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

BRTC Bureau of Research, Testing & Consultation

STRENGTH OF MATERIALS LABORATORY

BUETCE 0481593

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

BRTC No.: 1103-26339/CE/23-24; Dt. 30/6/2024

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

Project: - - -

Ref.: Letter; Dt. 30/6/2024

Date of Test: 1/7/2024

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	ELITE 60 EIS B420 DWR	12	11.8	0.856		54.6	484	478	69.2	610	610		16		Satisfactory
2	ELITE 60 EIS B420 DWR	12	11.9	0.867	0.864	53.3	472	(69500 psi)	68.3	605	(88000 psi)	1.28	16	16	Satisfactory
3	ELITE 60 EIS B420 DWR	12	11.9	0.869		54.2	480		68.7	610			16		Satisfactory
-	-	-	-	-		-	-	-	-	-	-		-		-
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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

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

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

02 July 2024

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

Test performed by:
Dr. Provat Kumar Saha
Associate 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 the 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 security paper. It is also recommended that the test results be collected by a duly authorized person.*

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BRTC Bureau of Research, Testing & Consultation

BUETCE 0481594

STRENGTH OF MATERIALS LABORATORY

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.: 1103-26339/CE/23-24; Dt. 30/6/2024
Ref.: Letter; Dt. 30/6/2024
Date of Test: 1/7/2024

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	ELITE 60 EIS B420 DWR	12	11.8	0.856		-	-		-	-			-		-	Satisfactory
2	ELITE 60 EIS B420 DWR	12	11.9	0.867	0.864	-	-	-	-	-	-	-	-	-	-	Satisfactory
3	ELITE 60 EIS B420 DWR	12	11.9	0.869		-	-		-	-			-		-	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

*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.

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

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

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

02 July 2024

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

Test performed by:
Dr. Provat Kumar Saha
Associate Professor, Dept. of Civil Engg., BUET