
CODE LISTED
ICC-ES ESR-2582
UNCRACKED CONCRETE
AC100+Gold
Adhesive Anchoring System
AC100+Gold
Powers
FASTENERS
Powers is a proud member of:
Evergreen
Powers
FASTENERS
A domestic company headquartered in Brewster, NY

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 AC100+Gold is designed for bonding threaded rod and reinforcing bar elements into drilled holes in concrete and masonry base materials.

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 structural loads in uncracked concrete base materials for cases where anchor design theory and criteria applies
- Can be installed in a wide range of base material temperatures

FEATURES AND BENEFITS

- Designed for use with threaded rod and reinforcing bar hardware elements
- Consistent performance in low and high strength concrete (2,500 to 8,500 psi)
- Evaluated and recognized for a range of embedments and for interior and exterior applications
- Versatile low odor formula with quick cure time
- Mixing nozzles proportion adhesive and provide simple delivery method into drilled holes
- Cartridge design allows for multiple uses using extra mixing nozzles

TESTING AND EVALUATION

Tested and evaluated by an accredited independent laboratory in accordance with ICC-ES AC308 criteria and ASTM E 1512 for anchoring in uncracked concrete, including but not limited to the following:

- Reliability testing for freeze/thaw conditions
- Reliability testing for sensitivity to hole cleaning, mixing effort and installation direction
- Reliability testing for sustained loads, i.e. creep resistance (see applicable long-term and short-term temperature ranges)
- Service condition testing at elevated and decreased temperatures
- Service condition testing in low and high strength concrete
- Service condition testing for resistance to alkalinity and sulfur exposure

APPROVALS AND LISTINGS

International Code Council, Evaluation Service (ICC-ES) ESR-2582

- Code listed with the 2006 IBC, 2006 IRC, 2003 IBC, 2003 IRC, 2000 IBC, 2000 IRC, 1997 UBC
- Tested in accordance with ICC-ES AC308 for use in structural concrete and design with ACI 318 Appendix D (Strength Design) and as amended by provisions of ICC-ES AC308 Annex A, Section 3.3 (www.icc-es.org)
- Compliant with NSF/ANSI Standard 61 for drinking water system components – health effects; minimum requirements for materials in contact with potable water and water treatment
- Conforms to requirements of ASTM C 881, Types I, II, IV and V, Grade 3, Classes A & B (meets Type III with exception of elongation)
- Department of Transportation listings – see www.powers.com or contact transportation agency

GUIDE SPECIFICATIONS

CSI Divisions: *03151-Concrete Anchoring, 04081 Masonry Anchorage and 05090-Metal Fastenings*. Adhesive anchoring system shall be AC100+Gold as supplied by Powers Fasteners, Inc., Brewster, NY. Anchors shall be installed in accordance with published instructions and requirements of the Authority Having Jurisdiction.

PACKAGING

Coaxial Cartridge
5 fl. oz. (150 ml or 9.2 in³)
10 fl. oz. (280 ml or 17.1 in³)

Dual (Side-by-Side) Cartridge
8 fl. oz. (235 ml or 14.3 in³)
12 fl. oz. (345 ml or 21.0 in³)
28 fl. oz. (825 ml or 50.3 in³)

STORAGE LIFE & CONDITIONS

Fifteen months in a dry, dark environment with temperature ranging from 32ºF and 86ºF (-0ºC to 30ºC)

ANCHOR SIZE RANGE (TYP.)

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

SUITABLE BASE MATERIALS

Normal-weight concrete
Grouted concrete masonry
Hollow concrete masonry
Brick masonry

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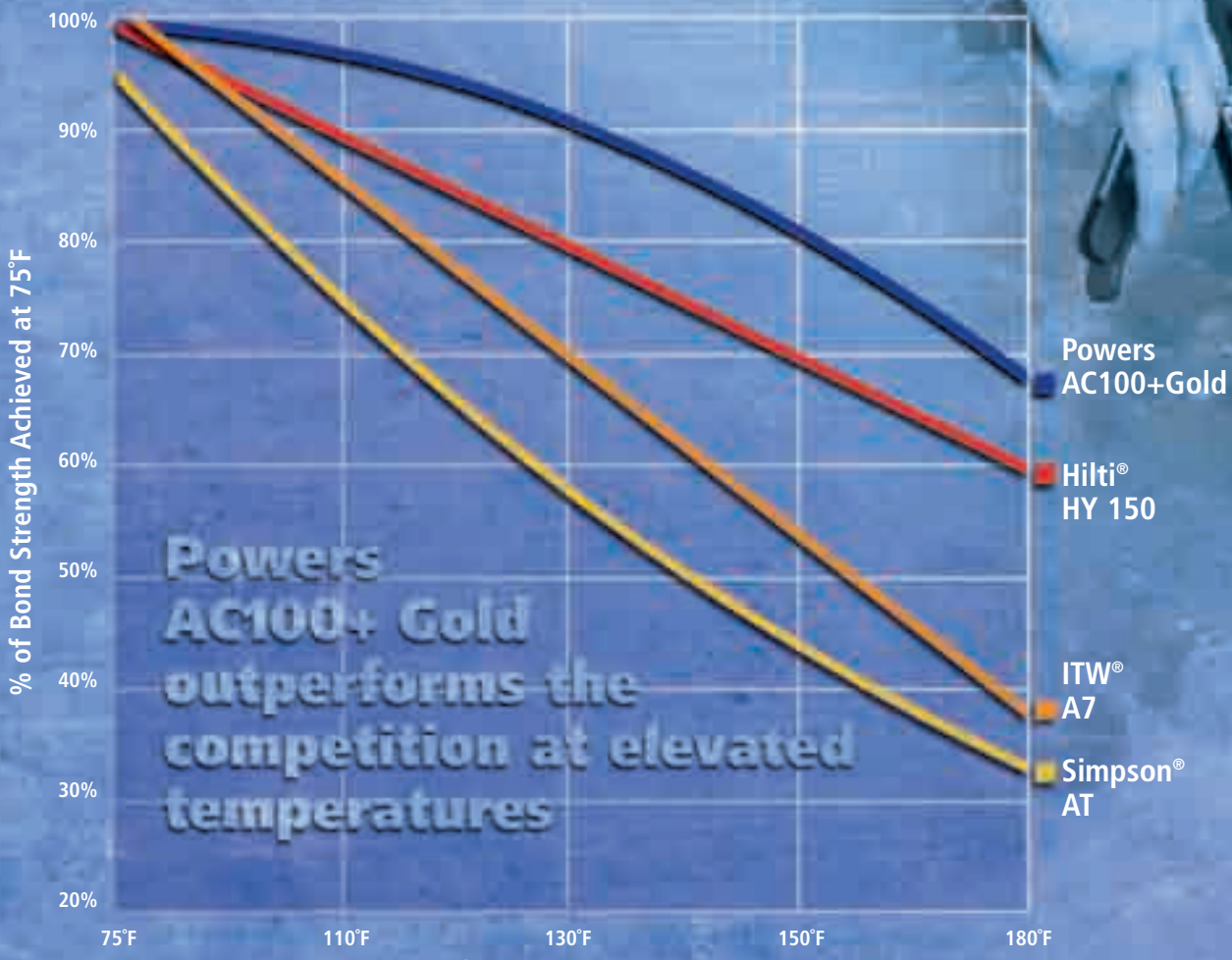
ICC-ES Code Listed for Installation Into Concrete

AC100+Gold	Compliant* See ESR-2582
HY150	No ESR-ICC-ES Report for Concrete
A7	No ESR-ICC-ES Report for Concrete
AT	No ESR-ICC-ES Report for Concrete

*As of 11/09

BOND STRENGTH REDUCTION VS. ELEVATED TEMPERATURE

Bond Strength vs. Temperature Chart for Acrylic Adhesive Anchoring Systems Installed into Uncracked Normal-Weight Concrete with Threaded Rod [1,2, 3, 4, 5]



1. Adhesives anchors were installed using the manufacturers recommended cleaning and installation procedures.
2. Anchor was allowed to cure for a minimum of 24 hours at 75°F.
3. The temperature of the concrete member containing the fully cured anchors was steadily elevated until the base material reached the desired test temperature. Anchors were then loaded in tension (confined) until adhesive bond failure occurred.
4. Individual tests were performed with the temperature of the concrete member at 75, 110, 130, 150 and 180 degrees F. 1/2" diameter ASTM A 193, Grade B7 threaded rod was used for the tests.
5. The graph represents a 2nd order polynomial trend line using actual test data.

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INSTALLATION SPECIFICATIONS

Installation Specifications for Threaded Rod and Reinforcing Bar (Solid Base Materials)

Dimension/Property		Notation	Units	Nominal Anchor Size								
Threaded rod		-	-	**3/8″**	**1/2″**	**5/8″**	**3/4″**	**7/8″**	**1″**	**-**	**1-1/4″**	**-**
Reinforcing bar		-	-	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**	**#9**	**-**	**#10**
Nominal anchor diameter		d	in. (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 (28.6)	1.250 (31.8)	1.250 (31.8)
Nominal diameter of drilled hole		d_o, (d_{bit})	in.	7/16 ANSI	9/16 ANSI	11/16 ANSI	7/8 ANSI	1 ANSI	1-1/8 ANSI	1-3/8 ANSI	1-3/8 ANSI	1-1/2 ANSI
Minimum embedment[1]		$h_{ef,min}$	in. (mm)	2-3/8 (61)	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[1]		$h_{ef,max}$	in. (mm)	4-1/2 (114)	6 (153)	7-1/2 (191)	9 (229)	10-1/2 (267)	12 (305)	13-1/2 (343)	15 (381)	15 (381)
Minimum concrete member thickness[1]		h_{min}	in. (mm)	h_{ef} + 1-1/4 (h_{ef} + 30)		$h_{ef} + 2d_o$						
Minimum spacing distance[1]		s_{min}	in. (mm)	1-7/8 (48)	2-1/2 (62)	3-1/8 (80)	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[1]		c_{min}	in. (mm)	1-7/8 (48)	2-1/2 (64)	3-1/8 (80)	3-3/4 (95)	4-3/8 (111)	5 (127)	5-5/8 (143)	6-1/4 (159)	6-1/4 (159)
Maximum torque (only possible after full cure time of adhesive)	A307 Grade C or F1554 carbon steel rod	T_{max}	ft.-lb. (N-m)	10 (13)	25 (34)	50 (68)	90 (122)	125 (169)	165 (224)	-	280 (379)	-
	F593 Condition CW stainless steel rod or ASTM A193, Grade B7 carbon steel rod	T_{max}	ft.-lb. (N-m)	16 (22)	33 (45)	60 (81)	105 (142)	125 (169)	165 (224)	-	280 (379)	-

1. For use with the design provisions of ACI 318 Appendix D and ICC-ES AC308 Annex A Section 3.3 and ESR-2582.

Installation Specifications for Threaded Rod (Hollow Base Material)

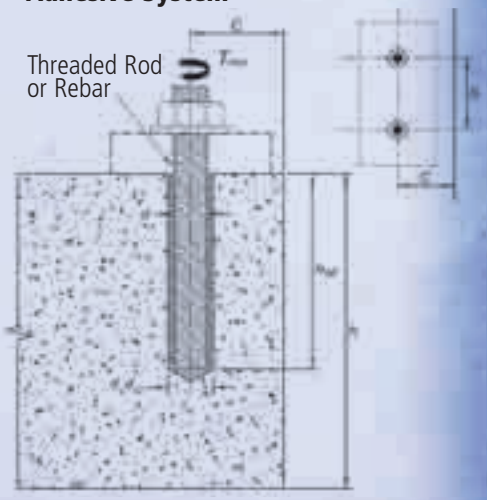
Dimension/Property	Notation	Units	Nominal Anchor Size	
			3/8″	**1/2″**
Nominal anchor diameter	d	in. (mm)	0.375 (9.5)	0.500 (12.7)
Nominal stainless steel tube size	-	in.	3/8	1/2
Nominal diameter of drilled hole	d_o, (d_{bit})	in.	1/2 ANSI	5/8 ANSI
Maximum torque (only possible after full cure time of adhesive)	T_{max}	in. (mm)	4-1/2 (114)	6 (153)

Threaded Rod and Deformed Reinforcing Bar Material Properties

Steel Description (General)	Steel Specification (ASTM)	Nominal Anchor Size (inch)	Minimum Yield Strength, f_y (ksi)	Minimum Ultimate Strength, f_u (ksi)
Carbon rod[1]	A 307, Grade C or F1554	3/8 through 1-1/4	36.0	58.0
Stainless rod (Alloy 304 / 316)	F 593, Condition CW	3/8 through 5/8	65.0	100.0
		3/4 through 1-1/4	45.0	85.0
High strength carbon rod	A 193, Grade B7	3/8 through 1-1/4	105.0	125.0
Grade 60 reinforcing bar	A 615, A 706, A 767, or A 996	3/8 through 1-1/4 (#3 through #10)	60.0	90.0

1. ASTM A 36 carbon steel threaded rod specification is equivalent in listed properties.

Detail of Steel Hardware Elements used with Injection Adhesive System



INSTALLATION INSTRUCTIONS (HOLLOW BASE MATERIALS)

Drilling

1- Drill a hole into the base material with a rotary drill tool to the size and embedment for the required screen size *(see installation specifications for threaded rod in hollow concrete base material)*. The tolerances of the drill bit used should meet the requirements of ANSI B212.15.

Precaution: Wear suitable eye and skin protection. Avoid inhalation of dusts during drilling and/or removal.

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 Powers Fasteners) or compressed air nozzle a minimum of *two* times (2x).

- Determine the wire brush diameter (*see hole cleaning equipment selection table*) 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 Powers Fasteners, 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 (less than D_{min}, *see hole cleaning equipment selection table*) or 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 Material Safety Data Sheet (MSDS) before use. Cartridge temperature must be between 32°F - 95°F (0°C - 35°C) when in use. 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 and load the cartridge into the correct dispensing tool. Always use a new mixing nozzle with new cartridges of adhesive; and for all work interrupions exceeding the published working time of the adhesive (*see gel time and curing time table*).

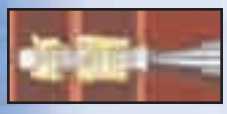
4 - Prior to inserting the anchor rod into the filled screen tube, the position of the embedment depth has to be marked on the anchor. Verify anchor element is straight and free of surface damage.

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.

Installing

6 - Insert a screen tube of suitable length into the cleaned anchor hole.



7 - 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 Powers Fasteners must be used with the mixing nozzle if the back of the screen tube cannot be reached.

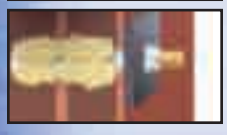
8 -Prior to inserting the anchor rod into the screen tube inspect it to ensure that it is free of dirt, grease, oil or other foreign material.

Push the threaded rod into the screen tube while turning slightly to ensure positive distribution of the adhesive until the back of the tube is reached.

Curing and Fixing

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 concrete base material)* by using a calibrated torque wrench.

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

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INSTALLATION INSTRUCTIONS (SOLID BASE MATERIALS)

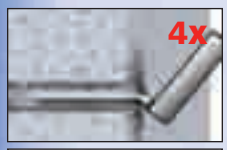
Drilling

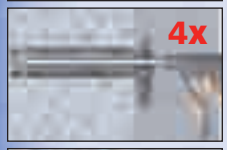
1- Drill a hole into the base material with a rotary hammer drill tool to the size and embedment required by the selected steel anchor element (*see installation specifications for threaded rod and reinforcing bar in solid concrete base material*). The tolerances of the carbide drill bit should meet the requirements of ANSI Standard B212.15.

Precaution: Wear suitable eye and skin protection. Avoid inhalation of dusts during drilling and/or removal.

Note! After drilling and prior to hole cleaning, all standing water in the drilled bore hole must be removed if present (e.g. vacuum, compressed air, etc.)

Hole Cleaning - Blow 4x, Brush 4x, Blow 4x



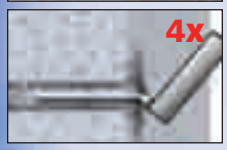


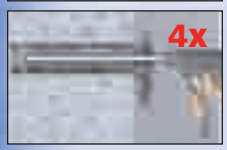
2a - Starting from the bottom or back of the anchor hole, blow the hole clean using a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl. oz., supplied by Powers Fasteners) a minimum of *four* times (4x).

- Use a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl. oz.) for anchor rod 3/8" to 3/4" diameter or reinforcing bar (rebar) sizes #3 to #6.
- Use a compressed air nozzle (min. 90 psi) for anchor rod 7/8" to 1-1/4" diameter and rebar sizes #7 to #10. A hand pump shall not be used with these anchor sizes.

2b - Determine wire brush diameter (*see hole cleaning equipment selection table*) 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 Powers Fasteners, Cat. #08282) should be used for holes drilled deeper than the listed brush length.

The wire brush diameter should be checked periodically during use. The brush must be replaced if it becomes worn (less than D_{min}, *see hole cleaning equipment selection table*) or does not come into contact with the sides of the drilled hole.





2c - Finally, blow the hole clean again a minimum of *four* times (4x).

- Use a compressed air nozzle (min. 90 psi) or a hand pump (min. volume 25 fl. oz.) for anchor rod 3/8" to 3/4" diameter or reinforcing bar (rebar) sizes #3 to #6.
- Use a compressed air nozzle (min. 90 psi) for anchor rod 7/8" to 1-1/4" diameter and rebar sizes #7 to #10. A hand pump shall not be used with these anchor sizes.

Preparing

3- Check adhesive expiration date on cartridge label. Do not use expired product. Review Material Safety Data Sheet (MSDS) before use. Cartridge temperature must be between 32°F - 95°F (0°C - 35°C) when in use. Review gel (working) and cure time table. Consideration should be given to the reduced gel time of the adhesive in warm temperatures.

Attach a supplied mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. Always use a new mixing nozzle with new cartridges of adhesive; and for all work interruptions exceeding the published working time of the adhesive (*see gel time and curing time table*).

4- Prior to inserting the anchor rod or rebar into the filled bore 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. 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 INSTRUCTIONS (SOLID BASE MATERIALS)

Installing

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. For embedment depth greater than 7-1/2" an extension nozzle (3/8" dia.) must be used with the mixing nozzle.

Piston plugs (*see adhesive piston plug table*) must be used with and attached to mixing nozzle and extension tube for horizontal and overhead installations with anchor rod from 3/4" to 1-1/4" diameter and rebar sizes #6 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 Powers Fasteners. Contact Powers for details 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. Air pockets are present when the threaded rod or rebar springs or air pockets burst during installation. In case of air pockets: remove rod or rebar, let the adhesive harden, re-drill the hole and repeat the complete installation.

8- Be sure that the anchor is fully seated at the bottom of the hole and that some adhesive has flowed from the hole and all around the top of the anchor. If there is not enough adhesive in the hole, the installation must be repeated. The anchor shall not be moved after placement and during cure.

Curing and Loading

9- Allow the adhesive anchor to cure to the specified full curing time prior to applying any load *(see 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 *(see installation specifications for threaded rod and reinforcing bar in solid concrete base material)* by using a calibrated torque wrench.

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

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REFERENCE TABLES FOR INSTALLATION

Gel (Working) Time and Curing Time Table for AC100+Gold			
Temperature of base material		Gel (working) time	Full curing time
°F	°C		
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

Hole Cleaning Equipment Selection Table for AC100+Gold							
Threaded rod diameter (inch)	Rebar size (no.)	ANSI drill bit diameter (inch)	Min. brush diameter, D_{min} (inches)	Brush length, L (inches)	Steel wire brush (Cat. #)	Blowout tool	Number of cleaning actions
Solid Base Material							
3/8	#3	7/16	0.475	6-3/4	08284	Hand-pump (Cat. #08280) or compressed air nozzle	4x blowing 4x brushing 4x blowing
1/2	#4	9/16	0.600	6-3/4	08285		
5/8	#5	11/16	0.735	7-7/8	08286		
3/4	#6	7/8	0.920	7-7/8	08287		
7/8	#7	1	1.045	11-7/8	08288	Compressed air nozzle only	
1	#8	1-1/8	1.175	11-7/8	08289		
1-1/4	#9	1-3/8	1.425	11-7/8	08290		
-	#10	1-1/2	1.550	11-7/8	08291		
Hollow Base Material							
3/8	-	1/2	0.600	7-7/8	08285	Hand-pump (Cat. #08280) or compressed air nozzle	2x blowing 2x brushing 2x blowing
1/2	-	5/8	0.735	7-7/8	08286		

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

Adhesive Piston Plugs					
Threaded rod diameter (inch)	Rebar Size (no.)	ANSI drill bit diameter (inch)	Plug Size (inch)	Plastic Plug (Cat. #)	Horizontal and overhead installations
7/8	#7	1	1	08301	
1	#8	1-1/8	1-1/8	08303	
1-1/4	#9	1-3/8	1-3/8	08305	
-	#10	1-1/2	1-1/2	08309	

A plastic extension tube (3/8" dia., Cat# 08281) must be used with piston plugs.

ORDERING INFORMATION

AC100+Gold Cartridges

Cat No.	Description	Std. Box	Std. Carton	Pallet
8462SD	AC100+Gold 5 fl. oz. Push-Pak	12	36	648
8478SD	AC100+Gold 10 fl. oz. Quik-Shot	12	36	648
8480SD	AC100+Gold 8 fl. oz. dual cartridge	12	-	624
8486SD	AC100+Gold 12 fl. oz. dual cartridge	12	-	540
8490SD	AC100+Gold 28 fl. oz. dual cartridge	8	-	240

One AC100+ Gold mixing nozzle is packaged with each cartridge. AC100+ Gold mixing nozzles must be used to ensure complete and proper mixing of the adhesive.

Cartridge System Mixing Nozzles

Cat No.	Description	Std. Pack/Box	Std. Carton
08293	Extra mixing nozzle for AC100+ Gold (5 oz., 8 oz.,10 oz. & 12 oz.)	2	24
08294	Extra mixing nozzle (with 8" extension) for AC100+ Gold 28 oz.	2	24
08281	Mixing nozzle extension, 8" length	2	24

Dispensing Tools for Injection Adhesive

Cat No.	Description	Std. Box	Std. Carton
08437	Manual caulking gun for Push-Pak and Quik-Shot	1	12
08479	High performance caulking gun for Push-Pak and Quik-Shot	1	6
08484	AC100+Gold 8 oz. standard all metal manual tool	1	6
08485	AC100+Gold 8 oz., 10 oz. & 12 oz. high performance manual tool	1	20
08495	AC100+Gold 28 oz. high performance manual tool	1	-
08496	AC100+Gold 28 oz. pneumatic tool	1	-
08444	AC100+Gold 28 oz. cordless power tool	1	-

Hole Cleaning Tools and Accessories

Cat No.	Description	Std. Package
08284	Wire brush for 7/16" ANSI hole (3/8" rod or #3 rebar), 6-3/4" length	1
08285	Wire brush for 9/16" ANSI hole (1/2" rod or #4 rebar), 6-3/4" length	1
08286	Wire brush for 11/16" ANSI hole (5/8" rod or #5 rebar), 7-7/8" length	1
08287	Wire brush for 7/8" ANSI hole (3/4" rod or #6 rebar), 7-7/8" length	1
08288	Wire brush for 1" ANSI hole (7/8" rod or #7 rebar), 11-7/8" length	1
08289	Wire brush for 1-1/8" ANSI hole (1" rod or #8 rebar), 11-7/8" length	1
08290	Wire brush for 1-3/8" ANSI hole (1-1/4" rod or #9 rebar), 11-7/8" length	1
08291	Wire brush for 1-1/2" ANSI hole (#10 rebar), 11-7/8" length	1
08283	SDS-plus adapter for steel brushes	1
08296	Standard drill adapter for steel brushes (e.g. Jacobs Chuck)	1
08282	Steel brush extension, 12" length	1
08280	Hand pump/dust blower (25 fl. oz. cylinder volume)	1
08292	Air compressor nozzle with extension, 18" length	1
08465	Adjustable torque wrench with 1/2" square drive (10 to 150 ft.-lbs.)	1
08466	Adjustable torque wrench with 1/2" square drive (25 to 250 ft.-lbs.)	1
52073	Adhesive cleaning kit, includes 4 wire brushes (08284, 08285, 08286, 08287), steel brush extension (08282), SDS-plus adapter (08283), standard drill adapter (08296), hand pump/dust blower (08280), gloves and safety glasses	1

Stainless Steel Screen Tubes

Cat No.	Description	Drill Diameter	Std. Carton
07961	3/8" x 3-1/2" Screen Tube*	1/2"	25
07962	3/8" x 6" Screen Tube*	1/2"	25
07963	3/8" x 8" Screen Tube*	1/2"	25
07964	3/8" x 10" Screen Tube*	1/2"	25
07959	3/8" x 12" Screen Tube*	1/2"	25
07965	1/2" x 3-1/2" Screen Tube	5/8"	25
07966	1/2" x 6" Screen Tube	5/8"	25
07967	1/2" x 8" Screen Tube*	5/8"	25
07968	1/2" x 10" Screen Tube*	5/8"	25

Screen tubes are made from a 300 series stainless steel. The nominal diameter of the screen listed indicates the matching rod diameter.
***Includes extension tubing.**

AC100+Gold®

SD PERFORMANCE DATA

Tension Design Information for Threaded Rod and Reinforcing Bar in Normal-Weight Concrete (For use with load combinations taken from ACI 318 Section 9.2)[1,2,3,4,5]

Design Characteristic		Notation	Units	Nominal Anchor Size							
				3/8"	1/2"	5/8"	3/4"	7/8"	1"	-	1-1/4"
				#3	#4	#5	#6	#7	#8	#9	#10
Minimum embedment		$h_{ef,min}$	in. (mm)	2-3/8 (70)	2-3/4 (70)	3-1/8 (79)	3-1/2 (89)	3-1/2 (89)	4 (102)	4-1/2 (114)	5 (127)
STEEL STRENGTH IN TENSION											
Effective cross sectional area of threaded rod		A_{se}	in.^{2} (mm^2)	0.078 (50)	0.142 (92)	0.226 (146)	0.335 (216)	0.462 (289)	0.606 (391)	-	0.969 (625)
Steel strength in tension	Carbon rod (ASTM A 307, Grade C or F1554)	N_{sa}	lb (kN)	4,525 (20.1)	8,235 (36.6)	13,110 (58.3)	19,430 (86.4)	26,795 (119.2)	35,150 (156.3)	-	56,200 (250.0)
	Stainless steel rod - alloy 304/316 (ASTM F 593, Condition CW)	N_{sa}	lb (kN)	7,800 (34.7)	14,200 (63.2)	22,600 (100.5)	28,475 (126.7)	39,270 (174.7)	51,510 (229.1)	-	82,365 (366.4)
	High strength carbon rod (ASTM A 193, Grade B7)	N_{sa}	lb (kN)	9,360 (41.6)	17,040 (75.8)	27,120 (120.6)	40,200 (178.8)	55,440 (246.6)	72,720 (323.5)	-	116,280 (517.2)
Effective cross sectional area of reinforcing bar		A_{se}	in.^{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)
Steel strength in tension, Grade 60 reinforcing bars		N_{sa}	lb (kN)	9,900 (44.0)	18,000 (80.1)	27,900 (124.1)	39,600 (176.1)	54,000 (240.2)	71,100 (316.3)	90,000 (400.3)	114,300 (508.4)
Reduction factor for steel strength		ø	-	0.75							
CONCRETE BREAKOUT STRENGTH IN TENSION											
Effectiveness factor for uncracked concrete		k_{uncr}	-	24	24	24	24	24	24	24	24
Modification factor for uncracked concrete		$\psi_{c,N}$	-	For all design cases use $\psi_{c,N} = 1.0$							
Critical edge distance		c_{ac}	in. (mm)	$1.6h_{ef}$ when $h \geq h_{ef} + 5(c_{a,min})^{0.75}$; otherwise $c_{ac} = 2.7h_{ef}$							
Critical spacing distance		s_{ac}	in. (mm)	$2c_{ac}$							
Reduction factor for concrete breakout strength		ø	-	Condition B = 0.65							
BOND STRENGTH IN TENSION FOR TEMPERATURE RANGE A[4] Maximum long term temperature = 75°F (24°C), Maximum short term temperature = 104°F (40°C)											
Dry hole	Characteristic bond strength, uncracked concrete (2,500 psi)	$\tau_{k,uncr}$	psi (N/mm^2)	1,359 (9.4)	1,359 (9.4)	1,359 (9.4)	1,359 (9.4)	1,359 (9.4)	1,228 (8.5)	1,098 (7.6)	968 (6.7)
	Reduction factor for bond strength	$ø_d$	-	0.65							
Water saturated concrete	Reduction factor for bond strength	$ø_{ws}$	-	0.55							
	Additional factor for water saturated concrete condition	K_{ws}	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Water-filled hole	Reduction factor for bond strength	$ø_{wf}$	-	0.45							
	Additional factor for water-filled hole condition	K_{wf}	-	0.77	0.77	0.77	0.77	0.70	0.69	0.68	0.67
BOND STRENGTH IN TENSION FOR TEMPERATURE RANGE B[4,5] Maximum long term temperature = 122°F (50°C), Maximum short term temperature = 176°F (80°C)											
Dry hole	Characteristic bond strength, uncracked concrete (2,500 psi)	$\tau_{k,uncr}$	psi (N/mm^2)	833 (5.7)	833 (5.7)	833 (5.7)	833 (5.7)	833 (5.7)	753 (5.2)	674 (4.6)	594 (4.1)
	Reduction factor for bond strength	$ø_d$	-	0.65							
Wet hole	Reduction factor for bond strength	$ø_{ws}$	-	0.55							
	Additional factor for water saturated concrete condition	K_{ws}	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Water-filled hole	Reduction factor for bond strength	$ø_{wf}$	-	0.45							
	Additional factor for water-filled hole condition	K_{wf}	-	0.77	0.77	0.77	0.77	0.70	0.69	0.68	0.67

1. The data in this table is intended to be used together with the design provisions of ACI 318 Appendix D and ICC-ES AC308 Annex A, Section 3.3 and ESR-2582.
2. Installation must comply with published instructions and details. Periodic special inspection must be performed where required by code or the Authority Having Jurisdiction (AHJ). See ICC-ES AC308 Annex A, Section 14.4.
3. For ductility classification of steel anchor elements see ESR-2582.
4. Long term concrete temperatures are roughly constant over significant periods of time. Short-term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling.
5. For load combinations consisting of short term loads only such as wind, bond strength may be increased by 40% for Temperature Range B.

SD PERFORMANCE DATA

Shear Design Information for Threaded Rod and Reinforcing Bar in Normal-Weight Concrete (For use with load combinations taken from ACI 318 Section 9.2)[1,2,3]

Design Characteristic		Notation	Units	Nominal Anchor Size							
				3/8"	1/2"	5/8"	3/4"	7/8"	1"	-	1-1/4"
				#3	#2	#5	#6	#7	#8	#9	#10
Minimum embedment		$h_{ef,min}$	in. (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)
STEEL STRENGTH IN SHEAR											
Steel strength in shear	Standard carbon rod (ASTM A 307, Grade C or F1554)	V_{sa}	lb (kN)	2,715 (12.1)	4,940 (22.0)	7,865 (35.0)	11,660 (51.9)	16,075 (71.5)	21,090 (93.8)	-	33,720 (150.0)
	Stainless steel rod - alloy 304/316 (ASTM F 593, Condition CW)	V_{sa}	lb (kN)	4,680 (20.8)	8,520 (37.9)	13,560 (60.3)	17,085 (76.0)	23,560 (104.8)	30,905 (137.5)	-	49,420 (219.8)
	High strength carbon rod (ASTM A 193, Grade B7)	V_{sa}	lb (kN)	5,615 (25.0)	10,225 (45.5)	16,270 (72.4)	24,120 (107.3)	33,265 (148.0)	43,630 (194.1)	-	69,770 (310.3)
Steel strength in shear, Grade 60 reinforcing bar		V_{sa}	lb (kN)	5,940 (26.4)	10,800 (48.0)	16,710 (74.5)	23,760 (105.7)	32,400 (144.1)	42,660 (189.8)	54,000 (240.2)	68,580 (305.0)
Reduction factor for steel strength		ø	-	0.65 (0.60 for stainless steel rod)							
CONCRETE BREAKOUT STRENGTH IN SHEAR											
Load bearing length of anchor		ℓ_e	in. (mm)	h_{ef} or 8d whichever is less							
Reduction factor for concrete breakout strength[3]		ø	-	Condition B = 0.70							
PRYOUT STRENGTH IN SHEAR											
Coefficient for pryout strength		k_{cp}	-	1.0 for $h_{ef} < 2.5$ in., 2.0 for $h_{ef} \geq 2.5$ in.							
Reduction factor for pryout strength[3]		ø		Condition B = 0.70							

1. The data in this table is intended to be used together with the design provisions of ACI 318 Appendix D and ICC-ES AC308 Annex A, Section 3.3 and ESR-2582.
2. Installation must comply with published instructions and details. Periodic special inspection must be performed where required by code or the Authority Having Jurisdiction (AHJ). See ICC-ES AC308 Annex A, Section 14.4 and ESR-2582.
3. For ductility classification of steel anchor elements see ESR-2582.

Bond Strength Determination				
Concrete State	**Hole Drilling Method**	**Installation Conditions**	**Bond Strength**	**Strength Reduction Factor**
Uncracked concrete	Hammer drill	Dry concrete	$\tau_{k,uncr}$	$ø_d$
		Water-saturated concrete	$\tau_{k,uncr}\ K_{ws}$	$ø_{ws}$
		Water-filled hole	$\tau_{k,uncr}\ K_{wf}$	$ø_{wf}$

For concrete compressive strength between 2,500 psi and 8,000 psi, the tabulated characteristic bond strength for cracked concrete $\tau_{k,cr}$ or uncracked concrete $\tau_{k,uncr}$ may be increased by a factor of $(f'_c / 2{,}500)^{0.13}$.

FACTORED DESIGN STRENGTH (ϕN_N AND ϕV_N) IN ACCORDANCE WITH ACI 318 APPENDIX D AND ICC-ES AC308 ANNEX A:

Tension and Shear Design Strength for AC100+Gold Installed into Uncracked Concrete in Dry Hole Condition for *Temperature Range A* (Bond or Concrete Strength)

Maximum long term temperature = 75°F (24°C), Maximum short term temperature = 104°F (40°C)

Nominal Rod Rebar Size (in. or #)	Embed. Depth h_{ef} (in.)	Minimum Concrete Compressive Strength, f'c (psi)									
		2,500		3,000		4,000		6,000		8,000	
		ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)	ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)	ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)	ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)	ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)
3/8 or #3	2 3/8	2,470	1,860	2,530	2,035	2,625	2,350	2,770	2,880	2,875	3,095
	3	3,120	2,565	3,195	2,810	3,320	3,245	3,500	3,975	3,630	4,590
	4 1/2	4,685	4,255	4,795	4,660	4,980	5,380	5,250	6,590	5,445	7,610
1/2 or #4	2 3/4	3,555	2,480	3,895	2,715	4,055	3,135	4,275	3,840	4,440	4,435
	4	5,550	4,230	5,685	4,630	5,900	5,350	6,220	6,550	6,455	7,565
	6	8,325	7,150	8,525	7,835	8,850	9,045	9,330	11,080	9,685	12,795
5/8 or #5	3 1/8	4,310	3,260	4,720	3,570	5,450	4,125	6,075	5,050	6,305	5,830
	5	8,670	6,420	8,880	7,030	9,220	8,120	9,720	9,945	10,090	11,480
	7 1/2	13,010	10,945	13,320	11,990	13,830	13,840	14,575	16,955	15,130	19,575
3/4 or #6	3 1/2	5,105	4,350	5,595	4,765	6,460	5,500	7,910	6,740	8,475	7,780
	6	11,465	9,365	12,560	10,255	13,275	11,845	13,995	14,505	14,525	16,750
	9	18,730	15,905	19,180	17,425	19,910	20,120	20,990	24,640	21,790	28,455
7/8 or #7	3 1/2	5,105	4,770	5,595	5,225	6,460	6,035	7,910	7,395	9,135	8,535
	7	14,445	12,685	15,825	13,895	18,070	16,045	19,045	19,650	19,770	22,690
	10 1/2	25,495	21,580	26,110	23,640	27,105	27,295	28,570	33,430	29,660	38,600
1 or #8	4	6,240	6,195	6,835	6,790	7,895	7,840	9,665	9,600	11,160	11,085
	8	17,650	16,510	15,825	18,085	21,325	20,885	22,480	25,580	23,335	29,535
	12	30,090	28,115	26,110	30,795	31,985	35,560	33,720	43,555	35,005	50,290
#9	4 1/2	7,445	8,090	8,155	8,860	9,420	10,230	11,535	12,530	13,205	14,465
	9	21,060	21,295	23,070	23,325	24,130	26,935	25,440	32,985	26,410	38,090
	13 1/2	34,055	36,065	34,870	39,510	36,200	45,620	38,155	55,875	39,610	64,515
1-1/4	5	8,720	9,605	8,155	10,525	11,030	12,150	13,510	14,880	14,370	17,185
	10	24,665	25,670	23,070	28,125	26,265	32,475	27,685	39,770	28,740	45,925
	15	37,065	43,775	34,870	47,950	39,400	55,370	41,530	67,810	43,115	78,305
#10	5	8,720	9,915	8,155	10,860	11,030	12,545	13,510	15,360	14,370	17,740
	10	24,665	26,175	23,070	28,675	26,265	33,110	27,685	40,550	28,740	46,825
	15	37,065	44,390	34,870	48,625	39,400	56,150	41,530	68,765	43,115	79,405

LEGEND

Concrete Breakout Strength   Bond Strength/Pryout Strength

1. Tabular values are provided for illustration and are applicable for single anchors installed in uncracked normal-weight concrete with minimum slab thickness, $h_a = h_{min}$, and with the following conditions: - c_{a1} is greater than or equal to the critical edge distance, c_{ac} where $c_{ac} = 2.7\ h_{ef}$.
   - c_{a2} is greater than or equal to 1.5 times c_{a1}.
2. Calculations were performed according to ACI 318-05 Appendix D and ICC-ES AC308 Annex A, Section 3.3. The load level corresponding to the failure mode is listed (e.g. For *tension:* steel, concrete breakout or bond strength; For *shear:* steel, concrete breakout or pryout strength). The lowest load level controls.
3. Strength reduction factors (ø) for steel strength and concrete breakout strength are based on ACI 318 Section 9.2 for load combinations. Condition B was assumed.
4. Strength reduction factors(ø) for bond strength are determined from reliability testing and qualification in accordance with ICC-ES AC308 and are tabulated in this product information and in ESR-2582.
5. Tabular values are permitted for static loads only, seismic loading is not permitted with these tables. Periodic special inspection must be performed where required by code or the Authority Having Jurisdiction (AHJ). See ICC-ES AC308 Annex A, Section 14.4 and ESR-2582.
6. Tabular values are not permitted for anchors subjected to tension resulting from sustained loading. Please see ICC-ES AC308 Annex A, Section 3.3 and ESR-2582 for the supplement design requirement for this loading condition.
7. For designs that include combined tension and shear, the interaction of tension and shear loads must be calculated in accordance with ACI 318-05 Appendix D.
8. Interpolation is not permitted to be used with the tabular values. For intermediate base material compressive strengths, please see ACI 318-05 Appendix D, ICC-ES AC308 Annex A, Section 3.3 and information included in this product supplement. For other design conditions including seismic considerations please see ACI 318-05 Appendix D and ICC-ES AC308 Annex A, Section 3.3 and ESR-2582.
9. Long term concrete temperatures are roughly constant over significant periods of time. Short-term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling.

FACTORED DESIGN STRENGTH (ϕN_n AND ϕV_n) IN ACCORDANCE WITH ACI 318 APPENDIX D AND ICC-ES AC308 ANNEX A:

Tension and Shear Design Strength for AC100+Gold Installed into Uncracked Concrete in Dry Hole Condition for *Temperature Range B* (Bond or Concrete Strength)– see notes on previous page

Maximum long term temperature = 122°F (50°C), Maximum short term temperature = 176°F (80°C)

Nominal Rod Rebar Size (in. or #)	Embed. Depth h_{ef} (in.)	Minimum Concrete Compressive Strength, f'c (psi)									
		2,500		3,000		4,000		6,000		8,000	
		ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)	ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)	ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)	ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)	ϕN_{cb} or ϕN_a Tension (lbs.)	ϕV_{cb} or ϕV_{cp} Shear (lbs.)
3/8 or #3	2 3/8	1,515	1,630	1,550	1,670	1,610	1,735	1,700	1,830	1,760	1,900
	3	1,915	2,565	1,960	2,810	2,035	3,245	2,145	3,975	2,225	4,590
	4 1/2	2,870	4,255	2,940	4,660	3,050	5,380	3,215	6,590	3,340	7,190
1/2 or #4	2 3/4	2,340	2,480	2,395	2,715	2,485	3,135	2,620	3,840	2,720	4,435
	4	3,400	4,230	3,485	4,630	3,615	5,350	3,810	6,550	3,955	7,565
	6	5,105	7,150	5,225	7,835	5,425	9,045	5,720	11,080	5,935	12,785
5/8 or #5	3 1/8	3,320	3,260	3,400	3,570	3,530	4,125	3,725	5,050	3,865	5,830
	5	5,315	6,420	5,445	7,030	5,650	8,120	5,955	9,945	6,185	11,480
	7 1/2	7,970	10,945	8,165	11,990	8,475	13,840	8,935	16,955	9,275	19,575
3/4 or #6	3 1/2	4,465	4,350	4,570	4,765	4,745	5,500	5,005	6,740	5,195	7,780
	6	7,655	9,365	7,840	10,255	8,135	11,845	8,575	14,505	8,905	16,750
	9	11,480	15,905	11,755	17,425	12,205	20,120	12,865	24,640	13,355	28,455
7/8 or #7	3 1/2	5,105	4,770	5,335	5,225	5,540	6,035	5,835	7,395	6,060	8,535
	7	10,420	12,685	10,670	13,895	11,075	16,045	11,675	19,650	12,120	22,690
	10 1/2	15,630	21,580	16,005	23,640	16,615	27,295	17,510	33,430	18,180	38,600
1 or #8	4	6,150	6,195	6,300	6,790	6,540	7,840	6,890	9,600	7,155	11,085
	8	12,300	16,510	12,595	18,085	13,075	20,885	13,785	25,580	14,310	29,535
	12	18,450	28,115	18,895	30,795	19,615	35,560	20,675	43,555	21,465	46,230
#9	4 1/2	6,970	8,090	7,135	8,860	7,405	10,230	7,810	12,530	8,105	14,465
	9	13,935	21,295	14,270	23,325	14,815	26,935	15,615	32,985	16,210	34,915
	13 1/2	20,905	36,065	21,405	39,510	22,220	45,620	23,425	50,450	24,315	52,370
1-1/4	5	7,580	9,605	7,765	10,525	8,060	12,150	8,495	14,880	8,820	17,185
	10	15,160	25,670	15,525	28,125	16,115	32,475	16,990	36,595	17,635	37,990
	15	22,745	43,775	23,290	47,950	24,175	52,070	25,485	54,890	26,455	56,980
#10	5	7,580	9,915	7,765	10,860	8,060	12,545	8,495	15,360	8,820	17,740
	10	15,160	26,175	15,525	28,675	16,115	33,110	16,990	36,595	17,635	37,990
	15	22,745	44,390	23,290	48,625	24,175	52,070	25,485	54,890	26,455	56,980

LEGEND

Concrete Breakout Strength — Bond Strength/Pryout Strength

Factored bond or concrete strength must be checked against factored steel strength to determine the ultimate load. Factored tension design strength = min. (ϕN_{cb} or ϕN_a, ϕN_{sa}) and factored shear design strength = min. (ϕV_{cb} or ϕV_{cr}, ϕV_{cp}).

Tension and Shear Design Strength of Steel Elements (Steel Strength)

Nominal Rod Rebar Size (in. or #)	Steel Elements- Threaded Rod and Reinforcing Bar							
	A 307, Grade C or F1554		F 593 (SS), CW		A 193, Grade B7		Grade 60 Rebar	
	ϕN_{sa} Tension (lbs.)	ϕV_{sa} Shear (lbs.)	ϕN_{sa} Tension (lbs.)	ϕV_{sa} Shear (lbs.)	ϕN_{sa} Tension (lbs.)	ϕV_{sa} Shear (lbs.)	ϕN_{sa} Tension (lbs.)	ϕV_{sa} Shear (lbs.)
3/8 or #3	3,395	1,765	5,850	3,040	7,315	3,805	7,425	3,860
1/2 or #4	6,175	3,210	10,650	5,540	13,315	6,925	13,500	7,020
5/8 or #5	9,830	5,110	16,950	8,815	21,190	11,020	20,925	10,880
3/4 or #6	14,575	7,580	21,355	11,105	31,405	16,330	29,700	15,455
7/8 or #7	20,095	10,450	29,455	15,315	43,315	22,525	40,500	21,060
1 or #8	26,360	13,710	38,635	20,090	56,815	29,545	53,325	27,730
#9	-	-	-	-	-	-	67,500	35,100
1 1/4	42,150	21,920	61,775	32,190	90,845	47,240	-	-
#10	-	-	-	-	-	-	85,725	44,575

LEGEND

Steel Strength

ASD PERFORMANCE DATA

Allowable Load Capacities for AC100+ Gold Installed into Uncracked Normal-Weight Concrete with Threaded Rod and Reinforcing Bar (Based on Bond Strength/Concrete Capacity)[1,2,3,4,5,6]

Nominal Rod or Rebar Size (in. or #)	Minimum Embedment Depth (in.)	Minimum Concrete Compressive Strength, (f'c)			
		3,000 psi (20.7 Mpa)	4,000 psi (27.6 Mpa)	5,000 psi (34.5 Mpa)	6,000 psi (41.4 Mpa)
		Tension (lbs) (kN)			
3/8 or #3	2 3/8	945 (4.2)	980 (4.4)	1,005 (4.5)	1,025 (4.6)
	3 1/2	1,385 (6.2)	1,440 (6.4)	1,475 (6.6)	1,505 (6.7)
	4 1/2	1,780 (7.9)	1,845 (8.2)	1,895 (8.5)	1,935 (8.6)
1/2 or #4	2 3/4	1,445 (6.5)	1,495 (6.7)	1,535 (6.9)	1,570 (7)
	4 3/8	2,310 (10.3)	2,390 (10.7)	2,455 (11)	2,510 (11.2)
	6	3,175 (14.2)	3,285 (14.7)	3,375 (15.1)	3,450 (15.4)
5/8 or #5	3 1/8	2,065 (9.2)	2,140 (9.6)	2,195 (9.8)	2,245 (10)
	5 1/4	3,470 (15.5)	3,595 (16)	3,690 (16.5)	3,775 (16.9)
	7 1/2	4,960 (22.1)	5,135 (22.9)	5,275 (23.5)	5,390 (24.1)
3/4 or #6	3 1/2	2,770 (12.4)	2,865 (12.8)	2,945 (13.1)	3,010 (13.4)
	6 1/4	4,960 (22.1)	5,130 (22.9)	5,270 (23.5)	5,390 (24.1)
	9	7,145 (31.9)	7,395 (33)	7,595 (33.9)	7,765 (34.7)
7/8 or #7	3 1/2	2,860 (12.8)	2,960 (13.2)	3,040 (13.6)	3,110 (13.9)
	7	6,275 (28)	6,495 (29)	6,675 (29.8)	6,820 (30.4)
	10 1/2	9,690 (43.3)	10,030 (44.8)	10,305 (46)	10,530 (47)
1 or #8	4	3,490 (15.6)	3,615 (16.1)	3,710 (16.6)	3,795 (16.9)
	8	7,470 (33.3)	7,735 (34.5)	7,945 (35.5)	8,120 (36.3)
	12	11,450 (51.1)	11,850 (52.9)	12,175 (54.4)	12,445 (55.6)
#9	4 1/2	4,170 (18.6)	4,315 (19.3)	4,435 (19.8)	4,530 (20.2)
	9	8,575 (38.3)	8,875 (39.6)	9,120 (40.7)	9,320 (41.6)
	13 1/2	12,980 (57.9)	13,435 (60)	13,800 (61.6)	14,105 (63)
1-1/4	5	4,700 (21)	4,865 (21.7)	4,995 (22.3)	5,110 (22.8)
	10	9,415 (42)	9,745 (43.5)	10,010 (44.7)	10,235 (45.7)
	15	14,130 (63.1)	14,625 (65.3)	15,025 (67.1)	15,355 (68.5)
#10	5	4,700 (21)	4,865 (21.7)	4,995 (22.3)	5,110 (22.8)
	10	9,415 (42)	9,745 (43.5)	10,010 (44.7)	10,235 (45.7)
	15	14,130 (63.1)	14,625 (65.3)	15,025 (67.1)	15,355 (68.5)

1. Allowable load capacities listed are calculated using an applied safety factor of 4.0. Consideration of safety factors of 10 or higher may be necessary depending on the application, such as life safety or overhead.
2. Linear interpolation may be used to determine allowable loads for intermediate embedments and compressive strengths.
3. The tabulated load values are applicable to single anchors installed at critical edge and spacing distances and where the minimum member thickness is 2.7 times the embedment depth.
4. The tabulated load values are applicable for dry concrete. Holes must be drilled with a hammer drill and an ANSI carbide drill bit. Installation in wet concrete or in water-filled holes may require a reduction in capacity. Contact Powers Fasteners for more information concerning these installation conditions.
5. Adhesives experience reductions in capacity at elevated temperatures. See the in-service temperature chart.
6. Allowable bond strength/concrete capacity must be checked against allowable steel strength to determine the controlling allowable load. Allowable shear capacity is controlled by allowable steel strength for the given conditions.

In-Service Temperature Chart for Allowable Load Capacities[1]

Base Material Temperature		Reduction Factor For Temperature
°F	°C	
32	0	1.00
41	5	1.00
50	10	1.00
68	20	1.00
86	30	0.93
104	40	0.86
122	50	0.80
140	60	0.73
158	70	0.66
176	80	0.59

1. Linear interpolation may be used to derive reduction factors for base material temperatures between those listed.

ASD PERFORMANCE DATA

Allowable Load Capacities for AC100+ Gold Installed into Uncracked Normal-Weight Concrete with Threaded Rod and Reinforcing Bar (Based on Steel Strength)[1,2,3]

Nominal Rod or Rebar Size (in. or #)	Steel Elements - Threaded Rod and Reinforcing Bar							
	A36/A307, Grade C or F 1554		A 193, Grade B7		F 593, CW (SS)		Grade 60 Rebar	
	Tension (lbs) (kN)	Shear (lbs) (kN)	Tension (lbs) (kN)	Shear (lbs) (kN)	Tension (lbs) (kN)	Shear (lbs) (kN)	Tension (lbs) (kN)	Shear (lbs) (kN)
3/8 or #3	1,485 (6.6)	760 (3.4)	3,085 (13.8)	1,585 (7.1)	2,565 (11.5)	1,315 (5.9)	2,655 (11.9)	1,320 (5.9)
1/2 or #4	2,725 (12.2)	1,395 (6.2)	5,655 (25.2)	2,900 (12.9)	4,685 (20.9)	2,410 (10.8)	4,710 (21)	2,345 (10.5)
5/8 or #5	4,325 (19.3)	2,225 (9.9)	8,990 (40.1)	4,625 (20.6)	7,480 (33.4)	3,845 (17.2)	7,370 (32.9)	3,670 (16.4)
3/4 or #6	6,420 (28.7)	3,295 (14.7)	13,320 (59.5)	6,845 (30.6)	9,465 (42.3)	4,865 (21.7)	10,592 (47.3)	5,285 (23.6)
7/8 or #7	8,855 (39.5)	4,550 (20.3)	18,390 (82.1)	9,445 (42.2)	13,070 (58.3)	6,715 (30)	14,425 (64.4)	7,195 (32.1)
1 or #8	11,630 (51.9)	5,970 (26.7)	24,115 (107.7)	12,395 (55.3)	17,150 (76.6)	8,810 (39.3)	18,840 (84.1)	9,400 (42)
#9	-	-	-	-	-	-	23,845 (106.5)	11,890 (53.1)
1-1/4	18,595 (83)	9,555 (42.7)	38,585 (172.3)	19,830 (88.5)	27,430 (122.5)	14,095 (62.9)		
#10	-	-	-	-	-	-	29,435 (131.4)	14,680 (65.5)

1. Allowable load capacities listed are calculated for the steel element type. Consideration of applying additional safety factors may be necessary depending on the application, such as life safety or overhead.
2. Allowable bond strength/concrete capacity must be checked against allowable steel strength to determine the controlling allowable load.
3. Allowable shear capacity is controlled by steel strength for the given conditions on the previous page.

AC100+Gold®

Ultimate Load Capacities for Threaded Rod Installed with AC100+Gold into the Face Shell of Grout-Filled Concrete Masonry Walls[1,2,3]

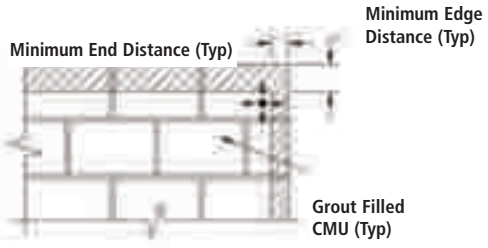
Rod Diameter d in. (mm)	Drill Diameter d_{bit} in.	Minimum Embed. Depth in. (mm)	Minimum Edge Distance in. (mm)	Minimum End Distance in. (mm)	Ultimate Load		Allowable Load	
					Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
3/8 (9.5)	7/16	3 (76.2)	3 (76.2)	4 (101.6)	3,670 (16.3)	2,450 (10.9)	735 (3.3)	490 (2.2)
			12 (304.8)	12 (304.8)	4,795 (21.3)	4,275 (19.0)	960 (4.3)	855 (3.8)
1/2 (12.7)	9/16	4 (101.6)	4 (101.6)	4 (101.6)	4,920 (21.8)	3,280 (14.6)	985 (4.4)	655 (2.9)
			12 (304.8)	12 (304.8)	6,060 (26.9)	7,550 (33.6)	1,210 (5.4)	1,510 (6.7)

Ultimate Load Capacities for Threaded Rod Installed with AC100+Gold into the Top of Grout-Filled Concrete Masonry Walls[1,2,3]

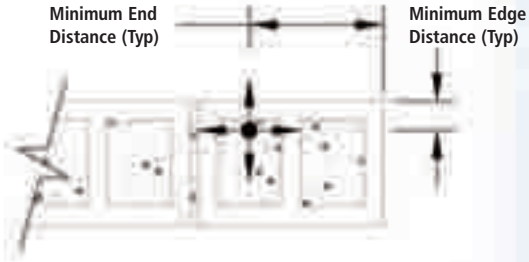
Rod Diameter d in. (mm)	Drill Diameter d_{bit} in.	Minimum Embed. Depth in. (mm)	Minimum Edge Distance in. (mm)	Minimum End Distance in. (mm)	Ultimate Load		Allowable Load	
					Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/2 (12.7)	9/16	2-3/4 (69.8)	1-3/4 (44)	4 (101.6)	2,975 (13.2)	1,500 (6.67)	595 (2.6)	300 (2.9)
		4 (106)	1-3/4 (44)	4 (101.6)	3,320 (14.7)	1,770 (7.87)	665 (3.0)	1,510 (1.6)

Notes for the above two tables:

1. Tabulated load values are for anchors installed in a minimum 6" wide Grade N, Type II, lightweight, medium-weight or normal-weight concrete masonry units conforming to ASTM C 90 that have reached a designated ultimate compressive strength at the time of installation ($f'm \geq 1{,}500$ psi). Mortar must be type N, S or M.
2. Allowable loads are calculated using all applied safety factor of 5.0. Consideration of safety factors of 10 or higher may be necessary depending on the application, such as life safety.
3. Anchor installations are limited to one per masonry cell. Shear loads may be applied in any direction.



FACE SHELL
Permissable Anchor Locations
Un-hatched Area / Through Face Shell



TOP OF WALL

Ultimate Load Capacities for Threaded Rod Installed with AC100+Gold into Hollow Concrete Masonry Walls with Stainless Steel Screen Tubes[1,2,3]

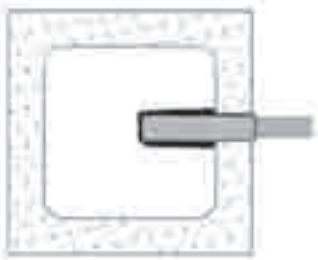
Rod Diameter d in. (mm)	Drill Diameter d_{bit} in.	Screen Tube Length in. (mm)	Minimum End Distance in. (mm)	Minimum Edge Distance in. (mm)	Ultimate Load Tension lbs. (kN)	Ultimate Load Shear lbs. (kN)	Allowable Load Tension lbs. (kN)	Allowable Load Shear lbs. (kN)
3/8 (9.5)	1/2	3-1/2 (88.9)	3-3/4 (95.2)	3-3/4 (95.2)	1,600 (7.2)	1,700 (9.6)	320 (1.4)	340 (1.5)
1/2 (12.7)	5/8	3-1/2 (88.9)	3-3/4 (95.2)	3-3/4 (95.2)	2,165 (9.6)	1,700 (9.6)	430 (1.9)	340 (1.5)

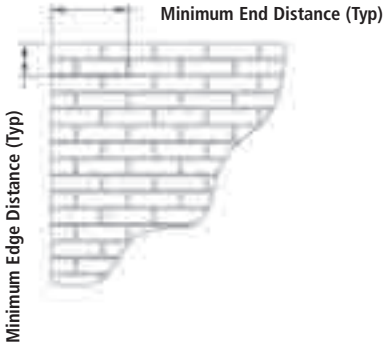
1. Tabulated load values are for anchors installed in minimum 8" wide, Grade N, Type II, lightweight, medium-weight or normal-weight concrete masonry units conforming to ASTM C 90 that have reached a designated ultimate compressive strength at the time of installation ($f'm \geq 1{,}500$ psi). Mortar must be type N, S or M.
2. Allowable loads are calculated using an applied safety factor or 5.0. Consideration of safety factors of 10 or higher may be necessary depending on the application, such as life safety.
3. Anchor spacing is limited to one anchor per masonry cell.

Ultimate Load Capacities for Threaded Rod Installed with AC100+Gold into the Face of Brick Masonry Walls[1,2]

Rod Diameter d in. (mm)	Drill Diameter d_{bit} in.	Minimum Embed. Depth in. (mm)	Minimum End Distance in. (mm)	Minimum Edge Distance in. (mm)	Minimum Spacing in. (mm)	Ultimate Load Tension lbs. (kN)	Ultimate Load Shear lbs. (kN)	Allowable Load Tension lbs. (kN)	Allowable Load Shear lbs. (kN)
3/8 (9.5)	1/2	3-1/2 (88.9)	6 (152.4)	6 (152.4)	6 (152.4)	1,600 (7.2)	1,700 (9.6)	320 (1.4)	340 (1.5)
1/2 (12.7)	5/8	6 (152.4)	8 (203.2)	8 (203.2)	8 (203.2)	2,165 (9.6)	1,700 (9.6)	430 (1.9)	340 (1.5)

1. Tabulated load values are for anchors installed in minimum 2 wythe Grade SW, solid clay brick masonry conforming to ASTM C62.
2. The values listed above are ultimate load capacities which should be reduced by a minimum safety factor of 5.0 or greater to determine the allowable working load. Consideration of safety factors of 10 or higher may be necessary depending on the application, such as life safety.



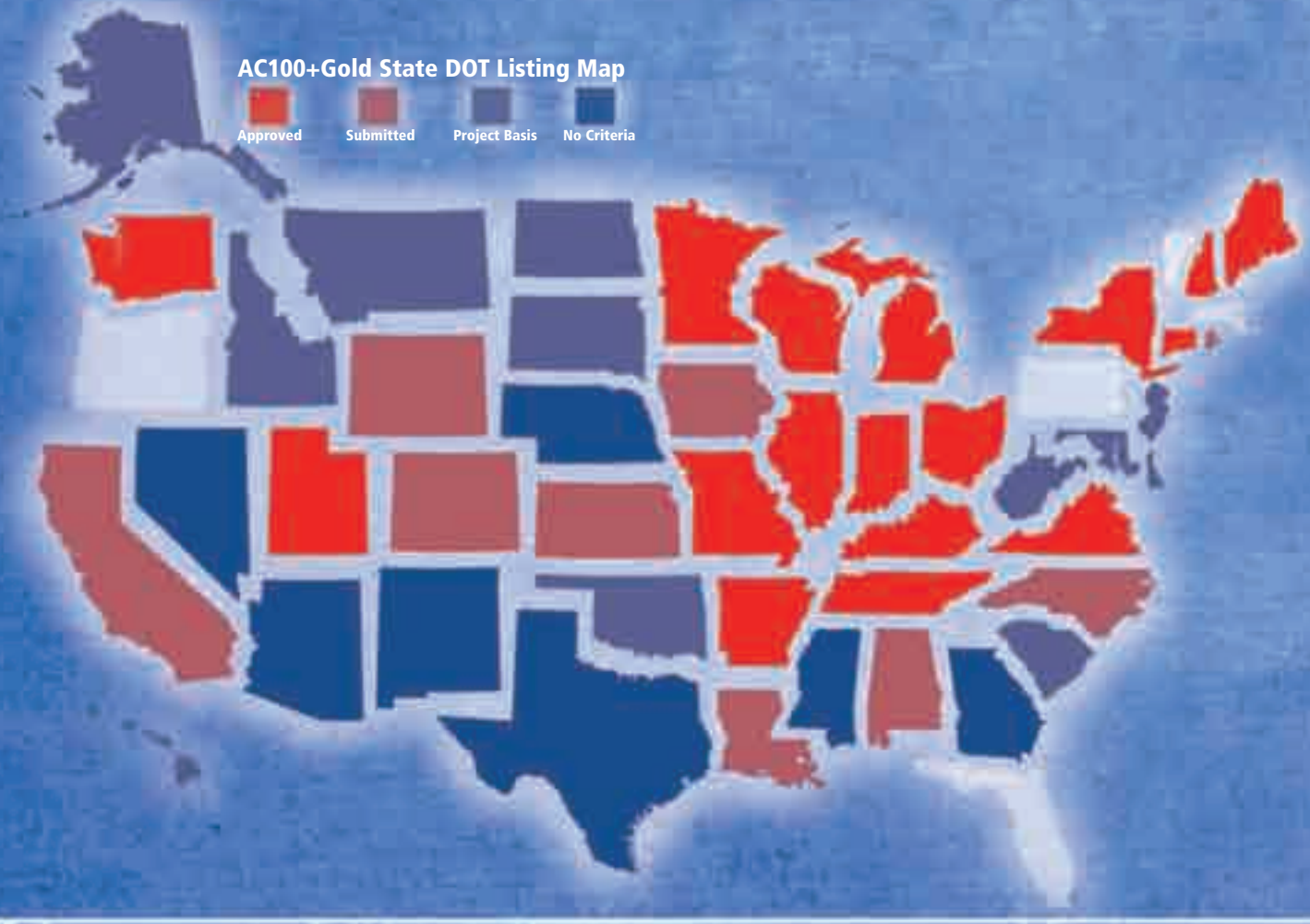


Adhesive DOT Listing

State	AC100+ Gold	PE1000+	T308+
Alabama	Submitted	Submitted	Approved
Alaska	Project by Project	Project by Project	Project by Project
Arizona	No Criteria	Submitted	Submitted
Arkansas	Approved	Submitted	Approved
California	Submitted	Submitted	Approved
Colorado	Submitted	Submitted	–
Connecticut	Approved	Submitted	Approved
Delaware	Project by Project	Project by Project	Project by Project
Florida	–	–	Approved
Georgia	No Criteria	Approved	Approved
Hawaii	Project by Project	Project by Project	Project by Project
Idaho	Project by Project	Project by Project	Project by Project
Illinois	Approved	No Criteria	No Criteria
Indiana	Approved	Approved	Approved
Iowa	Submitted	Approved	Approved
Kansas	Submitted	Submitted	Approved
Kentucky	Submitted	Submitted	Submitted
Louisiana	Submitted	Submitted	Submitted
Maine	Approved	Approved	Approved
Maryland	Project by Project	Project by Project	Project by Project
Massachusetts	–	–	–
Michigan	Approved	Submitted	Approved
Minnesota	Approved	Submitted	Submitted
Mississippi	No Criteria	Submitted	–
Missouri	Approved	Submitted	Approved

State	AC100+ Gold	PE1000+	T308+
Montana	Project by Project	Project by Project	Project by Project
Nebraska	No Criteria	Submitted	Approved
Nevada	No Criteria	Submitted	Approved
New Hampshire	–	Submitted	Approved
New Jersey	Project by Project	Project by Project	Project by Project
New Mexico	No Criteria	Approved	–
New York	Approved	Approved	Approved
North Carolina	Submitted	Submitted	Approved
North Dakota	Project by Project	Project by Project	Project by Project
Ohio	Approved	Approved	Approved
Oklahoma	Project by Project	Project by Project	Project by Project
Oregon	–	Approved	Approved
Pennsylvania	–	–	Approved
Rhode Island	Submitted	Submitted	Submitted
South Carolina	Project by Project	Project by Project	Project by Project
South Dakota	Project by Project	Project by Project	Project by Project
Tennessee	Approved	Approved	Approved
Texas	No Criteria	Approved	Approved
Utah	Approved	Approved	–
Vermont	Approved	Submitted	Approved
Virginia	Approved	Approved	Approved
Washington	Approved	Approved	–
West Virginia	Project by Project	Project by Project	Project by Project
Wisconsin	Approved	No Criteria	No Criteria
Wyoming	Submitted	No Criteria	No Criteria

AC100+Gold State DOT Listing Map



PRODUCT SUBMITTAL / SUBSTITUTION REQUEST

TO:

PROJECT:

SPECIFIED ITEM:

Section *Page* *Paragraph* *Description*

PRODUCT SUBMITTAL / SUBSTITUTION REQUESTED:

The attached submittal package includes the product description, specifications, drawings, and performance data for use in the evaluation of the request.

SUBMITTED BY:

Name: *Signature:*

Company:

Address:

Date: *Telephone:* *Fax:*

FOR USE BY THE ARCHITECT AND/OR ENGINEER

○ ***Approved*** ○ ***Approved as Noted*** ○ ***Not Approved***

(If not approved, please briefly explain why the product was not accepted.)

By: *Date:*

Remarks:

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Powers Fasteners Canada Ltd. 6950 Edwards Boulevard Mississauga Ontario L5T-2W2 Canada
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