

SET High Strength Epoxy-Tie® Anchoring Adhesive



Epoxy Adhesives

SET Epoxy-Tie® epoxy 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. SET-PAC-EZ™ adhesive covered by ICC-ES, City of L.A. and NSF/ANSI listings only. **⚠** The load tables list values based upon results from the most recent testing and may not reflect those in current code reports. Where those 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 15 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 22

INSTALLATION: See pages 31–32

SHelf LIFE: 24 months from date of manufacture in unopened side-by-side cartridge. SET-PAC-EZ™ cartridge - 24 months from date of manufacture, unopened.

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 Epoxy-Tie® adhesive have been tested in accordance with ICC-ES's *Acceptance Criteria for Adhesive Anchors (AC58)* for the following:

- Seismic/wind loading
- Long-term creep at elevated-temperature
- Static loading at elevated-temperature
- Damp and water-filled holes
- Freeze-thaw conditions
- Critical and minimum edge distance and spacing

In addition, anchors installed with SET Epoxy-Tie® 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 our website or contact Simpson Strong-Tie and request Technical Bulletin T-SAS-CHEMRES08.



SET-PAC-EZ™ Adhesive
U.S. Patent
6,634,524

**- IMPORTANT -
SEE Pages 31–32
FOR INSTALLATION
INSTRUCTIONS**

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)
SET-PAC-EZ	8.5 (16.2)	single	12	CDT10 or high quality standard caulking tool	2 included
SET22	22 (39.7)	side-by-side	10	EDT22B, EDT22AP, or EDT22CKT	EMN22i
SET56	56 (101.1)	side-by-side	6	EDT56AP	EMN22i or EMN50

1. Bulk containers also available, call Simpson Strong-Tie for details.
2. Cartridge and bulk estimation guides are available on pages 63–66.
3. Detailed information on dispensing tools, mixing nozzles and other adhesive accessories is available on pages 87–92.
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 Epoxy-Tie® adhesive from Simpson Strong-Tie, Pleasanton, CA. Anchors shall be installed per Simpson Strong-Tie instructions for SET Epoxy-Tie® adhesive.

ACCESSORIES: See pages 87–92 for information on dispensing tools, mixing nozzles and other accessories.

SET High Strength Epoxy-Tie® Anchoring Adhesive

Epoxy Adhesives

Cure Schedule

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

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 15 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			A307 (SAE 1018)	A193 GR B7 (SAE 4140)	F593 (A304SS)
					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 9/16 (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 3/8 (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 7/8 (276)	28 3/4 (730)	•	•	7,515 (33.4)	•	•	8,200 (36.5)			
		9 3/8 (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 7/8 (194)	20 1/4 (514)	•	•	7,195 (32.0)	•	•	7,245 (32.2)			
		6 3/4 (171)	10 1/8 (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 7/8 (429)	45 (1143)	47,634 (211.9)	608 (2.7)	11,910 (53.0)	47,634 (211.9)	•	11,910 (53.0)			

See Notes on Next Page

*See page 10 for an explanation of the load table icons

7/8" – 1 1/4" Diameters on next page



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			A307 (SAE 1018)	A193 GR B7 (SAE 4140)	F593 (A304SS)
					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 19/16 (148)	8 3/4 (222)	23 1/4 (591)	•	•	8,535 (38.0)	•	•	9,250 (41.1)			
		7 3/4 (197)	11 5/8 (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 5/8 (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 1/8 (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 1/4 (514)	54 (1372)	•	•	21,380 (95.1)	•	•	21,770 (96.8)			
		16 7/8 (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 7/8 (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. Allowable loads may be increased by 33 1/3 percent for short-term loading due to wind or seismic forces where permitted by code.
4. Refer to allowable load-adjustment factors for spacing and edge distance on pages 48 and 50.
5. Refer to in-service temperature sensitivity chart for allowable load adjustment for temperature.
6. 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.
7. 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.
8. Allowable load based on bond strength may be interpolated for concrete compressive strengths between 2000 psi and 4000 psi.

*See page 10 for an explanation of the load table icons.

SET High Strength Epoxy-Tie® Anchoring Adhesive

Epoxy Adhesives

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			A307 (SAE 1018)	A193 GR B7 (SAE 4140)	F593 (A304SS)
					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 5/8 (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 5/8 (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 5/8 (295)	33,533 (149.2)	2,793 (12.4)	8,385 (37.3)			
		13 1/8 (333)		11 5/8 (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 7/8 (429)		15 1/4 (387)	•	•	14,570 (64.8)			
1 1/4 (31.8)	1 3/8	5 5/8 (143)	16 7/8 (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 7/8 (429)	66,383 (295.3)	3,948 (17.6)	16,595 (73.8)			
		18 3/4 (476)		16 7/8 (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. Allowable loads may be increased by 33 1/3 percent for short-term loading due to wind or seismic forces where permitted by code.
4. Refer to allowable load-adjustment factors for spacing and edge distance on pages 49 and 51.
5. Refer to in-service temperature sensitivity chart for allowable load adjustment for temperature.
6. 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.

*See page 10 for an explanation of the load table icons