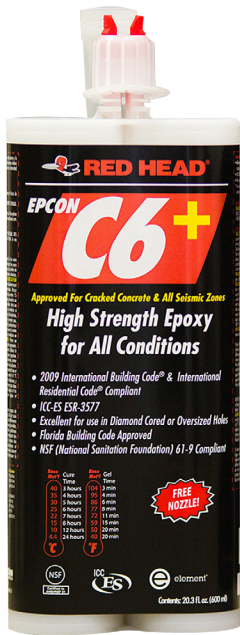


**C6+**

**High Strength  
Epoxy for All  
Conditions**



**DESCRIPTION/SUGGESTED SPECIFICATIONS\***

\*Suggested Specifications see page 43

**One product for most environmental conditions and weather conditions**

Design and use with confidence with Epcon C6+ featuring 35% greater bond strength than the closest competition in 70° cracked concrete, and better performance in dry, saturated and water filled conditions.

**ADVANTAGES**

- Higher average bond strength than competition in cracked concrete
- Excellent performance in diamond cored and oversized holes.
- Better performance in dry, saturated, and water-filled conditions.
- Safe & durable to use at job sites (cartridges vs. sausage packs)
- Simplifies specification process by providing a comprehensive list of 3rd-party approvals
- 24-month shelf life.

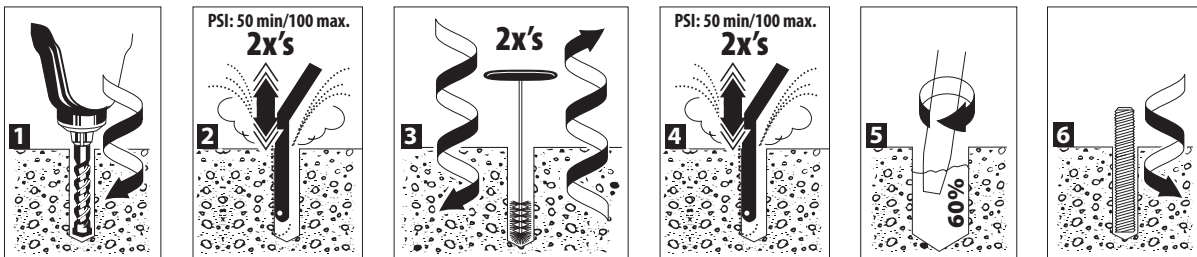
**Curing Times**

BASE MATERIAL (F°/C°)	WORKING TIME <sup>2</sup>	FULL CURE TIME
104°/ 40°	3 minutes	3 hours
95°/ 35°	4 minutes	4 hours
86°/ 30°	6 minutes	5 hours
77°/ 25°	8 minutes	6 hours
72°/ 22°	11 minutes	7 hours
59°/ 15°	15 minutes	8 hours
50°/ 10°	20 minutes	12 hours
40°/ 4.4°	20 minutes	24 hours

<sup>1</sup> For concrete temperatures between 40-50°F. Adhesive must be maintained at a minimum of 50°F during installation.

<sup>2</sup> Working time is max time from the end of mixing to when the insertion of the threaded rod or rebar into the adhesive shall be completed.

**INSTALLATION STEPS**



\*Water saturated concrete and water-filled hole applications require 4x's air, 4x's brushing, and 4x's air

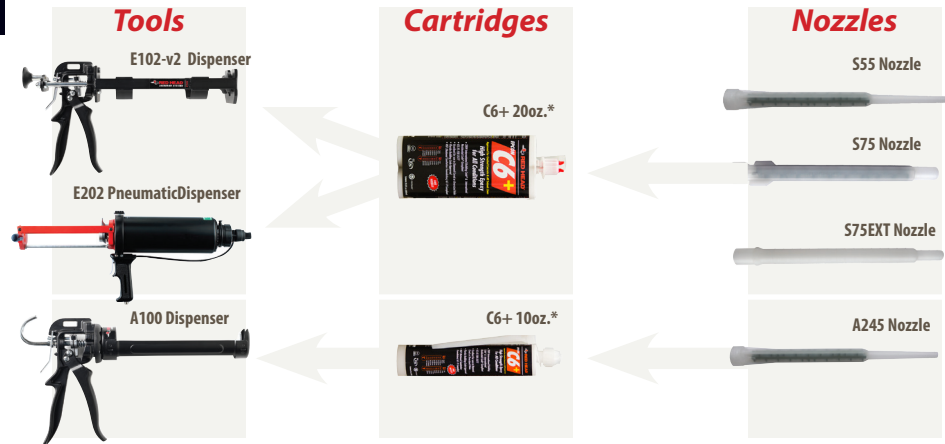
## Selection Guide

### APPROVALS/LISTINGS

- ICC-ES ESR Report No. 3577, approved for Cracked, Uncracked, and all Seismic Zones (A~F)
- Florida Building Code
- IBC 2003/2006/2009/2012
- IRC 2003/2006/2009/2012
- NSF/ANSI 61

For the most current approvals/listings visit:  
[www.itw-redhead.com](http://www.itw-redhead.com)

\*nozzle included in purchase



Product Category	Part No.	Description	Carton Qty
<b>Epcon C6+ Epoxy</b>			
Epcon C6+ 20 fl. Oz cartridge	C6P-20	Epcon C6+ 20 fl. oz cartridge	6
Epcon C6+ 10 fl. Oz cartridge	C6P-10	Epcon C6+ 10 fl. oz cartridge, installs with 10oz. dispensing tool	6
<b>Mixing Nozzles</b>			
Mixing Nozzle	A245	Mixing Nozzle for C6P-10	24
Mixing Nozzle	S55	Mixing Nozzle for C6P-20	24
High Flow Mixing Nozzle	S75	High Flow Nozzle for C6P-20 (for 5/8" diameter hole or larger)	24
Mixing Nozzle Extension	S75EXT	Nozzle Extension For S75 High Flow Nozzle	24
<b>Dispensing Guns</b>			
Dispensing Gun - 10 oz.	A100	Manual Dispenser for C6P-10	1
Dispensing Gun - 20 oz.	E102-V2	Manual Dispenser for C6P-20	1
Pneumatic Dispensing Gun - 20 oz.	E202	Pneumatic Dispenser for C6P-20	1
<b>Piston Plug</b>			
Piston plugs for deep embedment installations greater than 10"	PL-5834	Piston Plug for 5/8" and 3/4" diameter anchors	10
	PL-7810	Piston Plug for 7/8" and 1" diameter anchors	10
	PL-1250	Piston Plug for 1-1/4" diameter anchors	10

Wire Brushes	Part No.	Anchor Dia.	Rebar	Drill Bit Dia.	Brush Dia.	Overall Length	Qty
3/8" Diameter Brush	SB038	3/8"	No.3	7/16"	5/8"	4-7/8"	4
1/2" Diameter Brush	SB012	1/2"	No. 4	9/16"	3/4"	4-7/8"	4
5/8" Diameter Brush	SB058	5/8"	No.5	3/4"	1"	4-7/8"	4
3/4" Diameter Brush	SB034	3/4"	No.6	7/8"	1-1/4"	4-7/8"	4
7/8" Diameter Brush	SB078	7/8"	No. 7	1"	1-1/2"	5-1/8"	4
1" Diameter Brush	SB010	1"	No.7	1-1/8"	1-5/8"	5-1/4"	4
1-1/4" Diameter Brush	SB125	1-1/4"	No. 10	1-3/8"	1-3/4"	5-1/4"	4
Brush Extension	ESDS-38	Wire brush 12" usable extension with SDS+ adaptor					1
Brush Extension	EHAN-38	Wire brush 12" usable extension with T-Handle					1
<b>Hole Plugs</b>		<b>Part No.</b>	<b>Hole Diameter</b>			<b>Qty</b>	
3/8" Diameter Hole Plug	E038	7/16"			25		
1/2" Diameter Hole Plug	E012	9/16"			25		
5/8" Diameter Hole Plug	E058	3/4"			20		
3/4" Diameter Hole Plug	E034	7/8"			20		
7/8" Diameter Hole Plug	E078	1"			10		
1" Diameter Hole Plug	E010	1-1/8"			10		



SB038 - 3/8" Diameter Brush



E038 - 3/8" Diameter Hole Plug

## ESTIMATING TABLES

### **C6P-20** Number of Anchoring Installations Per Cartridge\* 20 Fluid Ounce Cartridge Using Reinforcing Bar with C6+ Adhesive in Solid Concrete

REBAR	DRILL HOLE DIA. INCHES	EMBEDMENT DEPTH IN INCHES (mm)														
		1 (25.4)	2 (50.8)	3 (76.2)	4 (101.6)	5 (127.0)	6 (152.4)	7 (177.8)	8 (203.2)	9 (228.6)	10 (254.0)	11 (279.4)	12 (304.8)	13 (330.2)	14 (355.6)	15 (381.0)
# 3	7/16	310.8	155.4	103.6	77.7	62.2	51.8	44.4	38.8	34.5	31.1	28.3	25.9	23.9	22.2	20.7
# 4	5/8	198.9	99.5	66.3	49.7	39.8	33.2	28.4	24.9	22.1	19.9	18.1	16.6	15.3	14.2	13.3
# 5	3/4	138.1	69.1	46.0	34.5	27.6	23.0	19.7	17.3	15.3	13.8	12.6	11.5	10.6	9.9	9.2
# 6	7/8	101.5	50.7	33.8	25.4	20.3	16.9	14.5	12.7	11.3	10.1	9.2	8.5	7.8	7.2	6.8
# 7	1-1/8	61.4	30.7	20.5	15.3	12.3	10.2	8.8	7.7	6.8	6.1	5.6	5.1	4.7	4.4	4.1
# 8	1-1/8	49.7	24.9	16.6	12.4	9.9	8.3	7.1	6.2	5.5	5.0	4.5	4.1	3.8	3.6	3.3
# 9	1-3/8	41.1	20.5	13.7	10.3	8.2	6.8	5.9	5.1	4.6	4.1	3.7	3.4	3.2	2.9	2.7
# 10	1-1/2	43.5	17.3	11.5	8.6	6.9	5.8	4.9	4.3	3.8	3.5	3.1	2.9	2.7	2.5	2.3
# 11	1-3/4	25.4	12.7	8.5	6.3	5.1	4.2	3.6	3.2	2.8	2.5	2.3	2.1	2.0	1.8	1.7

\* The number of anchoring installations is based upon calculations of hole volumes using ANSI tolerance carbide tipped drill bits, the nominal areas of the reinforcing bars and the stress areas of the threaded rods. These estimates do not account for waste.  
\* Oversized holes acceptable but volume of adhesive will increase.

### **C6P-20** Number of Anchoring Installations Per Cartridge\* 20 Fluid Ounce Cartridge Using Threaded Rod with C6+ Adhesive in Solid Concrete

ROD In. (mm)	DRILL HOLE DIA. INCHES	EMBEDMENT DEPTH IN INCHES (mm)														
		1 (25.4)	2 (50.8)	3 (76.2)	4 (101.6)	5 (127.0)	6 (152.4)	7 (177.8)	8 (203.2)	9 (228.6)	10 (254.0)	11 (279.4)	12 (304.8)	13 (330.2)	14 (355.6)	15 (381.0)
1/4 (6.4)	5/16	795.6	397.8	265.2	198.9	159.1	132.6	113.7	99.5	88.4	79.6	72.3	66.3	61.2	56.8	53.0
3/8 (9.5)	7/16	405.9	203.0	135.3	101.5	81.2	67.7	58.0	50.7	45.1	40.6	36.9	33.8	31.2	29.0	27.1
1/2 (12.7)	9/16	245.6	122.8	81.9	61.4	49.1	40.9	35.1	30.7	27.3	24.6	22.3	20.5	18.9	17.5	16.3
5/8 (15.9)	3/4	138.1	69.1	46.0	34.5	27.6	23.0	19.7	17.3	15.3	13.8	12.6	11.5	10.6	9.9	9.2
3/4 (19.1)	7/8	101.5	50.7	33.8	25.4	20.3	16.9	14.5	12.7	11.3	10.1	9.2	8.5	7.8	7.2	6.8
7/8 (22.2)	1	77.7	38.8	25.9	19.4	15.5	12.9	11.1	9.7	8.6	7.8	7.1	6.5	6.0	5.5	5.2
1 (25.4)	1-1/8	61.4	30.7	20.5	15.3	12.3	10.2	8.8	7.7	6.8	6.1	5.6	5.1	4.7	4.4	4.1
1-1/4 (31.8)	1-3/8	41.1	20.5	13.7	10.3	8.2	6.8	5.9	5.1	4.6	4.1	3.7	3.4	3.2	2.9	2.7

\* The number of anchoring installations is based upon calculations of hole volumes using ANSI tolerance carbide tipped drill bits, the nominal areas of the reinforcing bars and the stress areas of the threaded rods. These estimates do not account for waste.  
\* Oversized holes acceptable but volume of adhesive will increase.

### **C6P-10** Number of Anchoring Installations Per Cartridge\* 10 Fluid Ounce Cartridge Using Reinforcing Bar with C6+ Adhesive in Solid Concrete

REBAR	DRILL HOLE DIA. INCHES	EMBEDMENT DEPTH IN INCHES (mm)														
		1 (25.4)	2 (50.8)	3 (76.2)	4 (101.6)	5 (127.0)	6 (152.4)	7 (177.8)	8 (203.2)	9 (228.6)	10 (254.0)	11 (279.4)	12 (304.8)	13 (330.2)	14 (355.6)	15 (381.0)
# 3	7/16	129.5	64.7	43.2	32.4	25.9	21.6	18.5	16.2	14.4	12.9	11.8	10.8	10.0	9.2	8.6
# 4	5/8	82.9	41.4	27.6	20.7	16.6	13.8	11.8	10.4	9.2	8.3	7.5	6.9	6.4	5.9	5.5
# 5	3/4	56.7	28.8	19.2	14.4	11.5	9.6	8.2	7.2	6.4	5.8	5.2	4.8	4.4	4.1	3.8
# 6	7/8	42.3	21.1	14.1	10.6	8.5	7.0	6.0	5.3	4.7	4.2	3.8	3.5	3.3	3.0	2.8
# 7	1-1/8	25.6	12.8	8.5	6.4	5.1	4.3	3.7	3.2	2.8	2.6	2.3	2.1	2.0	1.8	1.7
# 8	1-1/8	20.7	10.4	6.9	5.2	4.1	3.5	3.0	2.6	2.3	2.1	1.9	1.7	1.6	1.5	1.4
# 9	1-3/8	17.1	8.6	5.7	4.3	3.4	2.9	2.4	2.1	1.9	1.7	1.6	1.4	1.3	1.2	1.1
# 10	1-1/2	14.4	7.2	4.8	3.6	2.9	2.4	2.1	1.8	1.6	1.4	1.3	1.2	1.1	1.0	1.0
# 11	1-3/4	10.6	5.3	3.5	2.6	2.1	1.8	1.5	1.3	1.2	1.1	1.0	0.9	0.8	0.8	0.7

\* The number of anchoring installations is based upon calculations of hole volumes using ANSI tolerance carbide tipped drill bits, the nominal areas of the reinforcing bars and the stress areas of the threaded rods. These estimates do not account for waste.  
\* Oversized holes acceptable but volume of adhesive will increase.

### **C6P-10** Number of Anchoring Installations Per Cartridge\* 10 Fluid Ounce Cartridge Using Threaded Rod with C6+ Adhesive in Solid Concrete

ROD	DRILL HOLE DIA. INCHES	EMBEDMENT DEPTH IN INCHES (mm)														
		1 (25.4)	2 (50.8)	3 (76.2)	4 (101.6)	5 (127.0)	6 (152.4)	7 (177.8)	8 (203.2)	9 (228.6)	10 (254.0)	11 (279.4)	12 (304.8)	13 (330.2)	14 (355.6)	15 (381.0)
1/4 (6.4)	5/16	331.5	165.7	110.5	82.9	66.3	55.2	47.4	41.4	36.8	33.1	30.1	27.6	25.5	23.7	22.1
3/8 (9.5)	7/16	169.1	84.6	56.3	42.3	33.8	28.2	24.2	21.1	18.8	16.9	15.4	14.1	13.0	12.1	11.3
1/2 (12.7)	9/16	102.3	51.2	33.8	25.6	20.5	17.1	14.6	12.8	11.4	10.2	9.3	8.5	7.9	7.3	6.8
5/8 (15.9)	3/4	57.6	28.8	19.2	14.4	11.5	9.6	8.2	7.2	6.4	5.8	5.2	4.8	4.4	4.1	3.8
3/4 (19.1)	7/8	42.3	21.1	14.1	10.6	8.5	7.0	6.0	5.3	4.7	4.2	3.8	3.5	3.3	3.0	2.8
7/8 (22.2)	1	32.4	16.2	10.8	8.1	6.5	5.4	4.6	4.0	3.6	3.2	2.9	2.7	2.5	2.3	2.2
1 (25.4)	1-1/8	25.6	12.8	8.5	6.4	5.1	4.3	3.7	3.2	2.8	2.6	2.3	2.1	2.0	1.8	1.7
1-1/4 (31.8)	1-3/8	17.1	8.6	5.7	4.3	3.4	2.9	2.4	2.1	1.9	1.7	1.6	1.4	1.3	1.2	1.1

\* The number of anchoring installations is based upon calculations of hole volumes using ANSI tolerance carbide tipped drill bits, the nominal areas of the reinforcing bars and the stress areas of the threaded rods. These estimates do not account for waste.  
\* Oversized holes acceptable but volume of adhesive will increase.



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# PACKAGING

1. Disposable, self-contained cartridge system capable of dispensing both epoxy components in the proper mixing ratio
2. Epoxy components dispensed through a static mixing nozzle that thoroughly mixes the material, and places the epoxy at the base of the pre-drilled hole
3. Cartridge markings: Include manufacturer's name, batch number and best-used-by date, mix ratio by volume, ANSI hazard classification, and appropriate ANSI handling precautions

# SUGGESTED SPECIFICATIONS

## EPOXY ADHESIVE

### High Strength EPOXY ADHESIVE:

1. Two component resin and hardener, non-sag paste, insensitive to moisture, grey in color, suitable for extreme temperature ranges, for all conditions or substrate materials.
2. Meets NSF Standard 61, certified for use in conjunction with drinking water systems.
3. Works in wet, damp, and submerged hole.
4. Extended Shelf life: Best if used within 2 years.
5. Oversized and/or diamond cored holes permitted.

## PERFORMANCE TABLE

### Bond Strength Design Information For Fractional Threaded Rod<sup>1,7</sup>

Design Information		Symbol	Units	Nominal Threaded Rod Diameter								
				3/8"	1/2"	5/8"	3/4"	7/8"	1"	1-1/4"		
Minimum Effective Installation Depth		$h_{ef,min}$	in	1-5/8"	2"	2-1/2"	3-1/2"	4	4	5		
			mm	60	70	79	89	102	102	127		
Maximum Effective Installation Depth		$h_{ef,max}$	in	7-1/2	10	12-1/2	15	17-1/2	20	25		
			mm	191	254	318	381	445	508	635		
Temperature Range A, <sup>2,5</sup>	Characteristic Bond Strength in Uncracked Concrete	$\tau_{k,uncr}$	psi	1,350								
			N/mm <sup>2</sup>	9.3								
	Characteristic Bond Strength in Cracked Concrete	$\tau_{k,cr}$	psi	1,150	1,090	1,025	965	900	840	715		
			N/mm <sup>2</sup>	7.9	7.5	7.1	5.1	4.7	4.4	3.8		
Temperature Range B, <sup>3,5</sup>	Characteristic Bond Strength in Uncracked Concrete	$\tau_{k,uncr}$	psi	1,030								
			N/mm <sup>2</sup>	7.1								
	Characteristic Bond Strength in Cracked Concrete	$\tau_{k,cr}$	psi	875	830	780	735	685	640	545		
			N/mm <sup>2</sup>	6.1	5.7	5.4	5.1	4.7	4.4	3.8		
Temperature Range C, <sup>4,5</sup>	Characteristic Bond Strength in Uncracked Concrete	$\tau_{k,uncr}$	psi	725								
			N/mm <sup>2</sup>	5.0								
	Characteristic Bond Strength in Cracked Concrete	$\tau_{k,cr}$	psi	620	620	620	620	620	620	620		
			N/mm <sup>2</sup>	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
Permissible Installation Conditions <sup>6</sup>		Periodic Inspection	Dry Concrete	$\phi_d$	0.65							
			Water-saturated Concrete	$\phi_{ws}$	0.55				0.65			
			Water-filled Hole	$\phi_{wf}$	0.65							
			Submerged Concrete	$\phi_{sub}$	0.65							0.55
		Continuous Inspection	Dry Concrete	$\phi_d$	0.65							
			Water-saturated Concrete	$\phi_{ws}$	0.65							
			Water-filled Hole	$\phi_{wf}$	0.65							
			Submerged Concrete	$\phi_{sub}$	0.65							

For SI: 1 inch = 25.4 mm, 1 in.<sup>2</sup> = 645.16 mm<sup>2</sup>, 1 lb = 0.004448 kN

<sup>1</sup> Bond strength values correspond to concrete compressive strength  $f_c = 2,500$  psi. Bond strength values must not be increased for increased concrete compressive strength.

<sup>2</sup> Temperature Range A = Maximum Long Term Temperature: 110°F (43°C); Maximum Short Term Temperature: 130°F (55°C)

<sup>3</sup> Temperature Range B = Maximum Long Term Temperature: 110°F (43°C); Maximum Short Term Temperature: 162°F (72°C)

<sup>4</sup> Temperature Range C = Maximum Long Term Temperature: 110°F (43°C); Maximum Short Term Temperature: 176°F (80°C) 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.

<sup>6</sup> The tabulated value of  $\phi$  applies when the load combinations of Section 1605.2 of the IBC, or ACI 318 Section 9.2 are used in accordance with ACI 318 D.4.3. If the load combinations of ACI 318 Appendix C are used, the appropriate value of  $\phi$  must be determined in accordance with ACI 318 D.4.4.

<sup>7</sup> For sustained loads, bond strengths must be multiplied by 0.73.

<sup>8</sup> See ICC-ES ESR 3577 for further design information in accordance with ACI 318

### Bond Strength Design Information For Fractional Reinforcing Bar<sup>1,7</sup>

Design Information		Symbol	Units	Nominal Threaded Bar Diameter								
				No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 10		
Minimum Effective Installation Depth		$h_{ef,min}$	in	1-5/8"	2"	2-1/2"	3-1/2"	4	4	5		
			mm	60	70	79	89	102	102	127		
Maximum Effective Installation Depth		$h_{ef,max}$	in	7-1/2	10	12-1/2	15	17-1/2	20	25		
			mm	191	254	318	381	445	508	635		
Temperature Range A, <sup>2,5</sup>	Characteristic Bond Strength in Uncracked Concrete	$\tau_{k,uncr}$	psi	1,350								
			N/mm <sup>2</sup>	9.3								
	Characteristic Bond Strength in Cracked Concrete	$\tau_{k,cr}$	psi	1,150	1,090	1,025	965	900	840	715		
			N/mm <sup>2</sup>	7.9	7.5	7.1	5.1	4.7	4.4	3.8		
Temperature Range B, <sup>3,5</sup>	Characteristic Bond Strength in Uncracked Concrete	$\tau_{k,uncr}$	psi	1,030								
			N/mm <sup>2</sup>	7.1								
	Characteristic Bond Strength in Cracked Concrete	$\tau_{k,cr}$	psi	875	830	780	735	685	640	545		
			N/mm <sup>2</sup>	6.1	5.7	5.4	5.1	4.7	4.4	3.8		
Temperature Range C, <sup>4,5</sup>	Characteristic Bond Strength in Uncracked Concrete	$\tau_{k,uncr}$	psi	725								
			N/mm <sup>2</sup>	5.0								
	Characteristic Bond Strength in Cracked Concrete	$\tau_{k,cr}$	psi	620	620	620	620	620	620	620		
			N/mm <sup>2</sup>	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
Permissible Installation Conditions <sup>6</sup>		Periodic Inspection	Dry Concrete	$\phi_d$	0.65							
			Water-saturated Concrete	$\phi_{ws}$	0.55				0.65			
			Water-filled Hole	$\phi_{wf}$	0.65							
			Submerged Concrete	$\phi_{sub}$	0.65							0.55
		Continuous Inspection	Dry Concrete	$\phi_d$	0.65							
			Water-saturated Concrete	$\phi_{ws}$	0.65							
			Water-filled Hole	$\phi_{wf}$	0.65							
			Submerged Concrete	$\phi_{sub}$	0.65							

For SI: 1 inch = 25.4 mm, 1 in.<sup>2</sup> = 645.16 mm<sup>2</sup>, 1 lb = 0.004448 kN

<sup>1</sup> Bond strength values correspond to concrete compressive strength  $f_c = 2,500$  psi. Bond strength values must not be increased for increased concrete compressive strength.

<sup>2</sup> Temperature Range A = Maximum Long Term Temperature: 110°F (43°C); Maximum Short Term Temperature: 130°F (55°C)

<sup>3</sup> Temperature Range B = Maximum Long Term Temperature: 110°F (43°C); Maximum Short Term Temperature: 162°F (72°C)

<sup>4</sup> Temperature Range C = Maximum Long Term Temperature: 110°F (43°C); Maximum Short Term Temperature: 176°F (80°C)

<sup>5</sup> 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.

<sup>6</sup> The tabulated value of  $\phi$  applies when the load combinations of Section 1605.2 of the IBC, or ACI 318 Section 9.2 are used in accordance with ACI 318 D.4.3. If the load combinations of ACI 318 Appendix C are used, the appropriate value of  $\phi$  must be determined in accordance with ACI 318 D.4.4.

<sup>7</sup> For sustained loads, bond strengths must be multiplied by 0.73.

<sup>8</sup> See ICC-ES ESR 3577 for further design information in accordance with ACI 318



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## PERFORMANCE TABLE

### C6+ Epoxy Adhesive

### Average Ultimate Tension and Shear Loads<sup>1,2,3</sup> for Threaded Rod Installed in Grout Filled Concrete Block

THREADED ROD DIA.	DRILL HOLE DIAMETER In. (mm)	EMBEDMENT DEPTH In. (mm)	ANCHOR LOCATION In. (mm)	ULTIMATE TENSION Lbs. (kN)	ULTIMATE SHEAR Lbs. (kN)
3/8 (9.5)	7/16 (11.1)	3 (76.2)	GRouted CELL	4,862 (21.6)	N/A
1/2 (12.7)	5/8 (15.9)	3 (76.2)	GRouted CELL	4,953 (22.0)	N/A
1/2 (12.7)	5/8 (15.9)	6 (152.4)	GRouted CELL	8,214 (36.5)	N/A
5/8 (15.9)	3/4 (19.1)	5 (127.0)	GRouted CELL	7,355 (32.7)	N/A
3/4 (19.1)	7/8 (22.2)	6 (152.4)	Note 1	17,404 (77.4)	19,588 (87.1)
3/4 (19.1)	7/8 (22.2)	6 (152.4)	Note 2	17,404 (77.4)	8,668 (38.6)

1 Anchor can be located in grouted cell, "T" joint, or bed joint.

2 Anchor can be located in first grouted cell from edge.

3 Allowable working loads for the single installations under static loading should not exceed 25% (an industry standard) capacity or the allowable load of the anchor rod. Loads based upon testing with ASTM A193, Grade B7 rods.

## PERFORMANCE TABLE

### C6+ Epoxy Adhesive

### Allowable Tension Loads<sup>1,2,3</sup> for Threaded Rod Installed in Solid Concrete

THREADED ROD DIA. In. (mm)	EMBEDMENT DEPTH In. (mm)	ALLOWABLE TENSION LOAD BASED ON ADHESIVE BOND STRENGTH			ALLOWABLE TENSION LOAD BASED ON STEEL STRENGTH		
		2000 PSI (13.8 MPa) CONCRETE Lbs. (kN)	4000 PSI (27.6 MPa) CONCRETE Lbs. (kN)	6000 PSI (41.4 MPa) IN CONCRETE Lbs. (kN)	ASTM A307 (SAE 1018) Lbs. (kN)	ASTM A193 GR. B7 (SAE 4140) Lbs. (kN)	ASTM F593 AISI 304 SS Lbs. (kN)
3/8 (9.5)	3-3/8 (85.7)	1,800 (8.0)	2,110 (9.4)	2,655 (11.8)	2,080 (9.3)	4,340 (19.3)	3,995 (17.8)
	4-1/2 (114.3)	2,080 (9.2)	2,505 (11.1)	2,655 (11.8)	2,080 (9.3)	4,340 (19.3)	3,995 (17.8)
1/2 (12.7)	4-1/2 (114.3)	3,315 (14.8)	4,420 (19.7)	4,420 (19.7)	3,730 (16.6)	7,780 (34.6)	7,155 (31.8)
	6 (152.4)	4,780 (21.3)	4,900 (21.8)	4,900 (21.8)	3,730 (16.6)	7,780 (34.6)	7,155 (31.8)
5/8 (15.9)	5-5/8 (142.9)	4,425 (19.7)	6,130 (27.3)	6,130 (27.3)	5,870 (26.1)	12,230 (54.4)	11,250 (50.0)
	7-1/2 (190.5)	5,660 (25.2)	7,190 (32.0)	7,364 (32.8)	5,870 (26.1)	12,230 (54.4)	11,250 (50.0)
3/4 (19.1)	6-3/4 (171.5)	7,195 (32.0)	7,885 (35.1)	8,440 (37.5)	8,490 (37.8)	17,690 (78.7)	14,860 (66.1)
	9 (228.6)	7,940 (35.3)	10,345 (46.0)	10,345 (46.0)	8,490 (37.8)	17,690 (78.7)	14,860 (66.1)
7/8 (22.2)	7-7/8 (200.0)	8,810 (39.2)	9,430 (41.9)	10,260 (45.6)	11,600 (51.6)	25,510 (113.5)	20,835 (92.7)
	10-1/2 (266.7)	N/A	12,080 (57.0)	12,805 (57.0)	11,600 (51.6)	25,510 (113.5)	20,835 (92.7)
1 (25.4)	9 (228.6)	10,085 (44.9)	11,970 (53.3)	11,970 (53.0)	15,180 (67.5)	31,620 (140.7)	26,560 (118.1)
	12 (304.8)	12,180 (54.2)	15,545 (69.2)	15,760 (70.1)	15,180 (67.5)	31,620 (140.7)	26,560 (118.1)
1-1/4 (31.8)	11-1/4 (285.8)	13,915 (61.9)	14,245 (63.4)	14,245 (63.4)	23,800 (105.9)	49,580 (220.6)	34,670 (154.2)
	15 (381.0)	16,340 (72.7)	19,930 (88.7)	19,930 (88.7)	23,800 (105.9)	49,580 (220.6)	34,670 (154.2)

1 Use lower value of either bond or steel strength for allowable tensile load.

2 Allowable loads taken from ICC Evaluation Report #4285 (formerly ICBO).

3 Linear interpolation may be used for intermediate spacing and edge distances (see below).

### C6+ Adhesive Edge/Spacing Distance Load Factor Summary for Installation of Threaded Rod and Reinforcing Bar<sup>1,2</sup>

LOAD FACTOR	DISTANCE FROM EDGE OF CONCRETE
<b>Critical Edge Distance—Tension</b>	
100% Tension Load	→ 1.25 x Anchor Embedment (or greater)
<b>Minimum Edge Distance—Tension</b>	
70% Tension Load	→ 0.50 x Anchor Embedment
<b>Critical Edge Distance—Shear</b>	
100% Shear Load	→ 1.25 x Anchor Embedment (or greater)
<b>Minimum Edge Distance—Shear</b>	
30% Shear Load	→ 0.30 x Anchor Embedment
<b>LOAD FACTOR</b>	<b>DISTANCE FROM ANOTHER ANCHOR</b>
<b>Critical Spacing—Tension</b>	
100% Tension Load	→ 1.50 x Anchor Embedment (or greater)
<b>Minimum Spacing—Tension</b>	
75% Tension Load	→ 0.75 x Anchor Embedment
<b>Critical Spacing—Shear</b>	
100% Shear Load	→ 1.50 x Anchor Embedment (or greater)
<b>Minimum Spacing—Shear</b>	
30% Shear Load	→ 0.50 x Anchor Embedment

1 Use linear interpolation for load factors at edge distances or spacing distances between critical and minimum.

2 Anchors are affected by multiple combination of spacing and/or edge distance loading and direction of the loading. Use the product of tension and shear loading factors in design.

## PERFORMANCE TABLE

### C6+ Epoxy Adhesive Allowable Shear Loads<sup>1,2,3</sup> for Threaded Rod Installed in Solid Concrete

THREADED ROD DIA. In. (mm)	MINIMUM EMBEDMENT DEPTH In. (mm)	ALLOWABLE SHEAR LOAD BASED ON CONCRETE STRENGTH			ALLOWABLE SHEAR LOAD BASED ON STEEL STRENGTH		
		2000 PSI (13.8 MPa) CONCRETE Lbs. (kN)	4000 PSI (27.6 MPa) CONCRETE Lbs. (kN)	6000 PSI (41.4 MPa) CONCRETE Lbs. (kN)	ASTM A307 (SAE 1018) Lbs. (kN)	ASTM A193 GR. B7 (SAE 4140) Lbs. (kN)	ASTM F593 AISI 304 SS Lbs. (kN)
3/8 (9.5)	3-3/8 (85.7)	1,300 (5.8)	1,465 (6.5)	1,500 (6.7)	1,040 (4.6)	2,170 (9.7)	1,995 (8.9)
1/2 (12.7)	4-1/2 (114.3)	2,855 (12.7)	3,145 (14.0)	3,145 (14.0)	1,870 (8.3)	3,895 (17.3)	3,585 (15.9)
5/8 (15.9)	5-5/8 (142.9)	4,575 (20.3)	4,950 (22.0)	4,950 (22.0)	2,940 (13.1)	6,125 (27.2)	5,635 (25.1)
3/4 (19.1)	6-3/4 (171.5)	6,430 (28.6)	6,430 (28.6)	6,430 (28.6)	4,250 (18.9)	8,855 (39.4)	7,440 (33.1)
7/8 (22.2)	7-7/8 (200.0)	N/A	7,575 (33.7)	8,140 (36.2)	5,800 (25.8)	12,760 (56.8)	10,730 (47.7)
1 (25.4)	9 (228.6)	9,630 (42.8)	10,085 (44.9)	11,600 (51.6)	7,590 (33.8)	15,810 (70.3)	13,285 (59.1)
1-1/4 (31.8)	11-1/4 (285.8)	16,270 (72.4)	16,270 (72.4)	16,270 (72.4)	11,900 (52.9)	24,790 (110.3)	18,840 (83.8)

1 Use lower value of either concrete or steel strength for allowable shear load.

2 Allowable loads taken from ICC Evaluation Report #4285 (formerly ICBO).

3 Linear interpolation may be used for intermediate spacing and edge distances.

## PERFORMANCE TABLE

### C6+ Epoxy Adhesive Average Ultimate Tension Loads<sup>1,2,3</sup> for Reinforcing Bar Installed in Solid Concrete

REINFORCING BAR In. (mm)	EMBEDMENT IN CONCRETE In. (mm)	2000 PSI (13.8 MPa) CONCRETE ULTIMATE TENSION Lbs. (kN)	4000 PSI (27.6 MPa) CONCRETE ULTIMATE TENSION Lbs. (kN)	ULTIMATE TENSILE AND YIELD STRENGTH GRADE 60 REBAR	
				MINIMUM YIELD STRENGTH Lbs. (kN)	MINIMUM ULTIMATE TENSILE STRENGTH Lbs. (kN)
# 3 (9.5)	3-3/8 (85.7)	7,020 (31.2)	9,200 (40.9)	6,600 (29.4)	9,900 (44.0)
	4-1/2 (114.3)	9,000 (40.1)	11,540 (51.3)	6,600 (29.4)	9,900 (44.0)
# 4 (12.7)	4-1/2 (114.3)	11,940 (53.1)	15,140 (67.3)	12,000 (53.4)	18,000 (80.1)
	6 (152.4)	16,703 (74.3)	18,880 (84.0)	12,000 (53.4)	18,000 (80.1)
# 5 (15.9)	5-5/8 (142.9)	14,120 (62.8)	27,740 (123.4)	18,600 (82.7)	27,900 (124.1)
	7-1/2 (190.5)	20,040 (89.1)	30,727 (136.7)	18,600 (82.7)	27,900 (124.1)
# 6 (19.1)	6-3/4 (171.5)	17,940 (79.8)	29,200 (129.9)	26,400 (117.4)	39,600 (176.2)
	9 (228.6)	25,520 (113.5)	41,640 (185.2)	26,400 (117.4)	39,600 (176.2)
	10 (254.0)	N/A	45,000 (200.2)	26,400 (117.4)	39,600 (176.2)
# 7 (22.2)	7-7/8 (200.0)	N/A	45,850 (204.0)	36,000 (160.1)	54,000 (240.2)
	10-1/2 (266.7)	N/A	60,375 (268.6)	36,000 (160.1)	54,000 (240.2)
	13 (330.2)	N/A	65,300 (290.5)	36,000 (160.1)	54,000 (240.2)
# 8 (25.4)	9 (228.6)	30,960 (137.7)	54,180 (241.1)	47,400 (210.9)	71,100 (316.3)
	12 (304.8)	30,960 (137.7)	65,420 (291.0)	47,400 (210.9)	71,100 (316.3)
	16 (406.4)	N/A	86,700 (385.7)	47,400 (210.9)	71,100 (316.3)
# 9 (28.6)	10-1/8 (257.2)	N/A	61,530 (273.7)	60,000 (266.9)	90,000 (400.4)
	13-1/2 (342.9)	N/A	81,240 (361.4)	60,000 (266.9)	90,000 (400.4)
	19 (482.6)	N/A	108,000 (480.4)	60,000 (266.9)	90,000 (400.4)
# 10 (31.8)	11-1/4 (285.8)	44,600 (198.4)	76,500 (340.3)	76,200 (339.0)	114,300 (508.5)
	15 (381.0)	49,220 (218.9)	82,320 (366.2)	76,200 (339.0)	114,300 (508.5)
	19 (482.6)	N/A	120,000 (533.8)	76,200 (339.0)	114,300 (508.5)

1 Allowable working loads for the single installations under static loading should not exceed 25% ultimate capacity or the allowable load of the anchor rod.

2 Ultimate load values in 2000 and 4000 psi stone aggregate concrete. Ultimate loads are indicated for the embedment shown in the Embedment in Concrete column. Performance values are based on minimum Grade 60 reinforcing bar. The use of lower strength rods will result in lower ultimate tension and shear loads.

3 SHEAR DATA: Provided the distance from the rebar to the edge of the concrete member exceeds 1.25 times the embedment depth of the rebar, calculate the ultimate shear load for the rebar anchorage as 60% of the ultimate tensile strength of the rebar.

### Combined Tension and Shear Loading—for Adhesive Anchors

Allowable loads for anchors under tension and shear loading at the same time (combined loading) will be lower than the allowable loads for anchors subjected to 100% tension or 100% shear. Use the following equation to evaluate anchors in combined loading conditions:

$$\left(\frac{N_a}{N_s}\right)^{5/3} + \left(\frac{V_a}{V_s}\right)^{5/3} \leq 1$$

$N_a$  = Applied Service Tension Load

$N_s$  = Allowable Tension Load

$V_a$  = Applied Service Shear Load

$V_s$  = Allowable Shear Load