Bureau of Research, Testing and Consultation (BRTC)

Department of Civil Engineering

Chittagong University of Engineering & Technology (CUET)

Chattogram-4349, Bangladesh

TEST REPORT

Memo No. : BRTC/TEST/CE/2021/1745 Date: 10/06/2021

Supplier : Director, H. M. Steel & Industry Limited

Ref. No. : H M STEEL/CUET/02/21 Date: 07/06/2021

Name of the Test : Diameter, Tensile Strength, Elongation, Unit Weight, Bend & Re-Bend Test of Rebar (Brand: H M XPERT B-500CWR).

Location : Not Available

Sample : **Unsealed**

Nominal Dia	Actual Dia (mm)	Avg. Actual Dia (mm)	Yield Strength (MPa)	Avg. Yield Strength (MPa)	Ult. Strength (MPa)	Avg. Ult. Strength (MPa)	US/ YS	Elongation (%)	Avg. Elongation (%)	Unit Weight (kg/m)	Avg. Unit Weight (kg/m)	Bend	Re-bend
8	8.09	8.08	505.3	509.8	660.8	668.9	1.31	19.00	19.43	0.41	0.41	S	S
	8.08		516.3		672.2		1.3	19.90		0.41			
	8.07		507.8		673.8		1.33	19.40		0.41			
10	10.10	10.08	511.5	518.0	648.7	643.3	1.27	18.05	18.48	0.64	0.63	S	S
	10.04		530.2		643.8		1.21	18.93		0.63			
	10.09		512.3		637.3		1.24	18.45		0.63			
12	12.02	12.02	537.1	537.4	642.8	643.1	1.2	16.83	16.61	0.90	0.90	S	S
	12.01		537.9		634.9		1.18	16.75		0.90			
	12.02		537.0		651.5		1.21	16.27		0.90			
16	16.05	16.06	533.6	529.4	667.0	669.1	1.25	15.09	14.53	1.60	1.61	S	S
	16.07		527.3		670.2		1.27	14.08		1.61			
	16.07		527.3		670.2		1.27	14.42		1.61			

Explanatory Notes: 1MPa = 145.048 psi, S=Satisfactory, U=Unsatisfactory

ASTM A615-16 Weight Requirements & Nominal Area of bars (Table A1.1)

Nominal Dia, mm	10	12	16	20	22	25	28	32	36	40	50	60
Nominal Area, sq. mm	79	113	201	314	380	491	616	804	1018	1257	1963	2827
Nominal Weight, kg/m	0.617	0.888	1.578	2.466	2.984	3.853	4.834	6.313	7.990	9.865	15.41	22.2

- Measured unit weight shall not be less than 94% of the nominal weight
- Area & weight of 22mm dia bar is derived based on principle followed for other sizes in Table A1.1
- Actual dia & US/YS ratio are provided for informative purpose only.

These are not requirements of ASTM A615M-16

ASTM A 615M-16 Tensile Requirements for Common Steel Grades

	Grade 60 (420)	Grade 75 (520)	Grade 80 (550)
Tensile strength min. MPa (psi)	620 (90000)	690 (100000)	725 (105000)
Yield strength, min MPa (psi)	420 (60000)	520 (75000)	550 (80000)
Elongation in 200mm (8in), min %			
Bar designation No.			
10,12,16,20	9	7	7
25,22	8	7	7
28,32,36,40,50,60	7	6	6

Countersigned by

21/06/2021

Head

Department of Civil Engineering

Chittagong University of Engineering and Technology

Test Conducted by

20/6/21

Dr. Md. Moinul Islam

Professor

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