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GENERAL INFORMATION

AC100+ GOLD®

Vinylester Injection Adhesive Anchoring System

PRODUCT DESCRIPTION

The AC100+ Gold is a two-component vinylester adhesive anchoring system. The system includes injection adhesive in plastic cartridges, mixing nozzles, dispensing tools and hole cleaning equipment. The adhesive is designed for bonding threaded rod and reinforcing bar elements into drilled holes in concrete and masonry base materials. It can be considered for use in solid base materials as well as hollow base materials with screen tubes.

GENERAL APPLICATIONS AND USES

- Bonding threaded rod and reinforcing bar into hardened concrete and masonry
- Evaluated for use in dry and water-saturated concrete (including water filled holes)
- Suitable to resist loads in cracked or uncracked concrete base materials
- Adhesive system can be installed in a wide range of base material temperatures; qualified for anchoring applications as low as 14ºF (-10ºC)
- Tested and qualified for wind and seismic loading (SDC A - F)

FEATURES AND BENEFITS

+ Designed for use with threaded rod and reinforcing bar hardware elements
+ Consistent performance in low and high strength concrete
+ Evaluated and recognized for freeze/thaw performance and sustained loading
+ Evaluated and recognized for a range of embedments
+ Versatile low odor formula with optimized cure time
+ Evaluated and recognized for long term and short term loading (see performance tables)
+ Mixing nozzles proportion adhesive and provide simple delivery method into drilled holes
+ Cartridge design allows for multiple uses using extra mixing nozzles
+ Universal product for concrete and masonry (hollow and solid base materials)

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES) ESR-2582 for concrete
- International Code Council, Evaluation Service (ICC-ES) ESR-3200 for masonry
- International Code Council, Evaluation Service (ICC-ES) ESR-4105 for Unreinforced Masonry (URM)
- Code compliant with the 2021 IBC/IRC, 2018 IBC/IRC, 2015 IBC/IRC and 2012 IBC/IRC
- Tested in accordance with ASTM E488 / ACI 355.4 and ICC-ES AC308 for use in structural concrete with design according to ACI 318 (-19 & -14) Chapter 17 and ACI 318 Appendix D
- Tested in accordance with ICC-ES AC58 and ICC-ES AC60 for use in masonry walls
- Compliant with NSF/ANSI Standard 61 for drinking water system components – health effects
- Compliant to California DPH for VOC emissions and South Coast AQMD for VOC content (LEED v4.1)
- Conforms to requirements of ASTM C881 including C882 and AASHTO M235, Types I, II, IV and V, Grade 3, Class A and conforms to requirements of ASTM C881 Types I and IV, Grade 3, Class B
- Department of Transportation listings – see www.DEWALT.com or contact transportation agency

GUIDE SPECIFICATIONS

CSI Divisions: 03 16 00 - Concrete Anchors, 04 05 19.16 - Masonry Anchors and 05 05 19 - Post-Installed Concrete Anchors. Adhesive anchoring system shall be AC100+ Gold as supplied by DEWALT, Towson, MD. Anchors shall be installed in accordance with published instructions and requirements of the Authority Having Jurisdiction.

CODE LISTED ICC-ES ESR-2582 CONCRETE
CODE LISTED ICC-ES ESR-3200 MASONRY
CODE LISTED ICC-ES ESR-4105 URM

SECTION CONTENTS

AC100+ GOLD ADHESIVE IN CARTRIDGE
(STANDARD THREADED ROD AND REBAR STEEL SUPPLIED BY OTHERS)

PACKAGING (10:1 MIX RATIO)

Coaxial Cartridge

- 9.5 fl. oz. (280 mL or 17.1 in³)
- 14 fl. oz. (420 mL or 25.6 in³)

Dual Cartridge (side-by-side)

- 28 fl. oz. (825 mL or 50.3 in³)

STORAGE LIFE & CONDITIONS

Eighteen months in a dry, dark environment with temperature ranging from 32°F and 86°F (-0°C to 30°C)

ANCHOR SIZE RANGE (TYPICAL)

- 3/8" to 1-1/4" diameter threaded rod
- No. 3 to No. 10 reinforcing bar

SUITABLE BASE MATERIALS

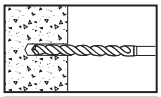
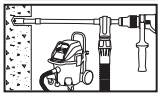
- Normal-weight concrete
- Lightweight concrete
- Grouted concrete masonry (CMU)
- Hollow concrete masonry (CMU)
- Hollow core concrete
- Brick masonry
- Unreinforced Masonry (URM Walls)

PERMISSIBLE INSTALLATION CONDITIONS (ADHESIVE)

- Dry concrete
- Water-saturated concrete (wet)
- Water-filled holes (flooded)

INSTALLATION INSTRUCTIONS (SOLID BASE MATERIALS)

DRILLING

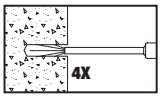



1- Drill a hole into the base material with rotary hammer drill (i.e. percussion drill) and a carbide drill bit to the size and embedment required by the selected steel hardware element (reference installation specifications for threaded rod and reinforcing bar). The tolerances of the carbide drill bits, including hollow bits, must meet ANSI Standard B212.15.

- Precaution: Use suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal (see optional dust extraction equipment supplied by DEWALT to minimize dust emission).
- Note! In case of standing water in the drilled hole (flooded hole condition), all the water has to be removed from the hole (e.g. vacuum, compressed air, etc.) prior to cleaning.
- Drilling in dry base material is necessary when using hollow drill bits (vacuum must be on); not for use in wet concrete or masonry.

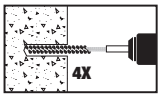
GO TO STEP 3 FOR HOLES DRILLED WITH DUSTX+™ DRILLING AND CLEANING SYSTEM; OTHERWISE GO TO STEP 2A.

HOLE CLEANING



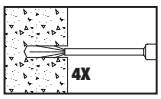
2a- Starting from the bottom or back of the anchor hole, blow the hole clean using a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl. oz.) supplied by DEWALT) a minimum of four times (4x).

- Use a compressed air nozzle or a hand pump for anchor rod diameters 3/8" to 3/4" or reinforcing bar (rebar) sizes #3 to #6.
- Use a compressed air nozzle for anchor rod diameter 7/8" to 1-1/4" and rebar sizes #7 to #10. Do not use a hand pump for these sizes.



2b- Determine wire brush diameter (see installation specifications) and attach the brush with adaptor to a rotary drill tool or battery screwgun. Brush the hole with the selected wire brush a minimum of four times (4x). A brush extension (supplied by DEWALT) should be used for holes drilled deeper than the listed brush length.

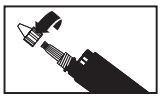
- Note! The wire brush diameter should be checked periodically during use. The brush should resist insertion into the drilled hole and come into contact with the sides of the drilled hole. If not the brush is too small and must be replaced.



2c- Finally, blow the hole clean again using a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl.oz.) supplied by DEWALT a minimum of four times (4x).

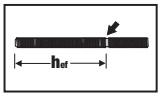
- Use a compressed air nozzle or a hand pump for anchor rod diameters 3/8" to 3/4" or reinforcing bar (rebar) sizes #3 to #6.
- Use a compressed air nozzle for anchor rod diameters 7/8" to 1-1/4" and rebar sizes #7 to #10. Do not use a hand pump for these sizes. When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

PREPARING



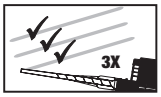
3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F to 95°F (-5°C to 35°C) when in use for concrete unless otherwise noted. Cartridge temperature must be between 41°F to 95°F (5°C to 35°C) when in use for masonry. Review gel (working) and cure time table. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures.

- Remove cap from cartridge.
- Attach a supplied mixing nozzle to the cartridge. Unless otherwise noted do not modify the mixer in any way. Make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.
- Note! Use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published gel (working) time of the adhesive.



4- Prior to inserting the anchor rod or rebar into the drilled hole, the position of the embedment depth has to be marked on the anchor.

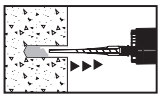
- Verify anchor element is straight and free of surface damage.



5- Adhesive must be properly mixed to achieve published properties. For new cartridges and nozzles, prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent **GRAY** color.

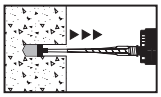
- Unless otherwise noted, do not attach a used nozzle when changing to a new cartridge.
- Review and note the published working and cure times (see gel time and curing time table) prior to injection of the mixed adhesive into the cleaned anchor hole.

INSTALLATION

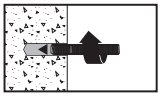


6- Fill the cleaned hole approximately two-thirds full with mixed adhesive starting from the bottom or back of the anchor hole. Slowly withdraw the mixing nozzle as the hole fills to avoid creating air pockets or voids. If the bottom or back of the anchor hole is not reached with the mixing nozzle only, a plastic extension tube supplied by DEWALT must be used with the mixing nozzle (see reference tables for installation).

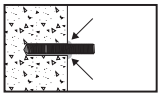
WITH PISTON PLUG:



- Piston plugs must be used with and attached to mixing nozzle and extension tube for overhead (i.e. upwardly inclined) installations and horizontal installations with anchor sizes as indicated in the piston plug selection table. Insert piston plug to the back of the drilled hole and inject as described in the method above. During installation the piston plug will be naturally extruded from the drilled hole by the adhesive pressure.
- Attention! Do not install anchors overhead without proper training and installation hardware provided by DEWALT. Contact DEWALT for details.

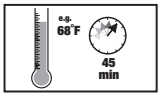


7- The anchor should be free of dirt, grease, oil or other foreign material. Push clean threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. Observe the gel (working) time.



8- Be sure the rod or rebar is fully seated at the bottom of the hole to the specified embedment. Adhesive must completely fill the annular gap between the anchor and the base material. Protect exposed anchor threads from fouling with adhesive. For all installations the anchor must be restrained from movement throughout the specified curing period (as necessary) where necessary through the use of temporary wedges, external supports, or other methods. Minor adjustments to the position of the anchor element may be performed during the gel (working) time only.

CURING AND LOADING



9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load (reference gel time and curing time table).

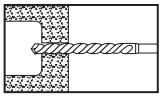
- Do not disturb, torque or load the anchor until it is fully cured.

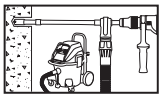
10- After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (reference gel time and curing table) by using a calibrated torque wrench.

- Note! Take care not to exceed the maximum torque for the selected anchor.

INSTALLATION INSTRUCTIONS (UNREINFORCED MASONRY [URM WALLS] AND HOLLOW BASE MATERIALS)

DRILLING



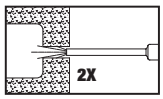


1- Drill a hole into the base material with a rotary drill tool to the size and embedment required by the selected screen tube size and steel anchor element (see installation specifications for threaded rod in hollow base material with screen tube supplied by DEWALT). Holes drilled in hollow concrete masonry units may be drilled with a rotary hammer-drill. The tolerances of the drill bit, including hollow drill bits, must meet the requirements of ANSI B212.15.

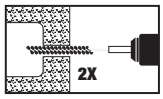
- Precaution: Wear suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal (see dust extraction by DEWALT to minimize dust emission).
- Drilling in dry base materials is necessary when using hollow drill bits (vacuum must be on); not for use in wet concrete or masonry.

GO TO STEP 3 FOR HOLES DRILLED WITH DUSTX+™ DRILLING AND CLEANING SYSTEM; OTHERWISE GO TO STEP 2.

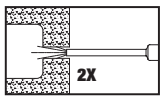
HOLE CLEANING (BLOW 2X, BRUSH 2X, BLOW 2X)



2- Starting from the bottom or back of the anchor hole, blow the hole clean with a hand pump with min. volume 25 fl.oz. supplied by DEWALT (Cat #08280-PWR) or compressed air nozzle a minimum of two times (2x).



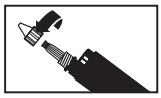
- Determine the wire brush diameter (see installation specifications) and attach the brush with adaptor to a rotary drill tool or battery screw gun. Brush the hole with the selected wire brush a minimum of two times (2x). A brush extension supplied by DEWALT (Cat. #08282-PWR) should be used for holes drilled deeper than the listed brush length.
- Note! The wire brush should be checked periodically during use. The brush should resist insertion into the drilled hole and come into contact with the sides of the drilled hole. If not the brush is too small and must be replaced.



- Finally, blow the hole clean again a minimum of two times (2x)

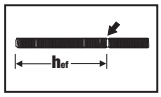
When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

PREPARING



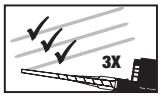
3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F to 95°F (-5°C to 35°C) when in use for concrete unless otherwise noted. Cartridge temperature must be between 41°F to 95°F (5°C to 35°C) when in use for masonry. Review gel (working) and cure time table. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures.

- Remove cap from cartridge.
- Attach a supplied mixing nozzle to the cartridge. Unless otherwise noted do not modify the mixer in any way. Make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.
- Note! Use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published gel (working) time of the adhesive.



4- Prior to inserting the anchor rod or rebar into the drilled hole, the position of the embedment depth has to be marked on the anchor.

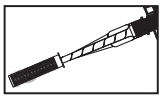
- Verify anchor element is straight and free of surface damage.



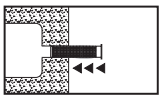
5- Adhesive must be properly mixed to achieve published properties. For new cartridges and nozzles, prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent **GRAY** color.

- Unless otherwise noted, do not attach a used nozzle when changing to a new cartridge.
- Review and note the published working and cure times (see gel time and curing time table) prior to injection of the mixed adhesive into the cleaned anchor hole.

INSTALLATION

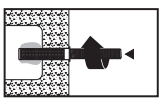


6- Select a screen tube of suitable length supplied by DEWALT. Fill the screen tube full with adhesive starting from the bottom or back of the tube. Slowly withdraw the mixing nozzle as the screen fills to avoid creating air pockets or voids. A plastic extension tube must be used with the mixing nozzle if the back of the screen tube cannot be reached (see reference tables for installation).



7- Insert the screen tube filled with adhesive into the cleaned anchor hole. Inject additional adhesive into the screen tube as necessary to ensure the screen tube is completely filled.

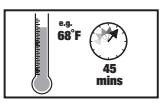
- Note! Overfilling the screen tube is acceptable but not required.



8- Prior to inserting the anchor rod into the screen tube inspect it to ensure that it is free of dirt, grease, oil or other foreign material.

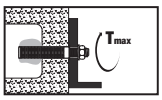
- Push the threaded rod into the screen tube while turning slightly to ensure positive distribution of the adhesive until back of the tube is reached.
- Note: In cases where the drilled hole size is larger than specified due to rotary drilling (e.g. an elongated opening), the annular space between the screen tube and the hole at the base material surface must be filled with adhesive.

CURING AND FIXTURE



9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load.

- Do not disturb, torque or load the anchor until it is fully cured (see gel time and curing time table).



10- After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (see installation specifications for threaded rod in hollow base material) by using a calibrated torque wrench.

- Note! Take care not to exceed the maximum torque for the selected anchor.

REFERENCE INSTALLATION TABLES

Gel (working) Time and Curing Table

Temperature of Base Material		Gel (working) Time	Full Curing Time
˚F	˚C		
14	-10	90 minutes	24 hours
23	-5	90 minutes	14 hours
32	0	45 minutes	7 hours
41	5	25 minutes	2 hours
50	10	15 minutes	90 minutes
68	20	6 minutes	45 minutes
86	30	4 minutes	25 minutes
95	35	2 minutes	20 minutes
104	40	1.5 minutes	15 minutes

Cartridge temperature must be between 23°F to 95°F (-5°C to 35°C) when in use for concrete except for installations in base material temperatures between 14ºF and 23ºF (-10ºC and -5ºC) the cartridge temperature must be conditioned to between 68°F and 95°F (20°C - 35°C). Cartridge temperature must be between 41ºF to 95ºF (5ºC to 35ºC) when in use for masonry.

Wire Brush Selection Table for AC100+ Gold[1,2]

Nominal Wire Brush Size (inch)	ANSI Drill Bit Diameter (inch)	Brush Length (inches)	Steel Wire Brush (Cat. #)	Blowout Tool
Solid Base Material				
7/16	7/16	7	08284-PWR	Hand-pump (Cat #08280-PWR) or compressed air nozzle
9/16	9/16	7	08285-PWR	
5/8	5/8	7	08275-PWR	
11/16	11/16	9	08286-PWR	
3/4	3/4	9	08278-PWR	
7/8	7/8	9	08287-PWR	
1	1	11	08288-PWR	Compressed air nozzle only
1-1/8	1-1/8	11	08289-PWR	
1-3/8	1-3/8	11	08290-PWR	
1-1/2	1-1/2	11	08291-PWR	
Hollow Base Material (with Screen Tube)				
3/8	3/8 (SS screen)	7	08284-PWR	Hand pump (Cat# 08280-PWR) or compressed air nozzle
1/2	1/2 (SS screen)	7	08284-PWR	
9/16	9/16 (plastic screen)	7	08285-PWR	
5/8	5/8 (SS screen)	7	08275-PWR	
3/4	3/4 (plastic screen)	9	08278-PWR	
3/4	3/4 (SS screen)	9	08278-PWR	
7/8	7/8 (plastic screen)	9	08287-PWR	
7/8	7/8 (SS screen)	9	08287-PWR	
1	1 (SS screen)	11	08288-PWR	

1. An SDS-plus adaptor (Cat. #08283-PWR) or Jacobs chuck style adaptor (Cat. #08296-PWR) is available to attach a steel wire brush to the drill tool.
2. A brush extension (Cat. #08282-PWR) must be used for holes drilled deeper than the listed brush length.

For Retrofit Bolt Anchors in URM Walls, including separate installation details, see the table in this tech section entitled "Allowable Load Capacities for AC100+ Gold with Threaded Rods and Reinforcing Bars or Rebar Dowel Installed in Unreinforced Masonry Walls with Stainless Steel Screen Tubes".

Piston Plug Selection Table for Adhesive Anchors[1,2,3,4]

Drill Bit Diameter (inch)	Plug Size (inch)	Piston Plug (Cat. #)	Premium Piston Plug (Cat. #)
11/16	11/16	08258-PWR	PFC1691515
3/4	3/4	08259-PWR	PFC1691520
7/8	7/8	08300-PWR	PFC1691530
1	1	08301-PWR	PFC1691540
1-1/8	1-1/8	08303-PWR	PFC1691550
1-1/4	1-1/4	08307-PWR	PFC1691555
1-3/8	1-3/8	08305-PWR	PFC1691560
1-1/2	1-1/2	08309-PWR	PFC1691570
1-3/4	1-3/4	-	PFC1691580
2	2	-	PFC1691590
2-3/16	2-3/16	-	PFC1691600

1. All overhead or upwardly inclined installations require the use of piston plugs where one is tabulated together with the anchor size.
2. All horizontal installations require the use of piston plugs where the embedment depth is greater than 8 inches and the drill bit size is larger than 5/8-inch.
3. The use of piston plugs is also recommended for underwater installations where one is tabulated together with the anchor size.
4. A flexible plastic extension tube (Cat. #08281-PWR or #08297-PWR) or equivalent approved by DEWALT must be used with piston plugs.

ICC-ES Evaluation Report

ESR-2582

Reissued February 2025

Subject to renewal February 2026

This report also contains:

- **City of LA Supplement**
- **FL Supplement w/ HVHZ**
- **See ELC-2582 for *National Building Code of Canada***

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DIVISION: 03 00 00—CONCRETE **Section: 03 16 00—Concrete Anchors** **DIVISION: 05 00 00—METALS** **Section: 05 05 19—Post-installed Concrete Anchors**	**REPORT HOLDER:** **DEWALT**	**EVALUATION SUBJECT:** **AC100+ GOLD® ADHESIVE ANCHOR SYSTEM IN CRACKED AND UNCRACKED CONCRETE (DEWALT)**	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, 2018 and 2015 *International Building Code®* (IBC)
- 2024, 2021, 2018 and 2015 *International Residential Code®* (IRC)

Main references of this report are for the 2024 IBC and IRC. See Table 11 and Table 12 for applicable sections of the code for previous IBC and IRC editions.

Property evaluated:

Structural

2.0 USES

The AC100+ Gold adhesive anchor system is used as anchorage in cracked and uncracked normal weight concrete or lightweight concrete having a specified compressive strength, f'_c, of 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa) to resist static, wind, or earthquake (Seismic Design Categories A through F) tension and shear loads in $^1/_2$-, $^5/_8$-, $^3/_4$-, $^7/_8$-, 1- and $1^1/_4$-inch-diameter (12.7, 15.9, 19.1, 22.2, 25.4 and 31.8 mm) threaded steel rods and No. 4 through No. 10 steel reinforcing bars; and used as anchorage in uncracked normal weight concrete only having a specified compressive strength, f'_c, of 2,500 psi to 8,500 psi(17.2 MPa to 58.6 MPa) to resist static, wind and earthquake (IBC Seismic Design Categories A and B only) tension and shear loads in $^3/_8$-inch-diameter (9.5 mm) threaded steel rods and No. 3 steel reinforcing bars in hammer-drilled holes.

The anchor system complies with anchors as described in Section 1901.3 of the 2024 IBC. The anchor systems may also be used where an engineered design is submitted in accordance with Section R301.1.3 of the IRC.

3.0 DESCRIPTION

3.1 General:

The AC100+ Gold Adhesive is comprised of AC100+ Gold two-component adhesive filled in cartridges, static mixing nozzles, manual or powered dispensing tools, hole cleaning equipment, and adhesive injection accessories. The AC100+ Gold adhesive may be used with continuously threaded steel rods or deformed steel reinforcing bars.

Product names for the report holder is presented in the following table of this report.

Company Name	Adhesive Product Name
DEWALT	AC100+ Gold®
	AC100-PRO (outside the Americas)

The primary components of the AC100+ Gold Adhesive Anchor System, including the AC100+ Gold adhesive cartridge, static mixing nozzle, the nozzle extension tube and steel anchor elements, are shown in Figure 3 of this report. Manufacturer's printed installation instructions (MPII) and parameters, included with each adhesive unit package, are shown in Figure 4 of this report.

3.2 Materials:

3.2.1 AC100+ Gold Adhesive: The AC100+ Gold adhesive is an injectable two-component vinylester adhesive. The two components are kept separate by means of a labeled dual-cylinder cartridge. The two components combine and react when dispensed through a static mixing nozzle, supplied by DEWALT, which is attached to the cartridge. AC100+ Gold is available in: coaxial cartridges: 9.5-ounce (280 mL) and 14-ounce (420 mL), and side-by-side cartridges: 28-ounce (825 mL). Each cartridge label is marked with the adhesive expiration date. The shelf life, as indicated by the expiration date, applies to an unopened cartridge stored in a dry, dark, and cool environment.

3.2.2 Hole Cleaning Equipment: Hole cleaning equipment is comprised of steel wire brushes supplied by DEWALT, and air blowers which are shown in Figure 4 of this report.

3.2.3 Dispensers: AC100+ Gold adhesive must be dispensed with manual dispensers, pneumatic dispensers, or electric powered dispensers supplied by DEWALT.

3.2.4 Steel Anchor Elements:

3.2.4.1 Threaded Steel Rods: Threaded steel rods must be clean and continuously threaded (all-thread) in diameters described in Table 1 of this report. The embedded portions of the threaded rods must be clean, straight, and free of mill scale, rust and other coatings (other than zinc) that may impair the bond with the adhesive. Specifications for grades of threaded rod, including the mechanical properties, and corresponding nuts, are included in Table 2. Carbon steel threaded rods may be furnished with a minimum 0.0002-inch-thick (0.005 mm) zinc electroplated coating complying with ASTM B633SC 1 or a minimum 0.0021-inch-thick (0.053 mm) mechanically deposited zinc coating complying with ASTM B695, Class 55; or hot dip galvanized zinc coating complying with ASTM A153, Class C or D. The stainless steel threaded rods must comply with Table 2 of this report. Steel grades and types of material (carbon, stainless) for the washers and nuts must match the threaded rods. Threaded steel rods must be clean, straight and free of indentations or other defects along their length. The embedded end may be flat cut or cut on the bias to a chisel point.

3.2.4.2 Steel Reinforcing Bars: Steel reinforcing bars must be deformed reinforcing bars (rebar) in sizes as described in Table 1 of this report. The embedded portions of reinforcing bars must be clean, straight, and free of mill scale, rust and other coatings (other than zinc) that may impair the bond with the adhesive. Reinforcing bars must not be bent after installation except as set forth in ACI 318-19 Section 26.6.3.2 (b) with the additional condition that the bars must be bent cold, and heating of reinforcing bars to facilitate field bending is not permitted.

3.2.4.3 Ductility: In accordance with ACI 318-19 Section 2.3, in order for a steel anchor element to be considered ductile, the tested elongation must be at least 14 percent and reduction of area must be at least 30 percent. Steel elements with a tested elongation of less than 14 percent or a reduction of area less than 30 percent, or both, are considered brittle. Values for various steel materials are provided in Table 2 of this report. Where values are nonconforming or unstated, the steel must be considered brittle.

3.3 Concrete:

Normal weight concrete and lightweight concrete must comply with Sections 1903 and 1905 of the IBC, as applicable. The specified compressive strength of the concrete must be from 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa).

4.0 DESIGN AND INSTALLATION

4.1 Strength Design:

General: The design strength of anchors under the 2024 IBC, as well as the 2024 IRC must be determined in accordance with ACI 318-19 and this report.

The strength design of anchors must comply with ACI 318-19 Section 17.5.1.2 except as required in ACI 318-19 Section 17.10.

Design parameters are provided in Table 4 through Table 8 of this report. Strength reduction factors, ϕ, as given in ACI 318-19 Section17.5.3, must be used for load combinations calculated in accordance with Section 1605.1 of the 2024 IBC and ACI 318-19 Section 5.3

4.1.1 Static Steel Strength in Tension: The nominal static steel strength of a single anchor in tension, N_{sa}, in accordance with ACI 318-19 Section17.6.1.2 and the associated strength reduction factors, ϕ, in accordance with ACI 318-19 Section 17.5.3, are provided in Table 4 and Table 5 of this report for the anchor element types included in this report. See Table 1 for design use and table index.

4.1.2 Static Concrete Breakout Strength in Tension: The nominal concrete breakout strength of a single anchor or group of anchors in tension, N_{cb} or N_{cbg}, must be calculated in accordance with ACI 318-19 Section 17.6.2 with the following addition:

The basic concrete breakout strength of a single anchor in tension, N_b, must be calculated in accordance with ACI 318-19 Section 17.6.2.2 using the selected values of $k_{c,cr}$ and $k_{c,uncr}$ as provided in the tables of this report. Where analysis indicates no cracking in accordance with ACI 318-19 Section17.6.2.5, N_b must be calculated using $k_{c,uncr}$ and $\Psi_{c,N}$ = 1.0. See Table 1 for additional design information. See ACI 318-19 Section 17.2.4 for modification factor, λ_a, for lightweight concrete. The value of f'_c used for calculation must be limited to 8,000 psi (55 MPa) in accordance with ACI 318-19 Section 17.3.1. Additional information for the determination of nominal bond strength in tension is given in Section 4.1.4 of this report.

4.1.3 Static Bond Strength in Tension: The nominal static bond strength of a single adhesive anchor or group of adhesive anchors in tension, N_a or N_{ag}, must be calculated in accordance with ACI 318-19 Section 17.6.5. Bond strength values ($\tau_{k,cr}$, $\tau_{k,uncr}$) are a function of concrete compressive strength (f'_c), concrete state (cracked, uncracked), and installation conditions (dry concrete, water-saturated concrete, water-filled holes). Bond strength values must further be modified with the factor κ_{nn} for cases where the holes are water-filled at the time of anchor installation (κ_{wf}). Special inspection level is qualified as periodic for all anchors except as noted in Section 4.4 of this report. The selection of continuous special inspection level does not provide an increase in anchor category or associated strength reduction factors for design. The following table summarizes the requirements:

CONCRETE STATE	DRILLING METHOD	BOND STRENGTH	CONCRETE STRENGTH	PERMISSIBLE INSTALLATION CONDITIONS	ASSOCIATED STRENGTH REDUCTION FACTOR
Cracked and uncracked	Hammer-drill	$\tau_{k,cr}$ *or* $\tau_{k,uncr}$	f'_c	Dry concrete	ϕ_d
				Water-saturated concrete	ϕ_{ws}
				Water-filled hole (flooded)	ϕ_{wf}

The bond strength values in Table 7 and Table 8 for hammer-drilled holes, correspond to concrete compressive strength f'_c equal to 2,500 psi (17.2 MPa) in normal weight concrete. For concrete compressive strength, f'_c between 2,500 psi and 8,000 psi (17.2 MPa and 55.2 MPa), the tabulated characteristic bond strength may be increased by a factor of $(f'_c / 2{,}500)^{0.13}$ [For **SI:** $(f'_c / 17.2)^{0.13}$]. Where applicable, the modified bond strength values must be used in lieu of $\tau_{k,cr}$ and $\tau_{k,uncr}$ in ACI 318-19 Eq. 17.6.5.1.2b and 17.6.5.2.1. The resulting nominal bond strength must be multiplied by the associated strength reduction factor ϕ_d, ϕ_{ws} or ϕ_{wf}, as applicable.

Figure 2 of this report presents a bond strength design selection flowchart. Strength reduction factors for determination of the bond strength are given in Table 7 and Table 8 of this report. See Table 1 for index of design tables. Adjustments to the bond strength may also be made for increased concrete compressive strength as noted above and in the footnotes to the corresponding tables. For anchors in lightweight concrete see ACI 318-19 Section 17.2.4.

4.1.4 Static Steel Strength in Shear: The nominal static strength of a single anchor in shear, as governed by the steel, V_{sa}, in accordance with ACI 318-19 Section 17.7.1.2 and the strength reduction factors, ϕ, in accordance with ACI 318-19 Section 17.5.3, are given in Table 4 and Table 5 of this report for the anchor element types included in this report. See Table 1 for index of design tables.

4.1.5 Static Concrete Breakout Strength in Shear: The nominal concrete breakout strength of a single anchor or group of anchors in shear, V_{cb} or V_{cbg}, must be calculated in accordance with ACI 318-19 Section 17.7.2, based on information given in Table 6 of this report. The basic concrete breakout strength of a single anchor in shear, V_b, must be calculated in accordance with ACI 318-19 Section 17.7.2.2, using the values of d

given in Table 6 for the corresponding anchor steel in lieu of d_a. In addition, h_{ef} must be substituted for ℓ_e. In no case must ℓ_e exceed 8*d*. See ACI 318-19 Section 17.2.4 for modification factor, λ_a, for lightweight concrete. The value of f'_c must be limited to a maximum of 8,000 psi (55 MPa) in accordance with ACI 318-19 Section 17.3.1.

4.1.6 Static Concrete Pryout Strength in Shear: The nominal static pryout strength of a single anchor or group of anchors in shear, V_{cp} or V_{cpg}, shall be calculated in accordance with ACI 318-19 Section 17.7.3.

4.1.7 Interaction of Tensile and Shear Forces: For designs that include combined tension and shear, the interaction of tension and shear loads must be calculated in accordance with ACI 318-19 Section 17.8.

4.1.8 Minimum Member Thickness h_{min}, Anchor Spacing s_{min}, Edge Distance c_{min}: In lieu of ACI 318-19 Section 17.9.2 values of s_{min} and c_{min} described in this report must be observed for anchor design and installation. The minimum member thicknesses, h_{min}, described in this report must be observed for anchor design and installation. For adhesive anchors that will remain untorqued, ACI 318-19 Section 17.9.3 applies.

For anchors that will be torqued during installation, the maximum torque, T_{max}, must be reduced for edge distances less than five anchor diameters (5d). T_{max} is subject to the edge distance, c_{min}, and anchor spacing, s_{min}, and shall comply with the following requirements:

MAXIMUM TORQUE SUBJECT TO EDGE DISTANCE			
NOMINAL ANCHOR SIZE, *d*	MIN. EDGE DISTANCE, c_{min}	MIN. ANCHOR SPACING, s_{min}	MAXIMUM TORQUE, T_{max}
all sizes	5*d*	5*d*	$1.0 \cdot T_{max}$
$^3/_8$ in. to 1 in. #3 to #8	1.75 in. (45 mm)	5*d*	$0.45 \cdot T_{max}$
$1^1/_4$ in. #9 to #10	2.75 in. (70 mm)		

For values of T_{max}, see Table 9 and Figure 4 of this report.

4.1.9 Critical Edge Distance c_{ac} and $\psi_{cp,Na}$: The modification factor $\psi_{cp,Na}$, must be determined in accordance with ACI 318-19 Section 17.6.5.5 except as noted below:

For all cases where cNa/cac < 1.0, ψcp,Na determined from ACI 318-19 Eq. 17.6.5.5.1b, need not be taken less than c_{Na}/c_{ac}. For all other cases, $\psi_{cp,Na}$ shall be taken as 1.0.

The critical edge distance, c_{ac} must be calculated according to ACI 318-19 Eq. 17.6.5.5.1c, in lieu of ACI 318-19 17.9.5, as applicable.

$$c_{ac} = h_{ef} \cdot \left(\frac{\tau_{k,uncr}}{1160}\right)^{0.4} \cdot \left[3.1 - 0.7\frac{h}{h_{ef}}\right]$$

(ACI 318-19 Eq. 17.6.5.5.1c)

where

$\left[\frac{h}{h_{ef}}\right]$ need not be taken as larger than 2.4; and

$\tau_{k,uncr}$ = the characteristic bond strength stated in the tables of this report whereby $\tau_{k,uncr}$ need not be taken as larger than:

$$\tau_{k,uncr} = \frac{k_{uncr}\sqrt{h_{ef} f'_c}}{\pi \cdot d_a} \qquad \text{Eq. (4-1)}$$

4.1.10 Design Strength in Seismic Design Categories C, D, E and F: In structures assigned to Seismic Design Category C, D, E or F under the IBC or IRC, anchors must be designed in accordance with ACI 318-19 Section 17.10, except as described below.

The nominal steel shear strength, V_{sa}, must be adjusted by $\alpha_{V,seis}$ as given in Tables 4 and 5 for the corresponding anchor steel. The nominal bond strength $\tau_{k,cr}$ must be adjusted by $\alpha_{N,seis}$ as given in Table 7 for threaded rods. An adjustment to the nominal bond strength $\tau_{k,cr}$ is not required for reinforcing bars ($\alpha_{N,seis}$ = 1.0.)

4.2 Allowable Stress Design (ASD):

4.2.1 General: For anchors designed using load combinations in accordance with Section 1605.1 of the 2024 IBC (Allowable Stress Design) loads must be established using the equations below:

$$T_{allowable,ASD} = \phi N_n / \alpha \qquad \text{(Eq. 4-2)}$$

and

$V_{allowable,ASD}$ = $\phi V_n / \alpha$ (Eq. 4-3)

where

$T_{allowable,ASD}$ = Allowable tension load (lbf or kN).

$V_{allowable,ASD}$ = Allowable shear load (lbf or kN).

ϕN_n = Lowest design strength of an anchor or anchor group in tension as determined in accordance with ACI 318-19 Chapter 17 and 2024 IBC Section 1905.7; and Section 4.1 of this report, as applicable (lbf or kN).

ϕV_n = Lowest design strength of an anchor or anchor group in shear as determined in accordance with ACI 318-19 Chapter 17 and 2024 IBC Section 1905.7 and Section 4.1 of this report, as applicable (lbf or kN).

α = Conversion factor calculated as a weighted average of the load factors for the controlling load combination. In addition, α must include all applicable factors to account for non-ductile failure modes and required over-strength.

4.2.2 Interaction of Tensile and Shear Forces: Interaction must be calculated in accordance with ACI 318- 19 Section 17.8 as follows:

For shear loads $V \leq 0.2\ V_{allowable,ASD}$, the full allowable load in tension shall be permitted.

For tension loads $T \leq 0.2\ T_{allowable,ASD}$, the full allowable load in shear shall be permitted.

For all other cases:

$$\frac{T}{T_{allowable,ASD}} + \frac{V}{V_{allowable,ASD}} \leq 1.2 \qquad \text{Eq. (4-4)}$$

4.3 Installation:

Installation parameters are illustrated in Figure 4 of this report. Installation must be in accordance with ACI 318-19 Section 26.7.2. Anchor locations must comply with this report and the plans and specifications approved by the code official. Installation of the AC100+ Gold Adhesive Anchor System must conform to the manufacturer's printed installation instructions (MPII) as reproduced in each unit package as described in Figure 4. The injection tools, mixing nozzles, wire brushes, air blowers, and piston plugs along with the adhesive cartridges must be supplied by the manufacturer, as described in Figure 4 of this report.

The adhesive anchor system may be used for upwardly inclined orientation applications (e.g. overhead). Upwardly inclined and horizontal orientation applications are to be installed using piston plugs for the $^5/_8$-inch through $1^1/_4$-inch diameter threaded steel rods and No. 5 through No. 10 steel reinforcing bars, installed in the specified hole diameter, and attached to the mixing nozzle and extension tube supplied by DEWALT as described in Figure 4 in this report. Upwardly inclined and horizontal orientation installation for the $^3/_8$-inch and $^1/_2$-inch diameter threaded steel rods, and No. 3 and No. 4 steel reinforcing bars may be injected directly to the end of the hole using a mixing nozzle with a hole depth $h_0 \leq 10$ inches (250 mm).

Installation of anchors in horizontal or upwardly inclined orientations shall be fully restrained from movement throughout the specified curing period through the use of temporary wedges, external supports, or other methods. Where temporary restraint devices are used, their use shall not result in impairment of the anchor shear resistance.

4.4 Special Inspection:

Periodic special inspection must be performed where required in accordance with Section 1705.1.1 and Table 1705.3 of the 2024 IBC and this report. The special inspector must be on the jobsite initially during anchor installation to verify the anchor type, anchor dimensions, concrete type, concrete compressive strength, adhesive identification and expiration date, hole dimensions, hole cleaning procedures, anchor spacing, edge distances, concrete thickness, anchor embedment, tightening torque and adherence to the manufacturer's printed installation instructions (MPII). The special inspector must verify the initial installations of each type and size of adhesive anchor by construction personnel on site. Subsequent installations of the same anchor type and size by the same construction personnel are permitted to be performed in the absence of the special inspector. Any change in the anchor product being installed or the personnel performing the installation requires an initial inspection. For ongoing installations over an extended period, the special inspector must make regular inspections to confirm correct handling and installation of the product.

Continuous special inspection of adhesive anchors installed in horizontal or upwardly inclined orientations to resist sustained tension loads shall be performed in accordance with ACI 318-19 Section 26.13.3.2(e).

Under the IBC, additional requirements as set forth in Sections 1705, 1706 or 1707 must be observed, where applicable.

4.5 Compliance with NSF/ANSI Standard 61:

The AC100+ Gold Adhesive Anchor System complies with the requirements of NSF/ANSI Standard 61, as referenced in Section 605 of the 2024 *International Plumbing Code*® (IPC), and is certified for use as an anchoring adhesive for installing threaded rods less than or equal to 1.3 inches (33 mm) in diameter in concrete for water treatment applications. An NSF/ANSI Standard 61 listing is provided by NSF International.

5.0 CONDITIONS OF USE:

The AC100+ Gold Adhesive Anchor System described in this report complies with or is a suitable alternative to what is specified in the codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The AC100+ Gold adhesive anchors must be installed in accordance with this report and the manufacturer's printed installation instructions (MPII) as included with each cartridge and described in Figure 4 of this report.

5.2 The anchors described in this report must be installed in cracked or uncracked normal-weight concrete or lightweight concrete having a specified compressive strength, f'_c = 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa).

5.3 The values of f'_c used for calculation purposes must not exceed 8,000 psi (55 MPa).

5.4 The concrete shall have attained its minimum design strength prior to installation of the anchors.

5.5 Anchors must be installed in concrete base materials in holes predrilled in accordance with the instructions provided in Figure 4 of this report.

5.6 Loads applied to the anchors must be adjusted in accordance with Section 1605.1 of the 2024 IBC for strength design and for allowable stress design.

5.7 The AC100+ Gold adhesive anchors are recognized for use to resist short- and long-term loads, including wind and earthquake, subject to the conditions of this report.

5.8 In structures assigned to Seismic Design Categories C, D, E, and F under the IBC or IRC, anchor strength must be adjusted in accordance with Section 4.1.10 of this report.

5.9 The AC100+ Gold Adhesive Anchor System is permitted to be installed in concrete that is cracked or that may be expected to crack during the service life of the anchor, subject to the conditions of this report.

5.10 Strength design values are established in accordance with Section 4.1 of this report.

5.11 Allowable stress design values are established in accordance with Section 4.2 of this report.

5.12 Minimum anchor spacing and edge distance, as well as minimum member thickness, must comply with the values described in this report.

5.13 Prior to installation, calculations and details demonstrating compliance with this report must be submitted to the code official. The calculations and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.14 Anchors are not permitted to support fire-resistive construction. Where not otherwise prohibited by the code, AC100+ Gold adhesive anchors are permitted for installation in fire-resistive construction provided that at least one of the following conditions is fulfilled:

- Anchors are used to resist wind or seismic forces only.
- Anchors that support gravity load-bearing structural elements are within a fire-resistive envelope or a fire-resistive membrane, are protected by approved fire-resistive materials, or have been evaluated for resistance to fire exposure in accordance with recognized standards.
- Anchors are used to support nonstructural elements.

5.15 Since an ICC-ES acceptance criteria for evaluating data to determine the performance of adhesive anchors subjected to fatigue or shock loading is unavailable at this time, the use of these anchors under such conditions is beyond the scope of this report.

5.16 Use of zinc-plated carbon steel threaded rods or steel reinforcing bars is limited to dry, interior locations.

5.17 Use of hot-dipped galvanized carbon steel and stainless steel rods is permitted for exterior exposure or damp environments.

5.18 Steel anchoring materials in contact with preservative-treated wood and fire-retardant-treated wood must be of zinc-coated carbon steel or stainless steel. The minimum coating weights for zinc-coated steel must comply with ASTM A153.

5.19 Periodic special inspection must be provided in accordance with Section 4.4 in this report. Continuous special inspection for anchors installed in horizontal or upwardly inclined orientations to resist sustained tension loads must be provided in accordance with Section 4.4 of this report.

5.20 Installation of anchors in horizontal or upwardly inclined orientations to resist sustained tension loads shall be performed by personnel certified by an applicable certification program in accordance with ACI 318-19 Sections 26.7.1(l) and 26.7.2(e).

5.21 Anchors shall not be used for installations where the in-service concrete temperature can vary from 40°F (5°C) or less to 80°F (27°C) or higher within a 12-hour period. Such applications may include but are not limited to anchorage of building facade systems and other applications subject to direct sun exposure.

5.22 AC100+ Gold adhesive is manufactured, under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Post-installed Adhesive Anchors and Reinforcing Bars in Concrete Elements (AC308), dated February 2023 (editorially revised February 2024), which incorporates requirements in ACI 355.4-19 and ACI 355.4-11 for use in cracked and uncracked concrete; including, but not limited to, tests under freeze/thaw conditions, tests under sustained load, tests for installation direction, tests at elevated temperatures, tests for resistance to alkalinity, tests for resistance to sulfur and tests for seismic tension and shear.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-2582) along with the name, registered trademark, or registered logo of the report holder must be included in the product label

7.2 In addition, AC100+ Gold adhesive and additional listee product name described in Section 3.1 of this report are identified by packaging labelled with the lot number; expiration date; and company name (DEWALT). Steel anchor elements including threaded rods, nuts, washers, and deformed reinforcing bars must conform to applicable national specifications as set forth in Section 3.2.4 and Tables 2 and 3 of this evaluation report or equivalent.

7.3 The report holder's contact information is the following:

DEWALT
701 EAST JOPPA ROAD
TOWSON, MARYLAND 21286
(800) 524-3244
www.DEWALT.com
anchors@DEWALT.com

TABLE 1—DESIGN USE AND TABLE INDEX

DESIGN STRENGTH[1]		THREADED ROD (FRACTIONAL)[5]	DEFORMED REINFORCING BAR[5]
Steel	N_{sa}, V_{sa}	Table 4	Table 5
Concrete	N_{cb}, N_{cbg}, V_{cb}, V_{cbg}, V_{cp}, V_{cpg}	Table 6	Table 6
Bond[2]	N_a, N_{ag}	Table 7	Table 8

CONCRETE TYPE	CONCRETE STATE	THREADED ROD DIAMETER (inch)	REINFORCING BAR SIZE (No.)	DRILLING METHOD[4]	MINIMUM EMBEDMENT	MAXIMUM EMBEDMENT	SEISMIC DESIGN CATEGORIES[3]
Normal-weight and lightweight	Cracked	1/2, 5/8, 3/4, 7/8, 1 and 1 1/4	4, 5, 6, 7, 8, 9, 10	Hammer-drill	See Table 7 and Table 8	See Table 7 and Table 8	A through F
	Uncracked	3/8, 1/2, 5/8, 3/4, 7/8, 1 and 1 1/4	3, 4, 5, 6, 7, 8, 9, 10	Hammer-drill	See Table 7 and Table 8	See Table 7 and Table 8	A and B

For **SI:** 1 inch = 25.4 mm. For **pound-inch** units: 1 mm = 0.03937 inch.

[1]Reference ACI 318-19 Section 17.5.1. The controlling strength is decisive from all appropriate failure modes (i.e. steel, concrete, bond) and design assumptions.
[2]See Section 4.1.4 of this report for bond strength determination of post-installed adhesive anchors.
[3]See Section 4.1.11 for requirements for seismic design where applicable.
[4]Hammer-drill, i.e. rotary impact drills or rock drills with a carbide bit (including hollow drill bits).
[5]Anchors with 1/2-, 5/8-, 3/4-, 7/8- 1- and 1 1/4-inch-diameter (12.7, 15.9, 19.1, 22.2, 25.4 and 31.8 mm) threaded steel rods and No. 4 through No. 10 steel reinforcing bars may be installed in normal-weight concrete that is cracked or that may be expected to crack during the service life of the anchor. Anchors with 3/8-inch-diameter (9.5 mm) threaded steel rods and No. 3 steel reinforcing bars are limited to installation in uncracked concrete.

The DEWALT drilling systems shown below collect and remove dust with a HEPA dust extractor during the hole drilling operation in dry base materials using hammer-drills (see step 1 of the manufacturer's published installation instructions).

FIGURE 1—EXAMPLES DEWALT DUST REMOVAL DRILLING SYSTEMS WITH HEPA DUST EXTRACTORS FOR ILLUSTRATION

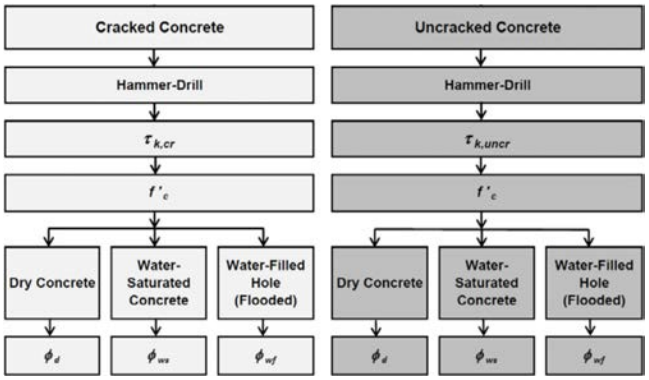


FIGURE 2—FLOW CHART FOR THE ESTABLISHMENT OF DESIGN BOND STRENGTH

TABLE 2—SPECIFICATIONS AND PHYSICAL PROPERTIES OF COMMON FRACTIONAL THREADED CARBON AND STAINLESS STEEL ROD MATERIALS[1]

THREADED ROD SPECIFICATION		UNITS	MIN. SPECIFIED ULTIMATE STRENGTH, f_{uta}	MIN. SPECIFIED YIELD STRENGTH 0.2 PERCENT OFFSET, f_{ya}	$\frac{f_{uta}}{f_{ya}}$	ELONGATION MINIMUM PERCENT[8]	REDUCTION OF AREA MINIMUM PERCENT	NUT SPECIFICATION[9]
Carbon Steel	ASTM A36[2] and F1554[3] Grade 36	psi (MPa)	58,000 (400)	36,000 (248)	1.61	23	40[10]	ASTM A194 / A563 Grade A
	ASTM F1554[3] Grade 55	psi (MPa)	75,000 (517)	55,000 (380)	1.36	23	40	
	ASTM F1554[3] Grade 105	psi (MPa)	125,000 (862)	105,000 (724)	1.19	15	45	ASTM A194 / A563 Grade D
	ASTM A193[4] Grade B7	psi (MPa)	125,000 (860)	105,000 (720)	1.19	16	50	
	ASTM A449[5] ($^3/_8$ to 1 inch dia.)	psi (MPa)	120,000 (828)	92,000 (635)	1.30	14	35	ASTM A194 / A563 Grade DH
	ASTM A449[5] ($1^1/_4$ inch dia.)	psi (MPa)	105,000 (720)	81,000 (559)	1.30	14	35	
Stainless Steel (Types 304 and 316)	ASTM F593[6] CW1 ($^3/_8$ to $^5/_8$ inch dia.)	psi (MPa)	100,000 (690)	65,000 (450)	1.54	20	-[11]	ASTM F594 Alloy Group 1, 2 or 3
	ASTM F593[6] CW2 ($^3/_4$ to $1^1/_4$ inch dia.	psi (MPa)	85,000 (590)	45,000 (310)	1.89	25	-[11]	
	ASTM A193[7] Grade B8/B8M, Class 1	psi (MPa)	75,000 (517)	30,000 (207)	2.50	30	50	ASTM F594 Alloy Group 1, 2 or 3
	ASTM A193[7] Grade B8/B8M2, Class 2B	psi (MPa)	95,000 (655)	75,000 (517)	1.27	25	40	

For **SI:** 1 inch = 25.4 mm, 1 psi = 0.006897 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 MPa = 145.0 psi.

[1]Adhesive must be used with continuously threaded carbon or stainless steels (all-thread) that have thread characteristics comparable with ANSI B1.1 UNC Coarse Thread Series. Tabulated values correspond to anchor diameters included in this report. See Section 3.2.4.3 of this report for ductility of steel anchor elements.
[2]*Standard Specification for Carbon Structural Steel.*
[3]*Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.*
[4]*Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and Other Special Purpose Applications.*
[5]*Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use.*
[6]*Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.*
[7]*Standard Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications*.
[8]Based on 2-inch (50 mm) gauge length except ASTM A193, which are based on a gauge length of 4d.
[9]Nuts of other grades and style having specified proof load stress greater than the specified grade and style are also suitable. Nuts must have specified proof load stresses equal to or greater than the minimum tensile strength of the specified threaded rod. Material types of the nuts and washers must be matched to the threaded rods.
[10]Minimum percent reduction of area reported in ASTM A36 is 50 percent.
[11]Minimum percent reduction of area not reported in the referenced ASTM standard.

TABLE 3—SPECIFICATIONS AND PHYSICAL PROPERTIES OF COMMON STEEL REINFORCING BARS[1]

REINFORCING SPECIFICATION	UNITS	MINIMUM SPECIFIED ULTIMATE STRENGTH, f_{uta}	MINIMUM SPECIFIED YIELD STRENGTH, f_{ya}
ASTM A615[2], A767[4], Grade 80	psi (MPa)	100,000 (690)	80,000 (550)
ASTM A615[2], A767[4], Grade 75	psi (MPa)	100,000 (690)	75,000 (520)
ASTM A615[2], A767[4], Grade 60	psi (MPa)	80,000 (550)	60,000 (414)
ASTM A706[3], A767[4], Grade 60	psi (MPa)	80,000 (550)	60,000 (414)
ASTM A615[2], A767[4], Grade 40	psi (MPa)	60,000 (415)	40,000 (275)

For **SI:** 1 psi = 0.006897 MPa. For **pound-inch** units: 1 MPa = 145.0 psi.

[1]Adhesive must be used with specified deformed reinforcing bars. Tabulated values correspond to bar sizes included in this report.
[2]*Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.* Grade 60 and Grade 40 bars may be considered ductile elements. In accordance with ACI 318-19 Section 17.10.5.3(a)(vi), deformed reinforcing bars meeting this specification used as ductile steel elements to resist earthquake effects shall be limited to reinforcing bars satisfying the requirements of ACI 318-19 Sections 20.2.2.4 and 20.2.2.5. Grade 75 bars furnished to specification are considered brittle elements unless evidence is otherwise shown to the satisfaction of the registered design professional and code official in accordance with Section 3.2.4.3 of this report.
[3]*Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.* Bars furnished to specification are considered ductile elements.
[4]*Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement*. Bars furnished to specification are considered brittle elements unless evidence is otherwise shown to the satisfaction of the registered design professional and code official in accordance with Section 3.2.4.3 of this report.

TABLE 4—STEEL DESIGN INFORMATION FOR FRACTIONAL THREADED ROD

DESIGN INFORMATION		SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)[1]						
				3/8	1/2	5/8	3/4	7/8	1	1 1/4
Threaded rod nominal outside diameter		d	inch (mm)	0.375 (9.5)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)	0.875 (22.2)	1.000 (25.4)	1.250 (31.8)
Threaded rod effective cross-sectional area		A_{se}	inch² (mm²)	0.0775 (50)	0.1419 (92)	0.2260 (146)	0.3345 (216)	0.4617 (298)	0.6057 (391)	0.9691 (625)
ASTM A36 and F1554, Grade 36	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	4,495 (20.0)	8,230 (36.6)	13,110 (58.3)	19,400 (86.3)	26,780 (119.1)	35,130 (156.3)	56,210 (250.0)
		V_{sa}	lbf (kN)	2,695 (12.0)	4,940 (22.0)	7,860 (35.0)	11,640 (51.8)	16,070 (71.4)	21,080 (93.8)	33,725 (150.0)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.85	0.85	0.85	0.85	0.80	0.80
	Strength reduction factor for tension[2]	ϕ	-	0.75						
	Strength reduction factor for shear[2]	ϕ	-	0.65						
ASTM F1554, Grade 55	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	5,810 (25.9)	10,640 (47.3)	16,950 (75.4)	25,085 (111.6)	34,625 (154.0)	45,425 (202.0)	72,680 (323.3)
		V_{sa}	lbf (kN)	3,485 (15.5)	6,385 (28.4)	10,170 (45.2)	15,050 (67.0)	20,775 (92.4)	27,255 (121.2)	43,610 (194.0)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.85	0.85	0.85	0.85	0.80	0.80
	Strength reduction factor for tension[2]	ϕ	-	0.75						
	Strength reduction factor for shear[2]	ϕ	-	0.65						
ASTM A193 Grade B7 and F1554, Grade 105	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	9,685 (43.1)	17,735 (78.9)	28,250 (125.7)	41,810 (186.0)	57,710 (256.7)	75,710 (336.8)	121,135 (538.8)
		V_{sa}	lbf (kN)	5,815 (25.9)	10,640 (7.3)	16,950 (75.4)	25,085 (111.6)	34,625 (154.0)	45,425 (202.1)	72,680 (323.3)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.85	0.85	0.85	0.85	0.80	0.80
	Strength reduction factor for tension[2]	ϕ	-	0.75						
	Strength reduction factor for shear[2]	ϕ	-	0.65						
ASTM A449	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	9,300 (41.4)	17,025 (75.7)	27,120 (120.6)	40,140 (178.5)	55,905 (248.7)	63,600 (282.9)	101,755 (452.6)
		V_{sa}	lbf (kN)	5,580 (24.8)	10,215 (45.4)	16,270 (72.4)	24,085 (107.1)	33,540 (149.2)	38,160 (169.7)	61,050 (271.6)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.80	0.80	0.80	0.80	0.80	0.80
	Strength reduction factor for tension[2]	ϕ	-	0.75						
	Strength reduction factor for shear[2]	ϕ	-	0.65						
ASTM F593 CW Stainless (Types 304 and 316)	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	7,750 (34.5)	14,190 (63.1)	22,600 (100.5)	28,430 (126.5)	39,245 (174.6)	51,485 (229.0)	82,370 (366.4)
		V_{sa}	lbf (kN)	4,650 (20.7)	8,515 (37.9)	13,560 (60.3)	17,060 (75.9)	23,545 (104.7)	30,890 (137.4)	49,425 (219.8)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.85	0.85	0.85	0.85	0.80	0.80
	Strength reduction factor for tension[2]	ϕ	-	0.65						
	Strength reduction factor for shear[2]	ϕ	-	0.60						
ASTM A193 Grade B8/B8M, Class 1 Stainless (Types 304 and 316)	Nominal strength as governed by steel strength (for a single anchor)[3]	N_{sa}	lbf (kN)	4,420 (19.7)	8,090 (36.0)	12,880 (57.3)	19,065 (84.8)	26,315 (117.1)	34,525 (153.6)	55,240 (245.7)
		V_{sa}	lbf (kN)	2,650 (11.8)	4,855 (21.6)	7,730 (34.4)	11,440 (50.9)	15,790 (70.2)	20715 (92.1)	33,145 (147.4)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.85	0.85	0.85	0.85	0.80	0.80
	Strength reduction factor for tension[2]	ϕ	-	0.75						
	Strength reduction factor for shear[2]	ϕ	-	0.65						
ASTM A193 Grade B8/B8M2, Class 2B Stainless (Types 304 and 316)	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	7,365 (32.8)	13,480 (60.0)	21,470 (95.5)	31,775 (141.3)	43,860 (195.1)	57,545 (256.0)	92,065 (409.5)
		V_{sa}	lbf (kN)	4,470 (19.7)	8,085 (36.0)	12,880 (57.3)	19,065 (84.8)	26,315 (117.1)	34,525 (153.6)	55,240 (245.7)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.85	0.85	0.85	0.85	0.80	0.80
	Strength reduction factor for tension[2]	ϕ	-	0.75						
	Strength reduction factor for shear[2]	ϕ	-	0.65						

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.448 N. For **pound-inch** units: 1 mm = 0.03937 inches, 1 N = 0.2248 lbf.

[1]Values provided for steel element material types based on minimum specified strengths and calculated in accordance with ACI 318-19 Eq. 17.6.1.2 and Eq. 17.7.1.2(b). Nuts must be appropriate for the rod, as listed in Table 2 of this report.

[2]The strength reduction factor applies when the load combinations from the IBC or ACI 318-19 are used and the requirements of ACI 318-19 Section 17.5.3 are met.

[3]In accordance with ACI 318-19 Eq. 17.6.1.2 and Eq. 17.7.1.2(b), the calculated values for nominal tension and shear strength for ASTM A193 Grade B8/B8M Class 1 stainless steel threaded rods are based on limiting the specified tensile strength of the anchor steel to $1.9f_y$ or 57,000 psi (393 MPa).

TABLE 5—STEEL DESIGN INFORMATION FOR REINFORCING BARS

DESIGN INFORMATION		SYMBOL	UNITS	NOMINAL REINFORCING BAR SIZE (REBAR)[1]							
				No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10
Rebar nominal outside diameter		d	inch (mm)	0.375 (9.5)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)	0.875 (22.2)	1.000 (25.4)	1.125 (28.7)	1.250 (32.3)
Rebar effective cross-sectional area		A_{se}	inch^2 (mm^2)	0.110 (71)	0.200 (129)	0.310 (200)	0.440 (284)	0.600 (387)	0.790 (510)	1.000 (645)	1.270 (819)
ASTM A615, Grade 80	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	11,000 (48.9)	20,000 (89.0)	31,000 (137.9)	44,000 (195.7)	60,000 (266.9)	79,000 (351.4)	100,000 (444.8)	127,000 (564.9)
		V_{sa}	lbf (kN)	6,600 (29.4)	12,000 (53.4)	18,600 (82.7)	26,400 (117.4)	36,000 (160.1)	47,400 (210.8)	60,000 (266.9)	76,200 (338.9)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.70	0.70	0.70	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.65							
	Strength reduction factor for shear[2]	ϕ	-	0.60							
ASTM A615, Grade 75	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	11,000 (48.9)	20,000 (89.0)	31,000 (137.9)	44,000 (195.7)	60,000 (266.9)	79,000 (351.4)	100,000 (444.8)	127,000 (564.9)
		V_{sa}	lbf (kN)	6,600 (29.4)	12,000 (53.4)	18,600 (82.7)	26,400 (117.4)	36,000 (160.1)	47,400 (210.8)	60,000 (266.9)	76,200 (338.9)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.70	0.70	0.70	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.65							
	Strength reduction factor for shear[2]	ϕ	-	0.60							
ASTM A615, Grade 60	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	8,800 (39.1)	16,000 (71.2)	24,800 (110.3)	35,200 (156.6)	48,000 (213.5)	63,200 (281.1)	80,000 (355.9)	101,600 (452.0)
		V_{sa}	lbf (kN)	5,280 (23.5)	9,600 (42.7)	14,880 (66.2)	21,120 (94.0)	28,800 (128.1)	37,920 (168.7)	48,000 (213.5)	60,960 (271.2)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.70	0.70	0.70	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.65							
	Strength reduction factor for shear[2]	ϕ	-	0.60							
ASTM A706, Grade 60	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	8,800 (39.1)	16,000 (71.2)	24,800 (110.3)	35,200 (156.6)	48,000 (213.5)	63,200 (281.1)	80,000 (355.9)	101,600 (452.0)
		V_{sa}	lbf (kN)	5,280 (23.5)	9,600 (42.7)	14,880 (66.2)	21,120 (94.0)	28,800 (128.1)	37,920 (168.7)	48,000 (213.5)	60,960 (271.2)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.70	0.70	0.70	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.75							
	Strength reduction factor for shear[2]	ϕ	-	0.65							
ASTM A615, Grade 40	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	6,600 (29.4)	12,000 (53.4)	18,600 (82.7)	26,400 (117.4)	In accordance with ASTM A615, Grade 40 bars are furnished only in sizes No. 3 through No. 6			
		V_{sa}	lbf (kN)	3,960 (17.6)	7,200 (32.0)	11,160 (49.6)	15,840 (70.5)				
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	Not applicable	0.70	0.70	0.70				
	Strength reduction factor for tension[2]	ϕ	-	0.65							
	Strength reduction factor for shear[2]	ϕ	-	0.60							

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.448 N. For **pound-inch** units: 1 mm = 0.03937 inches, 1 N = 0.2248 lbf.

[1]Values provided for reinforcing bar material types based on minimum specified strengths and calculated in accordance with ACI 318-19 Eq. 17.6.1.2 and Eq. 17.7.1.2(b).

[2]The strength reduction factor applies when the load combinations from the IBC or ACI 318-19 are used and the requirements of ACI 318-19 Section 17.5.3 are met.

TABLE 6—CONCRETE BREAKOUT AND PRYOUT DESIGN INFORMATION FOR FRACTIONAL THREADED ROD AND REINFORCING BARS IN HOLES DRILLED WITH A HAMMER DRILL AND CARBIDE BIT[1]

DESIGN INFORMATION	SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch) / REINFORCING BAR SIZE							
			3/8 or #3	1/2 or #4	5/8 or #5	3/4 or #6	7/8 or #7	1 or #8	#9	1 1/4 or #10
Effectiveness factor for cracked concrete	$k_{c,cr}$	- (SI)	Not Applicable	17 (7.1)						
Effectiveness factor for uncracked concrete	$k_{c,uncr}$	- (SI)	24 (10.0)							
Minimum embedment	$h_{ef,min}$	inch (mm)	2 3/8 (60)	2 3/4 (70)	3 1/8 (79)	3 1/2 (89)	3 1/2 (89)	4 (102)	4 1/2 (114)	5 (127)
Maximum embedment	$h_{ef,max}$	inch (mm)	4 1/2 (114)	6 (152)	7 1/2 (191)	9 (229)	10 1/2 (267)	12 (305)	13 1/2 (343)	15 (381)
Minimum anchor spacing	s_{min}	inch (mm)	1 7/8 (48)	2 1/2 (64)	3 1/8 (79)	3 3/4 (95)	4 3/8 (111)	5 (127)	5 5/8 (143)	6 1/4 (159)
Minimum edge distance	c_{min}	inch (mm)	5d where d is nominal outside diameter of the anchor; see Section 4.1.9 of this report for design with reduced minimum edge distances (with reduced torque)							
Minimum member thickness	h_{min}	inch (mm)	h_{ef} + 1 1/4 (h_{ef} + 30)		h_{ef} + 2d_o where d_o is hole diameter; for installation parameters see Table 9 of this report					
Critical edge distance—splitting (for uncracked concrete only)	c_{ac}	inch (mm)	See Section 4.1.10 of this report							
Strength reduction factor for tension, concrete failure modes, Condition B[2]	ϕ	-	0.65							
Strength reduction factor for shear, concrete failure modes, Condition B[2]	ϕ	-	0.70							

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.448 N. For **pound-inch** units: 1 mm = 0.03937 inch, 1 N = 0.2248 lbf.

[1]Additional setting information is described in the installation instructions, Figure 4 of this report.
[2]The strength reduction factor applies when the load combinations from the IBC or ACI 318-19 are used and the requirements of ACI 318-19 Section17.5.3 are met.

TABLE 7—BOND STRENGTH DESIGN INFORMATION FOR FRACTIONAL THREADED RODS IN HOLES DRILLED WITH A HAMMER DRILL AND CARBIDE BIT[1]

DESIGN INFORMATION		SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)						
				3/8	1/2	5/8	3/4	7/8	1	1 1/4
Minimum embedment		$h_{ef,min}$	inch (mm)	2 3/8 (60)	2 3/4 (70)	3 1/8 (79)	3 1/2 (89)	3 1/2 (89)	4 (102)	5 (127)
Maximum embedment		$h_{ef,max}$	inch (mm)	4 1/2 (114)	6 (152)	7 1/2 (191)	9 (229)	10 1/2 (267)	12 (305)	15 (381)
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) maximum short-term service temperature[3]	Characteristic bond strength in cracked concrete[4,6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	545 (3.8)	568 (3.9)	568 (3.9)	568 (3.9)	575 (4.0)	575 (4.0)
	Characteristic bond strength in cracked concrete, short-term loads only[6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	779 (5.4)	811 (5.6)	811 (5.6)	811 (5.6)	821 (5.7)	821 (5.7)
	Characteristic bond strength in uncracked concrete[4,7]	$\tau_{k,uncr}$	psi (N/mm²)	902 (6.2)	902 (6.2)	902 (6.2)	902 (6.2)	902 (6.2)	815 (5.6)	645 (4.4)
									Not applicable in water-filled hole installation condition	
	Characteristic bond strength in uncracked concrete, short-term loads only[7]	$\tau_{k,uncr}$	psi (N/mm²)	1,288 (8.9)	1,288 (8.9)	1,288 (8.9)	1,288 (8.9)	1,288 (8.9)	1,164 (8.0)	921 (6.4)
									Not applicable in water-filled hole installation condition	
122°F (50°C) Maximum long-term service temperature; 176°F (80°C) maximum short-term service temperature[2,3]	Characteristic bond strength in cracked concrete[4,6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	498 (3.4)	519 (3.6)	519 (3.6)	519 (3.6)	519 (3.6)	525 (3.6)
	Characteristic bond strength in cracked concrete, short-term loads only[6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	712 (4.9)	742 (5.1)	742 (5.1)	742 (5.1)	742 (5.1)	751 (5.2)
	Characteristic bond strength in uncracked concrete[4,7]	$\tau_{k,uncr}$	psi (N/mm²)	823 (5.7)	823 (5.7)	823 (5.7)	823 (5.7)	823 (5.7)	743 (5.1)	588 (4.1)
									Not applicable in water-filled hole installation condition	
	Characteristic bond strength in uncracked concrete, short-term loads only[7]	$\tau_{k,uncr}$	psi (N/mm²)	1,177 (8.1)	1,177 (8.1)	1,177 (8.1)	1,177 (8.1)	1,177 (8.1)	1,062 (7.3)	841 (5.8)
									Not applicable in water-filled hole installation condition	
162°F (72°C) Maximum long-term service temperature; 248°F (120°C) maximum short-term service temperature[2,3]	Characteristic bond strength in cracked concrete[4,6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	245 (1.7)	255 (1.8)	255 (1.8)	255 (1.8)	255 (1.8)	255 (1.8)
	Characteristic bond strength in cracked concrete, short-term loads only[6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	544 (3.7)	566 (3.9)	566 (3.9)	566 (3.9)	566 (3.9)	566 (3.9)
	Characteristic bond strength in uncracked concrete[4,7]	$\tau_{k,uncr}$	psi (N/mm²	405 (2.8)	405 (2.8)	405 (2.8)	405 (2.8)	405 (2.8)	366 (2.5)	Not applicable
								Not applicable in water-filled hole installation condition		
	Characteristic bond strength in uncracked concrete, short term loads only[7]	$\tau_{k,uncr}$	psi (N/mm²	899 (6.2)	899 (6.2)	899 (6.2)	899 (6.2)	899 (6.2)	813 (5.6)	Not applicable
								Not applicable in water-filled hole installation condition		
Permissible installation conditions[5]	Dry concrete	ϕ_d	-	0.65				0.65	0.65	0.65
	Water-saturated concrete	ϕ_{ws}	-	0.65				0.55	0.55	0.55
	Water-filled hole (flooded)	ϕ_{wf}	-	0.45				0.45	0.45	0.45
		κ_{wf}	-	0.78				0.70	0.69	0.67
Reduction factor for seismic tension		$\alpha_{N,seis}$	-	0.95						

For **SI:** 1 inch = 25.4 mm, 1 psi = 0.006894 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 MPa = 145.0 psi.

[1]Bond strength values correspond to concrete compressive strength f'_c = 2,500 psi. For concrete compressive strength, f'_c between 2,500 psi and 8,000 psi, the tabulated characteristic bond strength may be increased by a factor of $(f'_c / 2{,}500)^{0.13}$ [For **SI:** $(f'_c / 17.2)^{0.13}$]. See Section 4.1.4 of this report.
[2]Long-term and short-term temperatures meet and exceed the requirements of Section 8.5 of ACI 355.4 and Table 9.1, Temperature Category A.
[3]Short-term elevated concrete temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Long-term concrete temperatures are roughly constant over significant periods of time.
[4]Characteristic bond strengths are for sustained loads including dead and live loads.
[5]Permissible installation conditions include dry concrete, water-saturated concrete and water-filled holes. Water-filled holes include applications in dry or water-saturated concrete where the drilled holes contain standing water during anchor installation. For installation instructions see Figure 4 of this report.
[6]For structures assigned to Seismic Design Categories C, D, E or F, bond strength values for cracked concrete must be adjusted by an additional reduction factor, $\alpha_{N,seis}$, as given in the table. See Section 4.1.10 of this report.
[7]Bond strength values for uncracked concrete are applicable for structures assigned to Seismic Design Categories A and B only.

TABLE 8—BOND STRENGTH DESIGN INFORMATION FOR REINFORCING BARS IN HOLES DRILLED WITH A HAMMER DRILL AND CARBIDE BIT[1]

DESIGN INFORMATION		SYMBOL	UNITS	REINFORCING BAR SIZE							
				#3	#4	#5	#6	#7	#8	#9	#10
Minimum embedment		$h_{ef,min}$	inch (mm)	2 3/8 (60)	2 3/4 (70)	3 1/8 (79)	3 1/2 (89)	3 1/2 (89)	4 (102)	4 1/2 (114)	5 (127)
Maximum embedment		$h_{ef,max}$	inch (mm)	4 1/2 (114)	6 (152)	7 1/2 (191)	9 (229)	10 1/2 (267)	12 (305)	13 1/2 (343)	15 (381)
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) maximum short-term service temperature[3]	Characteristic bond strength in cracked concrete[4,6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	361 (2.5)	376 (2.6)	376 (2.6)	376 (2.6)	381 (2.6)	381 (2.6)	381 (2.6)
	Characteristic bond strength in cracked concrete, short-term loads only[6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	516 (3.6)	538 (3.7)	538 (3.7)	538 (3.7)	544 (3.8)	544 (3.8)	544 (3.8)
	Characteristic bond strength in uncracked concrete[4,7]	$\tau_{k,uncr}$	psi (N/mm²)	902 (6.2)	902 (6.2)	902 (6.2)	902 (6.2)	902 (6.2)	815 (5.6)	732 (5.0)	645 (4.4)
									Not applicable in water-filled hole installation condition		
	Characteristic bond strength in uncracked concrete, short-term loads only[7]	$\tau_{k,uncr}$	psi (N/mm²)	1,288 (8.9)	1,288 (8.9)	1,288 (8.9)	1,288 (8.9)	1,288 (8.9)	1,164 (8.0)	1,046 (7.2)	921 (6.4)
									Not applicable in water-filled hole installation condition		
122°F (50°C) Maximum long-term service temperature; 176°F (80°C) maximum short-term service temperature[2,3]	Characteristic bond strength in cracked concrete[4,6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	331 (2.3)	345 (2.4)	345 (2.4)	345 (2.4)	345 (2.4)	349 (2.4)	349 (2.4)
	Characteristic bond strength in cracked concrete, short-term loads only[6]	$\tau_{k,cr}$	psi (N/mm²)	Not applicable	473 (3.3)	493 (3.4)	493 (3.4)	493 (3.4)	493 (3.4)	499 (3.4)	499 (3.4)
	Characteristic bond strength in uncracked concrete[4,7]	$\tau_{k,uncr}$	psi (N/mm²)	823 (5.7)	823 (5.7)	823 (5.7)	823 (5.7)	823 (5.7)	743 (5.1)	655 (4.5)	588 (4.1)
									Not applicable in water-filled hole installation condition		
	Characteristic bond strength in uncracked concrete, short-term loads only[7]	$\tau_{k,uncr}$	psi (N/mm²)	1,177 (8.1)	1,177 (8.1)	1,177 (8.1)	1,177 (8.1)	1,177 (8.1)	1,062 (7.3)	951 (6.6)	841 (5.8)
									Not applicable in water-filled hole installation condition		
162°F (72°C) Maximum long-term service temperature; 248°F (120°C) maximum short-term service temperature[2,3]	Characteristic bond strength in cracked concrete[4,6]	$\tau_{k,cr}$	psi (N/mm²	Not applicable	163 (1.1)	170 (1.2)	170 (1.2)	170 (1.2)	170 (1.2)	170 (1.2)	170 (1.2)
	Characteristic bond strength in cracked concrete, short-term loads only[6]	$\tau_{k,cr}$	psi (N/mm²	Not applicable	362 (2.5)	377 (2.6)	377 (2.6)	377 (2.6)	377 (2.6)	382 (2.6)	382 (2.6)
	Characteristic bond strength in uncracked concrete[4,7]	$\tau_{k,uncr}$	psi (N/mm²	405 (2.8)	405 (2.8)	405 (2.8)	405 (2.8)	405 (2.8)	366 (2.5)	329 (2.3)	Not applicable
								Not applicable in water-filled hole installation condition			
	Characteristic bond strength in uncracked concrete, short-term loads only[7]	$\tau_{k,uncr}$	psi (N/mm²	899 (6.2)	899 (6.2)	899 (6.2)	899 (6.2)	899 (6.2)	813 (5.6)	730 (5.0)	Not applicable
								Not applicable in water-filled hole installation condition			
Permissible installation conditions[5]	Dry concrete	ϕ_{d}	-	0.65				0.65	0.65	0.65	0.65
	Water-saturated concrete	ϕ_{ws}	-	0.65				0.55	0.55	0.55	0.55
	Water-filled hole (flooded)	ϕ_{wf}	-	0.45				0.45	0.45	0.45	0.45
		κ_{wf}	-	0.78				0.70	0.69	0.68	0.67
Reduction factor for seismic tension		$\alpha_{N,seis}$	-	1.0							

For **SI:** 1 inch = 25.4 mm, 1 psi = 0.006894 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 MPa = 145.0 psi.

[1]Bond strength values correspond to concrete compressive strength f'_c = 2,500 psi. For concrete compressive strength, f'_c between 2,500 psi and 8,000 psi, the tabulated characteristic bond strength may be increased by a factor of $(f'_c / 2{,}500)^{0.13}$ [For **SI:** $(f'_c / 17.2)^{0.13}$]. See Section 4.1.4 of this report.

[2]Long-term and short-term temperatures meet and exceed the requirements of Section 8.5 of ACI 355.4 and Table 9.1, Temperature Category A.

[3]Short-term elevated concrete temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Long-term concrete temperatures are roughly constant over significant periods of time.

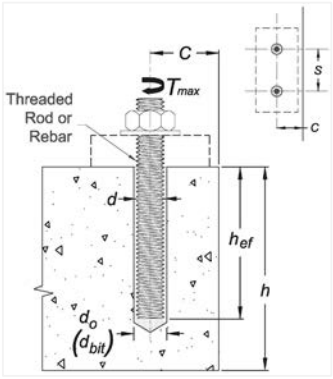
[4]Characteristic bond strengths are for sustained loads including dead and live loads.

[5]Permissible installation conditions include dry concrete, water-saturated concrete and water-filled holes. Water-filled holes include applications in dry or water-saturated concrete where the drilled holes contain standing water during anchor installation. For installation instructions see Figure 4 of this report.

[6]For structures assigned to Seismic Design Categories C, D, E or F, the tabulated bond strength values for cracked concrete do not require an additional reduction factor applied for seismic tension ($\alpha_{N,seis}$ = 1.0), where seismic design is applicable. See Section 4.1.10 of this report for requirements for seismic design.

[7]Bond strength values for uncracked concrete are applicable for structures assigned to Seismic Design Categories A and B only.

TABLE 9—INSTALLATION PARAMETERS FOR FRACTIONAL THREADED ROD AND REINFORCING BARS



PARAMETER	SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch) / REINFORCING BAR SIZE									
			3/8 or #3	1/2	#4	5/8 or #5	3/4 or #6	7/8 or #7	1 or #8	#9	1 1/4	#10
Threaded rod outside diameter	d	inch (mm)	0.375 (9.5)	0.500 (12.7)		0.625 (15.9)	0.750 (19.1)	0.875 (22.2)	1.000 (25.4)	N/A[1]	1.250 (31.8)	N/A[1]
Rebar nominal outside diameter	d	inch (mm)	0.375 (9.5)	0.500 (12.7)		0.625 (15.9)	0.750 (19.1)	0.875 (22.2)	1.000 (25.4)	1.125 (28.7)	N/A[1]	1.250 (31.8)
Carbide drill bit nominal size	d_o (d_{bit})	inch	7/16	9/16	5/8	11/16 or 3/4	7/8	1	1 1/8	1 3/8	1 3/8	1 1/2
Minimum embedment	$h_{ef,min}$	inch (mm)	2 3/8 (60)	2 3/4 (70)		3 1/8 (79)	3 1/2 (89)	3 1/2 (89)	4 (102)	4 1/2 (114)	5 (127)	5 (127)
Maximum embedment	$h_{ef,max}$	inch (mm)	4 1/2 (114)	6 (152)		7 1/2 (191)	9 (229)	10 1/2 (267)	12 (305)	13 1/2 (343)	15 (381)	15 (381)
Max. rod torque	T_{max}	ft-lbs	15	33		60	105	125	165	N/A[1]	280	N/A[1]
Max. torque[2] (A36/Grade 36 rod)	T_{max}	ft-lbs	10	25		50	90	125	165	N/A[1]	280	N/A[1]
Max. torque[3] (Class 1 SS rod)	T_{max}	ft-lbs	5	20		40	60	100	165	N/A[1]	280	N/A[1]
Minimum anchor spacing	s_{min}	inch (mm)	1 7/8 (48)	2 1/2 (64)		3 1/8 (79)	3 3/4 (95)	4 3/8 (111)	5 (127)	5 5/8 (143)	6 1/4 (159)	6 1/4 (159)
Minimum edge distance	c_{min}	inch (mm)	5d; or see Section 4.1.9 of this report for installation parameters with reduced minimum edge distances (with reduced torque)									
Minimum member thickness	h_{min}	inch (mm)	h_{ef} + 1 1/4 (h_{ef} + 30)			h_{ef} + 2d_o						

For **SI:** 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m. For **pound-inch** units: 1 mm = 0.03937 inch, 1 N-m = 0.7375 ft-lbf.

[1]N/A = Not Applicable.
[2]These values apply to ASTM A36 / F1554 Grade 36 carbon steel threaded rods.
[3]These values apply to ASTM A193 Grade B8/B8M (Class 1) stainless steel threaded rods.

FIGURE 3—AC100+ GOLD ADHESIVE ANCHOR SYSTEM INCLUDING TYPICAL STEEL ANCHOR ELEMENTS

TABLE 10—EXAMPLE OF AC100+ GOLD ADHESIVE ANCHOR ALLOWABLE STRESS DESIGN (ASD) VALUES FOR ILLUSTRATIVE PURPOSES[1,2,3,4,6,9,10,13,14,16,17]

NOMINAL ANCHOR ROD DIAMETER OR REBAR SIZE d (inch) / (No.)	EFFECTIVE EMBED.[5] h_{ef} (inches)	CONCRETE STRENGTH[12] f'_c (psi)	EFFECTIVE-NESS FACTOR FOR UNCRACKED CONCRETE k_{uncr}	CHARACTERISTIC BOND STRENGTH $\tau_{k,uncr}$ (psi)		NOMINAL STRENGTH IN TENSION N_n (pounds)		STRENGTH REDUCTON FACTOR ϕ[15]		ALLOWABLE TENSION LOAD[11] $\phi N_n / \alpha$ (pounds)	
				122°F LT, 176°F ST[7]	162°F LT, 248°F ST[8]	122°F LT, 176°F ST[7]	162°F LT, 248°F ST[8]	122°F LT, 176°F ST[7]	162°F LT, 248°F ST[8]	122°F LT, 176°F ST[7]	162°F LT, 248°F ST[8]
ASTM A193 Grade B7 Threaded Rod											
3/8	2 3/8	2,500	24	823	405	2,303	1,133	0.65 (bond)	0.65 (bond)	1,010	495
	4 1/2	2,500	24	823	405	4,363	2,147	0.65 (bond)	0.65 (bond)	1,915	945
1/2	2 3/4	2,500	24	823	405	3,555	1,749	0.65 (bond)	0.65 (bond)	1,560	765
	10	2,500	24	823	405	7,757	3,817	0.65 (bond)	0.65 (bond)	3,405	1,675
5/8	3 1/8	2,500	24	823	405	5,050	2,485	0.65 (bond)	0.65 (bond)	2,215	1,090
	12 1/2	2,500	24	823	405	12,120	5,964	0.65 (bond)	0.65 (bond)	5,325	2,620
3/4	3 1/2	2,500	24	823	405	6,787	3,340	0.65 (bond)	0.65 (bond)	2,980	1,465
	15	2,500	24	823	405	17,452	8,588	0.65 (bond)	0.65 (bond)	7,665	3,770
7/8	3 1/2	2,500	24	823	405	7,857	3,897	0.65 (conc)	0.65 (bond)	3,450	1,715
	17 1/2	2,500	24	823	405	23,755	11,690	0.65 (bond)	0.65 (bond)	10,430	5,135
1	4	2,500	24	743	366	9,337	4,599	0.65 (bond)	0.65 (bond)	4,100	2,020
	20	2,500	24	743	366	28,010	13,798	0.65 (bond)	0.65 (bond)	12,300	6,060
1 1/4	5	2,500	24	588	N/A	11,545	N/A	0.65 (bond)	N/A	5,070	N/A
	25	2,500	24	588	N/A	34,636	N/A	0.65 (bond)	N/A	15,215	N/A
ASTM A706 Grade 60 Reinforcing Bar											
3	2 3/8	2,500	24	823	405	2,303	1,133	0.65 (bond)	0.65 (bond)	1,010	495
	4 1/2	2,500	24	823	405	4,363	2,147	0.65 (bond)	0.65 (bond)	1,915	945
4	2 3/4	2,500	24	823	405	3,555	1,749	0.65 (bond)	0.65 (bond)	1,560	765
	10	2,500	24	823	405	7,757	3,817	0.65 (bond)	0.65 (bond)	3,405	1,675
5	3 1/8	2,500	24	823	405	5,050	2,485	0.65 (bond)	0.65 (bond)	2,215	1,090
	12 1/2	2,500	24	823	405	12,120	5,964	0.65 (bond)	0.65 (bond)	5,325	2,620
6	3 1/2	2,500	24	823	405	6,787	3,340	0.65 (bond)	0.65 (bond)	2,980	1,465
	15	2,500	24	823	405	17,452	8,588	0.65 (bond)	0.65 (bond)	7,665	3,770
7	3 1/2	2,500	24	823	405	7,857	3,897	0.65 (conc)	0.65 (bond)	3,450	1,715
	17 1/2	2,500	24	823	405	23,755	11,690	0.65 (bond)	0.65 (bond)	10,430	5,135
8	4	2,500	24	743	366	9,337	4,599	0.65 (bond)	0.65 (bond)	4,100	2,020
	20	2,500	24	743	366	28,010	13,798	0.65 (bond)	0.65 (bond)	12,300	6,060
9	4 1/2	2,500	24	665	329	11,545	5,233	0.65 (bond)	0.65 (bond)	5,070	2,295
	22 1/2	2,500	24	665	329	34,636	15,698	0.65 (bond)	0.65 (bond)	15,215	6,895
10	5	2,500	24	588	N/A	11,545	N/A	0.65 (bond)	N/A	5,070	N/A
	25	2,500	24	588	N/A	34,636	N/A	0.65 (bond)	N/A	15,215	N/A

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.448 N, 1 psi = 0.006894 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 N = 0.2248 lbf, 1 MPa = 145.0 psi.

[1]Single anchor with static tension load only; ASTM A193 Grade B7 threaded rod and ASTM A706 Grade 60 reinforcing bar.
[2]Vertical downward installation direction.
[3]Special inspection interval = Periodic.
[4]Installation temperature = 23°F (-5°C) to 104°F (40°C) for base material; 23°F (-5°C) to 95°F (35°C) for cartridge adhesive.
[5]Embedment = $h_{ef,min}$ and $h_{ef,max}$ for each diameter.
[6]Concrete determined to remain uncracked for the life of the anchorage.
[7]Long-term service temperature = 122°F (50°C), short-term service temperature = 176°F (80°C).
[8]Long-term service temperature = 162°F (72°C), short-term service temperature = 248F (120°C).
[9]Load combinations are based on ACI 318-19 Section 5.3, as applicable, with no seismic loading considered.
[10]Thirty percent (30%) dead load and seventy percent (70%) live load; controlling load combination $1.2D + 1.6L$.
[11]Calculation of weighted average for the conversion factor, $\alpha = 1.2(0.3) + 1.6(0.7) = 1.48$.
[12]f'_c = 2,500 psi compressive strength (normal-weight concrete).
[13]$c_{a1} = c_{a2} \geq c_{ac}$.
[14]$h \geq h_{min}$.
[15]Strength reduction factor from controlling nominal strength in tension [i.e. steel, concrete (conc), bond] decisive from design assumptions.
[16]Hammer-drilled holes in dry concrete.
[17]N/A = not applicable

TABLE 11— APPLICABLE SECTIONS OF THE IBC CODE UNDER EACH EDITION OF THE IBC

2024 IBC	2021 IBC	2018 IBC	2015 IBC
Section 1605.1		Section 1605.2 or 1605.3	
Section 1705.1.1			
Table 1705.3			
Section 1705			
Section 1706			
Section 1707			
Section 1901.3			
Section 1903			
Section 1905			
Section 1905.1.8	Section 1905.1.8		

TABLE 12— APPLICABLE SECTIONS OF ACI 318 UNDER EACH EDITION OF THE IBC

2024 IBC	2021 IBC	2018 IBC	2015 IBC
ACI 318-19		ACI 318-14	
2.3		2.3	
5.3		5.3	
Chapter 17		Chapter 17	
17.2.4		17.2.6	
17.3.1		17.2.7	
17.5.1		17.3.1.1	
17.5.1.2		17.3.1	
17.5.3		17.3.3	
17.6.1.2		17.4.1.2	
Eq. 17.6.1.2		17.4.1.2	
17.6.2		17.4.2	
17.6.2.2		17.4.2.2	
17.6.2.5		17.4.2.6	
17.6.5		17.4.5	
Eq 17.6.5.1.2b		Eq 17.4.5.1d	
Eq 17.6.5.2.1		Eq 17.4.5.2	
17.6.5.5		17.4.5.5	
Eq. 17.6.5.5.1b		Eq. 17.4.5.5b	
Eq. 17.6.5.5.1c		Eq. 17.4.5.5c	
17.7.1.2		17.5.1.2	
Eq. 17.7.1.2(b)		Eq. 17.5.1.2b	
17.7.2		17.5.2	
17.7.2.2		17.5.2.2	
17.7.3		17.5.3	
17.8		17.6	
17.9.2		17.7.1 and 17.7.3	
17.9.3		17.7.4	
17.9.5		17.7.6	
17.10		17.2.3	
17.10.5.3(a)(vi),		17.2.3.4.3(a)vi	
20.2.2.4 and 20.2.2.5		20.2.2.4 and 20.2.2.5	
26.6.3.2 (b)		26.6.3.1 (b)	
26.7.2		17.8.1 and 17.8.2	
26.7.1(l) and 26.7.2(e)		17.8.2.2 or 17.8.2.3	
26.13.3.2(e)		17.8.2.4, 26.7.1(h) and 26.13.3.2(c)	

AC100+ Gold Instruction Card

DESCRIPTION:
AC100+ Gold is an easy dispensing, rapid-curing, anchoring adhesive which is formulated for use in anchoring applications by trained professionals. Please refer to installation instructions and SDS for additional detailed information.

PRECAUTION:
Safety glasses and dust masks should be used when drilling holes into concrete, stone and masonry. Wear gloves and safety glasses when handling and dispensing adhesive. Do not sand the adhesive and create silica dust which could be inhaled. Avoid skin and eye contact. Use a NIOSH-approved chemical mask to avoid respiratory discomfort if working indoors or in a confined area, or if sensitive to adhesive odors. Wash hands or other affected body parts with soap and water if skin contact occurs. Flush eyes with plenty of water and seek immediate medical attention if eye contact occurs. Move to fresh air if adhesive odor begins to cause discomfort.

IMPORTANT! Before using, read and review Safety Data Sheet (SDS).
This product contains crystalline silica and as supplied does not pose a dust hazard. IARC classifies crystalline silica (quartz sand) as a Group I carcinogen based upon evidence among workers in industries where there has been long-term and chronic exposure (via inhalation) to silica dust; e.g. mining, quarry, stone crushing, refractory brick and pottery workers. This product does not pose a dust hazard; therefore, this classification is not relevant. However, if reacted (fully cured) product is further processed (e.g. sanded, drilled) be sure to wear proper respiratory and eye protection to avoid health risk.

HANDLING AND STORAGE:
Store in a cool, dry, well ventilated area at temperatures between 32°F (0°C) and 86°F (30°C). Do not freeze. Store and keep away from flame, heat and light. Keep partially used containers closed when not in use. Protect from damage.

Note expiration date on product label before use. Do not use expired product.
Partially used cartridges may be stored with hardened adhesive in the attached mixing nozzle. **Note:** If the cartridge is reused, attach a new mixing nozzle and discard the initial quantity of the anchor adhesive as described in the setting instructions.

DEWALT
701 East Joppa Road
Towson, MD 21286 U.S.A.
anchors@DEWALT.com
www.DEWALT.com
P: (800) 524-3244 **[N]**

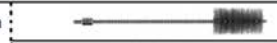
[V.] Adhesive piston plugs

Threaded rod size (inch)	Rebar size (no.)	Drill bit size (inch)	Piston plug size (Inch)	Piston Plug (Cat. #) Standard	Piston Plug (Cat. #) Premium	Horizontal and overhead installations[1,2]
5/8	#5	11/16	11/16	08258-PWR	PFC1691515	
		3/4	3/4	08259-PWR	PFC1691520	
3/4	#6	7/8	7/8	08300-PWR	PFC1691530	
7/8	#7	1	1	08301-PWR	PFC1691540	
1	#8	1 1/8	1 1/8	08303-PWR	PFC1691550	
1 1/4	#9	1 3/8	1 3/8	08305-PWR	PFC1691560	
-	#10	1 1/2	1 1/2	08309-PWR	PFC1691570	

[1]A plastic extension tube (Cat# 08281) or equivalent approved by DEWALT must be used with piston plugs.
[2] All listed overhead anchor installations require piston plugs; horizontal installations with embedments greater than 8 inches require piston plugs.

[I.] Hole cleaning tools - wire brushes and air blowers

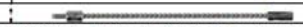
Threaded rod diameter (inch)	Rebar size (No.)	Drill bit size[1] (inch)	Brush length (inches)	Steel wire brush (Cat. #)
3/8	#3	7/16	6 3/4	08284
1/2	-	9/16	6 3/4	08285
-	#4	5/8	6 3/4	08275
5/8	#5	11/16	7 7/8	08286
		3/4	7 7/8	08278
3/4	#6	7/8	7 7/8	08287
7/8	#7	1	11 7/8	08288
1	#8	1 1/8	11 7/8	08289
1 1/4	#9	1 3/8	11 7/8	08290
-	#10	1 1/2	11 7/8	08291
A brush extension (Cat. #08282) must be used with brushes for holes drilled deeper than the listed brush length.				



Air blowers

Hand pump (volume 25 fl. oz.), Cat #08280-PWR or compressed air nozzle (min. 90 psi)

Compressed air nozzle only (min. 90 psi), Cat #08292-PWR or DFC165100



[1]For installations with 5/8-inch threaded rod and #5 rebar size, the preferred ANSI drill bit diameter is 3/4-inch. If an 11/16-inch ANSI drill bit is used the user must check before injecting the adhesive to verify that the steel anchor element can be inserted into the cleaned hole without resistance.

[II.] Gel (working) times and curing times

Temperature of base material		Gel (working) time	Full curing time
14°F	-10°C	90 minutes	24 hours
23°F	-5°C	90 minutes	14 hours
32°F	0°C	45 minutes	7 hours
41°F	5°C	25 minutes	2 hours
68°F	20°C	6 minutes	45 minutes
86°F	30°C	4 minutes	25 minutes
104°F	40°C	1.5 minutes	15 minutes

Linear interpolation for intermediate base material temperatures is possible. For installations in base material temperature between 14°F and 23°F the cartridge temperature must be conditioned to between 68°F and 95°F (20°C - 35°C).

[III.] Installation parameters - Specifications for installation of threaded rods and reinforcing bars

Anchor property / Setting information	Threaded rod (inch) / reinforcing bar size (rebar)								
	3/8 or #3	1/2	#4	5/8 or #5	3/4 or #6	7/8 or #7	1 or #8	#9	1 1/4	#10
d = Threaded rod outside diameter (in.)	0.375	0.500		0.625	0.750	0.875	1.000	-	1.250	-
d = Nominal rebar diameter (in.)	0.375	0.500		0.625	0.750	0.875	1.000	1.125	-	1.250
d_o (d_{bit}) = Nominal ANSI drill bit size (in.)	7/16	9/16	5/8	11/16 or 3/4	7/8	1	1 1/8	1 3/8	1 3/8	1 1/2
$h_{ef,min}$ = Minimum embedment (inches)	2 3/8	2 3/4		3 1/8	3 1/2	3 1/2	4	4 1/2	5	5
$h_{ef,max}$ = Maximum embedment (inches)	4 1/2	6		7 1/2	9	10 1/2	12	13 1/2	15	15
s_{min} = Minimum spacing (inches)	1 7/8	2 1/2		3 1/8	3 3/4	4 3/8	5	5 5/8	6 1/4	6 1/4
c_{min} = Minimum edge distance (inches)	1 3/4	1 3/4		1 3/4	1 3/4	1 3/4	1 3/4	2 3/4	2 3/4	2 3/4
h_{min} = Minimum member thickness (inches)	h_{ef} + 1 1/4			h_{ef} + $2d_o$						
T_{max} = Maximum rod torque (ft.-lb.)	15	33		60	105	125	165	-	280	-
T_{max} = Maximum torque (ft.-lb.) for A36/Grade 36 rod	10	25		50	90	125	165	-	280	-
T_{max} = Maximum torque (ft.-lb.) for Grade B8/B8M Class 1 rod	5	20		40	60	100	165	-	280	-

For installations between the minimum edge distance and 5d, the tabulated maximum torque must be reduced (multiplied) by a factor of 0.45.

[IV.] AC100+ Gold adhesive anchor system selection table

Injection tool		Plastic cartridge system	Mixing nozzle
Dispensers (caulking guns)	Cat. #08437-PWR – Manual tool Cat. #DCE560D1 – Cordless battery tool	AC100+ Gold 9.5 fl.oz. Quick-Shot w/nozzle	Mixing nozzle and extension tube Cat. #08293-PWR or PFC1641600
Manual dispensers	Cat. #08414-PWR – Manual tool	AC100+ Gold 14 fl.oz. coaxial cart. w/nozzle	
Manual and powered dispensers	Cat. #08494-PWR – Manual tool Cat. #08496-PWR – Pneumatic tool Cat. #DCE595D1 – Cordless battery tool	AC100+ Gold 28 fl.oz. dual cart. w/nozzle	Long mixing nozzle and extension tube Cat. #08294-PWR, 08609-PWR or PFC1641600

A plastic extension tube (Cat# 08281-PWR or 08297-PWR) or flexible extension hose (Cat# PFC1640600) or equivalent approved by DEWALT must be used if the bottom or back of the anchor hole is not reached with the mixing nozzle only.

FIGURE 4—MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS (MPII)

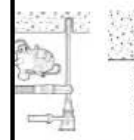
AC100+ Gold - Instruction Card (continued)

Installation instructions for Adhesive Anchors in solid base material – For any application not covered by this document please contact DEWALT

SELECT HAMMER DRILLING AS SUITABLE FOR APPLICATION

FOLLOW STEPS #1 THROUGH #10 FOR RECOMMENDED INSTALLATION

HAMMER DRILLING



1. Drill a hole into the base material with rotary hammer drill (i.e. percussion drill) and a carbide drill bit to the size and embedment required by the selected steel hardware element (see Table III). Tolerances of carbide drill bits including hollow drill bits must meet ANSI Standard B212.15.

Precaution: Wear suitable eye and skin protection. Avoid inhalation of dusts during drilling and/or removal (*see dust extraction equipment by DEWALT to minimize dust emissions*).

Notes: In case of standing water in the drilled hole (flooded hole condition), all the water has to be removed from the hole (e.g. vacuum, compressed air, etc.) prior to cleaning.

Drilling in dry concrete is recommended when using hollow drill bits (vacuum must be on).

HOLE CLEANING DRY OR WET HOLES

2a. Starting from the bottom or back of the drilled anchor hole, blow the hole clean a minimum of *four* times (4x).

Use a compressed air nozzle (min. 90 psi) for all sizes of anchor rod and reinforcing bar (rebar). Alternatively a hand pump (min. volume 25 fl. oz. supplied by DEWALT) may be used for anchor rods 3/8" to 3/4" diameter or reinforcing bar (rebar) sizes #3 to #5 for embedments not more than 8 inches (a hand pump must not be used with larger anchor sizes).

2b. Determine brush diameter (see Table I) for the drilled hole and attach the brush with adaptor to a rotary drill tool or battery screw gun. Brush the hole with the selected wire brush a minimum of *four* times (4x).

A brush extension (supplied by DEWALT) must be used for holes drilled deeper than the listed brush length. The wire brush diameter must be checked periodically during use; the brush should resist insertion into the drilled hole, if not the brush is too small and must be replaced with the proper brush diameter (i.e. new wire brush).

2c. Repeat Step 2a again by blowing the hole clean a minimum of *four* times (4x).

When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material. → **Next go to Step 3.**

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PREPARING

3. Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F - 104°F (-5°C - 40°C) when in use except as noted in Table II. Review published working and cure times. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures. For the permitted range of the base material temperature see Table II.

Attach a supplied mixing nozzle to the cartridge. Do not modify the mixer in any way and make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.

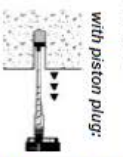
Note: Always use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published gel (working) time of the adhesive.

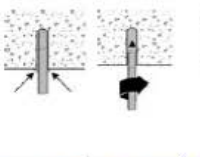
4. Prior to inserting the anchor rod or rebar into the filled hole, the position of the embedment depth has to be marked on the anchor. Verify anchor element is straight and free of surface damage.

5. Adhesive must be properly mixed to achieve published properties. Prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent gray color.

Review and note the published working and cure times (see Table II) prior to injection of the mixed adhesive into the cleaned anchor hole.

INSTALLATION





6. Fill the cleaned hole approximately two-thirds full with mixed adhesive starting from the bottom or back of the anchor hole. If the bottom or back of the anchor hole is not reached with the mixing nozzle only, a plastic extension tube must be used (see Table IV). Slowly withdraw the mixing nozzle as the hole fills to avoid creating air pockets or voids.

Note: Piston plugs (see Table V) must be used with and attached to mixing nozzle and extension tube for overhead and horizontal installations with anchor rod 5/8" to 1-1/4" diameter and rebar size #5 to #10. Insert piston plug to the back of the drilled hole and inject as described in the method above. During installation the piston plug will be naturally extruded from the drilled hole by the adhesive pressure.

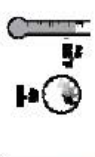
Attention! *Do not install anchors overhead without proper training and installation hardware provided by DEWALT; contact DEWALT prior to use.*

7. The anchor should be free of dirt, grease, oil or other foreign material. Push clean threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. Observe the gel (working) time.

8. Ensure that the anchor element is installed to the specified embedment depth. Adhesive must completely fill the annular gap at the concrete surface. Following installation of the anchor element, remove excess adhesive. Protect the anchor element threads from fouling with adhesive.

For all installations the anchor element must be restrained from movement throughout the specified curing period (where necessary) through the use of temporary wedges, external supports, or other methods. Minor adjustments to the position of the anchor element may be performed during the gel time only.

CURING AND FIXTURE



9. Allow the adhesive anchor to cure to the specified full curing time prior to applying any load (see Table II).

Do not disturb, torque or load the anchor until it is fully cured.

10. After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (shown in Table III) by using a calibrated torque wrench.

Note: Take care not to exceed the maximum torque for the selected anchor.

FIGURE 4—MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS (MPII) (continued)

DIVISION: 03 00 00—CONCRETE
Section: 03 16 00—Concrete Anchors

DIVISION: 05 00 00—METALS
Section: 05 05 19—Post-installed Concrete Anchors

REPORT HOLDER:

DEWALT

EVALUATION SUBJECT:

AC100+ GOLD® ADHESIVE ANCHOR SYSTEM IN CRACKED AND UNCRACKED CONCRETE (DEWALT)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that AC100+ Gold adhesive anchor system in cracked and uncracked concrete, described in ICC-ES evaluation report ESR-2582, has also been evaluated for compliance with the codes noted below as adopted by Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The AC100+ Gold adhesive anchor system in cracked and uncracked concrete, described in Sections 2.0 through 7.0 of the evaluation report ESR-2582, complies with LABC Chapter 19, and LARC, and is subject to the conditions of use described in this report.

3.0 CONDITIONS OF USE

The AC100+ Gold adhesive anchor system described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-2582.
- The design, installation, conditions of use and labeling of the anchor system are in accordance with the 2021 *International Building Code®* (IBC) provisions noted in the evaluation report ESR-2582.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.
- The allowable and strength design values listed in the evaluation report and tables are for the connection of the anchor system to the concrete. The connection between the anchor system and the connected members shall be checked for capacity (which may govern).
- For use in wall anchorage assemblies to flexible diaphragm applications, anchors shall be designed per the requirements of City of Los Angeles Information Bulletin P/BC 2023-071.

This supplement expires concurrently with the evaluation report, reissued February 2025.

DIVISION: 03 00 00—CONCRETE
Section: 03 16 00—Concrete Anchors

DIVISION: 05 00 00—METALS
Section: 05 05 19—Post-Installed Concrete Anchors

REPORT HOLDER:

DEWALT

EVALUATION SUBJECT:

AC100+ GOLD® ADHESIVE ANCHOR SYSTEM IN CRACKED AND UNCRACKED CONCRETE (DEWALT)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the AC100+ Gold Adhesive Anchor System in cracked and uncracked concrete, described in ICC-ES evaluation report ESR-2582, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2023 *Florida Building Code—Building*
- 2023 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The AC100+ Gold® Adhesive Anchor System in cracked and uncracked concrete, described in Sections 2.0 through 7.0 of the evaluation report ESR-2582, complies with the *Florida Building Code—Building* and the *Florida Building Code—Residential*. Thedesign requirements must bedetermined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential,* as applicable. The installation requirements noted in ICC-ES evaluation report ESR-2582 for the 2021 *International Building Code®* meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable.

Use of the AC100+ Gold® adhesive anchors has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and *Florida Building Code—Residential* with the following condition:

a) For connections subject to uplift, the connection must be designed for no less than 700 pounds (3114 N).

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official, when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued February 2025.

ICC-ES Evaluation Report

ESR-3200

Issued October 2024

Subject to renewal October 2025

This report also contains:

- **City of LA Supplement**
- **FL Supplement w/ HVHZ**

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DIVISION: 04 00 00—MASONRY Section: 04 05 19.16—Masonry Anchors	REPORT HOLDER: DEWALT	EVALUATION SUBJECT: AC100+ GOLD® ADHESIVE ANCHOR SYSTEM IN CRACKED AND UNCRACKED, GROUTED AND UNGROUTED CONCRETE MASONRY UNIT WALLS (DEWALT)	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, 2018, and 2015 *International Building Code®* (IBC)
- 2024, 2021, 2018, and 2015 *International Residential Code®* (IRC)

Main references of this report are for the 2024 IBC and IRC. See Table 10 and Table 11 for applicable sections of the code for previous IBC and IRC editions.

Property evaluated:

Structural

2.0 USES

The AC100+ Gold Adhesive Anchor System is used as anchorage in cracked and uncracked concrete masonry unit (CMU) walls to anchor building components to grouted and ungrouted lightweight, medium-weight, or normal-weight concrete masonry wall construction. The adhesive anchors are designed to resist static, wind, and earthquake (Seismic Design Categories A through F) tension and shear loads.

The adhesive anchors are an alternative to cast-in-place anchors described in Section 9.1.6 of TMS 402 as referenced in Section 2108.1 of the IBC. The anchor systems may also be used where an engineered design is submitted in accordance with IRC Section R301.1.3.

3.0 DESCRIPTION

3.1 General:

The AC100+ Gold Adhesive Anchor System is comprised of AC100+ Gold Adhesive two-component adhesive filled in cartridges, static mixing nozzles, dispensing tools, hole cleaning equipment and stainless steel mesh screen tubes (screen tubes are for use in ungrouted masonry / hollow CMU). The adhesive is used with continuously threaded steel rods and reinforcing bars installed in pre-drilled holes into concrete masonry walls.

Product names for the report holder are presented in the following table of this report:

Company Name	Adhesive Product Name
DEWALT	AC100+ Gold®
	AC100-PRO (outside the Americas)

Manufacturer's printed installation instructions (MPII) and parameters, included with each unit package, are shown in Figures 2 and 3 of this report.

3.2 Materials:

3.2.1 AC100+ Gold Adhesive: AC100+ Gold is an injectable, two-component adhesive. The two components are separated by means of a labeled dual-cylinder cartridge. The two components combine and react when dispensed through a static mixing nozzle, supplied by DEWALT, which is attached to the cartridge. The AC100+ Gold adhesive is available in 9.5-ounce (280 mL), 14-ounce (410 mL) and 28-ounce (825 mL) cartridges. Each cartridge label is marked with the adhesive expiration date. The shelf life, as indicated by the expiration date, applies to an unopened cartridge when stored in accordance with the manufacturer's recommendations.

3.2.2 Hole Cleaning Equipment:

3.2.2.1 Standard Equipment: Hole cleaning equipment is comprised of steel wire brushes supplied by DEWALT, and a compressed air nozzle or hand pump.

3.2.2.2 DEWALT Hollow Drill Bit System (DustX+™): The DEWALT hollow drill bit system shown in Figure A is comprised of DEWALT hollow drill bits with carbide tips conforming to ANSI B212.15 attached to a HEPA vacuum that has a minimum air flow rating of 90 cfm (150 m^3/h, 42 l/s), e.g. DWV015, DWV905M, DWV905H or equivalent approved by DEWALT. The vacuum dust extractor system removes the drilling dust during the drilling operation, eliminating the need for additional hole cleaning. DEWALT hollow drill bits may be used for 5/8- and 3/4-inch-diameter threaded rods and No. 5 and No. 6 steel reinforcing bars only in concrete masonry.

3.2.3 Dispensers: AC100+ Gold adhesive must be dispensed with manual, pneumatic dispensers, or electric powered dispensers supplied by DEWALT.

3.2.4 Steel Anchor Elements:

3.2.4.1 Threaded Steel Rods (For Use in Grouted Concrete Masonry and with Stainless Steel Mesh Screen Tubes in Hollow Masonry): Threaded steel rods must be clean and continually threaded (all-thread) in diameters described in Table 4 of this report. Carbon steel threaded rods may be furnished with a minimum of 0.0002-inch-thick (0.005 mm) zinc electroplated coating complying with ASTM B633, SC1; or a minimum 0.0021-inch-thick (0.053 mm) mechanically deposited zinc coating complying with ASTM B695, Class 55; or a hot dip galvanized zinc coating complying with ASTM A153, Class C or D. The stainless steel threaded rods must comply with Table 4 of this report. Steel grades and material types (carbon, stainless) of the washers and nuts must be matched to the threaded rods. Threaded steel rods must be straight and free of indentations or other defects along their length. The embedded end may be either flat cut or cut on the bias to a chisel point.

3.2.4.2 Steel Reinforcing Bars (For use in Grouted Concrete Masonry): Steel reinforcing bars must be deformed reinforcing bars (rebar) in sizes as described in Table 5 of this report. The embedded portions of reinforcing bars must be clean, straight, and free of mill scale, rust and other coatings (other than zinc) that may impair the bond with adhesive. Reinforcing bars must not be bent after installation except as set forth in ACI 318-19 Section 26.6.3.2 (b), with the additional condition that the bars must be bent cold, and heating of reinforcing bars to facilitate field bending is not permitted.

3.2.5 Screen Tubes: Stainless steel mesh screen tubes are used in hollow (ungrouted) CMU with the adhesive and threaded steel rods. The screen tubes hold the adhesive in position in the masonry wall face during the installation of the steel threaded rods and curing of the adhesive.

3.3 Masonry:

3.3.1 Grout-filled Concrete Masonry: The compressive strength of masonry, f'_m, at 28 days must be a minimum of 1,500 psi (10.3 MPa). Fully grouted masonry walls must comply with Chapter 21 of the IBC and must be constructed from the following materials:

3.3.1.1 Concrete Masonry Units (CMUs): Concrete masonry walls must be constructed from minimum lightweight, medium-weight, or normal-weight, closed-end or open-end, concrete masonry units (CMUs) conforming to ASTM C90. The minimum nominal size of the CMU must be 8 inches (203.2 mm) wide by 8 inches (203.2 mm) high by 16 inches (406.4 mm) long.

3.3.1.2 Grout (for Grout-filled Concrete Masonry): Grout-filled concrete masonry units must be fully grouted with grout complying with IBC Section 2103.3, or IRC Section R606.2.12. Alternatively, the grout must have a minimum compressive strength when tested in accordance with ASTM C1019 equal to its specified strength, but not less than 2,000 psi (13.8 MPa).

3.3.1.3 Mortar: Mortar must be Type M, S, or N prepared in accordance with IBC Section 2103.2.1 or IRC Section R606.2.8.

3.3.2 Hollow (Ungrouted) Concrete Masonry: The compressive strength of masonry, f'_m, at 28 days must be a minimum of 1,500 psi (10.3 MPa). Ungrouted concrete masonry must comply with Chapter 21 of the IBC and must be constructed from the following materials:

3.3.2.1 Concrete Masonry Units (CMUs): Concrete masonry walls must be constructed from minimum lightweight, medium-weight, or normal-weight, closed-end, concrete masonry units (CMUs) conforming to ASTM C90. The minimum nominal size of the CMU must be 8 inches (203.2 mm) wide by 8 inches (203.2 mm) high by 16 inches (406.4 mm) long.

3.3.2.2 Mortar: Mortar must be Type M, S, or N prepared in accordance with IBC Section 2103.2.1 or IRC Section R606.2.8.

4.0 DESIGN AND INSTALLATION

4.1 Strength Design of Anchors in Fully Grouted Concrete Masonry Unit Construction:

4.1.1 General: Sections 4.1 and 4.2 provide strength design requirements for anchors used in fully grouted concrete masonry unit construction, where anchors are used to transmit structural loads by means of tension, shear or a combination of tension and shear.

Strength design of adhesive anchors in fully grouted concrete masonry unit construction shall be conducted in accordance with the provisions for the design of adhesive anchors in concrete in *ACI 318-19 Chapter 17,* and TMS 402-22 as modified by the sections that follow. Design in accordance with this report cannot be conducted without reference to *ACI 318-19* with the deletions and modifications summarized in Table 1A and TMS 402-22 Eq. 9-5.

This report references sections, tables, and figures in both this report and ACI 318, with the following method used to distinguish between the two document references:

- References to sections, tables, and figures originating from ACI 318-19 are *italicized*. For example, Section 2.2 in ACI 318-19, will be displayed as *ACI 318-19 Section 2.2*.
- References to sections, tables, and figures originating from this report do not have any special font treatment, for example Section 4.1.2.

Where language from ACI 318 is directly referenced, the following modifications generally apply:

- The term “masonry” shall be substituted for the term “concrete” wherever it occurs.
- The modification factor to reflect the reduced mechanical properties for mixtures with lightweight aggregate and lightweight units, λ_a, shall be taken as 1.0.

The following terms shall be replaced wherever they occur:

***ACI 318-19* term**	**Replacement term**
f_c'	f_m'
N_{cb}, N_{cbg}	N_{mb}, N_{mbg}
N_a, N_{ag}	N_{ma}, N_{mag}
V_{cb}, V_{cbg}	V_{mb}, V_{mbg}
V_{cp}, V_{cpg}	V_{mp}, V_{mpg}

4.1.2 Restrictions for anchor placement are noted in Tables 2A and 2B and shown in Figure 1. For CMU construction with closed end blocks and hollow head joints, in addition to the ends and edges of walls, the nearest head joint on a horizontal projection from the anchor shall be treated as an edge for design purposes. The minimum distance from the nearest adjacent head joint shall be 2 inches (50.8 mm) as measured from the centerline of the head joint in CMU construction with hollow head joints. For anchor groups installed in CMU construction with solid head joints, the nearest head joint outside of the group on a horizontal projection to the group shall be treated as an edge. If open-ended units are employed, only the ends and edges of walls shall be considered for edge distance determination. For horizontal ledgers in fully-grouted CMU walls with hollow head joint applications, see Section 4.2.20.

4.2 ACI modifications required for design: Table 1A provides a summary of all applicable *ACI 318-19* and *ACI 318-14* sections for the design of adhesive anchors in masonry. Where applicable, modifying sections contained within this report are also provided.

4.2.1 *ACI 318-19 Section 17.1.1, 17.1.6 & 17.2.2* apply with the general changes prescribed in Section 4.1.1.

4.2.2 In lieu of *ACI 318-19 Section 17.1.2:* Design provisions are included for adhesive anchors that meet the assessment criteria of ICC-ES AC58.

4.2.3 *ACI 318-19 Section 17.1.4, 17.2.1, 17.4.1 & 17.5.1.3.1* apply with the general changes prescribed in Section 4.1.1.

4.2.4 In lieu of *ACI 318-19 Section 17.2.10:* The design of anchors in structures assigned to Seismic Design Category (SDC) C, D, E, or F shall satisfy the requirements of this section.

4.2.4.1 The design of anchors in the plastic hinge zones of masonry structures under earthquake forces is beyond the scope of this report.

4.2.4.2 The anchor or group of anchors shall be designed for the maximum tension and shear obtained from the design load combinations that include E, with E_h increased by Ω_o. The anchor design tensile strength shall satisfy the tensile strength requirements of Section 4.2.4.3.

4.2.4.3 The anchor design tensile force for resisting earthquake forces shall be determined from consideration of (a) through (c) for the failure modes given in Table 1B assuming the masonry is cracked unless it can be demonstrated that the masonry remains uncracked.

(a) ϕN_{sa} for a single anchor, or for the most highly stressed individual anchor in a group of anchors.

(b) (b) 0. 75 ϕN_{mb} or 0.75 $\phi N_{mbg.}$

(c) (c) 0.75 ϕN_{ma} or 0.75 $\phi N_{mag.}$

(d) (d) where ϕ is in accordance with Section 4.2.9.

4.2.4.4 Tables 4 and 5 contain the steel seismic reduction factors for grouted masonry for shear $\alpha_{V,seis}$ and Tables 7 and 8 contain the grouted masonry bond strength seismic reduction factors for tension $\alpha_{N,seis}$ (=1.0).

4.2.5 In lieu of *ACI 318-19 Section 17.5.1.3 & 17.5.2.2.1:* For anchors designed for sustained tension loading, *ACI 318-19 Section 17.5.2.2* shall be satisfied. For groups of anchors, *ACI 318-19 Eq. 17.5.2.2* shall be satisfied for the anchor that resists the highest sustained tension load. Inspection requirements for horizontal anchors designed for sustained tension loading shall be in accordance with *ACI 318-19 Section 26.13.3.2(e).* Installers of such anchors shall be qualified for the installation of the anchor type used.

4.2.6 *In lieu of ACI 318-19 Section 17.5.2*: The design of anchors shall be in accordance with Table 1B. In addition, the design of anchors shall satisfy Section 4.2.4 for earthquake loading and *ACI 318-19 Section 17.5.2.2* for anchors designed for sustained tensile loading.

4.2.7 *ACI 318-19 Section 17.5.2.2-17.5.2.3* applies with the general changes prescribed in Section 4.1.1.

4.2.8 ACI 318-19 Section 17.5.1.2 applies with the general changes prescribed in Section 4.1.1.

4.2.9 In lieu of *ACI 318-19 Section 17.5.3:* Strength reduction factor ϕ for anchors in masonry shall be as follows when the LRFD load combinations of ASCE 7 are used:

(a) For steel capacity of ductile steel elements as defined in *ACI 318-19 Section 2.3*, ϕ shall be taken as 0.75 in tension and 0.65 in shear. Where the ductility requirements of Section 3.2.4.3 are not met, ϕ shall be taken as 0.65 in tension and 0.60 in shear.

(b) For shear crushing capacity, ϕ shall be taken as 0.50.

(c) For cases where the nominal strength of anchors in masonry is controlled by masonry breakout in tension, ϕ shall be taken as 0.65.

(d) For cases where the nominal strength of anchors in masonry is controlled by masonry failure modes in shear, ϕ shall be taken as 0.70.

(e) For cases where the nominal strength of anchors in masonry is controlled by bond failure or pullout failure, ϕ shall be taken as 0.65 for anchors qualifying for Category 1 and 0.55 for anchors qualifying for Category 2.

4.2.10 *ACI 318-19 Section 17.6.1* applies with the general changes prescribed in Section 4.1.1.

4.2.11 In lieu of *ACI 318-19 Section 17.6.2.1*: The nominal breakout strength in tension, N_{mb} of a single anchor or N_{mbg} of a group of anchors, shall not exceed:

a. For a single anchor:

$$N_{mb} = \frac{A_{Nm}}{A_{Nmo}} \psi_{ed,N,m} \cdot \psi_{c,N,m} \cdot N_{b,m} \qquad (17.6.2.1a)$$

b. For a group of anchors:

$$N_{mbg} = \frac{A_{Nm}}{A_{Nmo}} \psi_{ec,N,m} \cdot \psi_{ed,N,m} \cdot \psi_{c,N,m} \cdot N_{b,m} \qquad (17.6.2.1b)$$

Factors $\psi_{ec,N,m}$,$\psi_{ed,N,m}$,$\psi_{c,N,m}$ are defined in *ACI 318-19 Section 17.6.2.3-17.6.2.5*. A_{Nm} is the projected masonry failure area of a single anchor or group of anchors that shall be approximated as the base of the rectilinear geometrical figure that results from projecting the failure surface outward $1.5h_{ef}$ from the centerlines of the anchor, or, in the case of a group of anchors, from a line through a row of adjacent anchors. A_{Nm} shall not exceed $n \cdot A_{Nmo}$, where n is the number of anchors in the group that resist tension. A_{Nmo} is the projected masonry failure area of a single anchor with an edge distance equal to or greater than $1.5h_{ef}$.

$$A_{Nmo} = 9h_{ef}^2 \qquad (17.6.2.1.4)$$

4.2.12 In lieu of ACI 318-19 Section 17.6.2.2: The basic masonry breakout strength of a single anchor in tension in cracked masonry, $N_{b,m}$, shall not exceed:

$$N_{b,m} = k_m\sqrt{f'_m}\ h_{ef}^{1.5} \qquad (17.6.2.2.1)$$

where

k_m = effectiveness factor for breakout strength in masonry

= $\alpha_{masonry} \cdot k_c$

k_c = *effectiveness factor for breakout strength in concrete*

= 17; and

$\alpha_{masonry}$ = reduction factor for the inhomogeneity of masonry materials in breakout and bond strength determination.

= 0.7

4.2.13 *ACI 318-19 Section 17.6.2.1.2 & 17.6.2.3-17.6.2.4* apply with the general changes prescribed in Section 4.1.1.

4.2.14 In lieu of *ACI 318-19 Section 17.6.2.5*: The basic masonry breakout strength of a single anchor in tension, $N_{b,m}$, must be calculated using the values of $k_{m,cr}$ and $k_{m,uncr}$ as described in Table 6. Where analysis indicates no cracking is anticipated, $N_{b,m}$ must be calculated using $k_{m,uncr}$ and $\Psi_{c,N,m}$ = 1.0.

4.2.15 *ACI 318-19 Section 17.6.2.6* need not be considered since the modification factor for post installed anchors, $\psi_{cp,N}$ is not included in Eq. 17.6.2.1a & b.

4.2.16 In lieu of *ACI 318-19 Section 17.6.5.1*: The nominal bond strength in tension, N_{ma} , of a single anchor or N_{mag} of a group of anchors, shall not exceed:

4.2.16.1 For a single anchor:

$$N_{ma} = \frac{A_{Na}}{A_{Nao}}\psi_{ed,Na} \cdot N_{ba,m} \qquad (17.6.5.1a)$$

4.2.16.2 For a group of anchors:

$$N_{mag} = \frac{A_{Na}}{A_{Nao}}\psi_{ec,Na} \cdot \psi_{ed,Na} \cdot N_{ba,m} \qquad (17.6.5.1b)$$

Factors $\psi_{ec,Na}$ and $\psi_{ed,Na}$ are defined in *ACI 318-19 Sections 17.6.5.3-17.6.5.4*. A_{Na} is the projected influence area of a single anchor or group of anchors that shall be approximated as a rectilinear area that projects outward a distance c_{Na} from the centerlines of the anchor, or in the case of a group of anchors, from a line through a row of adjacent anchors. A_{Na} shall not exceed nA_{Nao}, where $n$is the number of anchors in the group that resist tension. $A_{Nmo}$is the projected masonry failure area of a single anchor with an edge distance equal to or greater than c_{Na}.

$$A_{Nao} = (2c_{Na})^2 \qquad (17.6.5.1.2a)$$

where

$$c_{Na} = 10d_a\sqrt{\frac{\tau_{uncr}}{1100}} \qquad (17.6.5.1.2b)$$

and constant 1100 carries the unit of lb./in.^{2}

4.2.17 *In lieu of ACI 318-19 Section 17.6.5.2*: The basic bond strength of a single adhesive anchor in cracked masonry, $N_{ba,m}$, shall not exceed:

$$N_{ba,m} = \tau_{cr,m} \cdot \pi \cdot d_a \cdot h_{ef} \qquad (17.6.5.2.1)$$

The characteristic bond stresses $\tau_{cr,m}$ shall be taken from Tables 7 and 8. For adhesive anchors located in a region of a masonry member where analysis indicates no cracking at service load levels, $\tau_{uncr,m}$ shall be permitted to be used in place of $\tau_{cr,m}$ in *ACI 318-19 Eq. 17.6.5.2.1* and shall be taken as the value of $\tau_{k,uncr}$determined from Tables 7 and 8.

4.2.18 The following apply with the general changes prescribed in Section 4.1.1:

1. *ACI 318-19 Section 17.6.5.3-17.6.5.4.*
2. *ACI 318-19 Section 17.7.1 excluding Sections 17.7.1.2a & 17.7.1.2c*.
3. *ACI 318-19 Sections 17.7.2.1-17.7.2.2.1*.
4. *ACI 318-19 Section 17.7.2.1.2 & 17.7.2.3-17.7.2.4.*
5. *ACI 318-19 Section 17.7.2.6.*
6. *ACI 318-19 Section 17.7.3.*
7. *ACI 318-19 Section 17.2.5.*

4.2.19 In lieu of *ACI 318-19 Section 17.7.2.5:* For anchors located in a region of masonry construction where cracking is anticipated, $\psi_{m,V}$ shall be taken as 1.0. for cases where analysis indicates no cracking at service levels, it shall be permitted to take $\psi_{m,V}$ as 1.4.

[In addition to the ACI 318 provisions] Masonry crushing strength for anchors in shear shall be calculated in accordance with TMS 402-22 Eq. 9-5. The nominal strength of an anchor in shear as governed by masonry crushing, V_{mc}, shall be calculated using Eq. (4-1).

$$V_{mc} = 1750\sqrt[4]{f'_m A_{se,V}} \qquad (4\text{-}1)$$

4.2.20 Determination of shear capacity for anchors in horizontal ledgers in fully-grouted CMU walls with hollow head joint applications with an assumed masonry unit length of 16 inches, standard:

Where six or more anchors are placed at uniform horizontal spacing in continuous wood or steel ledgers connecting floor and roof diaphragms to fully grouted CMU walls constructed with hollow head joints (using closed-end block), the horizontal and vertical shear capacity of the anchors may be permitted to be calculated in accordance with Eq. (4-1.1) and Eq. (4-1.2), respectively, in lieu of ACI 318-19 Section 17.7.2.

$$V_{mb,horiz} = 0.75 \cdot V_{gov,horiz} \cdot \frac{12}{s_{horiz}} \qquad (4\text{-}1.1)$$

$$V_{mb,vert} = 0.75 \cdot V_{gov,vert} \cdot \frac{12}{s_{horiz}} \qquad (4\text{-}1.2)$$

where:

s_{horiz} = horizontal anchor spacing in the ledger, (in). For anchor spacings that are multiples of 8 inches, locate the first anchor in the ledger at least 2 inches from the head joint and the center of the block. For other anchor spacings, minimum edge distance as specified in the evaluation report shall apply.

$V_{gov,horiz}$ = min(V_{sa}, $V_{mb,4}$, V_{mc}, $V_{mp,4}$), (lb).

$V_{gov,vert}$ = min(V_{sa}, $2 \cdot V_{mb,4}$, V_{mc}, $V_{mp,4}$), (lb).

V_{sa} = shear capacity for a single anchor calculated in accordance with *ACI 318-19 Section 17.7.1.2,* (lb).

$V_{mb,4}$ = breakout capacity for a single anchor with edge distance of 4 inches, (lb).

V_{mc} = crushing capacity for a single anchor calculated in accordance with Eq. (3-1), (lb).

$V_{mp,4}$ = pryout capacity for a single anchor with edge distance of 4 inches, (lb).

4.2.21 In lieu of *ACI 318-19 Section 26.7.1(i):* The construction documents shall specify all parameters associated with the characteristic bond stress used for design in accordance with Section 4.2.16 and Section 4.2.17, including minimum age of masonry; masonry temperature range; moisture condition of masonry at time of installation; type of masonry, if applicable; and requirements for hole drilling and preparation.

4.2.22 *ACI 318-19 Section 26.7.2(e)* apply with the general changes prescribed in Section 4.1.1.

4.2.23 Interaction shall be calculated in compliance with *ACI 318-19 17.8* as follows:

For shear loads $V \leq 0.2V_{allowable,ASD}$, the full allowable load in tension shall be permitted.

For tensile loads $T \leq 0.2T_{allowable,ASD}$, the full allowable load in shear shall be permitted.

For all other cases:

$$\frac{T}{T_{allowable}} + \frac{V}{V_{allowable}} \leq 1.2$$

4.2.24 Satisfying the parabolic equation complying with *ACI 318-19 Section R17.8* may be used in lieu of satisfying Section 4.2.23. The parabolic equation is given as:

$$\left(\frac{N_{ua}}{\phi N_n}\right)^{5/3} + \left(\frac{V_{ua}}{\phi V_n}\right)^{5/3} = 1$$

4.3 Strength Design in Hollow (Ungrouted) Concrete Masonry Unit Construction:

4.3.1 General: This section provides strength design requirements for anchors used in ungrouted concrete masonry unit construction, where anchors are used to transmit structural loads by means of tension, shear or a combination of tension and shear.

4.3.2 The use of a DEWALT screen tube to prevent unrestricted flow of adhesive is required.

4.3.3 Anchors shall be designed for critical effects of factored loads as determined by elastic analysis. Plastic analysis shall not be permitted.

4.3.4 Group effects shall not be considered. Dimensional requirements specified in Table 2B shall be observed for the design of individual anchors as follows:

4.3.4.1 The critical edge distance, c_{cr}, is the smallest edge distance to consider full capacity of an individual anchor and the minimum edge distance, c_{min}, shall be the smallest distance an anchor may be installed with a reduced capacity per the multiplier listed in Table 2B. For anchors installed with edge distances between c_{cr} and c_{min}, capacities shall be linearly interpolated.

4.3.4.2 For anchor spacings less than the minimum spacing, s_{min}, the strength of the group shall equal the strength of a single anchor.

4.3.5 Seismic design requirements: Anchors designed in ungrouted CMU shall be in accordance with Section 4.2.4, as applicable. Table 9 contains the seismic tension and seismic shear reduction factors for ungrouted masonry $\alpha_{V,seis}$ and $\alpha_{N,seis}$ (=1.0), respectively.

4.3.6 Anchors designed for sustained tensile loading shall be in accordance with Section 4.2.5.

4.3.7 Strength design checks shall be in accordance with Table 1C. In addition, the design of anchors shall satisfy Section 4.2.4 for earthquake loading and Section 4.2.5 for anchors designed for sustained tensile loading.

4.3.8 The strength reduction factors, ϕ, shall be in accordance with Section 4.2.9, as applicable.

4.3.9 The nominal steel strength of anchors in tension shall be calculated in accordance with Section 4.2.10.

4.3.10 The nominal pullout strength of anchors in tension, $N_{k,ug}$, shall be taken from Table 9.

4.3.11 The nominal strength of anchors in shear, $V_{s,ug}$, shall be taken from Table 9.

4.3.12 The nominal steel strength of an anchor in shear, V_{sa}, shall be calculated in accordance with Section 4.2.18 (2).

4.3.13 The nominal strength of an anchor in shear as governed by crushing, V_{mc}, shall be calculated in accordance with Section 4.2.19.

4.3.14 Anchors designed for combinations of tension and shear shall satisfy the provisions of Section 4.3.23.

4.3.15 The provisions of Sections 4.2.18.7, 4.2.21, and 4.2.22 shall apply.

4.4 Strength Design in Partially Grouted Concrete Masonry Unit Construction:

4.4.1 In all cases, the minimum distance from hollow head joints shall be 2 inches as measured from the centerline of the head joint.

4.4.2 For cases where the location of grouted cells is known, the following provisions shall apply:

4.4.2.1 Group effects shall not be considered between anchors in grouted masonry and anchors in ungrouted masonry.

4.4.2.2 Anchors located in grouted cells shall be designed in accordance with Sections 4.1 and 4.2, whereby the distance to the extent of the ungrouted cell shall be taken as a free edge.

4.4.2.3 Anchors in ungrouted cells shall be designed in accordance with Section 4.3, whereby the use of a screen tube to prevent unrestricted flow of adhesive is required.

4.4.3 For cases where the location of grouted cells is unknown, the design of anchors shall be in accordance with Section 4.3.

4.4.4 Seismic design requirements: Anchors shall be designed accordance with Sections 4.2.4, 4.3.5, and 4.4, as applicable.

4.5 Conversion of Strength Design to Allowable Stress Design:

For adhesive anchors designed using load combinations in accordance with IBC Section 1605.1 (Allowable Stress Design) allowable loads shall be established using the equations below:

$$T_{allowable,ASD} = \frac{\phi N_n}{\alpha} \quad (4\text{-}2) \quad \text{and} \quad V_{allowable,ASD} = \frac{\phi V_n}{\alpha} \quad (4\text{-}3)$$

where

$T_{allowable,ASD}$ = Allowable tensile load (lb. or kN); $V_{allowable,ASD}$ = Allowable shear load (lb. or kN);

N_n = Lowest design strength of an anchor or anchor group in tension as determined in accordance with this report (lb. or kN);

V_n = Lowest design strength of an anchor or anchor group in shear as determined in accordance with this report (lb. or kN);

α = Conversion factor calculated as a weighted average of the load factors for the controlling load combination. In addition, α shall include all applicable factors to account for non-ductile failure modes and required overstrength; and

ϕ = Relevant strength reduction factor for load case and Anchor Category

4.6 Installation:

Installation parameters are provided in Tables 2A, 2B, 3, and in Figures A, 1, 2, and 3. Installation must be in accordance with ACI 318-19 26.7.2. Anchor locations must comply with this report and the plans and specifications approved by the building official. Installation must conform to the manufacturer's printed installation instructions as described in Figures 2 and 3. The nozzles, brushes, screen tubes, and dispensing tools supplied by the manufacturer must be used for anchor installation. The anchors must not be installed until the base material has reached its minimum designated compressive strength.

Anchors installed in the face of fully grouted CMU construction must be limited to the face shell of the CMU unit (center web and grouted cores) and the horizontal mortared bed joints, as indicated in Figure 1. Anchors installed in a T-joint, the hollow head joint, or the end webs of a CMU unit, as indicated in Figure 1, are outside the scope of this report.

For anchors installed in the top of fully grouted concrete masonry (CMU grouted cores and CMU webs), anchor location must comply with the minimum edge and end distances noted in Table 2A. Anchors installed in hollow head joints of fully grouted masonry are outside the scope of this report.

Anchors installed in the face of ungrouted CMU construction must use a DEWALT screen tube and are permitted in the face shell of the CMU unit (center web and ungrouted cores), the horizontal mortared bed joints, the T-joint, the hollow head joint, or the end webs of a CMU unit (no restrictions on installation location) as noted in Table 2B.

4.7 Special Inspection:

Anchors must be installed with special inspection. For the IBC and IRC, special inspection must conform to Sections 1704 and 1705 of the IBC.

At a minimum, periodic special inspection shall be provided for all anchors. Continuous special inspection shall be provided for anchors installed in horizontally inclined orientations and designed to resist sustained tension loads. In fully grouted walls, installation in head joints shall only be permitted in walls constructed with open-ended units, fully grouted bond beams or other types of construction where the head joint void is filled. In ungrouted walls, installation in head is permitted when installed with screen tubes.

The special inspector must be on the jobsite initially during anchor installation to verify anchor type, anchor dimensions, masonry type, masonry compressive strength, adhesive identification and expiration date, drill bit size and compliance with ANSI B212.15-1994, hole dimensions, hole cleaning procedures, installation outside of hollow head joints (in fully grouted masonry), anchor spacing, edge distances, masonry thickness, anchor embedment, tightening torque and adherence to the manufacturer's printed installation instructions.

The special inspector must verify the initial installations of each type and size of adhesive anchor by construction personnel on site. For periodic inspection, subsequent installations of the same anchor type and size by the same construction personnel shall be permitted to be performed in the absence of the special inspector. Any change in the anchor product being installed or the personnel performing the installation shall require an initial inspection. For ongoing installations over an extended period, the special inspector shall make regular inspections to confirm correct handling and installation of the product.

The special inspector must inspect and verify that anchor installation complies with this evaluation report and the manufacturers printed installation instructions.

5.0 CONDITIONS OF USE:

The AC100+ Gold® Adhesive Anchor System described in this report are suitable alternatives to what is specified in the codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 AC100+ Gold® adhesive anchors are identified and installed in accordance with this report and the manufacturer's printed installation instructions (MPII). In case of conflict, this report governs.

5.2 Anchors have been evaluated for use in cracked and uncracked grouted and ungrouted concrete masonry unit (CMU) construction with a minimum compressive strength of 1,500 psi (13.8 MPa) at the time of anchor installation.

5.3 Anchor sizes, dimensions, and minimum embedment depths must be as set forth in this report.

5.4 Construction documents prepared or reviewed by a registered design professional, where required by the statutes of the jurisdiction in which the project is to be constructed, specifying the AC100+ Gold® Adhesive anchors must indicate compliance with this evaluation report, applicable codes, and must be submitted to the code official for approval.

5.5 Anchors installed in the face or the top of fully grouted CMU masonry and the face of ungrouted CMU masonry may be used to resist short-term loading due to wind or seismic forces in structures assigned to Seismic Design Categories A through F under the IBC.

Loads applied to the anchors must be adjusted in accordance with Section 1605.1 of the 2024 IBC for strength design or allowable stress design.

5.6 Strength design values shall be established in accordance with Sections 4.1, 4.2, 4.3 and 4.4 of this report.

5.7 Allowable design values shall be established in accordance with Section 4.5 of this report.

5.8 Design of anchors in fully grouted CMU construction must avoid location of anchors in hollow head joints. For the design of anchors with screen tubes in ungrouted CMU construction, hollow head joint locations are permitted.

5.9 Since an ICC-ES acceptance criteria for evaluating data to determine the performance of adhesive anchors subjected to fatigue or shock loading is unavailable at this time, the use of these anchors under such conditions is beyond the scope of this report.

5.10 Adhesive anchors are permitted to be used to resist tension and shear forces in the face of wall installations only if consideration is given to the effects of elevated temperature conditions on anchor performance.

5.11 Anchors are not permitted to support fire-resistive construction. Where not otherwise prohibited by the applicable code, anchors are permitted for use with fire-resistance-rated construction provided that at least one of the following conditions is fulfilled:

- Anchors are used to resist wind or seismic forces only.
- Anchors that support fire-resistance-rated construction or gravity load-bearing structural elements are within a fire-resistance-rated envelope or a fire-resistance-rated membrane, are protected by approved fire-resistance-rated materials, or have been evaluated for resistance to fire exposure in accordance with recognized standards.
- Anchors are used to support nonstructural elements.

5.12 The design of anchors must be in accordance with the provisions for cracked masonry where analysis indicates that cracking may occur ($f_t > f_r$) in the vicinity of the anchor due to service loads or deformations over the anchor service life.

5.13 The AC100+ Gold® Adhesive Anchor System must be installed in holes created using a carbide-tipped masonry drill bit manufactured within the range of the maximum and minimum dimensions of ANSI B212.15-1994 in accordance with the instructions provided in Figures 2 and 3 of this report. A hammer-drill may be used to drill holes in ungrouted (hollow) masonry walls provided the maximum tool impact power is not exceeded as given in Table 2B.

5.14 The AC100+ Gold® Adhesive Anchor System may be installed in base materials having interior temperatures between 23°F (-5°C) and 104°F (40°C) at the time of installation. For installation of anchors in masonry where the temperature is below 41°F (21°C), the adhesive must be conditioned to a minimum temperature of 41°F (5°C). Installation of anchors in base materials having temperatures beyond this range is outside the scope of this report.

5.15 Special inspection, when required, must be provided in accordance with Section 4.7. Continuous special inspection must be provided for anchors designed to resist sustained tension loads.

5.16 Steel anchoring materials in contact with preservative-treated or fire-retardant-treated wood shall be of zinc-coated steel or stainless steel. The coating weights for zinc-coated steel shall be in accordance with ASTM A153 class C or D or ASTM B695 with a Class 55 min. coating.

5.17 Anchors shall not be torqued until adhesive cure time indicated in the MPII is fully reached.

5.18 Anchors are not permitted for overhead installations.

5.19 Use of uncoated or zinc electroplated carbon steel threaded rods is limited to dry, interior locations.

5.20 Hot-dipped galvanized carbon steel threaded rods with coating weights in accordance with ASTM A153 Class C and D, or stainless steel (AISI Type 304 or 316) threaded rods, are permitted for exterior exposure

or damp environments.

5.21 The AC100+ Gold adhesive is manufactured under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Adhesive Anchors in Cracked and Uncracked Masonry (AC58), dated January 2024, editorially revised October 2024.

6.2 Quality-control documentation.

7.0 IDENTIFICATION

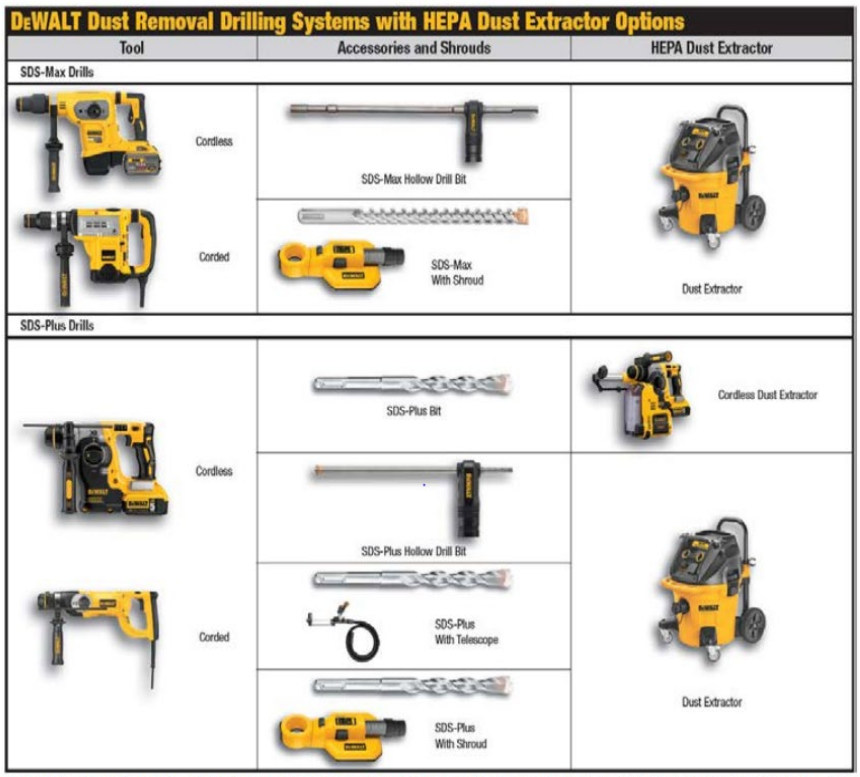
7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-3200) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the AC100+ Gold® is identified in the field by labels on the cartridge or packaging, bearing the company name (DEWALT), product name (AC100+ Gold®), the lot number, and the adhesive expiration date. The static mixing nozzles, dispensing tools, hole cleaning equipment, stainless steel screen tubes are identified by packaging label displaying the company name and the product name.

7.3 Threaded rods, nuts, washers and deformed reinforcing bars are standard elements and must conform to applicable national or international specifications.

7.4 The report holder's contact information is the following:

DEWALT
701 EAST JOPPA ROAD
TOWSON, MARYLAND 21286
(800) 524-3244
www.DEWALT.com
anchors@DEWALT.com



The DEWALT drilling systems shown below collect and remove dust with a HEPA dust extractor during the hole drilling operation in dry base materials using hammer-drills (see step 1 of the manufacturer's published installation instructions).

FIGURE A—EXAMPLES OF DEWALT DUST REMOVAL DRILLING SYSTEMS WITH HEPA DUST EXTRACTORS FOR ILLUSTRATION

TABLE 1A—ACI 318-19 AND ACI 318-14 SECTIONS APPLICABLE OR MODIFIED BY THIS REPORT FOR MASONRY DESIGN

ACI 318-19 Section	*ACI 318-14 Section*	Modified by this report Section:
2.2	*(2.2)*	unchanged*
2.3	*(2.3)*	
17.1.1 & 17.1.5	*(17.1.1 – 17.1.2)*	
17.1.2	*(17.1.3)*	Section 4.2.2
17.1.4, 17.2.1, 17.4.1, & 17.5.1.3.1	*(17.1.4 – 17.2.2)*	unchanged*
17.10	*(17.2.3)*	Section 4.2.4
17.5.1.3 & 17.5.2.2	*(17.2.5)*	Section 4.2.5
17.5.2	*(17.3.1.1)*	Section 4.2.6
17.5.2.2 – 17.5.2.3	*(17.3.1.2 – 17.3.1.3)*	unchanged*
17.5.1.2	*(17.3.2 excluding 17.3.2.1)*	
17.5.3	*(17.3.3)*	Section 4.2.9
17.6.1	*(17.4.1)*	unchanged*
17.6.2.1	*(17.4.2.1)*	Section 4.2.11
17.6.2.2	*(17.4.2.2)*	Section 4.2.12
17.6.2.1.2 & 17.6.2.3 – 17.6.2.4	*(17.4.2.3 – 17.4.2.5)*	unchanged*
17.6.2.5	*(17.4.2.6)*	Section 4.2.14
17.6.2.6	*(17.4.2.7)*	Section 4.2.15
17.5.2.1	*(17.4.2.9)*	unchanged*
17.6.5.1	*(17.4.5.1)*	Section 4.2.16
17.6.5.2	*(17.4.5.2)*	Section 4.2.17
17.6.5.3 – 17.6.5.4	*(17.4.5.3 – 17.4.5.4)*	unchanged*
17.7.1.1 – 17.7.2.2	*(17.5.1.1 – 17.5.2.2)*	
17.7.2.1.2 & 17.7.2.3 – 17.7.2.4	*(17.5.2.4 – 17.5.2.6)*	
17.7.2.6	*(17.5.2.8)*	
17.7.3	*(17.5.3)*	
17.8	*(17.6)*	
26.7.1	*(17.8.1)*	
17.7.2.5	(17.5.2.7)	Section 4.2.19
26.7.1(i)	*(17.8.2.1)*	Section 4.2.21
26.7.2(e)	*(17.8.2.4)*	unchanged*
R17.8	(R17.6)	

*Sections marked as unchanged adopt the general changes prescribed in Section 4.1.1.

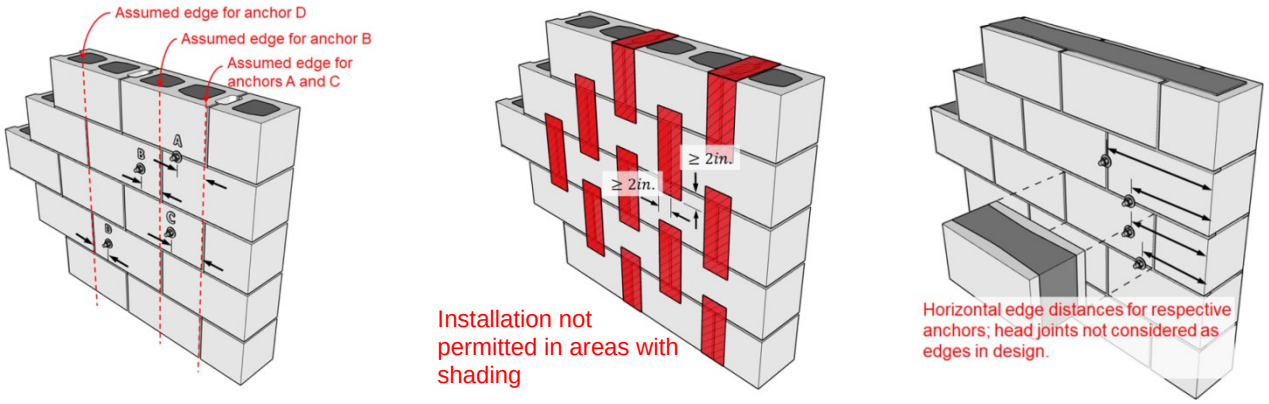
TABLE 1B—REQUIRED DESIGN STRENGTH OF ANCHORS IN GROUTED CMU

Failure mode	Single anchor	Anchor group[1]	
		Individual anchor in a group	Anchors as a group
Steel strength in tension	$\phi N_{sa} \geq N_{ua}$	$\phi N_{sa} \geq N_{ua,i}$	-
Masonry breakout strength in tension	$\phi N_{mb} \geq N_{ua}$	-	$\phi N_{mbg} \geq N_{ua,g}$
Bond strength in tension	$\phi N_{ma} \geq N_{ua}$	-	$\phi N_{mag} \geq N_{ua,g}$
Steel strength in shear	$\phi V_{sa} \geq V_{ua}$	$\phi V_{sa} \geq V_{ua,i}$	-
Masonry breakout strength in shear	$\phi V_{mb} \geq V_{ua}$	-	$\phi V_{mbg} \geq V_{ua,g}$
Masonry crushing strength in shear	$\phi V_{mc} \geq V_{ua}$	$\phi V_{mc} \geq V_{ua,i}$	-
Masonry pryout strength in shear	$\phi V_{mp} \geq V_{ua}$	-	$\phi V_{mpg} \geq V_{ua,g}$

[1]Required strengths for steel, pullout, and crushing failure modes shall be calculated for the most highly stressed anchor in the group.

TABLE 1C—REQUIRED DESIGN STRENGTH OF ANCHORS IN UNGROUTED CMU

Failure mode	Single anchor
Steel strength in tension	$\phi N_{sa} \geq N_{ua}$
Anchorage strength in tension	$\phi N_{k,ug} \geq N_{ua}$
Steel strength in shear	$\phi V_{sa} \geq V_{ua}$
Masonry anchor strength in shear	$\phi V_{s,ug} \geq V_{ua}$
Masonry crushing strength in shear	$\phi V_{mc,ug} \geq V_{ua}$



Hollow head joints

(a) *(b)*

Solid head joints

(c)

FIGURE 1—(a) Edge distance considerations in fully grouted CMU construction with hollow head joints, (b) exclusion zones in fully grouted construction with hollow head joints, and (c) edge distance considerations in fully grouted CMU construction with solid head joints . Note: dimensions to upper and lower edges omitted for clarity.

TABLE 2A — AC100+ GOLD ADHESIVE ANCHOR INSTALLATION SPECIFICATIONS FOR THREADED RODS AND REINFORCING BARS IN GROUTED MASONRY[2]

INSTALLATION INFORMATION		SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch) / REBAR SIZE (No.)							
				3/8	#3	1/2	#4	5/8	#5	3/4	#6
Drill Bit Diameter (ANSI)		d_o	inch	7/16		9/16	5/8	11/16	3/4	7/8	
Minimum Embedment Depth		$h_{ef,min}$	in. (mm)	2-3/8 (60)		2-3/4 (70)		3-1/8 (79)		3-1/2 (89)	
Maximum Embedment Depth[1]		$h_{ef,max}$	in. (mm)	7-1/2 (191)		10 (254)		10-3/8 (264)		10-3/8 (264)	
Minimum Masonry Thickness[1]		h_{min}	in. (mm)	7-5/8 (194)							
Minimum Edge Distance	Face of Wall	c_{min}	in. (mm)	2-1/4 (57)		3 (76)		3-3/4 (95)		4-1/2 (114)	
Minimum Anchor Spacing	Face of Wall	s_{min}	in. (mm)	2-1/4 (57)		3 (76)		3-3/4 (95)		4-1/2 (114)	
Minimum Edge Distance	Top of Wall	$c_{min,tow}$	in. (mm)	Not applicable		1-3/4 (45)	1-3/4 (45)	2 (51)	2-1/4 (57)	2-1/4 (57)	2-3/4 (70)
Minimum Anchor Spacing	Top of Wall	$s_{min,tow}$	in. (mm)	Not applicable		8 (203)		8 (203)		8 (203)	
Minimum End Distance	Top of Wall	$c_{min,tow,end}$	in. (mm)	Not applicable		3 (76)		3-3/4 (95)		4-1/2 (114)	
Maximum Tightening Torque		T_{max} (T_{inst})	ft-lbs. (N-m)	10 (14)		25 (34)		50 (68)		90 (122)	
Maximum Tightening Torque, Class 1 SS Rod[3]		T_{max} (T_{inst})	ft-lbs. (N-m)	5 (7)		20 (27)		40 (54)		60 (81)	

For **SI:** 1 inch = 25.4 mm, 1 ft-lb = 1.356 N-m.
[1]Maximum embedment for installation into the face of 7-5/8" CMU wall (8-inch nominal) is 6-1/8"; maximum embedment for installation into the face of 9-5/8" CMU wall (10-inch nominal) is 8-1/8"; maximum embedment for installation into the face of 11-5/8" CMU wall (12-inch nominal) is 10-1/8".
[2]The minimum distance from the center of an anchor to the centerline of a hollow head joint (vertical mortar joint) is 2" unless solid head joints are present; see Figure 1.
[3]These torque values apply to ASTM A193 Grade B8/B8M (Class 1) stainless steel threaded rods.

TABLE 2B — AC100+ GOLD ADHESIVE ANCHOR INSTALLATION SPECIFICATIONS FOR THREADED RODS WITH STAINLESS STEEL SCREEN TUBES IN UNGROUTED (HOLLOW) MASONRY

INSTALLATION INFORMATION		SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch) / REBAR SIZE (No.)				
				1/4	3/8	1/2	5/8	3/4
Drill Bit Diameter (ANSI)		d_o	in.	3/8	1/2	5/8	3/4	7/8
Minimum Embedment Depth		$h_{ef,min}$	in. (mm)	2 (51)	2 (51)	2 (51)	2 (51)	2 (51)
Minimum Masonry Thickness		h_{min}	in. (mm)	7-5/8 (194)				
Critical Edge Distance, Tension	Face of Wall	$c_{cr,N}$	in. (mm)	4 (102)				
Minimum Edge Distance, Tension	Face of Wall	$c_{min,N}$	in. (mm)	2 (51)				
Load Multiplier at Minimum Edge Distance[1]	Face of Wall	-	-	0.80				
Critical Edge Distance, Shear	Face of Wall	$c_{cr,V}$	in. (mm)	3 (76)	4-1/2 (114)	6 (152)	7-1/2 (191)	9 (229)
Minimum Edge Distance, Shear	Face of Wall	$c_{min,V}$	in. (mm)	1-1/2 (38)	2-1/4 (57)	3 (76)	3-3/4 (95)	4-1/2 (114)
Load Multiplier at Minimum Edge Distance[1]	Face of Wall	-	-	0.50				
Minimum Anchor Spacing[2]	Face of Wall	s_{min}	in. (mm)	8 (203)				
Maximum Tightening Torque		T_{max} (T_{inst})	ft-lbs. (N-m)	2 (3)	5 (7)	12 (16)	12 (16)	12 (16)
Maximum Tool Impact Power (Hammer-Drill)[3]		-	J	3.0		3.5		

For **SI:** 1 inch = 25.4 mm, 1 ft-lb = 1.356 N-m.
[1]The load multiplier at critical edge distance is 1.0. Load multiplier for edge distances between critical edge distance and minimum edge distance may be determined by linear interpolation.
[2]Minimum anchor spacing is equal to critical anchor spacing; load multiplier at minimum spacing distance is 1.0.
[3]A hammer-drill may be used to drill holes in ungrouted (hollow) masonry walls provided the maximum tool impact power is not exceeded.

TABLE 3 —GEL AND CURING TIMES FOR AC100+ GOLD ADHESIVE[1]

TEMPERATURE OF BASE MATERIAL		APPROXIMATE GEL (WORKING) TIME	FULL CURING TIME
14°F**	-10°C	90 minutes	24 hours
23°F	-5°C	90 minutes	14 hours
32°F	0°C	45 minutes	7 hours
41°F	5°C	25 minutes	2 hours
68°F	20°C	6 minutes	45 minutes
86°F	30°C	4 minutes	25 minutes
104°F	40°C	1.5 minutes	15 minutes

**Minimum temperature of base material is 14°F (-10°C) for concrete and 23°F (-5°C) for concrete masonry base materials. Cartridge temperature must be between 41°F to 95°F (5°C to 35°C) when in use for masonry.
[1]Linear interpolation to determine approximate gel and full curing times for intermediate base material temperatures is allowed.

TABLE 4 —STEEL DESIGN INFORMATION FOR COMMON FRACTIONAL THREADED RODS

DESIGN INFORMATION		SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)[1]				
				1/4	3/8	1/2	5/8	3/4
Threaded rod nominal outside diameter		d_a (d)	inch (mm)	0.250 (6.4)	0.375 (9.5)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)
Threaded rod effective cross-sectional area		A_{se}	inch² (mm²)	0.031 (20)	0.0775 (50)	0.1419 (92)	0.2260 (146)	0.3345 (216)
ASTM A36 and F1554, Grade 36	Nominal strength as governed by steel strength (for a single anchor)[4]	N_{sa}	lbf (kN)	1,800 (8.0)	4,495 (20.0)	8,230 (36.6)	13,110 (58.3)	19,400 (86.3)
		V_{sa}	lbf (kN)	1,080 (4.8)	2,695 (12.0)	4,940 (22.0)	7,860 (35.0)	11,640 (51.8)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM F1554, Grade 55	Nominal strength as governed by steel strength (for a single anchor)[4]	N_{sa}	lbf (kN)	-	-	10,640 (47.3)	16,950 (75.4)	25,085 (111.6)
		V_{sa}	lbf (kN)	-	-	6,385 (28.4)	10,170 (45.2)	15,050 (67.0)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	-	-	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM A193 Grade B7 and F1554, Grade 105	Nominal strength as governed by steel strength (for a single anchor)[4]	N_{sa}	lbf (kN)	3,875 (17.2)	9,685 (43.1)	17,735 (78.9)	28,250 (125.7)	41,810 (186.0)
		V_{sa}	lbf (kN)	2,325 (10.3)	5,815 (25.9)	10,640 (7.3)	16,950 (75.4)	25,085 (111.6)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM A449	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	3,720 (16.5)	9,300 (41.4)	17,025 (75.7)	27,120 (120.6)	40,140 (178.5)
		V_{sa}	lbf (kN)	2,230 (9.9)	5,580 (24.8)	10,215 (45.4)	16,270 (72.4)	24,085 (107.1)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM F593 CW Stainless (Types 304 and 316)	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	3,100 (13.8)	7,750 (34.5)	14,190 (63.1)	22,600 (100.5)	28,430 (126.5)
		V_{sa}	lbf (kN)	1,860 (9.0)	4,650 (20.7)	8,515 (37.9)	13,560 (60.3)	17,060 (75.9)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.65				
	Strength reduction factor for shear[2]	ϕ	-	0.60				
ASTM A193 Grade B8/B8M, Class 1 Stainless (Types 304 and 316)	Nominal strength as governed by steel strength (for a single anchor)[3]	N_{sa}	lbf (kN)	1,765 (7.9)	4,420 (19.7)	8,090 (36.0)	12,880 (57.3)	19,065 (84.8)
		V_{sa}	lbf (kN)	1,060 (4.7)	2,650 (11.8)	4,855 (21.6)	7,730 (34.4)	11,440 (50.9)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				
ASTM A193 Grade B8/B8M2, Class 2B Stainless (Types 304 and 316)	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	2,945 (13.1)	7,365 (32.8)	13,480 (60.0)	21,470 (95.5)	31,775 (141.3)
		V_{sa}	lbf (kN)	1,765 (7.9)	4,470 (19.7)	8,085 (36.0)	12,880 (57.3)	19,065 (84.8)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.75	0.75	0.75	0.75	0.75
	Strength reduction factor for tension[2]	ϕ	-	0.75				
	Strength reduction factor for shear[2]	ϕ	-	0.65				

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.448 N. For **pound-inch** units: 1 mm = 0.03937 inches, 1 N = 0.2248 lbf.

[1]Values provided for steel element material types based on minimum specified strengths and calculated in accordance with ACI 318-19 Eq. 17.6.1.2 and Eq. 17.7.1.2(b). Nuts must be appropriate for the threaded rod.

[2]The strength reduction factors, ϕ, apply when the LRFD load combinations from IBC Section 1605.1 are used.

[3]The calculated values for nominal tension and shear strength for ASTM A193 Grade B8/B8M Class 1 stainless steel threaded rods are based on limiting the specified tensile strength of the anchor steel to $1.9f_y$ or 57,000 psi (393 MPa).

[4]ASTM F1554 is not inclusive of threaded rods (anchor bolts) with diameters less than 1/2-inch.

TABLE 5—STEEL DESIGN INFORMATION FOR COMMON REINFORCING BARS (REBARS)

DESIGN INFORMATION		SYMBOL	UNITS	NOMINAL REINFORCING BAR SIZE (No.)[1]			
				#3	#4	#5	#6
Rebar nominal outside diameter		d_a (d)	inch (mm)	0.375 (9.5)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)
Rebar effective cross-sectional area		A_{se}	inch^2 (mm^2)	0.110 (71)	0.200 (129)	0.310 (200)	0.440 (284)
ASTM A615, Grade 75 or Grade 80	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	11,000 (48.9)	20,000 (89.0)	31,000 (137.9)	44,000 (195.7)
		V_{sa}	lbf (kN)	6,600 (29.4)	12,000 (53.4)	18,600 (82.7)	26,400 (117.4)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.65			
	Strength reduction factor for shear[2]	ϕ	-	0.60			
ASTM A615, Grade 60	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	8,800 (39.1)	16,000 (71.2)	24,800 (110.3)	35,200 (156.6)
		V_{sa}	lbf (kN)	5,280 (23.5)	9,600 (42.7)	14,880 (66.2)	21,120 (94.0)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.65			
	Strength reduction factor for shear[2]	ϕ	-	0.60			
ASTM A706, Grade 60	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	8,800 (39.1)	16,000 (71.2)	24,800 (110.3)	35,200 (156.6)
		V_{sa}	lbf (kN)	5,280 (23.5)	9,600 (42.7)	14,880 (66.2)	21,120 (94.0)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.75			
	Strength reduction factor for shear[2]	ϕ	-	0.65			
ASTM A615, Grade 40	Nominal strength as governed by steel strength (for a single anchor)	N_{sa}	lbf (kN)	6,600 (29.4)	12,000 (53.4)	18,600 (82.7)	26,400 (117.4)
		V_{sa}	lbf (kN)	3,960 (17.6)	7,200 (32.0)	11,160 (49.6)	15,840 (70.5)
	Reduction factor for seismic shear	$\alpha_{V,seis}$	-	0.70	0.70	0.70	0.70
	Strength reduction factor for tension[2]	ϕ	-	0.65			
	Strength reduction factor for shear[2]	ϕ	-	0.60			

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.448 N. For **pound-inch** units: 1 mm = 0.03937 inches, 1 N = 0.2248 lbf.

[1]Values provided for reinforcing bar material types based on minimum specified strengths and calculated in accordance with ACI 318-19 Eq. 17.6.1.2 and Eq. 17.7.1.2(b).

[2]The strength reduction factors, ϕ, apply when the LRFD load combinations from IBC Section 1605.1 are used.

TABLE 6 — AC100+ GOLD MASONRY BREAKOUT AND SHEAR CRUSHING DESIGN INFORMATION FOR THREADED RODS AND REINFORCING BARS IN FULLY GROUTED CMU

DESIGN INFORMATION	SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch) / REBAR SIZE (No.)			
			3/8" or #3	1/2" or #4	5/8" or #5	3/4" or #6
Nominal Diameter	d_a	inch	0.375	0.500	0.625	0.750
Minimum Embedment Depth	$h_{ef,min}$	inch (mm)	$2^3/_8$ (60)	$2^3/_4$ (70)	$3^1/_8$ (79)	$3^1/_2$ (89)
Effectiveness Factor for Cracked Masonry	$k_{m,cr}$	-	12			
Effectiveness Factor for Uncracked Masonry	$k_{m,uncr}$	-	17			
Strength Reduction Factor, Masonry Breakout Failure in Tension[1]	ϕ	-	0.65			
Strength Reduction Factor, Masonry Breakout Failure in Shear[1]	ϕ	-	0.70			
Strength Reduction Factor, Shear Crushing[1]	ϕ	-	0.50			

For **SI:** 1 inch = 25.4 mm, 1 ft-lb = 1.356 Nm.

[1]The strength reduction factors, ϕ, apply when the LRFD load combinations of IBC Section 1605.1 are used.

TABLE 7—BOND STRENGTH DESIGN INFORMATION FOR FRACTIONAL THREADED RODS IN FULLY GROUTED CMU[1]

DESIGN INFORMATION			SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)			
					$^3/_8$	$^1/_2$	$^5/_8$	$^3/_4$
Minimum embedment			$h_{ef,min}$	inch (mm)	$2^3/_8$ (60)	$2^3/_4$ (70)	$3^1/_8$ (79)	$3^1/_2$ (89)
Maximum embedment			$h_{ef,max}$	inch (mm)	$7^1/_2$ (191)	10 (254)	$10^3/_8$ (264)	$10^3/_8$ (264)
ANCHORS INSTALLED IN FACE OF MASONRY WALL								
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic bond strength in tension cracked masonry[3,7]		$\tau_{k,cr}$	psi (N/mm^2)	125 (0.9)	150 (1.0)	155 (1.1)	120 (0.8)
	Characteristic bond strength in tension cracked masonry, short-term loads only[7]				190 (1.3)	225 (1.6)	235 (1.6)	180 (1.2)
	Characteristic bond strength in tension uncracked masonry[3,6]		$\tau_{k,uncr}$	psi (N/mm^2)	350 (2.4)	325 (2.2)	295 (2.0)	265 (1.8)
	Characteristic bond strength in tension uncracked masonry, short-term loads only[6]				530 (3.7)	495 (3.4)	450 (3.1)	405 (2.8)
ANCHORS INSTALLED IN THE TOP OF MASONRY WALL								
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic bond strength in tension cracked masonry[3,7]		$\tau_{k,cr}$	psi (N/mm^2)	Not applicable	60 (0.4)	70 (0.5)	80 (0.6)
	Characteristic bond strength in tension cracked masonry, short-term loads only[7]				Not applicable	90 (0.6)	105 (0.7)	120 (0.8)
	Characteristic bond strength in tension uncracked masonry[3,6]		$\tau_{k,uncr}$	psi (N/mm^2)	Not applicable	130 (0.9)	135 (0.9)	175 (1.2)
	Characteristic bond strength in tension uncracked masonry, short-term loads only[6]				Not applicable	195 (1.3)	205 (1.4)	265 (1.8)
Permissible installation conditions[5]	Dry masonry	Anchor Category	-	-	1			
		Strength reduction factor[4]	ϕ_d	-	0.65			
	Water-saturated masonry	Anchor Category	-	-	2			
		Strength reduction factor[4]	ϕ_{ws}	-	0.55	0.55	0.55	0.55
		Modification factor for water-saturated masonry	κ_{ws}	-	0.50	0.65	0.90	1.0
Reduction factor for seismic tension[7]			$\alpha_{N,seis}$	-	1.0			

For **SI:** 1 inch = 25.4 mm, 1 psi = 0.006894 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 MPa = 145.0 psi.

See Table 8 Notes.

TABLE 8—BOND STRENGTH DESIGN INFORMATION FOR COMMON REINFORCING BARS IN FULLY GROUTED CMU[1]

DESIGN INFORMATION			SYMBOL	UNITS	NOMINAL REBAR SIZE (No.)			
					#3	#4	#5	#6
Minimum embedment			$h_{ef,min}$	inch (mm)	$2^3/_8$ (60)	$2^3/_4$ (70)	$3^1/_8$ (79)	$3^1/_2$ (89)
Maximum embedment			$h_{ef,max}$	inch (mm)	$7^1/_2$ (191)	10 (254)	$10^3/_8$ (264)	$10^3/_8$ (264)
ANCHORS INSTALLED IN FACE OF MASONRY WALL								
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic bond strength in tension cracked masonry[3,7]		$\tau_{k,cr}$	psi (N/mm^2)	120 (0.8)	135 (0.9)	170 (1.2)	140 (1.0)
	Characteristic bond strength in tension cracked masonry, short-term loads only[7]				185 (1.3)	205 (1.4)	255 (1.8)	215 (1.5)
	Characteristic bond strength in tension uncracked masonry[3,6]		$\tau_{k,uncr}$	psi (N/mm^2)	345 (2.4)	315 (2.2)	290 (2.0)	260 (1.8)
	Characteristic bond strength in tension uncracked masonry, short-term loads only[6]				520 (3.6)	480 (3.3)	440 (3.0)	395 (2.7)
ANCHORS INSTALLED IN THE TOP OF MASONRY WALL								
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic bond strength in tension cracked masonry[3,7]		$\tau_{k,cr}$	psi (N/mm^2)	Not applicable	55 (0.4)	100 (0.7)	95 (0.7)
	Characteristic bond strength in tension cracked masonry, short-term loads only[7]					85 (0.6)	150 (1.0)	145 (1.0)
	Characteristic bond strength in tension uncracked masonry[3,6]		$\tau_{k,uncr}$	psi (N/mm^2)	Not applicable	130 (0.9)	170 (1.2)	175 (1.2)
	Characteristic bond strength in tension uncracked masonry, short-term loads only[6]					195 (1.3)	255 (1.8)	265 (1.8)
Permissible installation conditions[5]	Dry masonry	Anchor Category	-	-	1			
		Strength reduction factor[4]	ϕ_d	-	0.65			
	Water-saturated masonry	Anchor Category	-	-	2			
		Strength reduction factor[4]	ϕ_{ws}	-	0.55	0.55	0.55	0.55
		Modification factor for water-saturated masonry	κ_{ws}	-	0.50	0.65	0.90	1.0
Reduction factor for seismic tension[7]			$\alpha_{N,seis}$	-	1.0			

For **SI:** 1 inch = 25.4 mm, 1 psi = 0.006894 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 MPa = 145.0 psi.

[1]Bond strength values correspond to a minimum masonry concrete compressive strength f'_m = 1,500 psi.
[2]Short-term elevated masonry temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Long-term masonry temperatures are roughly constant over significant periods of time. The maximum short-term service temperature may be increased to 176°F (80°C) provided characteristic bond strengths are reduced by 4 percent.
[3]Characterstic bond strength values are for sustained loads, including dead and live loads.
[4]The strength reduction factors, ϕ, apply when the LRFD load combinations of IBC Section 1605.1 are used.
[5]Permissible installation conditions include dry masonry and water-saturated masonry.
[6]Bond strength values for uncracked masonry are applicable for structures assigned to Seismic Design Categories A and B only.
[7]For structures assigned to Seismic Design Categories C, D, E or F, bond strength values for cracked masonry do not require an additional reduction factor applied for seismic tension ($\alpha_{N,seis}$ = 1.0), where seismic design is applicable.

TABLE 9—ANCHORAGE STRENGTH DESIGN INFORMATION FOR FRACTIONAL THREADED RODS IN UNGROUTED CMU[1]

DESIGN INFORMATION			SYMBOL	UNITS	NOMINAL ROD DIAMETER (inch)				
					$^1/_4$	$^3/_8$	$^1/_2$	$^5/_8$	$^3/_4$
Minimum embedment			$h_{ef,min}$	inch (mm)	2 (51)	2 (51)	2 (51)	2 (51)	2 (51)
110°F (43.3°C) Maximum long-term service temperature; 140°F (60°C) Maximum short-term service temperature[2]	Characteristic anchor strength in tension cracked masonry[3,7]		$N_{k,cr}$	lbf (kN)	70 (0.3)	115 (0.5)	110 (0.5)	85 (0.4)	85 (0.4)
	Characteristic anchor strength in tension cracked masonry, short-term loads only[7]				180 (0.8)	295 (1.3)	280 (1.2)	220 (1.0)	220 (1.0)
	Characteristic anchor strength in tension uncracked masonry[3,6]		$N_{k,uncr}$	lbf (kN)	140 (0.6)	230 (1.0)	215 (1.0)	175 (0.8)	175 (0.8)
	Characteristic anchor strength in tension uncracked masonry, short-term loads only[6]				360 (1.6)	590 (2.6)	555 (2.5)	445 (2.0)	445 (2.0)
	Characteristic anchor strength in shear cracked masonry[3,7]		$V_{k,cr}$	lbf (kN)	180 (0.8)	295 (1.3)	280 (1.2)	220 (1.0)	220 (1.0)
	Characteristic anchor strength in shear uncracked masonry[3,6]		$V_{k,uncr}$	lbf (kN)	360 (1.6)	590 (2.6)	555 (2.5)	445 (2.0)	445 (2.0)
Permissible installation conditions[5]	Dry masonry	Anchor Category	-	-	1				
		Strength reduction factor[4]	ϕ_d	-	0.65				
	Water-saturated masonry	Anchor Category	-	-	1	2	2	2	2
		Strength reduction factor[4]	ϕ_{ws}	-	0.65	0.55	0.55	0.55	0.55
		Modification factor for water-saturated masonry	κ_{ws}	-	1.0	0.50	0.65	0.90	1.0
Reduction factor for seismic tension[7]			$\alpha_{N,seis}$	-	1.0				
Reduction factor for seismic shear[7]			$\alpha_{V,seis}$	-	0.75				

For **SI:** 1 inch = 25.4 mm, 1 psi = 0.006894 MPa. For **pound-inch** units: 1 mm = 0.03937 inch, 1 MPa = 145.0 psi.

[1]Strength values correspond to ungrouted units with a minimum net masonry concrete compressive strength f'_m = 1,500 psi.
[2]Short-term elevated masonry temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling. Long-term masonry temperatures are roughly constant over significant periods of time. The maximum short-term service temperature may be increased to 176°F (80°C) provided characteristic bond strengths are reduced by 37 percent.
[3]Characterstic strength values are for sustained loads, including dead and live loads.
[4]The strength reduction factors, ϕ, apply when the LRFD load combinations of IBC Section 1605.1 are used.
[5]Permissible installation conditions include dry masonry and water-saturated masonry.
[6]Strength values for uncracked masonry are applicable for structures assigned to Seismic Design Categories A and B only.
[7]For structures assigned to Seismic Design Categories C, D, E or F, strength values for cracked masonry do not require a reduction factor applied for seismic tension ($\alpha_{N,seis}$ = 1.0); For seismic shear a reduction factor $\alpha_{V,seis}$ = 0.75 must be applied to the characteristic anchor strength in cracked masonry $V_{k,cr}$ where seismic design is applicable.

TABLE 10— APPLICABLE SECTIONS OF THE IBC CODE UNDER EACH EDITION OF THE IBC AND IRC

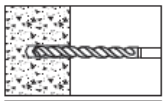
IBC			
2024 IBC	**2021 IBC**	**2018 IBC**	**2015 IBC**
Section 1605.1		Section 1605.2 or 1605.3	
Section 1704			
Section 1705			
Section 1705.1.1			
Chapter 21			
Section 2103.2.1			
Section 2103.3			
Section 2108.1			
IRC			
2024 IRC	**2021 IRC**	**2018 IRC**	**2015 IRC**
Section R301.1.3			
Section R606.2.8			Section R606.2.7
Section R606.2.12			Section R606.2.11

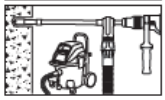
TABLE 11— APPLICABLE SECTIONS OF TMS 402 UNDER EACH EDITION OF THE IBC

2024 IBC	2021 IBC	2018 IBC	2015 IBC
TMS 402-22	TMS 402-16		TMS 402-13
Section 8.1.4	Section 8.1.3		Section 8.1.4
Section 9.1.6			
Eq. 9-5	Eq. 9-7		

INSTALLATION INSTRUCTIONS (SOLID BASE MATERIALS)

DRILLING



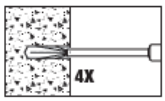


1- Drill a hole into the base material with rotary hammer drill (i.e. percussion drill) and a carbide drill bit to the size and embedment required by the selected steel hardware element (reference installation specifications for threaded rod and reinforcing bar). The tolerances of the carbide drill bits, including hollow bits, must meet ANSI Standard B212.15.

- Precaution: Use suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal (see optional dust extraction equipment supplied by DEWALT to minimize dust emission).
- Note! In case of standing water in the drilled hole (flooded hole condition), all the water has to be removed from the hole (e.g. vacuum, compressed air, etc.) prior to cleaning.
- Drilling in dry base material is necessary when using hollow drill bits (vacuum must be on); not for use in wet concrete or masonry.

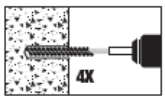
GO TO STEP 3 FOR HOLES DRILLED WITH DUSTX+™ DRILLING AND CLEANING SYSTEM; OTHERWISE GO TO STEP 2A.

HOLE CLEANING



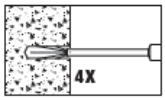
2a- Starting from the bottom or back of the anchor hole, blow the hole clean using a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl. oz.) supplied by DEWALT) a minimum of four times (4x).

- Use a compressed air nozzle or a hand pump for anchor rod diameters 3/8" to 3/4" or reinforcing bar (rebar) sizes #3 to #6.
- Use a compressed air nozzle for anchor rod diameter 7/8" to 1-1/4" and rebar sizes #7 to #10. Do not use a hand pump for these sizes.



2b- Determine wire brush diameter (see installation specifications) and attach the brush with adaptor to a rotary drill tool or battery screwgun. Brush the hole with the selected wire brush a minimum of four times (4x). A brush extension (supplied by DEWALT) should be used for holes drilled deeper than the listed brush length.

- Note! The wire brush diameter should be checked periodically during use. The brush should resist insertion into the drilled hole and come into contact with the sides of the drilled hole. If not the brush is too small and must be replaced.



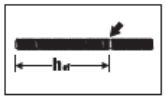
2c- Finally, blow the hole clean again using a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl.oz.) supplied by DEWALT a minimum of four times (4x).

- Use a compressed air nozzle or a hand pump for anchor rod diameters 3/8" to 3/4" or reinforcing bar (rebar) sizes #3 to #6.
- Use a compressed air nozzle for anchor rod diameters 7/8" to 1-1/4" and rebar sizes #7 to #10. Do not use a hand pump for these sizes. When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

PREPARING

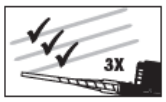
3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F to 95°F (-5°C to 35°C) when in use for concrete unless otherwise noted. Cartridge temperature must be between 41°F to 95°F (5°C to 35°C) when in use for masonry. Review gel (working) and cure time table. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures.

- Remove cap from cartridge.
- Attach a supplied mixing nozzle to the cartridge. Unless otherwise noted do not modify the mixer in any way. Make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.
- Note! Use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published gel (working) time of the adhesive.



4- Prior to inserting the anchor rod or rebar into the drilled hole, the position of the embedment depth has to be marked on the anchor.

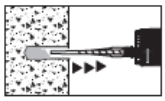
- Verify anchor element is straight and free of surface damage.



5- Adhesive must be properly mixed to achieve published properties. For new cartridges and nozzles, prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent **GRAY** color.

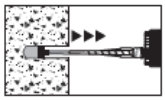
- Unless otherwise noted, do not attach a used nozzle when changing to a new cartridge.
- Review and note the published working and cure times (see gel time and curing time table) prior to injection of the mixed adhesive into the cleaned anchor hole.

INSTALLATION

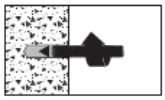


6- Fill the cleaned hole approximately two-thirds full with mixed adhesive starting from the bottom or back of the anchor hole. Slowly withdraw the mixing nozzle as the hole fills to avoid creating air pockets or voids. If the bottom or back of the anchor hole is not reached with the mixing nozzle only, a plastic extension tube supplied by DEWALT must be used with the mixing nozzle (see reference tables for installation).

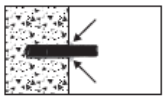
WITH PISTON PLUG:



- Piston plugs must be used with and attached to mixing nozzle and extension tube for overhead (i.e. upwardly inclined) installations and horizontal installations with anchor sizes as indicated in the piston plug selection table. Insert piston plug to the back of the drilled hole and inject as described in the method above. During installation the piston plug will be naturally extruded from the drilled hole by the adhesive pressure.
- Attention! Do not install anchors overhead without proper training and installation hardware provided by DEWALT. Contact DEWALT for details.

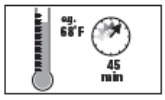


7- The anchor should be free of dirt, grease, oil or other foreign material. Push clean threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. Observe the gel (working) time.



8- Be sure the rod or rebar is fully seated at the bottom of the hole to the specified embedment. Adhesive must completely fill the annular gap between the anchor and the base material. Protect exposed anchor threads from fouling with adhesive. For all installations the anchor must be restrained from movement throughout the specified curing period (as necessary) where necessary through the use of temporary wedges, external supports, or other methods. Minor adjustments to the position of the anchor element may be performed during the gel (working) time only.

CURING AND LOADING



9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load (reference gel time and curing time table).

- Do not disturb, torque or load the anchor until it is fully cured.

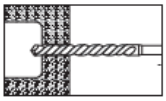
10- After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (reference gel time and curing table) by using a calibrated torque wrench.

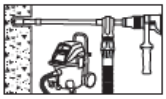
- Note! Take care not to exceed the maximum torque for the selected anchor.

FIGURE 2—MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPII), SOLID BASE MATERIALS

INSTALLATION INSTRUCTIONS (UNREINFORCED MASONRY [URM WALLS] AND HOLLOW BASE MATERIALS)

DRILLING



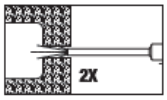


1- Drill a hole into the base material with a rotary drill tool to the size and embedment required by the selected screen tube size and steel anchor element (see installation specifications for threaded rod in hollow base material with screen tube supplied by DEWALT). Holes drilled in hollow concrete masonry units may be drilled with a rotary hammer-drill. The tolerances of the drill bit, including hollow drill bits, must meet the requirements of ANSI B212.15.

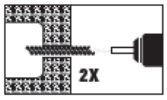
- Precaution: Wear suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal (see dust extraction by DEWALT to minimize dust emission).
- Drilling in dry base materials is necessary when using hollow drill bits (vacuum must be on); not for use in wet concrete or masonry.

GO TO STEP 3 FOR HOLES DRILLED WITH DUSTX+™ DRILLING AND CLEANING SYSTEM; OTHERWISE GO TO STEP 2.

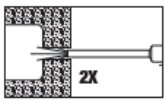
HOLE CLEANING (BLOW 2X, BRUSH 2X, BLOW 2X)



2- Starting from the bottom or back of the anchor hole, blow the hole clean with a hand pump with min. volume 25 fl.oz. supplied by DEWALT (Cat #08280-PWR) or compressed air nozzle a minimum of two times (2x).



- Determine the wire brush diameter (see installation specifications) and attach the brush with adaptor to a rotary drill tool or battery screw gun. Brush the hole with the selected wire brush a minimum of two times (2x). A brush extension supplied by DEWALT (Cat. #08282-PWR) should be used for holes drilled deeper than the listed brush length.
- Note! The wire brush should be checked periodically during use. The brush should resist insertion into the drilled hole and come into contact with the sides of the drilled hole. If not the brush is too small and must be replaced.



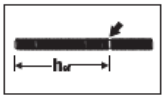
- Finally, blow the hole clean again a minimum of two times (2x)

When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

PREPARING

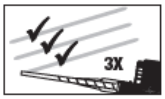
3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F to 95°F (-5°C to 35°C) when in use for concrete unless otherwise noted. Cartridge temperature must be between 41°F to 95°F (5°C to 35°C) when in use for masonry. Review gel (working) and cure time table. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures.

- Remove cap from cartridge.
- Attach a supplied mixing nozzle to the cartridge. Unless otherwise noted do not modify the mixer in any way. Make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.
- Note! Use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published gel (working) time of the adhesive.



4- Prior to inserting the anchor rod or rebar into the drilled hole, the position of the embedment depth has to be marked on the anchor.

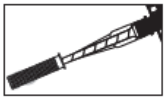
- Verify anchor element is straight and free of surface damage.



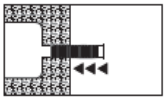
5- Adhesive must be properly mixed to achieve published properties. For new cartridges and nozzles, prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent **GRAY** color.

- Unless otherwise noted, do not attach a used nozzle when changing to a new cartridge.
- Review and note the published working and cure times (see gel time and curing time table) prior to injection of the mixed adhesive into the cleaned anchor hole.

INSTALLATION

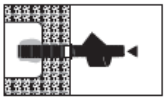


6- Select a screen tube of suitable length supplied by DEWALT. Fill the screen tube full with adhesive starting from the bottom or back of the tube. Slowly withdraw the mixing nozzle as the screen fills to avoid creating air pockets or voids. A plastic extension tube must be used with the mixing nozzle if the back of the screen tube cannot be reached (see reference tables for installation).



7- Insert the screen tube filled with adhesive into the cleaned anchor hole. Inject additional adhesive into the screen tube as necessary to ensure the screen tube is completely filled.

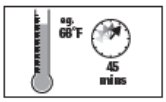
- Note! Overfilling the screen tube is acceptable but not required.



8- Prior to inserting the anchor rod into the screen tube inspect it to ensure that it is free of dirt, grease, oil or other foreign material.

- Push the threaded rod into the screen tube while turning slightly to ensure positive distribution of the adhesive until back of the tube is reached.
- Note: In cases where the drilled hole size is larger than specified due to rotary drilling (e.g. an elongated opening), the annular space between the screen tube and the hole at the base material surface must be filled with adhesive.

CURING AND FIXTURE



9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load.

- Do not disturb, torque or load the anchor until it is fully cured (see gel time and curing time table).

10- After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (see installation specifications for threaded rod in hollow base material) by using a calibrated torque wrench.

- Note! Take care not to exceed the maximum torque for the selected anchor.

FIGURE 3—MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPII), HOLLOW BASE MATERIALS

DIVISION: 04 00 00—MASONRY
Section: 04 05 19.16—Masonry Anchors

REPORT HOLDER:

DEWALT

EVALUATION SUBJECT:

AC100+ GOLD® ADHESIVE ANCHOR SYSTEM IN CRACKED AND UNCRACKED, GROUTED AND UNGROUTED CONCRETE MASONRY UNIT WALLS (DEWALT)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that AC100+ Gold adhesive anchor system in cracked and uncracked, grouted and ungrouted concrete masonry unit walls, described in ICC-ES evaluation report ESR-3200, has also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LABC)

2.0 CONCLUSIONS

The AC100+ Gold adhesive anchor system in cracked and uncracked, grouted and ungrouted concrete masonry unit walls, described in Sections 2.0 through 7.0 of the evaluation report ESR-3200, complies with LABC Chapter 21 and the LARC, and is subjected to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The AC100+ Gold adhesive anchor system described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-3200.
- The design, installation, conditions of use and labeling of the anchor system are in accordance with the 2021 *International Building Code®* (IBC) provisions noted in the evaluation report ESR-3200.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16, 17, and the City of Los Angeles Information Bulletin P/BC 2023-092, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.
- The allowable and strength design values listed in the evaluation report and tables are for the connection of the anchor system to masonry substrate. The connection between the anchor system and the connected members shall be checked for capacity (which may govern).
- For use in wall anchorage assemblies to flexible diaphragm applications, anchors shall be designed per the requirements of City of Los Angeles Information Bulletin P/BC 2023-071.

This supplement expires concurrently with the evaluation report, issued October 2024.

DIVISION: 04 00 00—MASONRY
Section: 04 05 19.16—Masonry Anchors

REPORT HOLDER:

DEWALT

EVALUATION SUBJECT:

AC100+ GOLD® ADHESIVE ANCHOR SYSTEM IN CRACKED AND UNCRACKED, GROUTED AND UNGROUTED CONCRETE MASONRY UNIT WALLS (DEWALT)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the AC100+ Gold® Adhesive Anchor System in cracked and uncracked, grouted and ungrouted concrete masonry unit walls, described in ICC-ES evaluation report ESR-3200, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2023 *Florida Building Code—Building*
- 2023 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The AC100+ Gold® Adhesive Anchor System in cracked and uncracked, grouted and ungrouted concrete masonry unit walls, described in Sections 2.0 through 7.0 of the evaluation report ESR-3200, complies with the *Florida Building Code—Building* and the *Florida Building Code—Residential.* The design requirements must be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential,* as applicable. The installation requirements noted in ICC-ES evaluation report ESR-3200 for the 2021 *International Building Code®* meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential,* as applicable.

Use of the AC100+ Gold® Adhesive Anchor System has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and the *Florida Building Code—Residential* with the following conditions:

a) Design and installation must meet the requirements in Section 2122.7 of the *Florida Building Code—Building*.

b) For anchorage of wood members, the connections subject to uplift must be designed for no less than 700 pounds (3114 N).

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official, when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, issued October 2024.

ICC-ES Evaluation Report

ESR-4105

Reissued August 2024

Revised December 2024

Subject to renewal August 2025

This report also contains:

- **City of LA Supplement**

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DIVISION: 04 00 00—MASONRY Section: 04 05 19.16—Masonry Anchors	REPORT HOLDER: DEWALT	EVALUATION SUBJECT: AC100+ GOLD® ADHESIVE ANCHORING SYSTEM IN UNREINFORCED MASONRY (DEWALT)	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, 2018, 2015, 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2024, 2021, 2018, 2015, 2012, 2009 and 2006 *International Residential Code®* (IRC)
- 2024, 2021, 2018, 2015, 2012, 2009 and 2006 *International Existing Building Code®* (IEBC)

Main references of this report are for the 2024 IBC, IRC and IEBC. See Table 4 and Table 5 for applicable sections of the code for previous editions.

Property evaluated:

- Structural

2.0 USES

Adhesive anchors installed using the AC100+ Gold Adhesive Anchoring System are post-installed adhesive anchors used for anchoring threaded steel rods or deformed steel reinforcement bars in unreinforced brick masonry. Adhesive anchors installed in unreinforced masonry with the AC100+ Gold adhesive anchoring system are designed to resist short-term loads imposed by earthquake or wind, as noted in Section 4.0 of this report.

The adhesive anchors are an alternative to anchors described in Section 8.1.4 of TMS 402, as referenced in Section 2107.1 of the IBC. The adhesive anchors are an alternative to bolts described in Section A107.4 and Section A113.1 of the IEBC. The anchoring system may also be used where an engineered design is submitted in accordance with Section R301.1.3 of the IRC.

3.0 DESCRIPTION

3.1 General:

The AC100+ Gold Adhesive Anchoring System is comprised of a two-component adhesive filled in cartridges, static mixing nozzles, dispensing tools, hole cleaning equipment, a steel anchor element, and steel mesh screen tubes.

Product names for the report holder is presented in the following table of this report.

Company Name	Adhesive Product Name
DEWALT	AC100+ Gold®
	AC100-PRO (outside North America)

The adhesive is used with continuously threaded steel rods and deformed reinforcing bars; the adhesive, screen tubes, and steel elements are installed in pre-drilled holes into masonry walls as described in this report.

3.2 Materials:

3.2.1 AC100+ Gold adhesive: The AC100+ Gold adhesive is a two-component adhesive that is packaged in dual-cylinder plastic cartridges to keep the adhesive components separate and allow for multiple uses. The components combine and react when dispensed with a manual or powered tool through a disposable injection mixing nozzle containing an internal mixing element supplied by DEWALT. The mixing nozzle may be replaced to permit multiple uses of the plastic cartridges. AC100+ Gold adhesive is available in 9.5-ounce (280 mL), 11.5-ounce (345 mL) and 28-ounce (825 mL) cartridges. Each cartridge label is marked with the adhesive expiration date. A shelf life, as indicated by the expiration date, applies to an unopened cartridge when stored in accordance with the manufacturer's recommendations.

3.2.2 Steel Anchor Rods and Reinforcing Bars: Threaded steel rods must be $^3/_4$-inch (19.1 mm) diameter and must comply with ASTM A36, ASTM F1554, Grade 36 or ASTM A307. The $^3/_4$-inch (19.1 mm) diameter threaded rods may also be used in a pre-bent $22^1/_2$-degree configuration (threaded rods must not be bent after installation). Threaded rods must be supplied with hex nuts conforming to ASTM A563 Grade A. Material types of the nuts and washers must be matched to the threaded rods. Deformed steel reinforcing bars must be No. 4, No. 5 or No. 6 and must comply with ASTM A615, A706, A767 or A996, Grade 60.

3.2.3 Steel Screen Tubes: Steel mesh screen tubes are used in the unreinforced masonry with the adhesive and threaded steel anchor rods or deformed reinforcing bars. The screen tubes hold the adhesive in position in unreinforced masonry wall during the installation of the steel anchor elements.

3.3 Unreinforced Masonry:

The existing unreinforced masonry walls must have a minimum nominal thickness of 13 inches (330 mm) [3 wythes of brick]. The average in-place mortar shear strength of the building's unreinforced masonry determined in accordance with IEBC Section A106.2.3 must be no less than 40 psi (275 kPa) net.

4.0 DESIGN AND INSTALLATION

4.1 General:

Two types of anchor assemblies are available: these assemblies are described as Configuration A (shear anchor or rebar dowel) and Configuration B ($22^1/_2$-degree combination anchor).

4.1.1 Configuration A, Threaded Rods or Steel Reinforcing Bars in Shear (Shear Anchor or Rebar Dowel): Configuration A is the anchor assembly resisting shear loads only, where the outside face of the wall is inaccessible. Configuration A consists of a $^3/_4$-inch-diameter (19.1 mm) threaded rod or a No. 4, 5 or No. 6 reinforcing bar and a $^{15}/_{16}$-inch-diameter-by-8-inch-long (23.8 mm by 203 mm) steel screen tube. Figure 1 shows details of an anchor installed in Configuration A.

4.1.2 Configuration B, Threaded Rods in Tension and Shear ($22^1/_2$-degree Combination Anchor): Configuration B is the anchor assembly resisting a combination of tension and shear loads where the outside face of the wall is not accessible. The anchor must be installed in the wall at an angle of $22^1/_2$ degrees in the vertical plane (upward or downward from the horizontal). Configuration B consists of a $^3/_4$-inch-diameter (19.1 mm), prebent threaded rod used with a $^{15}/_{16}$-inch-by-13-inch-long (23.8 mm by 330 mm) steel screen tube. The threaded rod must be embedded a minimum of 13 inches (330 mm) at the $22^1/_2$-degree downward angle. Figure 2 shows details of an installed Configuration B.

4.2 Design:

Adhesive anchors installed using the AC100+ Gold Adhesive Anchoring System are intended to resist only short-term loads imposed by wind or earthquake. The adhesive anchors must be approved by a registered design professional and installed under special inspection in accordance with Section 4.5 of this report. The edge distance and vertical and horizontal spacing for the anchor assemblies described in Section 4.1 must comply with Table 2.

Conditions of acceptance for threaded rods and reinforcing bars in unreinforced brick masonry are as follows:

4.2.1 Configuration A, Threaded Rods or Steel Reinforcing Bars in Shear (Shear Anchor or Rebar Dowel):

a. Installation of assemblies using threaded rods or reinforcing bars in Configuration A intended to resist shear loads only must comply with Sections 4.1.1 and 4.3, and Figure 1 of this report.
b. The allowable shear load for the $^3/_4$-inch-diameter (19.1 mm) threaded rod is 1,000 pounds (4,450 N), as shown in Table 3. For the No. 4, No. 5 and No. 6 reinforcing bars, the allowable shear loads are 500, 750 and 1,000 pounds (2,225, 3,338, and 4,450 N), respectively, as shown in Table 3. No adjustment for wind or earthquake loading is permitted.

c. The allowable shear loads noted above are applicable only to anchors installed in walls where in-place shear tests indicate a minimum mortar strength of 40 psi (275 kPa) net in accordance with IEBC Section A106.2.3.

4.2.2 Configuration B, Threaded Rods in Tension and Shear (22$^1/_2$-degree Combination Anchor):

a. Installation of assemblies using threaded rods in Configuration B intended to resist a combination of tension and shear loads must comply with Sections 4.1.2 and 4.3, and Figure 2 of this report.

b. The maximum allowable tension load for the $^3/_4$-inch-diameter (19.1 mm) prebent threaded rod (Configuration B) is 1,200 pounds (5,340 N), as shown in Table 3. No adjustment for wind or earthquake loading is permitted.

c. The maximum allowable shear load for the $^3/_4$-inch-diameter (19.1 mm) prebent threaded rod is 460 pounds (2,045 N), as shown in Table 3. No adjustment for wind or earthquake loading is permitted.

d. For the $^3/_4$-inch-diameter (19.1 mm) prebent threaded rod subjected to combined tension and shear, the allowable combined load must be determined using the following equation:

$$(P_s/P_t) + (V_s/V_t) \leq 1$$

where:

P_s = Applied service tension load.

P_t = Allowable service tension load.

V_s = Applied service shear load.

V_t = Allowable service shear load.

e. The allowable tension and shear values as determined above are applicable only to anchors installed in walls where in-place shear tests indicate minimum mortar strength of 40 psi (275 kPa) net in accordance with IEBC Section A106.2.3.

4.3 Installation:

4.3.1 General: Adhesive anchors must be installed in accordance with this report and the manufacturer's published installation instructions (MPII) as represented in Figure 3. The drill bit size, hole diameter, embedment depth, spacing, edge distance and base material must comply with the requirements of this report. Gel and curing times for the AC100+ Gold adhesive and the respective masonry temperature during installation and cure are shown in Table 1. The adhesive anchors must be installed under special inspection in accordance with Section 4.5 of this report.

4.3.2 Configuration A, Threaded Rods or Steel Reinforcing Bars in Shear (Shear Anchor or Rebar Dowel): For Configuration A, vertical and horizontal anchor spacing and edge distances must comply with Table 2 of this report. 1-inch-diameter (25.4 mm) holes must be drilled using standard carbide-tipped masonry drill bits complying with ANSI Specification B212.15-1994. The holes must be drilled 8 inches (203 mm) deep and perpendicular to the wall. A rotary drill, or a rotary hammer drill set on "rotation only," must be used to drill the holes. Figure 1 illustrates an anchor installed in Condition A. Figure 3 illustrates the MPII including drilling, hole cleaning, adhesive injection with screen tubes, anchor insertion, curing and attachment.

4.3.3 Configuration B, Threaded Rods in Tension and Shear (22$^1/_2$-degree Combination Anchor): For Configuration B, anchor spacing and edge distances must comply with Table 2 of this report. 1-inch-diameter (25.4 mm) holes must be drilled using standard carbide-tipped masonry drill bits complying with ANSI Specification B212.15-1994. Holes must be at a 22$^1/_2$-degree downward angle (measured from horizontal) to within one inch (25.4 mm) of the opposite wall surface, to a minimum depth of 13 inches (330 mm). A rotary drill, or a rotary hammer drill set on "rotation only," must be used to drill the holes. Figure 2 illustrates an anchor installed in Condition B. Figure 3 illustrates the MPII including drilling, hole cleaning, adhesive injection with screen tubes, anchor insertion, curing and attachment.

4.4 Field Tests:

a. Tests for in-place mortar shear strength of the building must be conducted in accordance with Section A106.2.3 of the IEBC. In-place mortar shear strengths shall indicate a minimum mortar strength of 40 psi (275 kPa).

b. Adhesive anchors resisting tension forces or a combination of tension and shear forces must be tested in accordance with Section A107.4 of the IEBC. The test report must include:

1. Test location(s)
2. Brick/mortar condition
3. Bolt movement/elongation
4. Embedment depth and masonry wall thickness
5. Applied load, loading procedure, load increments, and rate of loading.

4.5 Special Inspection:

4.5.1 IBC and IRC: Continuous special inspection must be conducted in accordance with Sections 1704 and 1705 of the IBC.

4.5.2 IEBC: Periodic inspection, direct-tension tests, and calibrated torque wrench tests must be conducted in accordance with Section A107.4 of the IEBC. In lieu of testing and periodic inspection, the IEBC permits continuous special inspection during installation of anchors resisting shear forces only.

5.0 CONDITIONS OF USE:

Adhesive anchors installed using the AC100+ Gold Adhesive Anchoring System in Unreinforced Masonry described in this report comply with, or are a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Use and installation must be as set forth in this evaluation report and the manufacturer's printed installation instructions (MPII) illustrated in Figure 3 of this report. In case of conflict, this report governs.

5.2 Calculations and details must be submitted to the code official for approval.

5.3 Special inspection must be in accordance with Section 4.5 of this evaluation report.

5.4 Use of the anchor system must be approved by the registered design professional.

5.5 The existing mortar shall have a minimum in-place shear strength of 40 psi (275kPa) in accordance with Section 3.3 of this report prior to installation of the adhesive anchors.

5.6 Adhesive anchors must be limited to resisting transient or short-term (wind or seismic) loads only.

5.7 Anchors are installed in holes predrilled with a carbide-tipped masonry drill bit complying with ANSI B212.15-1994. Holes must be drilled using a rotary drill, or a rotary hammer drill set on "rotation only" (non-impact). Impact tools must not be used for drilling holes or for tightening steel anchors or nuts.

5.8 The AC100+ Gold Adhesive Anchoring System is manufactured under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Anchors in Unreinforced Masonry Elements (AC60), dated December 2009 (editorially revised November 2024); and quality-control documentation.

7.0 IDENTIFICATION

7.1 AC100+ Gold adhesive cartridges are identified by labels on the cartridge or packaging bearing the company name (DEWALT), product name, the batch number, the expiration date, and the evaluation report number (ESR-4105). The screen tubes are identified by packaging label displaying the company name and product name. Threaded rods, nuts, washers, and deformed reinforcing bars are standard elements and must conform to applicable national or international specifications.

7.2 The report holder's contact information is the following:

DEWALT
701 EAST JOPPA ROAD
TOWSON, MARYLAND 21286
(800) 524-3244
www.DEWALT.com
anchors@DEWALT.com

The DEWALT drilling systems shown below collect and remove dust with a HEPA dust extractor during the hole drilling operation in dry base materials using hammer-drills set to “rotation only” (non-impact). See step 1 of the manufacturer’s printed installation instructions.

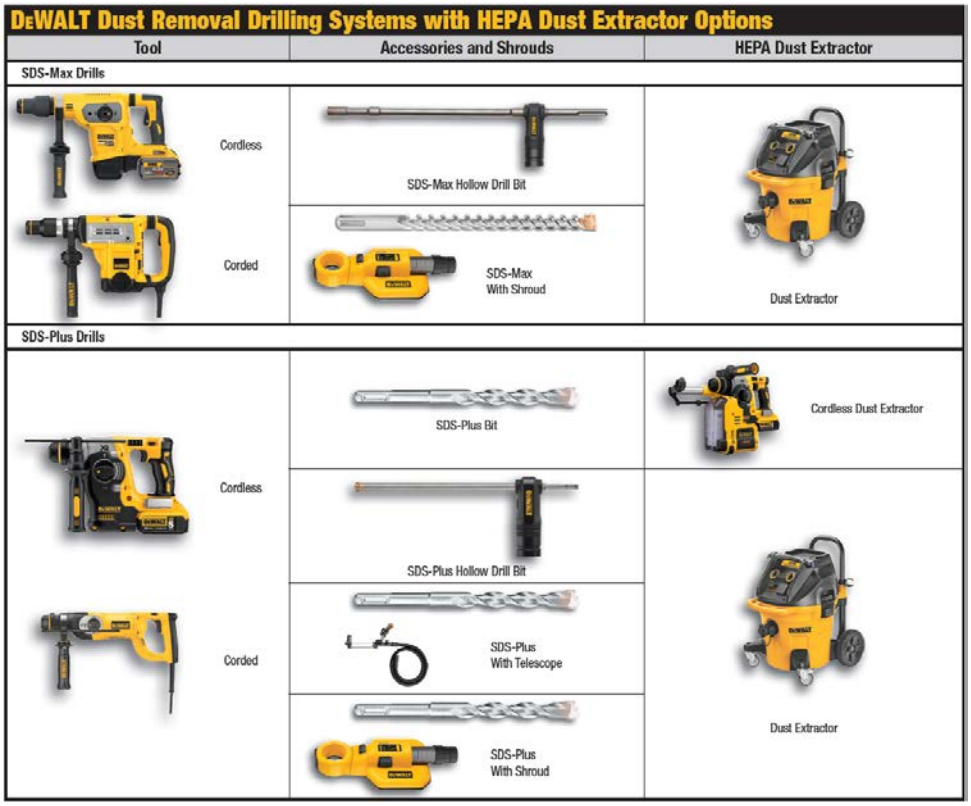


FIGURE A—EXAMPLES OF DEWALT DUST REMOVAL DRILLING SYSTEMS WITH HEPA DUST EXTRACTORS FOR ILLUSTRATION

TABLE 1—GEL AND CURING TIMES FOR AC100+ GOLD ADHESIVE[1]

Temperature of base material		Approximate gel (working) time	Full curing time
14°F	-10°C	90 minutes	24 hours
23°F	-5°C	90 minutes	14 hours
32°F	0°C	45 minutes	7 hours
41°F	5°C	25 minutes	2 hours
68°F	20°C	6 minutes	45 minutes
86°F	30°C	4 minutes	25 minutes
104°F	40°C	1.5 minutes	15 minutes

[1]Linear interpolation to determine approximate gel and full curing times for intermediate base material temperatures is allowed. For installations in masonry temperatures between 14°F and 23°F the cartridge temperature must be conditioned to between 68°F and 95°F (20°C - 35°C).

TABLE 2—SPACING AND EDGE DISTANCE REQUIREMENTS FOR AC100+ GOLD ADHESIVE INSTALLED IN UNREINFORCED MASONRY

ANCHOR ASSEMBLY	Minimum Vertical Spacing (inches)	Minimum Horizontal Spacing (inches)	Minimum Edge Distance (inches)
Shear anchor or rebar dowel, Configuration A (see Figure 1)	16	16	16
$22^1/_2$° combination anchor, Configuration B (see Figure 2)	16	16	16

For **SI:** 1 inch = 25.4 mm

TABLE 3—ALLOWABLE LOAD CAPACITIES FOR THREADED RODS AND REINFORCING BARS FOR AC100+ GOLD ADHESIVE INSTALLED IN UNREINFORCED MASONRY[1,2]

SHEAR ANCHOR OR REBAR DOWEL – CONFIGURATION A (FIGURE 1)				
Anchor Rod Dia. (inch) or Rebar Size	**Minimum Embedment (inches)**	**Minimum Wall Thickness (inches)**	**Allowable Tension Load (pounds)**	**Allowable Shear Load[3] (pounds)**
3/4	8	13	-	1,000
No. 4	8	13	-	500
No. 5	8	13	-	750
No. 6	8	13	-	1,000
22 1/2° COMBINATION ANCHOR – CONFIGURATION B (FIGURE 2)				
Anchor Rod Dia. (inch)	**Minimum Embedment**	**Minimum Wall Thickness (inches)**	**Allowable Tension Load[3] (pounds)**	**Allowable Shear Load[3] (pounds)**
3/4	Within 1 inch of opposite wall surface	13	1,200	1000

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 foot-pound = 1.356 N-m, 1 psi = 6.89 Pa.

[1]Allowable load values are applicable only to anchors where in-place shear tests indicate minimum mortar strength of 40 psi (275 kPa), net.
[2]No increase for lateral loading is permitted, such as loading induced by wind or earthquake.
[3]Anchors must be tested in accordance with Section 4.4 for use with the IEBC.

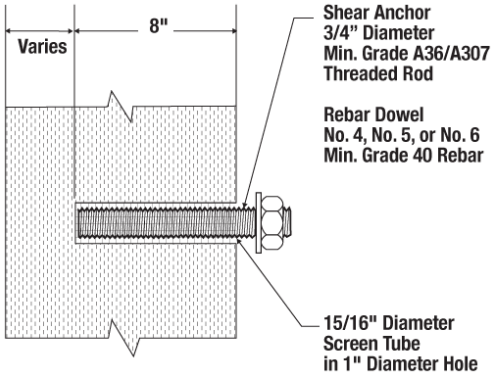


FIGURE 1—CONFIGURATION A (SHEAR ANCHOR OR REBAR DOWEL)[1]
[1]Screen tubes are nominally 8 inches long in accordance with Section 4.1.1 of this report.

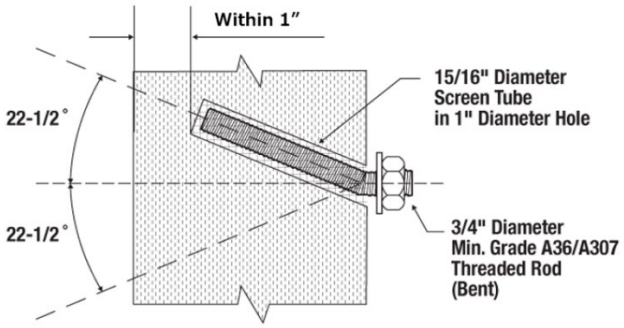


FIGURE 2—CONFIGURATION B (22 1/2-DEGREE COMBINATION ANCHOR)[1]
[1]Screen tubes are nominally 13 inches long in accordance with Section 4.2.1 of this report.

TABLE 4— APPLICABLE SECTIONS OF THE IBC, IRC, and IEBC UNDER EACH EDITION OF THE CODE

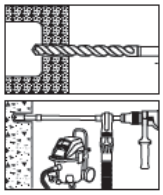
IBC						
2024 IBC	**2021 IBC**	**2018 IBC**	**2015 IBC**	**2012 IBC**	**2009 IBC**	**2006 IBC**
Section 1704						
Section 1705						
Chapter 21						
Section 2107.1						
IRC						
2024 IRC	**2021 IRC**	**2018 IRC**	**2015 IRC**	**2012 IRC**	**2009 IRC**	**2006 IRC**
Section R301.1.3						
IEBC						
2024 IEBC	**2021 IEBC**	**2018 IEBC**	**2015 IEBC**	**2012 IEBC**	**2009 IEBC**	**2006 IEBC**
A106.2.3			A106.3.3			
A107.4						
A113.1						

TABLE 5— APPLICABLE SECTIONS OF TMS 402 UNDER EACH EDITION OF THE IBC

2024 IBC	**2021 IBC**	**2018 IBC**	**2015 IBC**	**2012 IBC**	**2009 IBC**	**2006 IBC**
TMS 402-22	TMS 402-16		TMS 402-13	TMS 402-11	TMS 402-08	TMS 402-05
Section 8.1.4	Section 8.1.3			Section 2.1.4		

INSTALLATION INSTRUCTIONS (HOLLOW BASE MATERIALS AND UNREINFORCED MASONRY [URM])

DRILLING

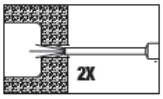


1- Drill a hole into the base material with a rotary drill tool to the size and embedment required by the selected screen tube size and steel anchor element (see installation specifications for threaded rod in hollow base material with screen tube supplied by DEWALT). The tolerances of the drill bit, including hollow drill bits, must meet the requirements of ANSI B212.15.

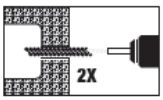
- Precaution: Wear suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal (see dust extraction by DEWALT to minimize dust emission).

Drilling in dry base materials is recommended when using hollow drill bits (vacuum must be on).

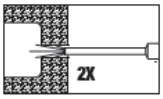
HOLE CLEANING (BLOW 2X, BRUSH 2X, BLOW 2X)



2- Starting from the bottom or back of the anchor hole, blow the hole clean with a hand pump (min. volume 25 fl.oz. supplied by DEWALT) or compressed air nozzle a minimum of two times (2x).



- Determine the wire brush diameter (see installation specifications) and attach the brush with adaptor to a rotary drill tool or battery screw gun. Brush the hole with the selected wire brush a minimum of two times (2x). A brush extension (supplied by DEWALT, Cat #08282) should be used for holes drilled deeper than the listed brush length.
- The wire brush should be checked periodically during use. The brush must be replaced if it becomes worn and does not come in contact with sides of the drill hole.

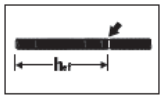


- Finally, blow the hole clean again a minimum of two times (2x)
- When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

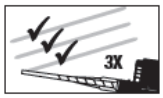
PREPARING

3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Safety Data Sheet (SDS) before use. Cartridge temperature must be between 23°F - 95°F (-5°C - 35°C) when in use unless otherwise noted. Review gel (working) time and curing time table. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures.

- Attach a supplied mixing nozzle to the cartridge. Do not modify the mixer in any way and make sure the mixing element is inside the nozzle. Load the cartridge into the correct dispensing tool.
- Note: Always use a new mixing nozzle with new cartridges of adhesive and also for all work interruptions exceeding the published working time of the adhesive.



4- Prior to inserting the anchor into the filled screen tube, the position of the embedment depth has to be marked on the anchor. Verify anchor element is straight and free of surface damage.

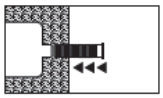


5- Adhesive must be properly mixed to achieve published properties. Prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent GRAY color. Do not attach a used nozzle when changing to a new cartridge.

- Review and note the published working and cure times (see gel time and curing time table) prior to injection of the mixed adhesive into the screen tube.

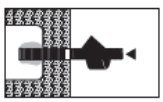
INSTALLATION

6- Select a screen tube of suitable length (supplied by DEWALT). Fill the screen tube full with adhesive starting from the bottom or back of the tube. Slowly withdraw the mixing nozzle as the screen fills to avoid creating air pockets or voids. A plastic extension tube supplied by DEWALT must be used with the mixing nozzle if the back of the screen tube cannot be reached.



7- Insert the screen tube filled with adhesive into the cleaned anchor hole. Inject additional adhesive into the screen tube as necessary to ensure the screen tube is completely filled.

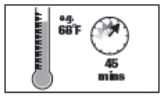
- Note: Overfilling the screen tube is acceptable but not required.



8- Prior to inserting the anchor rod into the screen tube inspect it to ensure that it is free of dirt, grease, oil or other foreign material.

- Push the threaded rod into the screen tube while turning slightly to ensure positive distribution of the adhesive until back of the tube is reached.
- Note: In cases where the drilled hole size is larger than specified due to rotary drilling (e.g. an elongated opening), the annular space between the screen tube and the hole at the base material surface must be filled with adhesive.

CURING AND FIXTURE



9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load.

- Do not disturb, torque or load the anchor until it is fully cured (see gel time and curing time table).

10- After full curing of the adhesive anchor, a fixture can be installed to the anchor and tightened up to the maximum torque (see installation specifications for threaded rod in hollow base material) by using a calibrated torque wrench.

- Take care not to exceed the maximum torque for the selected anchor.

FIGURE 3—AC100+ GOLD ADHESIVE ANCHORS INSTALLED INTO UNREINFORCED MASONRY AND HOLLOW BASE MATERIALS, MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII)

DIVISION: 04 00 00—MASONRY
Section: 04 05 19.16—Masonry Anchors

REPORT HOLDER:

DEWALT

EVALUATION SUBJECT:

AC100+ GOLD® ADHESIVE ANCHORING SYSTEM IN UNREINFORCED MASONRY (DEWALT)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that adhesive anchors installed using the AC100+ Gold Adhesive Anchoring System in unreinforced masonry, described in ICC-ES evaluation report ESR-4105, have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)
- 2023 *City of Los Angeles Existing Building Code* (LAEBC)

2.0 CONCLUSIONS

Adhesive anchors installed using the AC100+ Gold Adhesive Anchoring System in unreinforced masonry, described in Sections 2.0 through 7.0 of the evaluation report ESR-4105, comply with the LABC Chapters 21 and 88, LAEBC Appendix A Chapter A1, and the LARC, and are subjected to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

Adhesive anchors installed using the AC100+ Gold Adhesive Anchoring System in unreinforced masonry described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-4105.
- The design, installation, conditions of use and identification of the anchors are in accordance with the 2021 *International Building Code®* (IBC) and the 2021 *International Existing Building Code®* (IEBC) provisions noted in the evaluation report ESR-4105.
- The design, installation, testing and inspection are in accordance with additional requirements of LABC Chapters 16, 17, 21, 88 and LAEBC Appendix A Chapter A1, as applicable, including LABC Sections 1704, 1705, and 2107, and LAEBC Sections A106, A107 and A108.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 and additional requirements noted in this supplement must be submitted.
- The allowable strength values listed in the evaluation report and tables are for the connection of the anchors to the masonry. The connection between the anchors and the connected members must also be checked for capacity (which may govern).

This supplement expires concurrently with the evaluation report, reissued August 2024 and revised December 2024.

Safety Data Sheet

according to 29 CFR 1910.1200(g)

AC100+ Gold, Comp. A

1. Identification

Product identifier

AC100+ Gold, Comp. A

Recommended use of the chemical and restrictions on use

Use of the substance/mixture

Adhesive mortar for fastening elements A-component (resin)

Uses advised against

no restriction

Details of the supplier of the safety data sheet

Company name:	DEWALT Industrial Tool Co.
Street:	701 East Joppa Road
Place:	USA Towson, MD 21286
Telephone:	+1 800 524-3244 Telefax: +1 877 871-1965
Emergency phone number:	CHEMTREC USA: +1 800 424 9300 (24/7) CHEMTREC International: +1 703 527 3887 (24/7)

2. Hazard(s) identification

Classification of the chemical

29 CFR Part 1910.1200

Respiratory or skin sensitization: Skin Sens. 1

Label elements

29 CFR Part 1910.1200

Signal word: Warning

Pictograms:

Hazard statements

May cause an allergic skin reaction

Precautionary statements

Avoid breathing vapors.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves.
If skin irritation or rash occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
Dispose of contents/container to an approved waste disposal plant in accordance with local/national regulations.

Hazards not otherwise classified

Use only outdoors or in a well-ventilated area.

3. Composition/information on ingredients

Mixtures

Hazardous components

CAS No	Components	Quantity
2082-81-7	Tetramethylene dimethacrylate	5 - < 20 %
27813-02-1	Methacrylic acid, monoester with propane-1,2-diol	1 - < 8.5 %
38668-48-3	1,1'-(p-Tolylimino)dipropan-2-ol	< 1.25 %

Further Information

The actual concentration is withheld as a trade secret.

4. First-aid measures

Description of first aid measures

General information

Take off immediately all contaminated clothing and wash it before reuse. Get medical advice/attention if you feel unwell.

After inhalation

Provide fresh air. When in doubt or if symptoms are observed, get medical advice.

After contact with skin

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing and wash it before reuse. Medical treatment necessary.

After contact with eyes

Rinse immediately carefully and thoroughly with eye-bath or water. In case of eye irritation consult an ophthalmologist.

After ingestion

Do NOT induce vomiting. Rinse mouth thoroughly with water. Medical treatment necessary.

Most important symptoms and effects, both acute and delayed

May cause an allergic skin reaction.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Foam
Extinguishing powder
Water spray jet
Carbon dioxide (CO2)

Unsuitable extinguishing media

Full water jet

Specific hazards arising from the chemical

Pyrolysis products, toxic
Carbon monoxide

Special protective equipment and precautions for fire-fighters

In case of fire and/or explosion do not breathe fumes.
Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information

Supress gases/vapors/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

General advice

Use personal protective equipment as required. Provide adequate ventilation. Do not breathe gas/fume/vapor/spray. Avoid contact with skin, eyes and clothes.

Environmental precautions

Do not allow to enter into surface water or drains.

Methods and material for containment and cleaning up

For cleaning up

Collect spillage. Take up mechanically, placing in appropriate containers for disposal. Suitable material for taking up: Sand
Treat the recovered material as prescribed in the section on waste disposal.
Retain contaminated washing water and dispose it.

Reference to other sections

Safe handling: see section 7
Personal protection equipment (PPE): see section 8
Disposal: see section 13

7. Handling and storage

Precautions for safe handling

Advice on safe handling

Use only outdoors or in a well-ventilated area.
Wear personal protection equipment (refer to section 8).
Avoid contact with skin, eyes and clothes.
When using do not eat, drink or smoke.
Wash hands thoroughly after handling.
Take off contaminated clothing and wash it before reuse.

Advice on general occupational hygiene

Take off contaminated clothing and wash it before reuse. Draw up and observe skin protection programme.
Wash hands thoroughly after handling. When using do not eat, drink or smoke.

Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed.
Store in a place accessible by authorized persons only.
Keep only in the original container in a cool, well-ventilated place.

Hints on joint storage

Do not use for products which come into contact with the food stuffs.

Further information on storage conditions

Keep container tightly closed in a cool place.
storage temperature: 5 - 25°C (41 - 77 F)

8. Exposure controls/personal protection

Control parameters

Additional advice on limit values

To date, no national critical limit values exist.

Exposure controls

Appropriate engineering controls

Provide adequate ventilation. If local exhaust ventilation is not possible or not sufficient, the entire working area must be ventilated by technical means.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation, or the European standard EN 166.

Hand protection

Wear chemical resistant protective gloves.

Skin protection

Wear suitable protective clothing.

Respiratory protection

Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator as needed. Observe OSHA regulations for respirator use (29 CFR 1910.134).

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state:	solid (pasty)
Color:	light beige
Odor:	characteristic
Odour threshold:	No data available
Melting point/freezing point:	No data available
Boiling point or initial boiling point and boiling range:	No data available
Flammability:	Non-flammable.
Lower explosion limits:	not applicable
Upper explosion limits:	not applicable
Flash point:	not applicable
Auto-ignition temperature:	not applicable
Decomposition temperature:	No data available
pH-Value:	The study does not need to be conducted because the substance is known to be insoluble in water.
Viscosity / kinematic:	not applicable
Water solubility:	The study does not need to be conducted because the substance is known to be insoluble in water.

Solubility in other solvents

No data available

Partition coefficient n-octanol/water:	not applicable
Vapor pressure:	No data available
Density (at 20 °C):	1,71 g/cm³
Relative vapour density:	not applicable
Particle characteristics:	No data available

Other information

Information with regard to physical hazard classes

Explosive properties
The product is not: Explosive.
Self-ignition temperature
Solid: not determined
Oxidizing properties
Not oxidising.

Other safety characteristics

Evaporation rate: No data available
Solid content: No data available

10. Stability and reactivity

Reactivity
No hazardous reaction when handled and stored according to provisions.

Chemical stability
The product is stable under storage at normal ambient temperatures.

Possibility of hazardous reactions
Response: Oxidizing agent, strong

Conditions to avoid
Heat. Keep cool. Protect from sunlight.

Incompatible materials
No information available.

Hazardous decomposition products
No known hazardous decomposition products.

11. Toxicological information

Information on toxicological effects

Acute toxicity
Based on available data, the classification criteria are not met.

ATEmix calculated
ATE (oral) > 2000 mg/kg; ATE (dermal) > 2000 mg/kg; ATE (inhalation vapour) > 20 mg/l; ATE (inhalation dust/mist) > 5 mg/l

CAS No	Components				
	Exposure route	Dose	Species	Source	Method
2082-81-7	Tetramethylene dimethacrylate				
	oral	LD50 10066 mg/kg	Rat		
	dermal	LD50 > 3000 mg/kg	Rabbit		
27813-02-1	Methacrylic acid, monoester with propane-1,2-diol				
	oral	LD50 > 2000 mg/kg	Rat		
	dermal	LD50 > 5000 mg/kg	Rabbit		
38668-48-3	1,1'-(p-Tolylimino)dipropan-2-ol				
	oral	LD50 > 25 - 200 mg/kg	Rat		
	dermal	LD50 > 2000 mg/kg	Rat		

Irritation and corrosivity

Skin corrosion/irritation: Based on available data, the classification criteria are not met.
Serious eye damage/eye irritation: Based on available data, the classification criteria are not met.

Sensitizing effects

May cause an allergic skin reaction (Tetramethylene dimethacrylate; Methacrylic acid, monoester with propane-1,2-diol)

Carcinogenic/mutagenic/toxic effects for reproduction

Germ cell mutagenicity: Based on available data, the classification criteria are not met.
Carcinogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity: Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) - single exposure

Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) - repeated exposure

Based on available data, the classification criteria are not met.

Carcinogenicity (OSHA):	No ingredient of this mixture is listed.
Carcinogenicity (IARC):	No ingredient of this mixture is listed.
Carcinogenicity (NTP):	No ingredient of this mixture is listed.

Aspiration hazard

Based on available data, the classification criteria are not met.

Information on other hazards

Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

Other information

No information available.

12. Ecological information

Ecotoxicity

The product is not: Ecotoxic.

Persistence and degradability

The product has not been tested.

Bioaccumulative potential

The product has not been tested.

Mobility in soil

The product has not been tested.

Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

Other adverse effects

No information available.

Further information

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

13. Disposal considerations

Waste treatment methods

Disposal recommendations

Dispose of waste according to applicable legislation. Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

14. Transport information

U.S. DOT 49 CFR 172.101

Proper shipping name: Not a hazardous material with respect to these transport regulations.

Marine transport (IMDG)

UN number or ID number: No dangerous good in sense of this transport regulation.
UN proper shipping name: No dangerous good in sense of this transport regulation.
Transport hazard class(es): No dangerous good in sense of this transport regulation.
Packing group: No dangerous good in sense of this transport regulation.

Air transport (ICAO-TI/IATA-DGR)

UN number or ID number: No dangerous good in sense of this transport regulation.
UN proper shipping name: No dangerous good in sense of this transport regulation.
Transport hazard class(es): No dangerous good in sense of this transport regulation.
Packing group: No dangerous good in sense of this transport regulation.

Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

Special precautions for user

No information available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

not applicable

15. Regulatory information

U.S. Regulations

National Inventory TSCA

All ingredients of this mixture are included on the TSCA Inventory.

National regulatory information

SARA Section 311/312 Hazards:
Tetramethylene dimethacrylate (2082-81-7): Immediate (acute) health hazard
Methacrylic acid, monoester with propane-1,2-diol (27813-02-1): Immediate (acute) health hazard
1,1'-(p-Tolylimino)dipropan-2-ol (38668-48-3): Immediate (acute) health hazard

State Regulations

Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, State of California)

This product can not expose you to chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Additional information

VOC content of hardened final mixture: 10 g/L (determined method: SCAQMD according to rule 1168)

16. Other information

Hazardous Materials Identification System (HMIS)

Health: 2
Physical Hazard: 1
Personal Protection: -

NFPA Hazard Ratings

Health: 2
Flammability:
Reactivity: 1
Unique Hazard: -

Changes

Revision date: 02/18/2025

Revision No: 1,21

Flammability for HMIS and NFPA ratings not applicable.

Abbreviations and acronyms

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service
CFR: Code of Federal Regulations
EC50: Effective concentration, 50%
ErC50: EC50 in terms of reduction of growth rate
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations (DRG) for the air transport (IATA)
IARC: International Agency for Research on Cancer
IMDG: International Maritime Code for Dangerous Goods
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety and Health
NOEC: No Observed Effect Concentration
NTP: National Toxicology Program
OECD: Oragnisation for Economic Co-operation and Development
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
SARA: Superfund Amendments and Reauthorization Act
TLV: Threshold Limit Values
TSCA: Toxic Substances Control Act

Key literature references and sources for data

Data sources: Supplier

Other data

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the relevant ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)

Safety Data Sheet

according to 29 CFR 1910.1200(g)

AC100+ Gold, Comp. B

1. Identification

Product identifier

AC100+ Gold, Comp. B

Recommended use of the chemical and restrictions on use

Use of the substance/mixture

compound mortar B-component (hardener)

Uses advised against

no restriction

Details of the supplier of the safety data sheet

Company name: DEWALT Industrial Tool Co.
Street: 701 East Joppa Road
Place: USA Towson, MD 21286
Telephone: +1 800 524-3244 Telefax: +1 877 871-1965

Emergency phone number: CHEMTREC USA: +1 800 424 9300 (24/7)
CHEMTREC International: +1 703 527 3887 (24/7)

2. Hazard(s) identification

Classification of the chemical

29 CFR Part 1910.1200

Serious eye damage/eye irritation: Eye Irrit. 2A
Respiratory or skin sensitization: Skin Sens. 1

Label elements

29 CFR Part 1910.1200

Signal word: Warning

Pictograms:

Hazard statements

May cause an allergic skin reaction
Causes serious eye irritation

Precautionary statements

Avoid breathing vapors.
Wear protective gloves and eye protection/face protection.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
Dispose of contents/container to an approved waste disposal plant in accordance with local/national regulations.

Hazards not otherwise classified

No information available.

3. Composition/information on ingredients

Mixtures

Hazardous components

CAS No	Components	Quantity
94-36-0	Dibenzoyl peroxide	5 - < 15 %

Further Information

The actual concentration is withheld as a trade secret.

4. First-aid measures

Description of first aid measures

General information

First aider: Pay attention to self-protection! Take off immediately all contaminated clothing and wash it before reuse. Get medical advice/attention if you feel unwell.

After inhalation

Provide fresh air. When in doubt or if symptoms are observed, get medical advice.

After contact with skin

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing and wash it before reuse. Medical treatment necessary.

After contact with eyes

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Remove contact lenses, if present and easy to do. Continue rinsing.

After ingestion

Do NOT induce vomiting. Rinse mouth thoroughly with water. Medical treatment necessary.

Most important symptoms and effects, both acute and delayed

May cause an allergic skin reaction.
Causes serious eye irritation.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Foam
Extinguishing powder
Water spray jet
Carbon dioxide (CO_2)

Unsuitable extinguishing media

Full water jet

Specific hazards arising from the chemical

Pyrolysis products, toxic
Carbon monoxide

Special protective equipment and precautions for fire-fighters

In case of fire and/or explosion do not breathe fumes.
Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information

Supress gases/vapors/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

General advice

Use personal protective equipment as required. Provide adequate ventilation. Avoid contact with skin, eyes and clothes.

Environmental precautions

Do not allow to enter into surface water or drains.

Methods and material for containment and cleaning up

For cleaning up

Collect spillage. Take up mechanically, placing in appropriate containers for disposal. Suitable material for taking up: Sand

Treat the recovered material as prescribed in the section on waste disposal.

Retain contaminated washing water and dispose it.

Reference to other sections

Safe handling: see section 7

Personal protection equipment (PPE): see section 8

Disposal: see section 13

7. Handling and storage

Precautions for safe handling

Advice on safe handling

Use only outdoors or in a well-ventilated area.

Wear personal protection equipment (refer to section 8).

Avoid contact with skin, eyes and clothes.

When using do not eat, drink or smoke.

Wash hands thoroughly after handling.

Take off contaminated clothing and wash it before reuse.

Advice on general occupational hygiene

Take off contaminated clothing and wash it before reuse. Draw up and observe skin protection programme.

Wash hands thoroughly after handling. When using do not eat, drink or smoke.

Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed.

Store in a place accessible by authorized persons only.

Keep only in the original container in a cool, well-ventilated place.

Hints on joint storage

Do not store together with: Oxidizing agent, strong

Do not use for products which come into contact with the food stuffs.

Further information on storage conditions

Keep container tightly closed in a cool place.

storage temperature: 5 - 25°C (41 - 77 F)

8. Exposure controls/personal protection

Control parameters

Exposure limits

CAS No	Substance	ppm	mg/m³	f/cc	Category	Origin
94-36-0	Benzoyl peroxide	-	5		TWA (8 h)	PEL
		-	5		TWA (8 h)	REL
56-81-5	Glycerin (mist) Respirable fraction	-	5		TWA (8 h)	PEL

Exposure controls


Appropriate engineering controls

Provide adequate ventilation. If local exhaust ventilation is not possible or not sufficient, the entire working area must be ventilated by technical means.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation, or the European standard EN 166.

Hand protection

Wear chemical resistant protective gloves.

Skin protection

Wear suitable protective clothing.

Respiratory protection

Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator as needed. Observe OSHA regulations for respirator use (29 CFR 1910.134).

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state:	solid (pasty)
Color:	black
Odor:	characteristic
Odour threshold:	No data available
Melting point/freezing point:	No data available
Boiling point or initial boiling point and boiling range:	No data available
Flammability:	Combustible
Lower explosion limits:	not applicable
Upper explosion limits:	not applicable
Flash point:	not applicable
Auto-ignition temperature:	not applicable
Decomposition temperature:	Start of decomposition: >35 (95 F) °C
pH-Value:	The study does not need to be conducted because the substance is known to be insoluble in water.
Viscosity / kinematic:	not applicable
Water solubility:	The study does not need to be conducted because the substance is known to be insoluble in water.

Solubility in other solvents

No data available

Partition coefficient n-octanol/water:	not applicable
Vapor pressure:	No data available
Density (at 20 °C):	1,59 g/cm³
Relative vapour density:	not applicable
Particle characteristics:	No data available

Other information

Information with regard to physical hazard classes

Explosive properties

The product is not: Explosive.

Self-ignition temperature

Solid: not determined

Oxidizing properties

Not oxidising.

Available oxygen content: 0,74 %

Other safety characteristics

Evaporation rate: not determined

Solid content: No data available

10. Stability and reactivity

Reactivity

see section 10.3

Chemical stability

The product is stable under storage at normal ambient temperatures.

Possibility of hazardous reactions

Violent reaction with: Oxidising agent

Conditions to avoid

see section 7.2

Incompatible materials

Oxidizing agent, strong

Hazardous decomposition products

Benzoic acid

Benzene

Biphenyl

11. Toxicological information

Information on toxicological effects

Acute toxicity

Based on available data, the classification criteria are not met.

ATEmix calculated

ATE (oral) > 2000 mg/kg; ATE (dermal) > 5000 mg/kg; ATE (inhalation vapour) > 20 mg/l; ATE (inhalation dust/mist) > 5 mg/l

CAS No	Components				
	Exposure route	Dose	Species	Source	Method
94-36-0	Dibenzoyl peroxide				
	oral	LD50 > 5000 mg/kg	Rat		

Irritation and corrosivity

Serious eye damage/eye irritation: Causes serious eye irritation

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

Sensitizing effects

May cause an allergic skin reaction (Dibenzoyl peroxide)

Carcinogenic/mutagenic/toxic effects for reproduction

Germ cell mutagenicity: Based on available data, the classification criteria are not met.
Carcinogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity: Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) - single exposure
Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) - repeated exposure
Based on available data, the classification criteria are not met.

Carcinogenicity (OSHA): No ingredient of this mixture is listed.
Carcinogenicity (IARC): Benzoyl peroxide (CAS 94-36-0) is listed in group 3.
Carcinogenicity (NTP): No ingredient of this mixture is listed.

Aspiration hazard
Based on available data, the classification criteria are not met.

Information on other hazards

Endocrine disrupting properties
This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

12. Ecological information

Ecotoxicity
The product is not: Ecotoxic.

OECD 201 (Desmodesmus subspicatus)
IC10: (0 - 72 h) = 30 mg/l
IC50: (0 - 72 h) = 150 mg/l

OECD 202 (Daphnia magna)
EC0/NOEC (48h) = 100 mg/l
EC50 (48h) = >500 mg/l
EC100 (48h) = >>500 mg/l

OECD 203 (Danio rerio)
LC0/NOEC : 250 mg/l
LC50 : > 500 mg/l
LC100 : >> 500 mg/l

Persistence and degradability
The product has not been tested.

Bioaccumulative potential
The product has not been tested.

Mobility in soil
The product has not been tested.

Endocrine disrupting properties
This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

Other adverse effects
No information available.

Further information
Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

13. Disposal considerations

Waste treatment methods

Disposal recommendations

Dispose of waste according to applicable legislation. Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

14. Transport information

U.S. DOT 49 CFR 172.101

Proper shipping name: Not a hazardous material with respect to these transport regulations.

Marine transport (IMDG)

UN number or ID number: No dangerous good in sense of this transport regulation.
UN proper shipping name: No dangerous good in sense of this transport regulation.
Transport hazard class(es): No dangerous good in sense of this transport regulation.
Packing group: No dangerous good in sense of this transport regulation.

Air transport (ICAO-TI/IATA-DGR)

UN number or ID number: No dangerous good in sense of this transport regulation.
UN proper shipping name: No dangerous good in sense of this transport regulation.
Transport hazard class(es): No dangerous good in sense of this transport regulation.
Packing group: No dangerous good in sense of this transport regulation.

Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

Special precautions for user

No information available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

not applicable

15. Regulatory information

U.S. Regulations

National Inventory TSCA

All ingredients of this mixture are included on the TSCA Inventory.

National regulatory information

SARA Section 311/312 Hazards:
Benzoyl peroxide (94-36-0): Reactive, Immediate (acute) health hazard
SARA Section 313 Toxic release inventory:
Benzoyl peroxide (94-36-0): De minimis limit = 1.0 %, Reportable threshold = Standard

State Regulations

Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, State of California)

This product can not expose you to chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Additional information

VOC content of hardened final mixture: 10 g/L (determined method: SCAQMD according to rule 1168)

16. Other information

Hazardous Materials Identification System (HMIS)

Health: 2
Physical Hazard: 1
Personal Protection: X

NFPA Hazard Ratings

Health:	2
Flammability:	
Reactivity:	2
Unique Hazard:	-

Changes

Revision date:	02/18/2025
Revision No:	1,19

Flammability for HMIS and NFPA ratings not applicable.

Abbreviations and acronyms

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service
CFR: Code of Federal Regulations
EC50: Effective concentration, 50%
ErC50: EC50 in terms of reduction of growth rate
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations (DRG) for the air transport (IATA)
IARC: International Agency for Research on Cancer
IMDG: International Maritime Code for Dangerous Goods
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety and Health
NOEC: No Observed Effect Concentration
NTP: National Toxicology Program
OECD: Oragnisation for Economic Co-operation and Development
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
SARA: Superfund Amendments and Reauthorization Act
TLV: Threshold Limit Values
TSCA: Toxic Substances Control Act

Key literature references and sources for data

Data sources: Supplier

Other data

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the relevant ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)

DEWALT
ANCHORS & FASTENERS

DEWALT
701 East Joppa Road
Towson, MD 21286
P: (800) 524-3244
anchors.DEWALT.com

November 1, 2019

AC100+ Gold® Adhesive Anchoring System and ASTM C881 Requirements

The AC100+ Gold adhesive anchoring system meets the requirements of ASTM C 881 and AASHTO M235, Types I, II, IV and V, Grade 3, Classes A & B. The material test results in accordance with ASTM C881 are as follows:

Test	AC100+ Gold		Minimum requirements per ASTM C881, Grade 3	
	Tested at 32±2° F Class A	Tested at 50±2° F Class B		
Tensile Strength*, *psi* (ASTM D 638) 7 days	2,340	2,185	Type I	5,000 psi
			Type II	2,000 psi
			Type IV	7,000 psi
			Type V	6,000 psi
Compressive Yield Strength at 7 days, psi ASTM D 695	13,250	10,750	Type I & V	8,000 psi
			Type II	5,000 psi
			Type IV	10,000 psi
Compressive Modulus, psi (min) ASTM D 695	250,000	204,000	Type I & V	150,000 psi
			Type II	90,000 psi
			Type IV	200,000 psi
			Type III (max)	130,000 psi
Water Absorption, %, 24 hrs. ASTM D570	0.19	0.21	Types I through IV	max 1%
Bond Strength, psi ASTM C 882	1,490	1,410	2 days moist cure	1,000 psi
	1,880	1,765	14 days moist cure	1,500 psi
Linear Coefficient of Shrinkage on cure, in/in ASTM D2566	0.0031	0.0036	Max 0.005 in/in	
Heat Deflection Temperature, °F (min), 7 days	182	174	Types IV & V	120° F (50° C)
Thermal Compatibility	Passes	Passes	Type III	Passes test
Gel Time (minimum)	40	30	30 minutes	
Elongation at Break, % min	2	4	Types I, II, IV & V	1%

*Tensile strength not required for Grade 3

If there are any questions or if you require any additional information, please contact us.

ANCHORS & FASTENERS

DEWALT
701 East Joppa Road
Towson, MD 21286
P: (800) 524-3244
anchors.DEWALT.com

March 1, 2023

AC100+ Gold® Adhesive Anchoring System and Installations with DEWALT DustX+™ Automatic Dust Extraction

ACI 318-19, Chapter 17 and ACI 318-14 Chapter 17 (and by reference to the 2021 IBC, and the 2018 IBC and 2015 IBC, respectively) requires that adhesive anchors for concrete be installed using a specific drilling method. This is because the drilling method used to create a hole in the base material and the subsequent manufacturer recommended hole cleaning procedure for the adhesive system has a significant effect on the bond strength of the installed adhesive anchors.

Up until January 2018, DEWALT published bond strengths for AC100+ Gold adhesive anchors that are based on drilling into concrete and masonry using a hammer-drill with a carbide drill bit followed by a traditional hole cleaning process (e.g. blowing the hole clean, brushing the hole, blowing the hole clean again). Fortunately, additional hole drilling and cleaning options are now available for end users from DEWALT due to the increased attention being given to dust control solutions on jobsites in construction.

DUSTX+ SYSTEM COMPONENTS

DEWALT Hammer-drill & Hollow Drill Bit (HDB)

DEWALT HEPA Vacuum (DWV012 & DWV015)

AC100+ Gold Adhesive & Steel Rod or Rebar Anchor

DEWALT DustX+ System
(Hammer-drill + Hollow Drill Bit + Vacuum + Adhesive + Steel Rod or Rebar Anchor)

The DustX+ system allows users to drill holes in concrete and masonry and clean the holes during the drilling process at the same time (no extra cleaning steps are necessary with this system). The hollow drill bits are attached to a self-cleaning HEPA vacuum which provide the dust collection during drilling. DEWALT has conducted extensive supplemental laboratory testing on AC100+ Gold adhesive anchors installed in holes drilled and cleaned using the DustX+ system in dry concrete.

The table below shows the results of the testing adhesive anchor system crossed with the installation and cleaning method along with the corresponding reduction factor derived from testing that should be applied to the bond strength when calculating the bond strength capacity for the given adhesive anchor and relevant conditions.

Adhesive Anchor System	Drilling Method	Cleaning Method	Bond Strength Reduction Factor, α_{hdb}
DEWALT AC100+ GOLD	Hammer-drilling with standard carbide drill bits	Blow 4x, Brush 4x, Blow 4x	N/A (baseline values)
	Hammer-drilling with hollow drill bits (DustX+)	Hollow drill bits (DustX+)	1.0 (no reduction)

N/A = Not applicable.

1. Results shown are based on tension tests conducted in accordance with ACI 355.4/ASTM E488 in dry cracked and uncracked normal weight concrete; holes were drilled with a hammer drill and and standard carbide drill bit or hollow drill bit, as applicable.
2. Standard carbide drill bits and hollow drill bits must meet the requirements of ANSI B212.15; ANSI compliance for hole drilling is required by ICC-ES ESR-2582, ESR-3200 and ESR-4105.
3. See published literature for the specific adhesive anchor system for additional design and installation information which is available at anchors.DEWALT.com.

AC100+ Gold adhesive anchors will achieve published design strengths when the product is installed properly into holes drilled and cleaned in dry concrete and dry masonry with the DustX+ system.

June 10, 2020

ANCHORS & FASTENERS
DEWALT
701 East Joppa Road
Towson, MD 21286
P: (800) 524-3244
anchors.DEWALT.com

DEWALT Pure50+ and AC100+ Gold Adhesive Anchoring Systems

Supplemental Installation Instructions for Preparation of the Adhesive in Step #3: Cartridge Balancing

Cartridge adhesives must be properly mixed to achieve published properties for anchoring applications into concrete and masonry. In accordance with the Manufacturer's Printed Installation Instructions (MPII) the supplied mixing nozzle must be attached to the cartridge. The cartridge is loaded into the recommended dispensing tool. Prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent color:

- **Dark gray** color for mixed Pure50+
- **Gray** color for mixed AC100+ Gold

During consecutive installations using DEWALT piston plugs, it is permissible to transfer the piston plug assembly (nozzle, flexible tubing extension and piston plug) to a new cartridge when the initial cartridge is depleted. For the transfer and continued use of the piston plug assembly to be viable, the cartridge balancing steps shown below and restart of dispensing adhesive into the hole must be completed within the published working time of the adhesive as provided in the MPII.

Procedure for Cartridge Balancing:

1. Remove piston plug assembly from the depleted cartridge.
2. Load a new cartridge into dispensing tool (without new mixing nozzle).
3. Remove cap and balance cartridge by dispensing adhesive until both components are flowing separately and equally through the cartridge opening.
   Suggest removing any excess adhesive from cartridge opening prior to the next step.
4. Attach nozzle of piston plug assembly to the balanced cartridge.
5. Resume dispensing and placement of adhesive into hole.

Step #3

Provided these steps are followed, replacing the piston plug assembly with each new cartridge is not necessary. This supplemental procedure for cartridge balancing has been tested and determined to be equivalent to the standard procedures given in the MPII.

ANCHORS & FASTENERS
DEWALT
701 East Joppa Road
Towson, MD 21286
P: (800) 524-3244
anchors.DEWALT.com

November 10, 2023

Early Age Concrete and its Effect on Adhesive Anchor Bond Strength in Concrete

ACI 318-19, Chapter 17 and ACI 318-14, Chapter 17 (and by reference to the 2021 IBC, and the 2018 IBC and 2015 IBC, respectively) requires that adhesive anchors be installed in concrete with minimum age of 21 days at the time of installation. DEWALT currently publishes bond strengths that are based on concrete which has achieved its 28-day compressive strength and has cured for a minimum of 21 days. Concrete that is less than 21 days old is considered early age (aka 'green') and may influence the performance of adhesive anchors. Occasionally, waiting a minimum of 21 days to install adhesive anchors is not feasible, often due to scheduling and jobsite logistics.

As a result, DEWALT has conducted progressive laboratory testing with several adhesives anchor systems at various concrete ages and adhesive cure time intervals. The table below shows the concrete age at the time of anchor installation crossed with the adhesive cure time after anchor installation. If installations in early age concrete are considered, the corresponding reduction factor derived from testing for the given conditions is provided and must be applied to the bond strength when calculating the design bond strength capacity for the given anchor, as applicable.

Adhesive Anchor System	Concrete Age at Time of Anchor Installation	Adhesive Cure Time after Anchor Installation	Approximate Concrete Age at Time of Testing	Bond Strength Reduction Factor
DEWALT Pure110+ standard cure epoxy	7 days	Published Minimum	7 days	1.0
		7 days	14 days	
		14 days	21 days	
	14 days	Published Minimum	14 days	1.0
		7 days	21 days	
	21 days	Published Minimum	21 days	1.0
DEWALT AC200+ fast cure acrylic	7 days	Published Minimum	7 days	0.7
		7 days	14 days	0.8
		14 days	21 days	1.0
	14 days	Published Minimum	14 days	0.8
		7 days	21 days	1.0
	21 days	Published Minimum	21 days	
DEWALT Pure50+ standard cure epoxy	7 days	Published Minimum	7 days	1.0
		7 days	14 days	
		14 days	21 days	
	14 days	Published Minimum	14 days	1.0
		7 days	21 days	
	21 days	Published Minimum	21 days	1.0
DEWALT AC100+ Gold fast cure acrylic	7 days	Published Minimum	7 days	1.0
		7 days	14 days	
		14 days	21 days	
	14 days	Published Minimum	14 days	1.0
		7 days	21 days	
	21 days	Published Minimum	21 days	1.0
DEWALT Pure220+ standard cure epoxy	7 days	Published Minimum	7 days	0.9
		7 days	14 days	1.0
		14 days	21 days	
	14 days	Published Minimum	14 days	1.0
		7 days	21 days	
	21 days	Published Minimum	21 days	1.0

1. Installing adhesive anchors in concrete having a minimum age of less than 21 days at the time of anchor installation is not in compliance with ACI 318 and must be approved by the engineer of record and AHJ, as applicable. Actual concrete compressive strength at the time of anchor installation must be used for design.
2. Results shown are based on tension tests conducted in accordance with ACI 355.4/ASTM E488 in dry uncracked normal weight concrete at room temperature. The average minimum 7-day concrete compressive strength was approximately 2300 psi.
3. Holes were drilled with a hammer drill and standard carbide drill bit and cleaned following published instructions. Hollow drill bits (DEWALT DustX+ System) may be considered, as applicable.
4. Published minimum cure times vary based on the adhesive anchor system and the temperature of the base material. Anchors were not loaded until time of testing.
5. See published literature for the specific adhesive anchor system for minimum cure times and additional design information which is available at www.DEWALT.com.
6. The reduction factor for early age concrete is supplemental to all other relevant design considerations for the specific application, as applicable.

In addition to what is presented previously in this bulletin, DEWALT has also conducted supplemental installations and testing in 3-day old concrete with the following adhesive anchor system.

Adhesive Anchor System	Concrete Age at Time of Anchor Installation	Adhesive Cure Time after Anchor Installation	Approximate Concrete Age at Time of Testing	Bond Strength Reduction Factor
DEWALT Pure220+ standard cure epoxy	3 days	Published Minimum	3 days	0.9
		4 days	7 days	1.0
		11 days	14 days	
		18 days	21 days	

1. Installing adhesive anchors in concrete having a minimum age of less than 21 days at the time of anchor installation is not in compliance with ACI 318 and must be approved by the engineer of record and AHJ, as applicable. Actual concrete compressive strength at the time of anchor installation must be used for design.
2. Results shown are based on tension tests conducted in accordance with ACI 355.4/ASTM E488 in dry uncracked normal weight concrete at room temperature. The minimum 3-day concrete compressive strength was approximately 1650 psi.
3. Holes were drilled with a hammer drill and standard carbide drill bit and cleaned following published instructions. Hollow drill bits (DEWALT DustX+ System) may be considered, as applicable.
4. Published minimum cure times vary based on the adhesive anchor system and the temperature of the base material. Anchors were not loaded until time of testing.
5. See published literature for the specific adhesive anchor system for minimum cure times and additional design information which is available at www.DEWALT.com.
6. The reduction factor for early age concrete is supplemental to all other relevant design considerations for the specific application, as applicable.

The adhesive anchor systems will achieve published design strengths for relevant loading conditions when the product is properly installed into holes drilled in concrete. The adhesive anchors must be installed in accordance with all other published installation instructions specific to the application and conditions of the connection.