



# **Grip-Twist<sup>®</sup>**

## **TAPER THREADED**

**TYPE 2 MECHANICAL  
CONNECTIONS FOR  
REINFORCING BARS**



## **PERFORMANCE TEST DATA**

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## **INTRODUCTION**

Barsplice Products, Inc. (BPI) have conducted a series of tests on reinforcing bar mechanical splices, sizes No. 3 through No. 18. The tests have been conducted on Taper Threaded Grip-Twist<sup>®</sup> Mechanical Splices. The purpose of the testing is to ensure that products are manufactured to the quality standards of BPI's ISO 9001 Quality System and are capable of exceeding strength requirements of various Building Codes.

## **TENSILE TEST PROCEDURE**

Test specimens were loaded monotonically in tension to failure to determine the capability of the splice system. The tests were conducted in accordance with "Standard Test Methods and Definitions for Mechanical Testing of Steel Products", ASTM A370. The testing was performed to exceed the strength requirements of ACI (American Concrete Institute) 318-14, Chapter 25 and Chapter 18 using Grade 60 reinforcing bar.

All monotonic tension tests were carried out on a 600 kip Forney universal testing machine, or a 900 kip MTS universal test machine, located at the Barsplice manufacturing facility. Current calibration certificates for the test machine(s) 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 Taper Threaded Grip-Twist<sup>®</sup> tension testing described above are summarized in Table 1 and represented in Chart 1.

### **SUMMARY**

- (1) Tension test specimens exceeded the Type 1 strength requirements of ACI 318-14, Chapter 25, namely 125% x specified yield strength of Grade 60 rebar or 75,000 psi.
- (2) Tension test specimens exceeded the Type 2 strength requirements of ACI 318-14, Chapter 18, namely the specified tensile strength of Grade 60 bar. ASTM A615, Grade 60 has a specified tensile strength of 90,000 psi which is equivalent to 150% x specified yield. ASTM A706, Grade 60 has a specified tensile strength of 80,000 psi which is equivalent to 133% x specified yield.

**TABLE 1: TAPER THREADED GRIP-TWIST® TENSILE TEST RESULTS**

BAR SIZE	TEST LAB ID # & REF #		PEAK STRENGTH	
			MAX STRESS (psi)	% GR. 60 SPEC. YIELD
No. 3	3T32	3A	114,954	192%
		3B	115,676	193%
	3T66	3A	118,727	198%
		3B	115,818	193%
	3T72	3A	121,818	203%
		3B	123,091	205%
No. 4	4T313*	4A	100,713	168%
		4B	100,999	168%
	4T3059	4A	108,350	181%
		4B	111,050	185%
	4T3294	4A	110,450	184%
		4B	106,850	178%
	4T3314	4A	109,250	182%
		4B	110,700	185%
No. 5	5T3688*	5A	96,226	160%
	5T5486	5A	110,613	184%
		5B	111,258	185%
	5T5551	5A	108,387	181%
		5B	107,419	179%
	5T7986	5A	107,677	179%
		5B	105,387	176%
	5T8798	5A	104,129	174%
5B		106,000	177%	
No. 6	6T580*	6A	96,484	161%
		6B	98,659	164%
	6T5372	6A	111,386	186%
		6B	110,682	184%
	6T5806	6A	105,795	176%
		6B	106,023	177%
	6T5866	6A	103,705	173%
		6B	102,568	171%

\* Test conducted on ASTM A706 reinforcement bar

BAR SIZE	TEST LAB ID # & REF #		PEAK STRENGTH	
			MAX STRESS (psi)	% GR. 60 SPEC. YIELD
No. 7	7T2074	7A	114,067	190%
		7B	111,317	186%
	7T2161	7A	113,393	189%
		7B	110,564	184%
	7T2726	7A	104,464	174%
		7B	108,005	180%
7T2851	7A	107,398	179%	
	7B	106,906	178%	
No. 8	8T398*	8A	99,375	166%
		8B	93,045	155%
	8T3329	8A	108,380	181%
		8B	109,013	182%
	8T3542	8A	112,032	187%
		8B	111,843	186%
8T3658	8A	114,554	191%	
	8B	113,050	188%	
No. 9	9T1842	9A	107,630	179%
		9B	105,750	176%
	9T2030	9A	111,547	186%
		9B	108,762	181%
	9T2257	9A	109,386	182%
		9B	110,050	183%
9T2390	9A	114,030	190%	
	9B	113,811	190%	
No. 10	10T1640	10A	110,717	185%
		10B	111,189	185%
	10T2110	10A	107,851	180%
		10B	108,172	180%
	10T2157	10A	107,741	180%
		10B	108,322	181%
	10T2192	10A	107,136	179%
		10B	105,285	175%

**TABLE 1: TAPER THREADED GRIP-TWIST® TENSILE TEST RESULTS**

BAR SIZE	TEST LAB ID # & REF #		PEAK STRENGTH	
			MAX STRESS (psi)	% GR. 60 SPEC. YIELD
No. 11	11T548*	11A	94,459	157%
		11B	94,154	157%
	11T3858	11A	104,750	175%
		11B	105,269	175%
	11T4143	11A	110,569	184%
		11B	111,362	186%
	11T4148	11A	114,130	190%
		11B	112,010	187%
No. 14	14T140*	14A	95,227	159%
		14B	94,827	158%
	14T881	14A	112,200	187%
		14B	111,436	186%
	14T1354	14A	104,361	174%
		14B	105,033	175%
	14T1407	14A	102,101	170%
		14B	103,160	172%

BAR SIZE	TEST LAB ID # & REF #		PEAK STRENGTH	
			MAX STRESS (psi)	% GR. 60 SPEC. YIELD
No. 18	18T151*	18A	99,198	165%
	18T471*	18A	102,035	170%
	18T663	18A	106,755	178%
		18B	107,010	178%
	18T701	18A	107,742	180%
		18B	108,795	181%
	18T780	18A	102,536	171%
		18B	101,937	170%
	18T788	18A	110,905	185%
		18B	109,643	183%

\* Test conducted on ASTM A706 reinforcement bar

**CHART 1: TAPER THREADED GRIP-TWIST® TENSILE TEST RESULTS**

