

ULTRABOND® 1300-FG



Product Description

ULTRABOND® 1300-FG is a two-component, fast-setting adhesive system that offers exceptional strength in anchoring and doweling applications. It is perfect for bonding applications that require a quick turn-around. It may be used in temperatures between 40 °F - 110 °F (4 °C - 43 °C).

General Uses & Applications

- Adhering dowel bars and tie bars for full depth concrete pavement repairs
- Short term tensile anchoring and shear loading conditions in accordance with allowable stress design (ASD)
- Fast capping paste and injection port adhesive for crack injection applications - 1.5 hours at 75 °F (24 °C)
- Bonding concrete, grout filled block and unreinforced masonry
- Bonding raised pavement markers to concrete or asphalt
- Bonding agent for fresh to hardened concrete or hardened to hardened concrete

Advantages & Features

- Moisture insensitive allowing installation and curing in damp environments
- Little or no odor
- Non-sag
- High modulus

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 for online purchasing options or to search for a distributor by zip code.

STANDARDS & APPROVALS

AASHTO M235 / ASTM C881-15
Type I, II, IV & V Grade 3 Class A, B & C

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

Color & Ratio: Part A (Resin) White; Part B (Hardener) Gray, Mix Ratio – 1:1 by volume, Mixed Color – Gray

Storage & Shelf Life: 24 months when stored in unopened containers in dry conditions. Store between 40 °F (4 °C) and 95 °F (35 °C).

Installation: Manufacturer's Printed Installation Instructions (MPII) are available within this Technical Data Sheet (TDS). Due to occasional updates and revisions, always verify the most current MPII usage. In order to achieve maximum results, proper installation is imperative. An estimating guide for product usage may be found at www.atcepoxy.com.

Clean-Up: Clean uncured materials from tools and equipment with mild solvents. Cured material may only be removed mechanically.

Limitations & Warnings:

- Do not thin with solvents, as this will prevent cure
- For anchoring applications, concrete must be a minimum of 21 days old prior to anchor installation
- Not recommended for any application where there may be a sustained tensile load, including overhead applications

Safety: Please refer to the Safety Data Sheet (SDS) for ULTRABOND 1300-FG. Call ATC for more information at 1-800-892-1880.

Specification: Adhesive shall be a two-component, 1:1 ratio by volume, non-sag epoxy system supplied in pre-measured cartridges. Adhesive must meet the requirements of ASTM C881 Type I, II, IV & V Grade 3 Class A, B & C. Adhesive must have a minimum compressive yield strength of 10,780 psi (74.3 MPa) at 75 °F (24 °C) after a 7 day cure per ASTM D695. Shelf life must be a minimum of 24 months. The adhesive shall be ULTRABOND 1300-FG from Adhesives Technology Corp., Pompano Beach, Florida.

ORDERING INFORMATION

TABLE 1: ULTRABOND 1300-FG Adhesive Packaging, Dispensing Tools and Mixing Nozzles¹

Package Size	21.2 fl. oz. (627 ml) Cartridge	53 fl. oz. (1.6 L) Cartridge
Part #	A22-1300FGN	A53-1300FGN
Recommended Mixing Nozzle	T12	
Manual Dispensing Tool	TM22HD	N/A
Pneumatic Dispensing Tool	TA22HD-A	TA53HD-A
Case Qty.	12	6
Pallet Qty.	576	252
Pallet Weight (lb.)	1,273	1,338

1. Each cartridge is packaged with one mixing nozzle.



A22-1300FGN



A53-1300FGN



10 in. (254 mm)
T12 Nozzle



TM22HD



TA53HD-A



TA22HD-A



One tool, dual grip configurations

TABLE 2: ULTRABOND 1300-FG Installation Parameters and Brushes

Threaded Rod in.	Rebar	Drill Bit Diameter in.	Maximum Installation Torque ft-lbs. (N-m)	Brush Part #	Brush Length in.
3/8	----	7/16	15 (20)	B716	6
----	#3	1/2	----	B12	
1/2	----	9/16	30 (41)	B916	
----	#4	5/8	----	B58	
5/8	#5	3/4	60 (82)	B34	
3/4	#6	7/8	105 (142)	B78	

MATERIAL

TABLE 3: ULTRABOND 1300-FG performance to ASTM C881-15^{1,2,3,4}

Property	Cure Time	ASTM Standard	Units	Sample Conditioning Temperature		
				Class A	Class B	Class C
				38 °F (4) °C	50 °F (10) °C	75 °F (24) °C
Gel Time - 60 Gram Mass ⁵	---	C881	min	11	10	7
Consistency or Viscosity			---	Non-sag		
Compressive Yield Strength	7 day	D695	psi (MPa)	12,800 (88.3)	*	10,780 (74.3)
Compressive Modulus			psi (MPa)	498,000 (3,434)	*	516,800 (3,563)
Bond Strength Hardened to Hardened Concrete	2 day	C882	psi (MPa)	3,820 (26.3)	*	3,580 (24.7)
	14 day		psi (MPa)	4,290 (29.6)	*	3,630 (25.0)
Bond Strength Fresh to Hardened Concrete				psi (MPa)	2,230 (15.4)	
Tensile Strength ⁶	7 day	D638	psi (MPa)	---		3,680 (25.4)
Tensile Elongation ⁶			%			1.0
Heat Deflection Temperature			D648	°F (°C)	129	
Water Absorption	14 day	D570	%	0.63		
Linear Coefficient of Shrinkage	---	D2566		0.0000		

1. Results based on testing conducted on a representative lot(s) of product. Average results will vary according to the tolerances of the given property.
2. Full cure is listed above to obtain the given properties for each product characteristic.
3. Results may vary due to environmental factors such as temperature, moisture and type of substrate.
4. Condition cartridge between 60 - 85 °F (16 - 29 °C) in lower or elevated temperatures prior to use.
5. Gel time may be lower than the minimum required for ASTM C881. * The adhesive test results for Class A & Class C both meet or exceed the physical test requirements for both the lower and upper temperature range, therefore testing for Class B is not required.
6. Optional testing for ASTM C881 Grade 3.

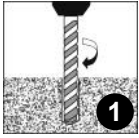
TABLE 4: ULTRABOND 1300-FG CURE SCHEDULE^{1,2,3}

Base Material Temperature	Working Time	Full Cure Time
°F (°C)		
40 (4)	15 min	48 hr
75 (24)	10 min	8 hr
110 (43)	6 min	6 hr

1. Working and full cure times are approximate, may be linearly interpolated between listed temperatures and are based on cartridge/nozzle system performance.
2. Application Temperature: Substrate and ambient air temperature should be from 40 - 110 °F (4 - 43 °C).
3. Condition cartridge between 60 - 85 °F (16 - 29 °C) in lower or elevated temperatures prior to use.

INSTALLATION INSTRUCTIONS (MPII)

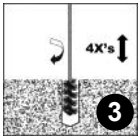
Drilling and Cleaning



Using a rotary hammer drill and a bit which conforms to ANSI B212.15 and is the appropriate size for the anchor diameter to be installed, drill the hole to the specified embedment depth. **CAUTION:** Always wear appropriate personal protection equipment (PPE) for eyes, ears & skin and avoid inhalation of dust during the drilling and cleaning process. Refer to the Safety Data Sheet (SDS) for details prior to proceeding.



NOTE: Remove any standing water from hole prior to beginning the cleaning process. If removal of standing water is not possible, please contact ATC for application specific installation instructions. Using oil free compressed air with a minimum pressure of 80 psi (5.5 bar), insert the air wand to the bottom of the drilled hole and blow out the debris with an up/down motion for a minimum of 4 seconds/cycles (4X).



Select the correct wire brush size for the drilled hole diameter (See Table 2), making sure that the brush is long enough to reach the bottom of the drilled hole. Reaching the bottom of the hole, brush in an up/down and twisting motion for 4 cycles (4X). **CAUTION:** The brush should contact the walls of the hole. If it does not, the brush is either too worn or small and should be replaced with a new brush of the correct diameter.



Blow the hole out once more to remove brush debris using oil free compressed air with a minimum pressure of 80 psi (5.5 bar). Insert the air wand to the bottom of the drilled hole and blow out the debris with an up/down motion for a minimum of 4 seconds/cycles (4X). Visually inspect the hole to confirm it is clean. **NOTE:** If installation will be delayed for any reason, cover cleaned holes to prevent contamination.

Cartridge Preparation



CAUTION: Check the expiration date on the cartridge to ensure it is not expired. **Do not use expired product!** Remove the protective cap from the adhesive cartridge and insert the cartridge into the recommended dispensing tool. Before attaching mixing nozzle, balance the cartridge by dispensing a small amount of material until both components are flowing evenly. For a cleaner environment, hand mix the two components and let cure prior to disposal in accordance with federal, state and local regulations.

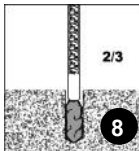


After the cartridge has been prepared, screw on the proper ATC mixing nozzle to the cartridge (see Table 1). Do not modify the mixing nozzle. Confirm that the internal mixing element is in place prior to dispensing the adhesive. Take note of the air and base material temperatures and review the working/full cure time chart (see Table 4) prior to starting the injection process.

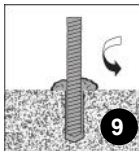


Dispense the initial amount of material from the mixing nozzle onto a disposable surface until the product is a uniform gray color with no streaks, as adhesive must be properly mixed in order to perform as published. Dispose of the initial amount of adhesive according to federal, state and local regulations prior to injection into the drill hole. **CAUTION:** When changing cartridges, never re-use nozzles. A new nozzle should be used with each new cartridge and steps 5-7 should be repeated accordingly.

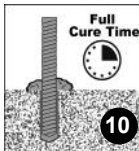
Installation and Curing (Vertical Down and Horizontal)



NOTE: The engineering drawings must be followed. For any applications not covered by this document, or if there are any installation questions, please contact Adhesives Technology Corp. Insert the mixing nozzle to the bottom of the hole and fill from the bottom to the top approximately two-thirds full, being careful not to withdraw the nozzle too quickly as this may trap air in the adhesive. **NOTE:** When using a pneumatic dispensing tool, ensure that pressure is set at 80 psi (5.5 bar) maximum.



Prior to inserting the threaded rod or rebar into the hole, make sure it is clean and free of oil and dirt and that the necessary embedment depth is marked on the anchor element. Insert the anchor element into the hole while turning 1 - 2 rotations prior to the anchor reaching the bottom of the hole. Excess adhesive should be visible on all sides of the fully installed anchor. For horizontal installations, wedges should be used to center and support the anchor while the adhesive is curing. **CAUTION:** Use extra care with deep embedment or high temperature installations to ensure that the working time has not elapsed prior to the anchor being fully installed.



Do not disturb, torque or apply any load to the installed anchor until the specified full cure time has passed. The amount of time needed to reach full cure is base material temperature dependent - refer to Table 4 for appropriate full cure time.

INSTALLATION INSTRUCTIONS (MPII)

Capping Paste for Crack Injection



Follow the crack injection product instructions on the label for horizontal, vertical and overhead installations. ATC recommends using CRACKBOND LR-321 and CRACKBOND LR-321LPL for fine to medium crack repair. Using a wire brush, vigorously clean the crack as well as the surface surrounding the crack assuring the crack is not plugged with any semi-loose debris. Remove all dust, debris, oil and any other contaminants from the crack by blowing out the crack with clean oil-free compressed air. For best results crack must be dry at the time of injection. If water is seeping from crack, steps must be taken to stop the flow of water in order to achieve desired repair.



Use ULTRABOND 1300-FG as a fast capping paste to seal the crack on the outside. Follow the Cartridge Preparation instructions to prepare the cartridge. After balancing the cartridge and disposing the initial amount as in Step 7 above, apply 1300-FG over the crack leaving spaces for port installations approximately 6 to 12 inches apart. Press the 1300-FG in the crack facing and smooth with a putty knife. It is recommended to apply at least 1 to 2 inches wide along the crack facing through the length of the crack.

Port Attachment



NOTE: Allow ULTRABOND 1300-FG to cure 1.5 hours at 75 °F (24 °C) if used as a capping paste prior to beginning the crack injection process. ATC's CRPORTSS port contains a stainless steel ball bearing to help prevent leaking during vertical and overhead injections. Using a plastic putty knife, apply ULTRABOND 1300-FG to the outer half of the port base. Ensure that the port passageway is not obstructed or blocked during the application. Place the coated port over the prepared gap using a slight twisting motion securing the port and centering directly over the gap. Check for voids or pin holes between the installed ports and the substrate being injected and seal.

TECHNICAL DATA



TABLE 5: ULTRABOND 1300-FG ultimate and allowable TENSION loads for THREADED ROD in normal-weight concrete^{1,2}

Threaded Rod Diameter in.	Nominal Drill Bit Diameter in.	Embedment Depth in. (mm)	Tension Load Based on Bond Strength/Concrete Capacity ³				Allowable Tension Load Based on Steel Strength ⁴		
			f _c ≥ 3,000 psi (20.7 MPa)		f _c ≥ 4,000 psi (34.5 MPa)		ASTM F1554 lbs. (kN) Grade 36	ASTM A193 Grade B7 lbs. (kN)	ASTM F593 304/316 SS lbs. (kN)
			Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)			
3/8	7/16	3 1/2 (89)	7,232 (32.2)	1,808 (8.0)	8,359 (37.2)	2,090 (9.3)	2,114 (9.4)	4,556 (20.3)	3,645 (16.2)
1/2	9/16	4 1/2 (114)	13,526 (60.2)	3,382 (15.0)	16,016 (71.2)	4,004 (17.8)	3,758 (16.7)	8,099 (36.0)	6,480 (28.8)
5/8	3/4	5 5/8 (143)	18,609 (82.8)	4,652 (20.7)	21,522 (95.7)	5,381 (23.9)	5,872 (26.1)	12,655 (56.3)	10,124 (45.0)
3/4	7/8	6 3/4 (171)	26,308 (117.0)	6,577 (29.3)	30,461 (135.5)	7,615 (33.9)	8,456 (37.6)	18,224 (81.1)	12,392 (55.1)

1. Allowable bond strength/concrete capacity was calculated using a safety factor of 4.0.
2. The lower value of either the allowable bond strength/concrete capacity or steel strength should be used as the allowable tension value for design.
3. Linear interpolation may be used for intermediate concrete compressive strengths.
4. Allowable steel strengths calculated in accordance with AISC Manual of Steel Construction: Tensile = 0.33*F_u*A_{nom}.

TABLE 6: ULTRABOND 1300-FG allowable SHEAR loads for THREADED ROD based on steel strength

Threaded Rod Diameter in.	Nominal Drill Bit Diameter in.	Embedment Depth in. (mm)	Allowable Shear Load Based on Steel Strength ¹		
			ASTM F1554 Grade 36 lbs. (kN)	ASTM A193 Grade B7 lbs. (kN)	ASTM F593 304/316 SS lbs. (kN)
3/8	7/16	3 1/2 (89)	1,089 (4.8)	2,347 (10.4)	1,878 (8.4)
1/2	9/16	4 1/2 (114)	1,936 (8.6)	4,172 (18.6)	3,338 (14.8)
5/8	3/4	5 5/8 (143)	3,025 (13.5)	6,519 (29.0)	5,216 (23.2)
3/4	7/8	6 3/4 (171)	4,356 (19.4)	9,388 (41.8)	6,384 (28.4)

1. Allowable steel strengths calculated in accordance with AISC Manual of Steel Construction: Shear = 0.17*F_u*A_{nom}.

TABLE 7: ULTRABOND 1300-FG ultimate and allowable TENSION & SHEAR loads for REBAR in normal-weight concrete^{1,2}

Rebar Size	Nominal Drill Bit Diameter in.	Embedment Depth in. (mm)	Tension Load Based on Bond Strength/Concrete Capacity ³				Allowable Load Based on Steel Strength ⁴			
			f _c ≥ 3,000 psi (20.7 MPa)		f _c ≥ 4,000 psi (35.4 MPa)		Tension		Shear	
			Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	ASTM A615 Grade 60 lbs. (kN)	ASTM A615 Grade 75 lbs. (kN)	ASTM A615 Grade 60 lbs. (kN)	ASTM A615 Grade 75 lbs. (kN)
#3	1/2	3 3/8 (86)	7,639 (34.0)	1,910 (8.5)	9,009 (40.1)	2,252 (10.0)	2,640 (11.7)	3,300 (14.7)	1,683 (7.5)	1,870 (8.3)
#4	5/8	4 1/2 (114)	15,446 (68.7)	3,862 (17.2)	18,108 (80.5)	4,527 (20.1)	4,800 (21.4)	6,000 (26.7)	3,060 (13.6)	3,400 (15.1)
#5	3/4	5 5/8 (143)	22,333 (99.3)	5,583 (24.8)	25,843 (115.0)	6,461 (28.7)	7,440 (33.1)	9,300 (41.4)	4,743 (21.1)	5,270 (23.4)
#6	7/8	6 3/4 (171)	30,411 (135.3)	7,603 (33.8)	35,190 (156.5)	8,798 (39.1)	10,560 (47.0)	13,200 (58.7)	6,732 (29.9)	7,480 (33.3)

1. Allowable bond strength/concrete capacity was calculated using a safety factor of 4.0.
2. The lower value of either the allowable bond strength/concrete capacity or steel strength should be used as the allowable tension or shear value for design.
3. Linear interpolation may be used for intermediate concrete compressive strengths.
4. Allowable steel strengths calculated in accordance with AISC Manual of Steel Construction: Tensile = (F_y*A_{nom})/2.5, Shear = 0.17*F_u*A_{nom}.