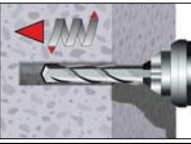
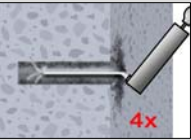

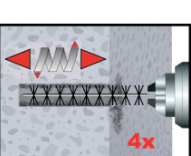
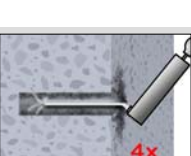
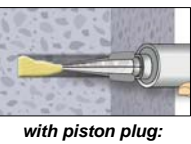
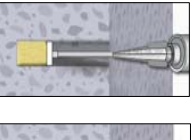
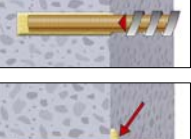





**1. Setting instructions for solid base material - For any application not covered by this document please contact Powers Fasteners (ESR-2583)**

<b>Drilling</b>		<p><b>1</b> Drill a hole into the base material with a hammer drill tool to the size and embedment required by the selected steel hardware element (see Table 4.1 or Table 4.2). The tolerances of the carbide drill bit must meet the requirements of ANSI Standard B212.15.</p> <p>Precaution: Wear suitable eye and skin protection. Avoid inhalation of dusts during drilling and/or removal.</p>
	<b>Hole cleaning</b>	<b>In order: Blow 4x, Brush 4x, Blow 4x</b>
		<p><b>2a.</b> In case of standing water in the drilled bore hole, all the water has to be removed from the hole (e.g. vacuum, compressed air, etc.) prior to cleaning.</p> <p>Starting from the bottom or back of the anchor hole, blow the hole clean a minimum of <i>four</i> times (4x).</p> <ul style="list-style-type: none"> <li>Use a compressed air nozzle (min. 90 psi) <b>or</b> a hand pump (min. volume 25 fl. oz. supplied by Powers Fasteners) for anchor rod 3/8" to 3/4" diameter or reinforcing bar (rebar) sizes #3 to #6.</li> <li>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 must not be used with these anchor sizes.</li> </ul>
	<p><b>2b.</b> Determine brush diameter (see Table 2) 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 <i>four</i> times (4x). A brush extension (supplied by Powers Fasteners) must be used for holes drilled deeper than the listed brush length.</p> <p>The wire brush diameter must be checked periodically during use (<math>\phi_{brush} &lt; D_{min}</math>, see Table 2). 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.</p>	<p><b>2c.</b> Finally, blow the hole clean again a minimum of <i>four</i> times (4x).</p> <ul style="list-style-type: none"> <li>Use a compressed air nozzle (min. 90 psi) <b>or</b> a hand pump (min. volume 25 fl. oz. supplied by Powers Fasteners) for anchor rod 3/8" to 3/4" diameter or reinforcing bar (rebar) sizes #3 to #6.</li> <li>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 must not be used with these anchor sizes.</li> </ul> <p>When finished the hole should be clean and free of dust, debris, ice, grease, oil or other foreign material.</p>
	<p><b>3.</b> 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 41°F - 104°F (5°C - 40°C) when in use. Review working and cure times (see Table 3).</p> <p>For the permitted range of the base material temperature see Table 3.</p> <p>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. A new mixing nozzle must be used for every working interruption longer than the published working times as well as for new cartridges.</p>	<p><b>4.</b> 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.</p>
	<p><b>5.</b> For new cartridges and nozzles: Prior to dispensing into the drilled hole, squeeze out separately a minimum three full strokes of the mixed adhesive. Discard non-uniform adhesive until the mixed adhesive shows a consistent <b>red</b> color.</p> <p>Review and note the published working and cure times (see Table 3) prior to injection of the mixed adhesive into the cleaned anchor hole.</p>	<p><b>5.</b> For new cartridges and nozzles: Prior to dispensing into the drilled hole, squeeze out separately a minimum three full strokes of the mixed adhesive. Discard non-uniform adhesive until the mixed adhesive shows a consistent <b>red</b> color.</p> <p>Review and note the published working and cure times (see Table 3) prior to injection of the mixed adhesive into the cleaned anchor hole.</p>

<b>Installation</b>		<p><b>6.</b> 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 depths greater than 7-1/2" a plastic extension tube supplied by Powers Fasteners (3/8" dia., Cat# 08281) must be used with the mixing nozzle.</p> <p>Piston plugs (see Table 6) 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.</p> <p><b>Attention!</b> Do not install anchors overhead without proper training and installation hardware provided by Powers Fasteners. Contact Powers for details prior to use.</p>
	<b>Curing and fixture</b>	<b>with piston plug:</b>
		<p><b>7.</b> 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.</p> <p><b>8.</b> 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. For overhead applications the anchor must be secured from moving/falling during the cure time (e.g. wedges). Minor adjustments to the anchor may be performed during the gel time but the anchor shall not be moved after final placement and during cure.</p>
	<p><b>9.</b> Allow the adhesive anchor to cure to the specified full curing time prior to applying any load (see Table 3).</p> <p>Do not disturb, torque or load the anchor until it is fully cured.</p>	<p><b>10.</b> 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 4.1) by using a calibrated torque wrench.</p> <p>Take care not to exceed the maximum torque for the selected anchor.</p>

**2. Hole cleaning tools - wire brushes and air blowers**

Threaded rod diameter (inch)	Rebar size (no.)	ANSI drill bit diameter (inch)	Min. brush diameter, D <sub>min</sub> (inches)	Brush length, L <sup>1</sup> (inches)	Steel wire brush (Cat. #)	Air blowers
3/8	#3	7/16	0.475	6-3/4	08284	Hand pump (volume 25 fl. oz.) or compressed air nozzle (min. 90 psi)
1/2	#4	9/16	0.600	6-3/4	08285	 Hand pump - Cat. #08280
5/8	#5	11/16	0.735	7-7/8	08286	
3/4	#6	7/8	0.920	7-7/8	08287	 Compressed air nozzle only (min. 90 psi)
7/8	#7	1	1.045	11-7/8	08288	
1	#8	1-1/8	1.175	11-7/8	08289	 Compressed air nozzle - Cat. #08292
1-1/4	#9	1-3/8	1.425	11-7/8	08290	
-	#10	1-1/2	1.550	11-7/8	08291	

<sup>1</sup>A brush extension (Cat. #08282) must be used with a steel wire brush for holes drilled deeper than the listed brush length.

# POWERS PE1000+

## Instruction Card

### DESCRIPTION:

PE1000+ is an easy dispensing, high strength, 100% solids epoxy anchoring adhesive which is formulated for use in anchoring applications by trained professionals. Please refer to Powers Fasteners installation instructions and MSDS 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 Material Safety Data Sheet (MSDS).

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 95°F (35°C). Keep away from excessive heat and flame. Keep partially used containers closed when not in use. Protect from damage. Store away from heat and light.


Note expiration date on product label before use. Do not use expired product. Cartridge temperature must be between 41°F - 104°F (5°C - 40°C) when in use. Partially used cartridges may be stored with hardened adhesive in the attached mixing nozzle. 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 (steps #3 and #5).

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P: +1 (914) 235-6300  
or (800) 524-3244

[e]

## 6. 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
3/4	#6	7/8	7/8	08300	
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.

## 3. Gel (working) times and curing times

Temperature of base material		Gel (working) time	Full curing time
41°F	5°C	180 minutes	50 hours
50°F	10°C	120 minutes	30 hours
68°F	20°C	30 minutes	10 hours
86°F	30°C	20 minutes	6 hours
104°F	40°C	12 minutes	4 hours

It is recommended that the cartridge temperature when in use does not differ significantly from the temperature of the base material.

## 4. Setting parameters

Table 4.1 Specifications for installation of threaded rods

Anchor property/Setting information	Nominal threaded rod size						
	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1-1/4"
$d$ = Nominal anchor rod diameter (in.)	0.375	0.500	0.625	0.750	0.875	1.000	1.250
$A_{se}$ = Nominal area of threaded rod (in. <sup>2</sup> )	0.078	0.142	0.226	0.335	0.462	0.606	0.969
$d_o$ ( $d_{bit}$ ) = Nominal ANSI drill bit size (in.)	7/16	9/16	11/16	7/8	1	1-1/8	1-3/8
$T_{max}$ = Maximum torque (ft.-lb.) for A193 B7 carbon steel rod or F593 SS rod	16	33	60	105	125	165	280
$T_{max}$ = Maximum torque (ft.-lb.) for A36/A307 carbon steel rod <b>only</b>	10	25	50	90			
$h_{ef,min}$ = Minimum embedment (inches)	2-3/8	2-3/4	3-1/8	3-1/2	3-1/2	4	5
$h_{ef,max}$ = Maximum embedment (inches)	4-1/2	6	7-1/2	9	10-1/2	12	15
$s_{min}$ = Minimum spacing (inches)	1-7/8	2-1/2	3-1/8	3-3/4	4-3/8	5	6-1/4
$c_{min}$ = Minimum edge distance (inches)	1-7/8	2-1/2	3-1/8	3-3/4	4-3/8	5	6-1/4
$h_{min}$ = Minimum member thickness (inches)	$h_{ef} + 1-1/4$			$h_{ef} + 2d_o$			

Table 4.2 Specifications for installation of deformed steel reinforcing bars

Anchor property/Setting information	Reinforcing bar size							
	#3	#4	#5	#6	#7	#8	#9	#10
$d$ = Nominal bar diameter (in.)	3/8	1/2	5/8	3/4	7/8	1	1-1/8	1-1/4
$d_o$ ( $d_{bit}$ ) = Nominal ANSI drill bit size (in.)	7/16	9/16	11/16	7/8	1	1-1/8	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
$h_{ef,max}$ = Maximum embedment (inches)	4-1/2	6	7-1/2	9	10-1/2	12	13-1/2	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
$c_{min}$ = Minimum edge distance (inches)	1-7/8	2-1/2	3-1/8	3-3/4	4-3/8	5	5-5/8	6-1/4
$h_{min}$ = Minimum member thickness (inches)	$h_{ef} + 1-1/4$			$h_{ef} + 2d_o$				

## 5. PE1000+ adhesive anchor system selection table

Injection tool	Plastic cartridge system	Extra mixing nozzle
PE1000+ 13 fl. oz. manual dispenser Cat. #08295	PE1000+ 13 fl. oz. dual cartridge w/mixing nozzle and extension tube - Cat. #0500SD	PE1000+ mixing nozzle and extension tube Cat. #08293 or 08294
PE1000+ 13 & 20 fl. oz. manual dispenser Cat. #08298	PE1000+ 20 fl. oz. dual cartridge w/mixing nozzle and extension tube - Cat. #0502SD	PE1000+ mixing nozzle and extension tube Cat. #08293 or 08294