5/8	1 (25.4)	2 (50.8)
3/4	1 (25.4)	2 1/2 (63.5)
1	1 1/2 (38.1)	3 1/2 (88.9)
1 1/4	1 1/2 (38.1)	4 1/4 (108.0)
1 1/2	2 (50.8)	4 (101.6)
2	2 1/2 (63.5)	4 (101.6)
2 1/2	3 (76.2)	4 (101.6)
3	4 (101.6)	

**TABLE 4: ULTRABOND HARD-ROK SET TIME<sup>1</sup>**

Base Material Temperature °F (°C)	Initial Set Time	Final Set Time
70 (21)	15 min	1 hr

1. Set times impacted by temperature. Colder temperatures retard and warmer temperatures accelerate set times.

**TABLE 3: ULTRABOND HARD-ROK performance to ASTM C881-15**

Property	Cure Time	ASTM Standard	Units	Result
Compressive Strength	3 hr	C109	psi (MPa)	2,100 (14.5)
	1 day		psi (MPa)	8,050 (55.5)
	7 day		psi (MPa)	9,990 (68.9)
	28 day		psi (MPa)	12,810 (88.3)
Flexural Strength	-----	C293	psi (MPa)	1,260 (8.7)
Density <sup>1</sup>	-----	C138	lb/ft <sup>3</sup> (kg/M <sup>3</sup> )	129 (2,067)
Tensile Strength	7 day	C307	psi (MPa)	450 (3.1)

1. Density based on 115 lb. of HARD-ROK mixed with 1.75 gallons of water.

**TABLE 5: ULTRABOND HARD-ROK Pullout Strength of Hardened Concrete ASTM C900**

Anchor Element	Nominal Drill Bit Diameter in. (mm)	Embedment Depth in. (mm)	Ultimate Tension Load lb. (kN)
1/2 in. A325 Bolt <sup>1</sup>	1 1/2 (38.1)	6 (152.4)	17,640 (78.5)
1 in. A325 Bolt	2 1/4 (57.2)	10 (254.0)	73,000 (324.7)
#4 Grade 60 Rebar <sup>1</sup>	1 (25.4)	8 (203.2)	18,000 (80.1)
#8 Grade 60 Rebar <sup>1</sup>	2 (50.8)	16 (406.4)	71,100 (316.3)

1. Load values limited by ultimate steel failure limits of the given steel types.

#### INSTALLATION INSTRUCTIONS (MPII)

**PREPARATION** - Follow ACI RAP Bulletin 7 and ICRI No. 310.2R recommended guidelines for best results.

- **Surface** – The surface must be sound, clean, 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 is to be installed must be saturated with water (saturated/surface-dry, or SSD) at the time of application. However, any freestanding water that has accumulated must be removed by compressed air or vacuuming.
- **Grouting** – When mixed to a fluid consistency, HARD-ROK readily flows. 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.

#### MIXING ULTRABOND HARD-ROK

Always use a clean mixing container. Never add sand, gravel or other foreign substance to HARD-ROK. This can weaken the product and effect setting. Mix no more product than can be used in 15 minutes at 70 °F (21 °C).

#### TWO MIX CONSISTENCIES

ULTRABOND HARD-ROK may be used in either a **fluid pourable consistency** or **trowelable paste consistency** for application with putty knife or trowel. Both methods provide high strength and durability.

**NOTE:** For best results, the water to HARD-ROK ratio must be accurately measured. **Never use more water than recommended. Water temperature must not exceed 78 °F (26 °C).** This will reduce strength, increase the possibility of separation of materials and may cause product to become soft producing undesirable results. **MAXIMUM 3.6 quarts (3.4 L) of water / pail.** **NOTE:** Chilling mix water will increase working time.

- **Fluid Pouring** – The correct amount of potable water is 2.3 fl. oz. (68 ml) for each 1 lb. (454 g) of HARD-ROK or 11.5 fl. oz. (340 ml) for 5 lb. (2.3 kg) or 115 fl. oz. (3.4 L) for 50 lb. (23 kg). Measure the amount of HARD-ROK and water to be mixed. Add measured amount of water to the mixing container first, then mix in the HARD-ROK using a low rpm drill and a mud mixer for AT LEAST 3 minutes to assure uniform consistency with no lumps.
- **Trowelable Paste** – The correct amount of potable water for plastic consistency is 1.5 fl. oz. (44 ml) for each 1 lb. (454 g) of HARD-ROK or 75 fl. oz. (2.2 L) for 50 lb. (23 kg). Add measured amount of the water to the mixing container first, then mix in the HARD-ROK using low rpm drill and a mud mixer. At first, dry lumps will form. Keep mixing for 1 to 1 ½ minutes until powder absorbs water, producing proper consistency with no lumps.

**IMPORTANT: DO NOT ADD ADDITIONAL AMOUNTS OF WATER AS THE MIX BEGINS TO SET UP.** Excess water reduces strength, durability and increases set time as with any hydraulic cement product.

**NOTE: TINTING HARD-ROK** - Up to two percent (by HARD-ROK weight) of metal oxide or iron oxide pigments can be used to tint HARD-ROK. The recommended ratio is one pound of inorganic oxide pigment per each 50 pound pail of HARD-ROK. Lamp black and carbon black (organic) tints are not recommended as they may result in color float, streaking or striation of color when HARD-ROK is mixed to a flowable consistency. Specialized commercial cement colorants for stucco, tile grout, commercial flooring are most commonly used.



#### ANCHORING BOLTS, RAILINGS, POSTS AND RODS IN CONCRETE, BRICK OR STONE

- 1) Drill hole to proper depth, never less than 2 in. (51 mm) deep. Blow out dust from bottom of the hole with oil-free compressed air. Brush the hole out with a wire brush. Finally, blow out dust again using compressed air or vacuum the hole clean. Hole **MUST** be free of dust before proceeding.
- 2) Surface and holes to receive HARD-ROK must be brought to a saturated/surface-dry (SSD) condition. This means that the pores of concrete are completely saturated with water but no water remains on the surface. Presoak the concrete surface for 30 minutes. Blow out all freestanding water with compressed air or vacuum out leaving the hole clean.
- 3) Mix the HARD-ROK in a CLEAN CONTAINER (See - Mixing ULTRABOND HARD-ROK).
- 4) For all vertically down anchoring and doweling, either consistency may be used. Pour the cement into the hole filling to the top. Then insert threaded rod or rebar to bottom of hole while turning clockwise. Hole should be filled to just above the substrate surface to ensure water cannot stand over installation. Do not disturb for a minimum of 30 minutes at 75 °F (24 °C) or apply load for a minimum of 60 minutes.
- 5) For anchoring in vertical walls, use the trowelable paste consistency (See - Mixing HARD-ROK). 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.



Revision 2.1