



BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

Mobile: 01819 557 964; PABX: 966 5650-80 Ext. 7226; www.buet.ac.bd/ce/

STRENGTH OF MATERIALS LABORATORY

Sheet 2/2



TENSION TEST OF DEFORMED M.S. BARS [ASTM A 615M]

Sent by: Col. Towficur Rahman (Rtd), Senior Marketing Manager (Marketing & Sales)

Ratanpur Steel Re-rolling Mills Ltd., 99 Gulshan Av., Gulshan-2, Dhaka-1212

Project: Routine Test

BRTC No.: 1100-64776 /CE/13-14; Dt. 28/05/2014

Ref.: RSRM/BUET (BRTC)/400W & 500W-7/14; Dt. 28/05/2014

Date of Test: 31/05/2014

Contractor: -

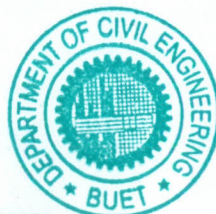
Sl. No.	Frog Mark	Nominal Dia	Actual Dia	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof Load	Yield or Proof Strength *	Average Yield or Proof Strength (YS)	Ultimate Load	Ultimate Strength *	Average Ultimate Strength (TS)	TS/YS	Elongation (%) (Gauge length = 203.2 mm)	Average Elongation (%) (G. length = 203.2 mm)	Bend Test (ISO 6935)	Rebend Test (ISO 6935)
1	RSRM.TMT.500.W	25	25.1	3.881	3.892	312	640	-	380	770	720	-	20	21	Satisfactory	Satisfactory
2	RSRM.TMT.500.W	25	25.2	3.905		263	540	-	335	680	(104000 psi)		22		Satisfactory	Satisfactory
3	RSRM.TMT.500.W	25	25.1	3.890		272	550	-	345	700	(7300 kg/sq.cm)		21		Satisfactory	Satisfactory
1	RSRM.TMT.500.W	20	19.8	2.421	2.447	178	570	550	220	700	680	1.24	19	19	Satisfactory	Satisfactory
2	RSRM.TMT.500.W	20	19.9	2.448		172	550	(79500 psi)	210	680	(98000 psi)		19		Satisfactory	Satisfactory
3	RSRM.TMT.500.W	20	20.0	2.471		167	530	(5600 kg/sq.cm)	205	660	(6900 kg/sq.cm)		20		Satisfactory	Satisfactory
1	RSRM.X.POWER.500.W	16	15.8	1.534	1.545	103	510	530	135	680	690	1.30	15	-	Satisfactory	Satisfactory
2	RSRM.X.POWER.500.W	16	15.9	1.554		111	550	(77500 psi)	140	710	(101000 psi)		17		Satisfactory	Satisfactory
3	RSRM.X.POWER.500.W	16	15.8	1.548		108	540	(5450 kg/sq.cm)	140	690	(7050 kg/sq.cm)		18		Satisfactory	Satisfactory
1	RSRM.TMT.500.W	12	11.9	0.879	0.896	61.2	540	530	75	670	650	1.23	16	17	Satisfactory	Satisfactory
2	RSRM.TMT.500.W	12	12.1	0.900		59	520	(76500 psi)	73	650	(95000 psi)		18		Satisfactory	Satisfactory
3	RSRM.TMT.500.W	12	12.1	0.908		59	520	(5400 kg/sq.cm)	73	650	(6650 kg/sq.cm)		18		Satisfactory	Satisfactory
1	RSRM.X.POWER.500.W	10	10.0	0.622	0.604	41.7	530	530	51	640	640	1.21	21	21	Satisfactory	Satisfactory
2	RSRM.X.POWER.500.W	10	9.8	0.594		41.3	520	(76500 psi)	50	630	(92000 psi)		22		Satisfactory	Satisfactory
3	RSRM.X.POWER.500.W	10	9.8	0.596		41.7	530	(5350 kg/sq.cm)	51	640	(6500 kg/sq.cm)		21		Satisfactory	Satisfactory

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

*Strengths are based on nominal area

Bar Sizes, mm	32	28	25	22	20	16	12	10	8
Nom. Area, sq.mm	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 N/mm ² or MPa	Ultimate Strength N/mm ² or MPa	Elongation %
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. Md. Zoynul Abedin, 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.



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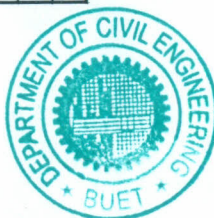
Sl. No.	Frog Mark	Nominal Dia	Actual Dia	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof Load	Yield or Proof Strength *	Average Yield or Proof Strength (YS)	Ultimate Load	Ultimate Strength *	Average Ultimate Strength (TS)	TS/YS	Elongation (%) (Gauge length = 203.2 mm)	Average Elongation (%) (G. length = 203.2 mm)	Bend Test (ISO 6935)	Rebend Test (ISO 6935)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa					
1	RSRM.G.60.400.W	25	24.8	3.789	3.774	216	440	440 (63500 psi) (4460 kg/sq.cm)	360	740	730 (106000 psi) (7500 kg/sq.cm)	1.66	20	20	Satisfactory	Satisfactory
2	RSRM.G.60.400.W	25	24.8	3.783		216	440		360	740			19		Satisfactory	Satisfactory
3	RSRM.G.60.400.W	25	24.7	3.749		213	435		355	730			20		Satisfactory	Satisfactory
1	RSRM.G.60.400.W	20	19.8	2.425	2.449	144	460	460 (67000 psi) (4710 kg/sq.cm)	225	720	740 (107000 psi) (7500 kg/sq.cm)	1.61	20	20	Satisfactory	Satisfactory
2	RSRM.G.60.400.W	20	19.8	2.418		146	465		235	740			20		Satisfactory	Satisfactory
3	RSRM.G.60.400.W	20	20.2	2.503		145	460		235	750			19		Satisfactory	Satisfactory
1	RSRM.G.60.400.W	16	16.0	1.569	1.565	86.3	430	440 (64000 psi) (4510 kg/sq.cm)	135	680	700 (102000 psi) (7200 kg/sq.cm)	1.59	21	-	Satisfactory	Satisfactory
2	RSRM.G.60.400.W	16	15.9	1.564		85.3	425		135	670			21		Satisfactory	Satisfactory
3	RSRM.G.60.400.W	16	15.9	1.561		95.1	475		155	760			18		Satisfactory	Satisfactory
1	RSRM.G.60.400.W	12	12.0	0.882	0.881	50.6	445	445 (64500 psi) (4530 kg/sq.cm)	78	690	690 (100000 psi) (7050 kg/sq.cm)	1.55	18	18	Satisfactory	Satisfactory
2	RSRM.G.60.400.W	12	11.9	0.878		50.6	445		78	690			18		Satisfactory	Satisfactory
3	RSRM.G.60.400.W	12	12.0	0.882		49.7	440		77	680			19		Satisfactory	Satisfactory
1	RSRM.G.60.400.W	10	10.1	0.628	0.625	38.2	485	480 (69500 psi) (4890 kg/sq.cm)	57	720	710 (104000 psi) (7300 kg/sq.cm)	1.48	18	19	Satisfactory	Satisfactory
2	RSRM.G.60.400.W	10	10.1	0.624		37.7	475		56	710			19		Satisfactory	Satisfactory
3	RSRM.G.60.400.W	10	10.1	0.624		37.7	475		56	710			19		Satisfactory	Satisfactory

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40	40000 (2810)	70000 (4910)	300	300 (3050)	500 (5090)	11	12	-	-
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