

**GENERAL INFORMATION**

**PURE GP**

*Epoxy Injection Adhesive Anchoring System*

**PRODUCT DESCRIPTION**

The Pure GP is a two-component adhesive anchoring system. The system includes injection adhesive in plastic cartridges, mixing nozzles, dispensing tools and hole cleaning equipment. Pure GP is designed for bonding threaded rod and reinforcing bar hardware into drilled holes in solid concrete base materials.

**GENERAL APPLICATIONS AND USES**

- Bonding threaded rod and reinforcing bar into hardened concrete
- Evaluated for installation and use in dry and wet holes
- 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
- + Cartridge design allows for multiple uses using extra mixing nozzles
- + Mixing nozzles proportion adhesive and provide simple delivery method into drilled holes

**APPROVALS AND LISTINGS**

- Conforms to requirements of ASTM C 881 and AASHTO M235, Types I, II, IV and V, Grade 3, Classes B & C (also meets Type III except for elongation)
- Department of Transportation listings - see [www.powers.com](http://www.powers.com) or contact transportation agency

**GUIDE SPECIFICATIONS**

CSI Divisions: 03 16 00 - Concrete Anchors and 05 05 19 - Post-Installed Concrete Anchors. Adhesive anchoring system shall be Pure GP as supplied by Powers Fasteners. Anchors shall be installed in accordance with published instructions and requirements of the Authority Having Jurisdiction.

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PURE GP CARTRIDGE AND MIXING NOZZLE

**PACKAGING**

**Dual (side-by-side Cartridge)**

- 21 fl. oz. (620 ml) 1:1 mix ratio

**STORAGE LIFE & CONDITIONS**

Two years in a dry, dark environment with temperature ranging from 41°F and 90°F (5°C to 32°C)

**ANCHOR SIZE RANGE (TYP.)**

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

**SUITABLE BASE MATERIALS**

- Normal-weight Concrete

**PERMISSIBLE INSTALLATION CONDITIONS**

- Dry Concrete
- Water Saturated Concrete

**REFERENCE INSTALLATION TABLES**

**Installation Table for Pure GP (Solid Concrete Base Materials)**

Dimension/Property	Notation	Units	Nominal Anchor Size					
Threaded Rod	-	in.	3/8	1/2	-	5/8	3/4	1
Reinforcing Bar	-	-	#3	-	#4	#5	#6	#8
Nominal anchor diameter	d <sub>a</sub>	in. (mm)	0.375 (9.5)	0.500 (12.7)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)	1.000 (25.4)
Carbide drill bit nominal size	d <sub>bit</sub>	in.	7/16 ANSI	9/16 ANSI	5/8 ANSI	11/16 or 3/4 ANSI	7/8 ANSI	1-1/8 ANSI
Standard embedment	h <sub>nom</sub>	in. (mm)	3-3/8 (95)	4-1/2 (114)	4-1/2 (114)	5-5/8 (143)	6-3/4 (172)	9 (229)


**Nomenclature**  
d<sub>a</sub> = Diameter of anchor  
d<sub>bit</sub> = Diameter of drilled hole  
h = Base material thickness, 1.5h<sub>nom</sub>  
h<sub>nom</sub> = Standard embedment depth

**Hole Cleaning Equipment Selection Table for Pure GP**

Rod Diameter (inch)	Rebar Size (No.)	ANSI Drill Bit Diameter <sup>1</sup> (inch)	Min. Brush Diameter, D <sub>min</sub> (inches)	Brush Length, L (inches)	Steel Wire Brush <sup>2,3</sup> (Cat. #)	Blowout Tool	Number of cleaning actions
<b>Solid Base Material</b>							
3/8	#3	7/16	0.475	6-3/4	08284	Compressed air nozzle only, Cat #8292 (min. 90 psi)	2x blowing 2x brushing 2x blowing
1/2	-	9/16	0.600	6-3/4	08285		
-	#4	5/8	0.670	6-3/4	08275		
5/8	#5	11/16	0.735	7-7/8	08286		
		3/4	0.790	7-7/8	08278		
3/4	#6	7/8	0.920	7-7/8	08287		
7/8	#7	1	1.045	11-7/8	08288		
1	#8	1-1/8	1.175	11-7/8	08289		

- 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 borehole without resistance.
- 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<sup>1</sup>**

Rod Diameter (inch)	Rebar Size (No.)	ANSI Drill Bit Diameter (inch)	Plug Size (inch)	Plastic Plug (Cat. #)	Piston Plug
<b>Solid Base Materials</b>					
1/2	-	9/16	9/16	08302	
-	#4	5/8	5/8	08304	
5/8	#5	11/16	11/16	08258	
		3/4	3/4	08259	
3/4	#6	7/8	7/8	08300	
7/8	#7	1	1	08301	
1	#8	1-1/8	1-1/8	08303	

- All horizontal installations require the use of piston plugs where one is tabulated together with the anchor size and where the embedment depth is greater than 8 inches.

**Gel (working) Time and Curing Table**

Temperature of base material		Gel (working) time	Full curing time
°F	°C		
50	10	90 minutes	24 hours
68	20	25 minutes	8 hours
86	30	20 minutes	8 hours
95	35	15 minutes	6 hours
104	40	12 minutes	4 hours

Linear interpolation for intermediate base material temperature is possible.

**PERFORMANCE DATA**

**Ultimate and Allowable Load Capacities for Pure GP Adhesive Installed with Threaded Rod into Normal-Weight Concrete**<sup>1,2,3,4,5,6</sup>

Rod / Anchor Diameter d. in.	Nominal ANSI Drill Bit Diameter d <sub>bit</sub>	Embedment Depth h <sub>nom</sub> in. (mm)	Based on Bond/Concrete Strength		Based on Steel Strength	
			Concrete Compressive Strength, f'c ≥ 3,000 psi		ASTM A36 / A307 Grade C ASTM F1554, Grade 36 (Fu = 58,000 psi)	ASTM A193, Grade B7 (Fu = 125,000 psi)
			Tension		Tension	Tension
			Ultimate lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)
3/8	7/16	3-3/8 (86)	8,090 (36.0)	2,025 (9.0)	2,115 (9.4)	4,555 (20.3)
1/2	9/16	4-1/2 (114)	13,065 (58.1)	3,265 (14.5)	3,760 (16.7)	8,100 (36.0)
5/8	11/16 or 3/4	5-5/8 (143)	21,045 (93.6)	5,260 (23.4)	5,870 (26.1)	12,655 (56.3)
3/4	7/8	6-3/4 (171)	28,055 (124.8)	7,015 (31.2)	8,455 (37.6)	18,225 (81.1)
1	1-1/8	9 (229)	47,970 (213.4)	11,995 (53.4)	15,035 (66.9)	32,400 (144.1)

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.
2. The tabulated load values are applicable to single anchor installed at critical edge and spacing distances and where the minimum member thickness is greater than or equal to 1.5\*h<sub>nom</sub>.
3. The tabulated load values are for applicable for dry or wet concrete. Holes must be drilled with a hammer drill and an ANSI carbide drill bit. Installations in water-filled holes may require a reduction in capacity. Contact Powers Fasteners for more information concerning this installation condition.
4. Adhesives experiences reductions in capacity at elevated temperature. Tabulated load values are applicable for temperature range of 40°F - 130°F (4°C - 54°C).
5. Allowable bond/concrete strength capacities must be checked against allowable steel strength.
6. Allowable shear capacity is controlled by allowable steel strength for the given conditions.

**Ultimate and Allowable Load Capacities for Pure GP Adhesive Installed with Threaded Rod into Normal-Weight Concrete**<sup>1,2,3,4,5,6</sup>

Rod / Anchor Diameter d. in.	Nominal ANSI Drill Bit Diameter d <sub>bit</sub>	Embedment Depth h <sub>nom</sub> in. (mm)	Based on Bond/Concrete Strength		Based on Steel Strength	
			Concrete Compressive Strength, f'c ≥ 3,000 psi		ASTM A36 / A307 Grade C ASTM F1554, Grade 36 (Fu = 58,000 psi)	ASTM A193, Grade B7 (Fu = 125,000 psi)
			Tension		Tension	Tension
			Ultimate lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)
#3 (3/8)	7/16	3-3/8 (86)	8,855 (39.4)	2,215 (9.9)	2,650 (11.8)	2,650 (11.8)
#4 (1/2)	5/8	4-1/2 (114)	15,015 (66.8)	3,755 (16.7)	4,710 (21.0)	4,710 (21.0)
#5 (5/8)	3/4	5-5/8 (143)	22,025 (98.0)	5,505 (24.5)	7,365 (32.8)	7,365 (32.8)
#6 (3/4)	7/8	6-3/4 (171)	28,910 (128.6)	7,230 (32.2)	10,605 (47.2)	10,605 (47.2)
#8 (1)	1-1/8	9 (229)	49,940 (222.1)	12,485 (55.5)	18,850 (83.8)	18,850 (83.8)

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.
2. The tabulated load values are applicable to single anchor installed at critical edge and spacing distances and where the minimum member thickness is greater than or equal to 1.5\*h<sub>nom</sub>.
3. The tabulated load values are for applicable for dry or wet concrete. Holes must be drilled with a hammer drill and an ANSI carbide drill bit. Installations in water-filled holes may require a reduction in capacity. Contact Powers Fasteners for more information concerning this installation condition.
4. Adhesives experiences reductions in capacity at elevated temperature. Tabulated load values are applicable for temperature range of 40°F - 130°F (4°C - 54°C).
5. Allowable bond/concrete strength capacities must be checked against allowable steel strength.
6. Allowable shear capacity is controlled by allowable steel strength for the given conditions.

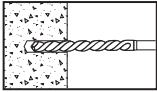
## INSTALLATION INSTRUCTIONS (SOLID BASE MATERIALS)

ADHESIVES

PURE GP  
Epoxy Injection Adhesive Anchoring System

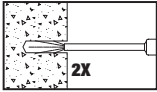
TECH MANUAL – ADHESIVES ©2016 POWERS VOLUME 1 – REV. C

### DRILLING

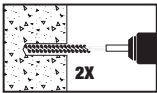


- 1- Drill a hole into the base material with a rotary hammer drill tool to the size and embedment required by the selected steel anchor element (reference installation specifications for threaded rod and reinforcing bar). The tolerances of the carbide drill bit must meet ANSI Standard B212.15.
  - Precaution: Use suitable eye and skin protection. Avoid inhalation of dust during drilling and/or removal.
  - **Note!** In case of standing water in the drilled hole, all the water has to be removed from the hole (e.g. vacuum, compressed air, etc.) prior to cleaning and installation.

### HOLE CLEANING DRY OR WET HOLES (BLOW 2X, BRUSH 2X, BLOW 2X)



- 2a- Starting from the bottom or back of the drilled anchor hole, blow the hole clean (free of noticeable dust) a minimum of two times (2x).
  - Use a compressed air nozzle (min. 90 psi) for all sizes of anchor rod and reinforcing bar (rebar).



- 2b- Determine wire brush diameter (see installation specifications) 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 two times (2x). A brush extension (supplied by Powers Fasteners) 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 it does not come into contact with the sides of the drilled hole, the brush is too small and must be replaced.

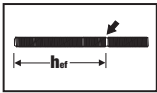


- 2c- Repeat Step 2a- again by blowing the hole clean a minimum of two times (2x).
  - When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.

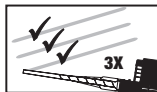
### PREPARING



- 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 50°F - 104°F (10°C - 40°C) when in use. Review published working and cure times. Consideration should be given to the reduced gel (working) time of the adhesive in warm temperatures. For permitted range of the base material temperature, see published gel and curing times.
  - 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 cartridge of adhesive and also for all work interruptions exceeding the published gel (working) time of the adhesive.

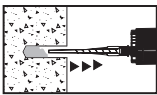


- 4- Prior to inserting the anchor rod or rebar into the filled bore hole, the position of the embedment depth has to be marked on the anchor. Verify anchor element is straight and free of surface damage.

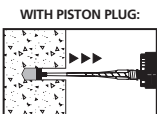


- 5- Adhesives must be properly mixed to achieve published properties. Prior to dispensing adhesive into the drilled hole, separately dispense at least three full strokes of adhesive through the mixing nozzle until the adhesive is a consistent **GRAY** color.
  - Review and note the published working and cure times (reference gel time and curing time table) prior to injection of the mixed adhesive into the cleaned anchor hole.

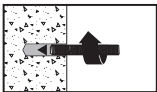
### INSTALLATION



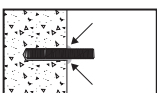
- 6- Fill the cleaned hole approximately two-thirds full with mixed adhesive starting from the bottom or back of the anchor hole. Slowly withdraw the mixing nozzle as the hole fills to avoid creating air pockets or voids. For embedment depth greater than 8 inches an extension nozzle must be used with the mixing nozzle.
  - Piston plugs (see adhesive piston plug table) must be used with and attached to the mixing nozzle and extension tube for horizontal installations where embedment is greater than 8 inches in concrete with anchor rod from 1/2" to 1" diameter and rebar sizes #4 to #8. 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.

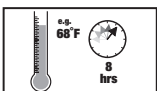


- 7- The anchor should be free of dirt, grease, oil or other foreign material. Push clean threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. Observe the gel (working) time.



- 8- Ensure that the anchor element is installed to the specific 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 fully restrained from movement throughout the specified curing period, where necessary through the use of temporary wedges, external supports, or other methods. Minor adjustment to the position of the anchor element may be performed during the gel 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 time table) by using a calibrated torque wrench.
  - Take care not to exceed the maximum torque for the selected anchor.

**ORDERING INFORMATION**

**Pure GP Cartridges**

Cat No.	Description	Std. Carton	Pallet
08821	Pure GP 21 fl. oz. cartridge	12	540

Pure GP mixing nozzles must be used to ensure complete and proper mixing of the adhesive.



**Cartridge System Mixing Nozzles**

Cat. No.	Description	Std. Pkg.	Std. Ctn.
08294	Mixing nozzle (with 8" extension)	2	24
08281	Mixing nozzle extension, 8" long	2	24
08297	Mixing nozzle extension, 20" long	1	12
08609	High flow mixing nozzle (with 8" extension) for Pure GP dual cartridge	2	24



**Dispensing Tools for Injection Adhesive**

Cat No.	Description	Std. Box	Std. Carton
08409	21 fl. oz. Standard metal manual tool	1	10
08421	21 fl. oz. High performance manual tool	1	10
08442	21 fl. oz. Battery powered tool (cordless)	1	-
08459	21 fl. oz. Pneumatic tool	1	-



**Hole Cleaning Tools and Accessories**

Cat No.	Description	Std. Box
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
08275	Wire brush for 5/8" ANSI hole (#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
08278	Wire brush for 3/4" 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
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
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

**Adhesive Piston Plugs**

Cat No.	Description	ANSI Drill Bit Dia.	Threaded Rod Dia.	Reinforcing Bar Size	Std. Bag
08302	9/16" Plug	9/16"	1/2"	#4	10
08304	5/8" Plug	5/8"	-	#4	10
08258	11/16" Plug	11/16"	5/8"	#5	10
08259	3/4" Plug	3/4"	5/8"	#5	10
08300	7/8" Plug	7/8"	3/4"	#6	10
08301	1" Plug	1"	7/8"	#7	10
08303	1-1/8" Plug	1-1/8"	1"	#8	10