



BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

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STRENGTH OF MATERIALS LABORATORY

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TENSION TEST OF DEFORMED M.S. BARS

Sent by: Col. Towficur Rahman(Rtd), Sr. General Manager(Marketing& Sales), Ratanpur Steel Re-rolling Mills Ltd.,
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Project: Test of deformed MS bars for RSRM

BRTC No.: 1100-72282/CE/14-15; Dt. 15/10/2014

Ref.: RSRM/BUET (BRTC)/400W&500W-8/14; Dt. 15/10/2014

Date of Test: 16/10/2014

Contractor: -

Sl. No.	Frog Mark	Nominal Dia	Actual Dia	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof Load	Yield or Proof Strength *	Average Yield or Proof Strength (YS)	Ultimate Load	Ultimate Strength *	Average Ultimate Strength (TS)	TS/YS	Elongation (%) (Gauge length = 203.2 mm)	Average Elongation (%) (G. length = 203.2 mm)	Bend Test (ISO 6935)	Rebend Test (ISO 6935)
1	RSRM.G60.400W	25	24.8	3.795	3.810	225	458	469	368	750	725	1.54	19	20	Satisfactory	-
2	RSRM.G60.400W	25	24.9	3.809		226	460	(68000 psi)	339	690	(105000 psi)		20		Satisfactory	-
3	RSRM.G60.400W	25	24.9	3.825		240	489	(4780 kg/sq.cm)	363	740	(7390 kg/sq.cm)		20		Satisfactory	-
4	RSRM.G60.400W	20	19.9	2.441	2.440	140	446	452	216	690	700	1.55	19	17	Satisfactory	-
5	RSRM.G60.400W	20	19.9	2.435		144	459	(65500 psi)	227	725	(102000 psi)		16		Satisfactory	-
6	RSRM.G60.400W	20	19.9	2.445		142	452	(4610 kg/sq.cm)	217	690	(7150 kg/sq.cm)		17		Satisfactory	-
7	RSRM.G60.400W	16	15.9	1.560	1.558	86.4	430	425	136	680	670	1.58	19	19	Satisfactory	-
8	RSRM.G60.400W	16	15.9	1.558		86.4	430	(61500 psi)	134	670	(97500 psi)		19		Satisfactory	-
9	RSRM.G60.400W	16	15.9	1.557		83.3	415	(4335 kg/sq.cm)	134	670	(6850 kg/sq.cm)		19		Satisfactory	-
10	RSRM.G60.400W	12	12.0	0.883	0.884	48	425	425	71	625	625	1.48	18	18	Satisfactory	-
11	RSRM.G60.400W	12	12.0	0.884		46.9	425	(61500 psi)	71	625	(91000 psi)		18		Satisfactory	-
12	RSRM.G60.400W	12	12.0	0.884		48.6	430	(4335 kg/sq.cm)	71	625	(6400 kg/sq.cm)		19		Satisfactory	-
13	RSRM.G60.400W	10	10.0	0.621	0.624	36.7	465	465	55	700	700	1.51	15	15	Satisfactory	-
14	RSRM.G60.400W	10	10.0	0.622		37.2	471	(67500 psi)	56	705	(102000 psi)		15		Satisfactory	-
15	RSRM.G60.400W	10	10.1	0.628		36.3	459	(4740 kg/sq.cm)	55	695	(7150 kg/sq.cm)		16		Satisfactory	-

Conversion factors: 1.0 kg/cm² = 14.219 psi (lb/in²) = 0.09807 MPa (N/mm²)

*Strengths are based on nominal area

Nom. Bar Dia. (mm)	40	32	28	25	22	20	16	12	10	8
Nom. Area. (sq.mm)	1257	804	616	491	380	314	201	113	79	50

Samples were received in unsealed condition

Minimum Standard Requirements (BDS / ISO 6935-2:1991(E))			
Grade	Yield Strength	Ultimate Strength	Elongation
	N/mm ² or MPa	N/mm ² or MPa	%
300	300	330	16
400/400W	400	440	14
500/500W	500	550	14

Minimum Standard Requirements (ASTM A615/A 615M - 96a)

ASTM A 615			ASTM A 615M			ASTM A 615/ A 615M			
Grade	Yield Strength	Ultimate Strength	Grade	Yield Strength	Ultimate Strength	Minimum Elongation in 8" (203.2 mm) GL, (%)			
	psi (kg/cm ²)	psi (kg/cm ²)		MPa (kg/cm ²)	MPa (kg/cm ²)	10 mm	13, 16, 19 mm	22, 25 mm	29, 32, 36 mm
40	40000 (2810)	70000 (4910)	300	300 (3050)	500 (5090)	11	12	-	-
60	60000 (4210)	90000 (6310)	420	420 (4275)	620 (6295)	9	9	8	7
75	75000 (5255)	100000 (7015)	520	520 (5275)	690 (7010)	-	7	7	6

+ For 19 mm bar only.

Countersigned by: Dr. Abu Siddique, Professor, Dept. of Civil Engg.

Test performed by: Dr. A. F. M. Saiful Amin, Professor, Dept. of Civil Engg.

Important Notes: Samples as supplied to us have been tested in our laboratory. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that the samples are sent in a secure and sealed cover/packet/container under signature of the competent authority. In order to avoid fraudulent fabrication of test results, it is recommended that all test reports be collected by duly authorized person, and not by the Contractor/Supplier.