



ZapT-lok™

**SHEAR SCREW & WEDGE
MECHANICAL END ANCHORAGES
FOR Gr.60 REINFORCING BARS**



PERFORMANCE TEST DATA

JULY 2017

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INTRODUCTION

Barsplice Products, Inc. has conducted a series of in-air tests on the Zap T-Lok system of reinforcing bar mechanical end anchorages, sizes No. 4 through No. 14. The purpose of this testing is to ensure that they are manufactured to the quality standards of BPI's ISO 9001 Quality System and are capable of exceeding various Building Codes strength requirements.

When the Zap T-Lok system is installed in the standard ASTM A970 Class A orientation, with the bearing face at the end of the reinforcing bar, the net head bearing area exceeds 9x rebar cross-sectional area. When installed in the reverse ASTM A970 Class HA orientation, the net head bearing area exceeds 14x rebar cross-sectional area.

TENSILE TEST PROCEDURE

Test specimens were loaded monotonically in tension to failure to determine the capability of the Zap T-Lok end anchorage system. The tests were conducted in accordance with ASTM A370, "Standard Test Methods and Definitions for Mechanical Testing of Steel Products." Loads were applied through the bearing area of the head. The testing was performed to exceed the mechanical anchorage strength requirements of ACI (American Concrete Institute) 318-2014 Section 25.4.5.1 (ACI 318-2011 Section 12.6) and ASTM A970, Class A or Class HA in reverse orientation.

All monotonic tension tests were carried out in a 600 kip Forney universal testing machine, located at the Barsplice manufacturing facility. Current calibration certificates for the test machine are on file.

The reinforcing steel used in these tests conforms to the requirements of ASTM A615, Grade 60 and ASTM A706, Grade 60.

TEST RESULTS

Results of the Zap T-Lok tension testing described above are summarized in Table 1 and represented in Chart 1.

SUMMARY

Tension test specimens exceeded the strength requirements of ACI 318-2014*, namely 100% x specified yield strength of Grade 60 rebar.

Additionally, the tension test specimens exceeded the strength requirements stated in ASTM A970, Class A (or Class HA in reverse orientation), namely the specified tensile strength of Grade 60 rebar which equates to 90,000 psi or 150% x specified yield for A615 rebar and 80,000 psi or 133% x specified yield for A706 rebar.

* In meeting the strength requirements of ACI-318, the Zap T-Lok system complies with IBC 2015 Section 1901.2.

TABLE 1: TENSILE TEST RESULTS

BAR SIZE	TEST LAB ID # & REF #		PEAK STRENGTH	
			MAX STRESS (psi)	% GR. 60 SPEC. YIELD
No. 4	4T1961	4A	115,000	192%
	4T2006	4A	110,500	184%
	4T2408	4A	106,250	177%
		4B	107,750	180%
No. 5	5T5760	5A	106,161	177%
		5B	106,968	178%
	5T5870	5A	106,194	177%
		5B	107,452	179%
	5T5892	5A	113,806	190%
		5B	107,645	179%
5T6123	5A	106,839	178%	
No. 6	6T3577	6A	113,864	190%
		6B	114,841	191%
	6T4391	6A	104,818	175%
		6B	102,068	170%
No. 7	7T1706	7A	107,117	179%
		7B	111,883	186%
	7T1844	7A	103,067	172%
		7B	110,467	184%
	7T2010	7A	96,983	162%
		7B	109,850	183%
	7T2310	7A	105,583	176%
		7B	106,150	177%
No. 8	8T2862	8A	117,000	195%
	8T2876	8A	107,228	179%
		8B	109,266	182%
	8T2957	8A	111,506	186%
		8B	106,456	177%
	8T3085	8A	109,443	182%
8B		108,620	181%	

BAR SIZE	TEST LAB ID # & REF #		PEAK STRENGTH	
			MAX STRESS (psi)	% GR. 60 SPEC. YIELD
No. 9	9T1057	9A	105,350	176%
	9T1059	9A	100,980	168%
	9T1061	9A	100,640	168%
	9T1246	9A	101,720	170%
		9B	96,080	160%
	9T1343	9A	109,560	183%
9B		100,410	167%	
No. 10	10T1269	10A	105,780	176%
		10B	104,835	175%
	10T1396	10A	94,787	158%
		10B	96,496	161%
	10T1937	10A	105,480	176%
		10B	107,606	179%
10T1954	10A	110,598	184%	
	10B	109,992	183%	
No. 11	11T2082	11A	105,147	175%
		11B	102,282	170%
	11T2085	11A	104,564	174%
		11B	106,481	177%
	11T2089	11A	103,192	172%
		11B	104,865	175%
11T3666	11A	98,263	164%	
	11B	96,500	161%	
No. 14	14T628	14A	97,258	162%
		14B	100,831	168%
	14T773	14A	111,982	187%
		14B	115,200	192%
	14T775	14A	112,227	187%
	14T943	14A	103,191	172%
14B		112,769	188%	

CHART 1: TENSILE TEST RESULTS

