BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)
DEPARTMENT OF CIVIL ENGINEERING
Mobile: 01819557964; PABX: (8802) - 55167100, 55167228-57 Ext. 7226, Info: http://brtc.ce.buet.ac.bd/#/home, Report verification: http://verify.ce.buet.ac.bd

STRENGTH OF MATERIALS LABORATORY

TEST OF DEFORMED M.S. BARS [ASTM A 615M-16]

Sent by: Md. Moniruzzaman, Deputy General Manager, Sales & Marketing
Elite Iron & Steel Ind. Ltd., Bade Kalmeswar, Board Bazar, Joydebpur, Gazipur.
Project: - - - -

BRTC No.: 1103-18125/CE/23-24; Dt. 24/3/2024
Ref.: Letter; Dt. 24/3/2024
Date of Test: 27/3/2024

Samples were received in UNSEALED condition.

Sl. No.	Frog Mark / Identification	Bar Desig./ Nominal dia. (mm)	Actual bar dia. (mm)	Unit Weight (kg/m)	Average Unit Weight (kg/m)	Yield or Proof Load (kN)	Yield or Proof Strength (MPa)	Average Yield or Proof Strength (YS) (MPa)	Tensile Load (kN)	Tensile Strength (MPa)	Average Tensile Strength (TS) (MPa)	TS/YS	Elongation (%) (G. length = 200 mm)	Average Elongation (%)	Bend Test (Seperate samples)
1	EIS B420 DWR	20	20.0	2.461		143	**456**	**462**	180	**575**	**585**		**18**		Satisfactory
2	EIS B420 DWR	20	19.8	2.418	**2.442**	153	**488**	(67000 psi)	191	**610**	(84500 psi)	**1.27**	**18**	**18**	Satisfactory
3	EIS B420 DWR	20	19.9	2.446		139	**443**		178	**565**			**18**		Satisfactory
-	-	-	-	-		-	-		-	-			-		-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-		-	-		-	-			-		-
-	-	-	-	-		-	-		-	-			-		-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-		-	-		-	-			-		-
-	-	-	-	-		-	-		-	-			-		-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-		-	-		-	-			-		-
-	-	-	-	-		-	-		-	-			-		-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-		-	-		-	-			-		-

Conversion factor: 1.0 MPa = 1.0 N/mm^2 = 145 psi. Strengths are based on nominal area.

ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)

Bar desig./Nominal dia., mm	*8*	10	12	16	20	*22*	25	28	32	36	40	50	60
Nominal area, sq.mm	*50.3*	79	113	201	314	*380*	491	616	804	1018	1257	1963	2827
Nominal weight, kg/m	*0.395*	0.617	0.888	1.578	2.466	*2.98*	3.853	4.834	6.313	7.99	9.865	15.41	22.2

Measured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in ASTM A615M-16.
Area and weight of 8mm and 22m dia. bars are derived based on principle follwed for other sizes in Table A1.1
Actual dia. and TS/YS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16.
Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length.

ASTM A615M-16 Tensile Requirements for Common Steel Grades

	Grade 60 [420]	Grade 75 [520]	Grade 80 [550]
Tensile strength, min. psi [MPa]	90 000 [620]	100 000 [690]	105 000 [725]
Yield strength, min, psi [MPa]	60 000 [420]	75 000 [520]	80 000 [550]
Elongation in 8 in. [200 mm], 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:
Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge
Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh

01 April 2024

Department of Civil Engineering * BUET, Dhaka-1000, Bangladesh *

Test performed by:
Dr. Sumaiya Afroz
Assistant Professor, Dept. of Civil Engg., BUET

Important Note: *Samples as supplied to us have been tested. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that samples are sent in a secure and sealed cover/packet/container under the signature of a competent authority. In order to avoid fradulent fabrication of test results, this report has been printed on a se*
It is also recommended that the test results be collected by a duly authorized person.

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)
DEPARTMENT OF CIVIL ENGINEERING

Mobile: 01819557964; PABX: (8802) - 55167100, 55167228-57 Ext. 7226, Info: http://brtc.ce.buet.ac.bd/#/home, Report verification: http://verify.ce.buet.ac.bd

STRENGTH OF MATERIALS LABORATORY

BRTC
Bureau of Research Testing & Consultation

BUETCE 0476105

TEST OF DEFORMED M.S. BARS [BDS ISO 6935-2:2016]

Sent by: Md. Moniruzzaman, Deputy General Manager, Sales & Marketing
Elite Iron & Steel Ind. Ltd., Bade Kalmeswar, Board Bazar, Joydebpur, Gazipur.

Project: - - - -

BRTC No.: 1103-18125/CE/23-24; Dt. 24/3/2024
Ref.: Letter; Dt. 24/3/2024
Date of Test: 27/3/2024

Samples were received in UNSEALED condition.

Sl. No.	Frog Mark / Identification	Nominal dia. mm	Actual dia. mm	Mass Per Unit Length kg/m	Average Mass Per Unit Length kg/m	Yield or Proof Load kN	Yield or Proof Strength R_{eH} MPa	Average Yield Strength, R_{eH} MPa	Tensile Load kN	Tensile Strength R_m MPa	Average Tensile Strength, R_m MPa	R_m/R_{eH}	Total Elongation (%) (G.length = 5d)	Average Total Elongation (%)	Bend Test	Rebend Test (Seperate samples)
1	EIS B420 DWR	20	20.0	2.461		-	-		-	-			-		-	Satisfactory
2	EIS B420 DWR	20	19.8	2.418	2.442	-	-	-	-	-	-	-	-	-	-	Satisfactory
3	EIS B420 DWR	20	19.9	2.446		-	-		-	-			-		-	Satisfactory
-	-	-	-	-		-	-		-	-			-		-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-		-	-		-	-			-		-	-
-	-	-	-	-		-	-		-	-			-		-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-		-	-		-	-			-		-	-
-	-	-	-	-		-	-		-	-			-		-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-		-	-		-	-			-		-	-
-	-	-	-	-		-	-		-	-			-		-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-		-	-		-	-			-		-	-

BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).

Nominal bar dia., mm		6	8	10	12	14	16	20	22*	25	28	32	40	50
Nominal cross sectional area, sq.mm		28.3	50.3	78.5	113	154	201	314	380	491	616	804	1257	1964
Nominal mass per unit length	Nominal, kg/m	0.222	0.395	0.616	0.887	1.21	1.58	2.46	2.98	3.85	4.84	6.31	9.87	15.42
	Permissible deviation, %	±8	±8	±6	±6	±5	±5	±5	±5	±4	±4	±4	±4	±4

Conversion factor: 1.0 MPa = 1.0 N/mm^2 = 145 psi. Strengths are based on nominal area.

*22mm dia. bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle used for other bar sizes.
Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016.
Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length.

BDS ISO 6935-2 Tensile Requirements for Common Steel Grades

Steel Grade	Yield Strength, R_{eH}, MPa		Ductiliy Properties		
	Min.	Max.	R_m/R_{eH} min.	Elongation, % (min.) Total	At R_m
B400C-R	400	--	1.15	14	7
B400CWR	400	--	1.15	14	7
B500C-R	500	--	1.15	14	7
B500CWR	500	--	1.15	14	7
B600C-R	600	--	1.15	10	7
B450CWR	450	1.25 R_{eH} (min.)	1.15	--	7.5
B400DWR	400	1.3 R_{eH} (min.)	1.25	17	8
B420DWR	420	1.3 R_{eH} (min.)	1.25	16	8
B500DWR	500	1.3 R_{eH} (min.)	1.25	13	8

Countersigned by:
Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge
Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh

01 April 2024

Test performed by:
Dr. Sumaiya Afroz
Assistant Professor, Dept. of Civil Engg., BUET

Department of Civil Engineering ★ BUET, Dhaka-1000, Bangladesh ★

Important Note: *Samples as supplied to us have been tested. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that t samples are sent in a secure and sealed cover/packet/container under the signature of a competent authority. In order to avoid fradulent fabrication of test results, this report has been printed on a sec It is also recommended that the test results be collected by a duly authorized person.*