

SET® Anchoring Adhesive

SET is a two-component, 1:1 ratio, high-solids, epoxy-based adhesive for use as a high strength, non-shrink anchor grouting material. Resin and hardener are dispensed and mixed simultaneously through the mixing nozzle. SET meets or exceeds the requirements of ASTM C-881 specification for Type I, II, IV and V, Grade 3, Class B and C.

USES:

- Threaded-rod anchoring
- Rebar doweling
- Bonding hardened concrete to hardened concrete
- Pick-proof sealant around doors, windows and fixtures
- Paste-over for crack injection

CODES: ICC-ES ESR-1772 (CMU & URM); City of L.A. RR25279; Florida FL 11506.4; Caltrans approved; multiple DOT listings; NSF/ANSI Standard 61 (216 in2/1000 gal), except SET1.7KTA.

⚠ The load tables list values based upon results from the most recent testing and may not reflect those in current code reports. Where code jurisdictions apply, consult the current reports for applicable load values.

APPLICATION: Surfaces to receive epoxy must be clean. For installations in or through standing water, see page 225 for details. The base material temperature must be 40°F or above at the time of installation. For best results, material should be 70°–80°F at the time of application. Cartridges should not be immersed in water to facilitate warming. To warm cold material, the cartridges should be stored in a warm, uniformly heated area or storage container for a sufficient time to allow epoxy to warm completely. Mixed material in nozzle can harden in 5–7 minutes at a temperature of 40°F or above.

ASD DESIGN EXAMPLE: See page 231

INSTALLATION: See pages 70–71

SHELF LIFE: 24 months from date of manufacture in unopened side-by-side cartridge.

STORAGE CONDITIONS: For best results store between 45°F – 90°F. To store partially used cartridges, leave hardened nozzle in place. To re-use, attach new nozzle.

COLOR: Resin – white, hardener – black. When properly mixed SET adhesive will be a uniform light gray color.

CLEAN UP: Uncured material – Wipe up with cotton cloths. If desired scrub area with abrasive, waterbased cleaner and flush with water. If approved, solvents such as ketones (MEK, acetone, etc.), lacquer thinner or adhesive remover can be used. **DO NOT USE SOLVENTS TO CLEAN ADHESIVE FROM SKIN.** Take appropriate precautions when handling flammable solvents. Solvents may damage surfaces to which they are applied. Cured material – Chip or grind off surface.

TEST CRITERIA: Anchors installed with SET adhesive have been tested in accordance with ICC-ES's *Acceptance Criteria for Adhesive Anchors (AC58)*.

In addition, anchors installed with SET adhesive have been tested in accordance with ICC-ES's *Acceptance Criteria for Unreinforced Masonry Anchors (AC60)*.

PROPERTY	TEST METHOD	RESULTS
Consistency	ASTM C 881	Non-sag/thixotropic paste
Heat deflection	ASTM D 648	136°F (58°C)
Bond strength (moist cure)	ASTM C 882	3,218 psi (2 days) 3,366 psi (14 days)
Water absorption	ASTM D 570	0.110% (24 hours)
Compressive yield strength	ASTM D 695	5,065 psi (24 hours) 12,650 psi (7 days)
Compressive modulus	ASTM D 695	439,000 psi (7 days)
Gel Time (75°F)	ASTM C 881	30 min. – 60 gram mass 60 min – Thin film

CHEMICAL RESISTANCE: Very good to excellent against distilled water, inorganic acids and alkalis. Fair to good against organic acids and alkalis, and many organic solvents. Poor against ketones. For more detailed information, visit www.strongtie.com.



SET1.7KTA

SET22

SET56



EMN22i

EDT22S

SET Cartridge Systems

Model No.	Capacity ounces (cubic inches)	Cartridge Type	Carton Quantity	Dispensing Tool(s)	Mixing ⁴ Nozzle
SET1.7KTA	1.7 (3.1)	side-by-side	12	Adaptor included for standard caulking tool	EMN1.7 (2 included)
SET22	22 (39.7)	side-by-side	10	EDT22S, EDTA22P or EDTA22CKT	EMN22i
SET56	56 (101.1)	side-by-side	6	EDTA56P	EMN22i or EMN50

1. Bulk containers also available, call Simpson Strong-Tie for details.
2. Cartridge and bulk estimation guides are available on pages 48–51.
3. Detailed information on dispensing tools, mixing nozzles and other adhesive accessories is available on pages 72–77.
4. Use only appropriate Simpson Strong-Tie mixing nozzle in accordance with Simpson Strong-Tie instructions. Modification or improper use of mixing nozzle may impair epoxy performance.

SUGGESTED SPECIFICATIONS: Anchoring adhesive shall be a two-component high-solids epoxy based system supplied in manufacturer's standard cartridge and dispensed through a static-mixing nozzle supplied by the manufacturer. Epoxy shall meet the minimum requirements of ASTM C-881 specification for Type I, II, IV, and V, Grade 3, Class B and C and must develop a minimum 12,650 psi compressive yield strength after 7 day cure. Epoxy must have a heat deflection temperature of a minimum 136°F (58°C). Adhesive shall be SET adhesive from Simpson Strong-Tie, Pleasanton, CA. Anchors shall be installed per Simpson Strong-Tie instructions for SET adhesive.

ACCESSORIES: See pages 72–77 for information on dispensing tools, mixing nozzles and other accessories.

IMPORTANT – See Pages 70–71 for Installation Instructions

SET® Anchoring Adhesive

Cure Schedule

Base Material Temperature		Cure Time (hrs.)
°F	°C	
40	4	72
65	18	24
85	29	20
90	32	16

In-Service Temperature Sensitivity

Base Material Temperature		Percent Allowable Load
°F	°C	
40	4	100%
70	21	100%
110	43	100%
135	57	75%
150	66	44%
180	82	20%

1. Refer to temperature sensitivity chart for allowable bond strength reduction for temperature. See page 225 for more information.
2. Percent allowable load may be linearly interpolated for intermediate base material temperatures.
3. °C = (°F-32) / 1.8

Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete
(continued on next page)



Rod Dia. in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing Dist. in. (mm)	Tension Load Based on Bond Strength						Tension Load Based on Steel Strength		
					f'c ≥ 2000 psi (13.8 MPa) Concrete			f'c ≥ 4000 psi (27.6 MPa) Concrete			F1554 Grade 36	A193 GR B7	F593 304SS
					Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	Allow. lbs. (kN)	Allow. lbs. (kN)	Allow. lbs. (kN)
3/8 (9.5)	1/2	1 3/4 (44)	2 5/8 (67)	7 (178)	1,900 (8.5)	485 (2.2)	475 (2.1)	1,900 (8.5)	—	475 (2.1)	2,105 (9.4)	4,535 (20.2)	3,630 (16.1)
		3 1/2 (89)	5 1/4 (133)	14 (356)	10,200 (45.4)	119 (0.5)	2,550 (11.3)	10,280 (45.7)	97 (0.4)	2,570 (11.4)			
		4 1/2 (114)	6 3/4 (171)	18 (457)	10,613 (47.2)	84 (0.4)	2,655 (11.8)	10,613 (47.2)	—	2,655 (11.8)			
1/2 (12.7)	5/8	2 1/8 (54)	3 3/16 (81)	8 1/2 (216)	7,216 (32.1)	1,163 (5.2)	1,805 (8.0)	7,216 (32.1)	—	1,805 (8.0)	3,750 (16.7)	8,080 (35.9)	6,470 (28.8)
		4 1/4 (108)	6 5/8 (162)	17 (432)	17,700 (78.7)	629 (2.8)	4,425 (19.7)	18,400 (81.8)	788 (3.5)	4,600 (20.5)			
		6 (152)	9 (229)	24 (610)	18,556 (82.5)	853 (3.8)	4,640 (20.6)	18,556 (82.5)	—	4,640 (20.6)			
5/8 (15.9)	3/4	2 1/2 (64)	3 3/4 (95)	10 (254)	6,780 (30.2)	315 (1.4)	1,695 (7.5)	6,780 (30.2)	—	1,695 (7.5)	5,875 (26.1)	12,660 (56.3)	10,120 (45.0)
		3 3/4 (95)	5 5/8 (143)	15 (381)	—	—	4,190 (18.6)	—	—	4,875 (21.7)			
		5 (127)	7 1/2 (191)	20 (508)	26,700 (118.8)	1,121 (5.0)	6,680 (29.7)	32,200 (143.2)	964 (4.3)	8,050 (35.8)			
		7 3/16 (183)	10 5/8 (276)	28 3/4 (730)	—	—	7,515 (33.4)	—	—	8,200 (36.5)			
		9 5/8 (238)	14 1/8 (359)	37 1/2 (953)	33,402 (148.6)	1,198 (5.3)	8,350 (37.1)	33,402 (148.6)	—	8,350 (37.1)			
3/4 (19.1)	7/8	3 3/8 (86)	5 1/16 (129)	13 1/2 (343)	15,456 (68.8)	2,621 (11.7)	3,865 (17.2)	15,456 (68.8)	—	3,865 (17.2)	8,460 (37.6)	18,230 (81.1)	12,400 (55.2)
		5 1/16 (129)	7 5/8 (194)	20 1/4 (514)	—	—	7,195 (32.0)	—	—	7,245 (32.2)			
		6 3/4 (171)	10 5/8 (257)	27 (686)	42,100 (187.3)	1,945 (8.7)	10,525 (46.8)	42,480 (189.0)	1,575 (7.0)	10,620 (47.2)			
		9 (229)	13 1/2 (343)	36 (914)	—	—	11,220 (49.9)	—	—	11,265 (50.1)			
		11 1/4 (286)	16 5/8 (429)	45 (1143)	47,634 (211.9)	608 (2.7)	11,910 (53.0)	47,634 (211.9)	—	11,910 (53.0)			

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SET® Anchoring Adhesive

Epoxy Adhesives

Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete
(continued from previous page)



Rod Dia. in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing Dist. in. (mm)	Tension Load Based on Bond Strength						Tension Load Based on Steel Strength		
					f' _c ≥ 2000 psi (13.8 MPa) Concrete			f' _c ≥ 4000 psi (27.6 MPa) Concrete			F1554 Grade 36	A193 GR B7	F593 304SS
					Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	Allow. lbs. (kN)	Allow. lbs. (kN)	Allow. lbs. (kN)
7/8 (22.2)	1	3 7/8 (98)	5 13/16 (148)	15 1/2 (394)	19,120 (85.1)	1,239 (5.5)	4,780 (21.3)	19,120 (85.1)	—	4,780 (21.3)	11,500 (51.2)	24,785 (110.2)	16,860 (75.0)
		5 13/16 (148)	8 3/4 (222)	23 3/4 (591)	—	—	8,535 (38.0)	—	—	9,250 (41.1)			
		7 3/4 (197)	11 1/8 (295)	31 (787)	49,160 (218.7)	2,149 (9.6)	12,290 (54.7)	54,880 (244.1)	1,050 (4.7)	13,720 (61.0)			
		10 7/16 (265)	15 5/8 (397)	41 3/4 (1060)	—	—	14,480 (64.4)	—	—	15,195 (67.6)			
		13 1/8 (333)	19 5/8 (498)	52 1/2 (1334)	66,679 (296.6)	506 (2.3)	16,670 (74.2)	66,679 (296.6)	—	16,670 (74.2)			
1 (25.4)	1 1/8	4 1/2 (114)	6 3/4 (171)	18 (457)	20,076 (89.3)	2,388 (10.6)	5,020 (22.3)	20,076 (89.3)	—	5,020 (22.3)	15,025 (66.8)	32,380 (144.0)	22,020 (97.9)
		6 3/4 (171)	10 1/8 (257)	27 (686)	—	—	10,020 (44.6)	—	—	10,640 (47.3)			
		9 (229)	13 1/2 (343)	36 (914)	60,060 (267.2)	5,472 (24.3)	15,015 (66.8)	65,020 (289.2)	2,924 (13.0)	16,255 (72.3)			
		12 (305)	18 (457)	48 (1219)	—	—	17,810 (79.2)	—	—	18,430 (82.0)			
		15 (381)	22 1/2 (572)	60 (1524)	82,401 (366.5)	6,432 (28.6)	20,600 (91.6)	82,401 (366.5)	—	20,600 (91.6)			
1 1/8 (28.6)	1 1/4	5 1/8 (130)	7 3/4 (197)	20 1/2 (521)	27,560 (122.6)	—	6,890 (30.6)	27,560 (122.6)	—	6,890 (30.6)	19,025 (84.6)	41,000 (182.4)	27,880 (124.0)
		7 5/8 (194)	11 1/2 (292)	30 1/2 (775)	—	—	12,105 (53.8)	—	—	12,500 (55.6)			
		10 5/8 (257)	15 1/4 (387)	40 1/2 (1029)	69,200 (307.8)	—	17,300 (77.0)	72,340 (321.8)	—	18,085 (80.4)			
		13 1/2 (343)	20 3/4 (514)	54 (1372)	—	—	21,380 (95.1)	—	—	21,770 (96.8)			
		16 3/8 (429)	25 3/8 (645)	67 1/2 (1715)	101,820 (452.9)	—	25,455 (113.2)	101,820 (452.9)	—	25,455 (113.2)			
1 1/4 (31.8)	1 3/8	5 5/8 (143)	8 7/16 (214)	22 1/2 (572)	35,858 (159.5)	2,389 (10.6)	8,965 (39.9)	35,858 (159.5)	—	8,965 (39.9)	23,490 (104.5)	50,620 (225.2)	34,425 (153.1)
		8 7/16 (214)	12 3/4 (324)	33 3/4 (857)	—	—	14,115 (62.8)	—	—	14,115 (62.8)			
		11 1/4 (286)	16 3/8 (429)	45 (1143)	77,045 (342.7)	7,024 (31.2)	19,260 (85.7)	77,045 (342.7)	—	19,260 (85.7)			
		15 (381)	22 1/2 (572)	60 (1524)	—	—	24,965 (111.0)	—	—	24,965 (111.0)			
		18 3/4 (476)	28 1/8 (714)	75 (1905)	122,681 (545.7)	10,940 (48.7)	30,670 (136.4)	122,681 (545.7)	—	30,670 (136.4)			

1. Allowable load must be the lesser of the bond or steel strength.
2. The allowable loads listed under allowable bond are based on a safety factor of 4.0.
3. Refer to allowable load-adjustment factors for spacing and edge distance on pages 31 and 33.
4. Refer to in-service temperature sensitivity chart for allowable load adjustment for temperature.
5. Anchors are permitted to be used within fire-resistive construction, provided the anchors resist wind or seismic loads only. For use in fire-resistive construction, the anchors can also be permitted to be used to resist gravity loads, provided special consideration has been given to fire-exposure conditions.

6. Anchors are not permitted to resist tension forces in overhead or wall installations unless proper consideration is given to fire-exposure and elevated-temperature conditions.
7. Allowable load based on bond strength may be interpolated for concrete compressive strengths between 2000 psi and 4000 psi.

Shear Loads for Threaded Rod Anchors in Normal-Weight Concrete



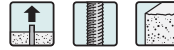
Rod Dia. in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing Dist. in. (mm)	Shear Load Based on Concrete Edge Distance			Shear Load Based on Steel Strength		
					f'c ≥ 2000 psi (13.8 MPa) Concrete			F1554 Grade 36	A193 GR B7	F593 304SS
					Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)
3/8 (9.5)	1/2	1 3/4 (44)	5 1/4 (133)	2 3/8 (67)	4,573 (20.3)	317 (1.4)	1,145 (5.1)	1,085 (4.8)	2,340 (10.4)	1,870 (8.3)
		3 1/2 (89)		5 1/4 (133)	6,935 (30.8)	965 (4.3)	1,735 (7.7)			
		4 1/2 (114)		5 1/4 (133)	—	—	1,735 (7.7)			
1/2 (12.7)	5/8	2 1/8 (54)	6 3/8 (162)	3 1/4 (83)	7,001 (31.1)	437 (1.9)	1,750 (7.8)	1,930 (8.6)	4,160 (18.5)	3,330 (14.8)
		4 1/4 (108)		6 3/8 (162)	11,116 (49.4)	1,696 (7.5)	2,780 (12.4)			
		6 (152)		6 3/8 (162)	—	—	2,780 (12.4)			
5/8 (15.9)	3/4	2 1/2 (64)	7 1/2 (191)	3 3/4 (95)	14,427 (64.2)	826 (3.7)	3,605 (16.0)	3,025 (13.5)	6,520 (29.0)	5,220 (23.2)
		5 (127)		7 1/2 (191)	19,501 (86.7)	1,027 (4.6)	4,875 (21.7)			
		9 3/8 (238)		7 1/2 (191)	—	—	4,875 (21.7)			
3/4 (19.1)	7/8	3 3/8 (86)	10 1/8 (257)	5 1/8 (130)	21,180 (94.2)	942 (4.2)	5,295 (23.6)	4,360 (19.4)	9,390 (41.8)	6,385 (28.4)
		6 3/4 (171)		10 1/8 (257)	25,244 (112.3)	2,538 (11.3)	6,310 (28.1)			
		11 1/4 (286)		10 1/8 (257)	—	—	6,310 (28.1)			
7/8 (22.2)	1	3 7/8 (98)	11 1/8 (295)	5 7/8 (149)	28,333 (126.0)	2,406 (10.7)	7,085 (31.5)	5,925 (26.4)	12,770 (56.8)	8,685 (38.6)
		7 3/4 (197)		11 1/8 (295)	33,533 (149.2)	2,793 (12.4)	8,385 (37.3)			
		13 1/8 (333)		11 1/8 (295)	—	—	8,385 (37.3)			
1 (25.4)	1 1/8	4 1/2 (114)	13 1/2 (343)	6 3/4 (171)	30,520 (135.8)	2,166 (9.6)	7,630 (33.9)	7,740 (34.4)	16,680 (74.2)	11,345 (50.5)
		9 (229)		13 1/2 (343)	50,187 (223.2)	2,176 (9.7)	12,545 (55.8)			
		15 (381)		13 1/2 (343)	—	—	12,545 (55.8)			
1 1/8 (28.6)	1 1/4	5 1/8 (130)	15 1/4 (387)	7 3/4 (197)	41,325 (183.8)	—	10,330 (46.0)	9,800 (43.6)	21,125 (94.0)	14,365 (63.9)
		10 1/8 (257)		15 1/4 (387)	58,285 (259.3)	—	14,570 (64.8)			
		16 3/8 (429)		15 1/4 (387)	—	—	14,570 (64.8)			
1 1/4 (31.8)	1 3/8	5 3/8 (143)	16 3/8 (429)	8 1/2 (216)	52,130 (231.9)	3,969 (17.7)	13,035 (58.0)	12,100 (53.8)	26,075 (116.0)	17,730 (78.9)
		11 1/4 (286)		16 3/8 (429)	66,383 (295.3)	3,948 (17.6)	16,595 (73.8)			
		18 3/4 (476)		16 3/8 (429)	—	—	16,595 (73.8)			

1. Allowable load must be the lesser of the load based on concrete edge distance or steel strength.
2. The allowable loads based on concrete edge distance are based on a safety factor of 4.0.
3. Refer to allowable load-adjustment factors for spacing and edge distance on pages 32 and 34.
4. Refer to in-service temperature sensitivity chart for allowable load adjustment for temperature.
5. Anchors are permitted to be used within fire-resistive construction, provided the anchors resist wind or seismic loads only. For use in fire-resistive construction, the anchors can also be permitted to be used to resist gravity loads, provided special consideration has been given to fire-exposure conditions.

SET® Anchoring Adhesive

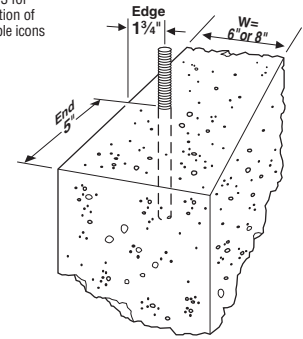
Epoxy Adhesives

Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete Stemwall



* See page 13 for an explanation of the load table icons

Rod Dia. in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Stemwall Width in. (mm)	Min. Edge Dist. in. (mm)	Min. End Dist. in. (mm)	Tension Load Based on Bond Strength		Tension Load Based on Steel Strength
						$f'_c \geq 2500$ psi (17.2 MPa) Concrete		F1554 Grade 36
						Ultimate lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)
$\frac{5}{8}$ (15.9)	$\frac{3}{4}$	10 (254.0)	6 (152.4)	$1\frac{3}{4}$ (44.5)	5 (127.0)	13,634 (60.6)	3,410 (15.2)	5,875 (26.1)
$\frac{7}{8}$ (22.2)	1	15 (381.0)	8 (203.2)	$1\frac{3}{4}$ (44.5)	5 (127.0)	22,664 (100.8)	5,665 (25.2)	11,500 (51.2)



Edge and end distances for threaded rod in concrete foundation stemwall corner installation

1. Allowable load must be the lesser of the bond or steel strength.
2. The allowable loads listed under allowable bond are based on a safety factor of 4.0.
3. Refer to in-service temperature sensitivity chart for allowable load adjustment for temperature.
4. Anchors are permitted to be used within fire-resistive construction, provided the anchors resist wind or seismic loads only. For use in fire-resistive construction, the anchors can also be permitted to be used to resist gravity loads, provided special consideration has been given to fire-exposure conditions.

Shear Loads for Threaded Rod Anchors in Normal-Weight Concrete, Load Applied Parallel to Concrete Edge



* See page 13 for an explanation of the load table icons

Rod Dia. in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Min. Edge Dist. in. (mm)	Min. End Dist. in. (mm)	Shear Load Based on Concrete Edge Distance			Shear Load Based on Steel Strength
					$f'_c \geq 2000$ psi (13.8 MPa) Concrete			F1554 Grade 36
					Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)
$\frac{1}{2}$ (12.7)	$\frac{5}{8}$	$4\frac{1}{4}$ (108.0)	$1\frac{1}{4}$ (44.5)	$8\frac{1}{2}$ (219.9)	8,496 (37.8)	654 (2.9)	2,125 (9.5)	1,930 (8.6)
$\frac{5}{8}$ (15.9)	$\frac{3}{4}$	5 (127.0)	$1\frac{3}{4}$ (44.5)	10 (254.0)	8,857 (39.4)	225 (1.0)	2,215 (9.9)	3,025 (13.5)

1. Allowable load must be the lesser of the load based on concrete edge distance, steel strength or wood bearing capacity.
2. The allowable loads based on concrete edge distance are based on a safety factor of 4.0.
3. Refer to allowable load-adjustment factors for spacing on page 34.
4. Refer to in-service temperature sensitivity chart for allowable load adjustment for temperature.
5. Anchors are permitted to be used within fire-resistive construction, provided the anchors resist wind or seismic loads only. For use in fire-resistive construction, the anchors can also be permitted to be used to resist gravity loads, provided special consideration has been given to fire-exposure conditions.