

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

STRENGTH OF MATERIALS LABORATORY

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 No.: 1103-21403/CE/23-24; Dt. 4/5/2024

Ref.: Letter, Dt. 4/5/2024

Date of Test: 5/5/2024

Sent by: Md. Moniruzzaman, Deputy General Manager, Sales & Marketing

Elite Iron & Steel Ind. Ltd., Bade Kalmeswar, Board Bazar, Joydebpur, Gazipur.

Project: -

Samples were received in UNSEALED condition.

Sl. No.	Frog Mark/ Identification	Bar Design/ 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)	T.S./Y.S.	Elongation (%)	Average Elongation (%)	Bend Test (Separate samples)
1	ELITE 60 EIS B420 DWR	12	11.7	0.842	-	50.2	445	459	65.2	575	585	-	18	-	Satisfactory
2	ELITE 60 EIS B420 DWR	12	11.9	0.874	0.861	53.3	472	(66500 psi)	67.4	595	(85000 psi)	1.27	18	18	Satisfactory
3	ELITE 60 EIS B420 DWR	12	11.9	0.867	-	52	460	-	66.1	585	-	-	18	-	Satisfactory
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Conversion factor: 1.0 MPa = 145 psi. Strengths are based on nominal areas

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

Bar design	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	0.399	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 22mm dia. bars are derived based on principle followed for other sizes in Table A1.1. Actual dia. and T.S./Y.S. 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	Grade 75	Grade 80
Tensile strength, min. psi [MPa]	[420]	[520]	[550]
Yield strength, min. psi [MPa]	60 000 [420]	75 000 [520]	80 000 [550]
Elongation in 8 in. [200 mm], min. %	9	7	7
Bar Designation No.	10, 12, 16, 20	8	7
	25, 22	7	6
	28, 32, 36, 40, 50, 60	6	6

Countersigned by:

[Signature]

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge
Dept. of Civil Engng., BUET, Dhaka-1000, Bangladesh

Test performed by:

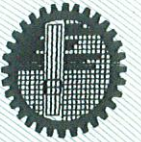
[Signature]

Dr. Shohei Rana
Professor, Dept. of Civil Engng., BUET

06 May 2024



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/pack/container under the signature of a competent authority. In order to avoid fraudulent 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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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.: 1103-21403/CE/23-24; Dt. 4/5/2024
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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_{eH}/R_{eH}	Total Elongation (%) (G. length = 5d)	Average Total Elongation (%)	Bend Test	Rebend Test (Separate samples)	
																	Per Unit Length kg/m
1	ELITE EIS B500 DWR	12	11.7	0.842	0.861	-	-	-	-	-	-	-	-	-	-	-	Satisfactory
2	ELITE EIS B500 DWR	12	11.9	0.874	0.861	-	-	-	-	-	-	-	-	-	-	-	Satisfactory
3	ELITE EIS B500 DWR	12	11.9	0.867	0.861	-	-	-	-	-	-	-	-	-	-	-	Satisfactory

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

Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area

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	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.

Steel Grade	Yield Strength, R_{eH} , MPa	Ductility Properties	
		R_{eH}/R_{m} min.	Elongation, % (min.) Total
B400C-R	400	1.15	14
B400C-WR	400	1.15	14
B500C-R	500	1.15	14
B500C-WR	500	1.15	14
B600C-R	600	1.15	10
B450C-WR	450	1.25 R_{eH} (min.)	17
B400DWR	400	1.3 R_{eH} (min.)	17
B420DWR	420	1.3 R_{eH} (min.)	16
B500DWR	500	1.3 R_{eH} (min.)	13

Countersigned by:

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh

Test performed by:

Dr. Shohel Rana

Professor, Dept. of Civil Engg., BUET

06 May 2024



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