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 0471576

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

BRTC No.: 1103-14486/CE/23-24; Dt. 17/2/2024

Sent by: Md. Moniruzzaman, Deputy General Manager
ELITE IRON & STEEL IND. LTD., Bade Kalmeswar, Board Bazar, Joydebpur, Gazipur

Ref.: Letter; Dt. 17/2/2024
Date of Test: 18/2/2024

Project: - - -

Samples were received in UNSEALED condition.

Sl. No.	Frog Mark / Identification	Bar Desig./ Nominal dia.	Actual bar dia.	Unit Weight	Average Unit Weight	Yield or Proof Load	Yield or Proof Strength	Average Yield or Proof Strength (YS)	Tensile Load	Tensile Strength	Average Tensile Strength (TS)	TS/YS	Elongation (%) (G. length = 200 mm)	Average Elongation (%)	Bend Test (Seperate samples)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa				
1	ELITE PURE 60 EIS B420 DWR	25	25.2	3.911		235	**478**	**463**	305	**620**	**610**		**20**		Satisfactory
2	ELITE PURE 60 EIS B420 DWR	25	24.8	3.807	**3.845**	222	**452**	(67000 psi)	294	**600**	(88000 psi)	**1.32**	**19**	**19**	Satisfactory
3	ELITE PURE 60 EIS B420 DWR	25	24.9	3.818		226	**460**		297	**605**			**19**		Satisfactory
-	-	-	-	-		-	-		-	-			-		-
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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

19 February 2024

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

Test performed by:
Dr. Md. Mafizur Rahman
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 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.*

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

BRTC No.: 1103-14486/CE/23-24; Dt. 17/2/2024

Sent by: Md. Moniruzzaman, Deputy General Manager
ELITE IRON & STEEL IND. LTD., Bade Kalmeswar, Board Bazar, Joydebpur, Gazipur

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Samples were received in UNSEALED condition.

Sl. No.	Frog Mark / Identification	Nominal dia.	Actual dia.	Mass Per Unit Length	Average Mass Per Unit Length	Yield or Proof Load	Yield or Proof Strength R_{eH}	Average Yield Strength, R_{eH}	Tensile Load	Tensile Strength R_m	Average Tensile Strength, R_m	R_m/R_{eH}	Total Elongation (%) (G.length = 5d)	Average Total Elongation (%)	Bend Test	Rebend Test (Seperate samples)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa					
1	ELITE PURE 60 EIS B420 DWR	25	25.2	3.911		-	-		-	-			-		-	Satisfactory
2	ELITE PURE 60 EIS B420 DWR	25	24.8	3.807	3.845	-	-	-	-	-	-	-	-	-	-	Satisfactory
3	ELITE PURE 60 EIS B420 DWR	25	24.9	3.818		-	-		-	-			-		-	Satisfactory
-	-	-	-	-		-	-		-	-			-		-	-
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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	Elongation, % (min.) 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

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

19 February 2024

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