

Acrylic-Tie® AT Adhesive – Rebar Yield and Tensile Strength Embedments

Tests have been performed to establish load capacities for rebar dowels installed at multiple embedment depths with Acrylic-Tie AT adhesive. Using these results, the embedment depths required to develop the yield or tensile strengths of CAN/CSA-G30.18 Grade 400 rebar have been calculated and are presented below.

Tension Loads and Development Lengths for Rebar Dowels in Normal-Weight Concrete

Rebar Size	Drill Bit Dia. in.	Embed. Depth in. (mm)	f'c ≥ 2000 psi (13.8 MPa) Concrete			f'c ≥ 4000 psi (27.6 MPa) Concrete			CAN/CSA-G30.18 Grade 400 Rebar	
			Ultimate Bond Strength lbs. (kN)	Embed. To Develop Yield Strength in. (mm)	Embed. To Develop Tensile Strength in. (mm)	Ultimate Bond Strength lbs. (kN)	Embed. To Develop Yield Strength in. (mm)	Embed. To Develop Tensile Strength in. (mm)	Yield Strength lbs. (kN)	Tensile Strength lbs. (kN)
10M	5/16	3 1/2 (89)	8,245 (36.7)	—	—	11,445 (50.9)	3 1/2 (89)	—	8,992 (40)	12,139 (54)
		4 1/2 (114)	•	—	—	•	—	—	—	—
15M	3/4	5 1/2 (140)	20,396 (91)	5 1/2 (140)	—	20,396 (91)	5 1/2 (140)	7 1/2 (191)	17,984 (80)	24,278 (108)
		9 3/8 (238)	•	—	—	28,115 (125)	—	—	—	—
20M	1	6 3/4 (171)	31,839 (142)	6 3/4 (171)	—	31,839 (142)	6 3/4 (171)	10 1/4 (260)	26,976 (120)	36,418 (162)
		11 1/4 (286)	•	—	—	37,992 (169)	—	—	—	—
25M	1 1/8	9 (229)	49,973 (222)	9 (229)	—	49,973 (222)	9 (229)	11 1/4 (286)	44,960 (200)	60,696 (270)
		15 (381)	•	—	—	80,598 (359)	—	—	—	—
30M	1 3/8	16 3/8 (429)	•	—	—	96,096 (427)	16 3/8 (429)	16 3/8 (429)	62,944 (280)	84,974 (378)

- Development lengths are based on comparison of average ultimate bond strengths from testing in unreinforced concrete to minimum yield and tensile strengths of rebar.
- Critical edge distance is 1.5 times embedment depth and critical spacing is 4 times embedment depth for unreinforced concrete. Refer to our *Anchoring and Fastening Systems for Concrete and Masonry* catalog for load adjustment factors for lesser spacings and edge distances. Critical edge distance and critical spacing may be reduced when anchoring into reinforced concrete members.
- Refer to our *Anchoring and Fastening Systems for Concrete and Masonry* catalog for load adjustment factors for in-service temperature.
- Development lengths may be interpolated for concrete compressive strengths between 2,000 psi (13.8 MPa) and 4,000 psi (27.6 MPa).
- The Acrylic-Tie® adhesive and Acrylic-Tie® FAST-PAC™ adhesive anchor systems are not permitted for use in conjunction with fire resistive construction. Exceptions would be:
 - Anchors resist wind or seismic loading only.
 - For other than wind or seismic loading, special consideration is given to fire exposure conditions.



This technical bulletin is effective until December 31, 2013, and reflects information available as of October 1, 2011. This information is updated periodically and should not be relied upon after December 31, 2013; contact Simpson Strong-Tie for current information and limited warranty or see www.strongtie.com.