BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

Testing & Consultation Bureau of Research

1 of 2

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

Sent by: Md. Moniruzzaman, Deputy General Manager TEST OF DEFORMED M.S. BARS [ASTM A 615M-16]

ELITE IRON & STEEL IND. LTD., Bade Kalmeswar, Board Bazar, Joydebpur, Gazipur

CE 040

Date of Test: 31/1/2024 Ref.: Letter; Dt. 31/1/2024

BRTC No.: 1103-12956/CE/23-24; Dt. 31/1/2024

Samples were received in UNSEALED condition.

1	•	1	-	ı	ı	1	,		,	-	1	З	2	1				No.	SI.
•	1	-		•			1.	-		-	-	ELITE 60 EIS B420 DWR	ELITE 60 EIS B420 DWR	ELITE 60 EIS B420 DWR				Identification	Frog Mark /
-	1	1	-	-			1	1	-	-	1	16	16	16	mm	dia.	Nominal	Desig./	Bar
1	1	1	1	1	1		1	1	-	-	1	16.1	15.9	16.0	mm		dia.	bar	Actual
-	-	1	-	_		-	\\		184		-	1.602	1.559	1.575	kg/m			Weight	Unit
									6.66666				1.579		kg/m		Weight	Unit	Average Yield or Yield or
												89	89	95	kN		Load	Proof	Yield or
		•						•				443	443	472	MPa		Strength	Proof	Yield or
				-	-					_			(65500 psi)	453	MPa	(YS)	Strength	Yield or Proof	Average
	-	-			-	,) <u>-</u>	+	-	-	1	115	115	120	ΚN			Load	Tensile
	-	-			-	-	•	-	-	-	•	570	570	595	MPa			Strength	Tensile
	ı	-		1	•		1	ı		-	1		(84000 psi)	580	MPa	(TS)	Strength	Tensile	Average
													1.28						SY/ST
		-	•	-	•			•	-	-	-	19	19	18	200 mm)	(G. length =		(%)	TS/YS Elongation
	•									1			19				(%)		Average
		-			•	•	•		•	•	-	Satisfactory	Satisfactory	Satisfactory		samples)	(Seperate		Bend

Bar desig /Nominal dia., mm ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1) Nominal area, sq.mm 8 10 12 16 20 22 380 25 491 616 28 32 804 36 1257 40 50 60 1963 2827 Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area

0.395 | 0.617 | 0.888 | 1.578 | 2.466 | 2.98 | 3.853 | 4.834 | 6.313 | 7.99 | 9.865

Actual dia. and TSVS ratio are provided for informative purpose only. These are not requirements of 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 Measured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in ASTM A615M-16.

lominal weight, kg/m

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

		orgon oldan	
	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
Tensile strength, min. psi [MPa]	90 000 [620]	90 000 [620] 100 000 [690] 105 000 [725]	105 000 [725]
Yield strength, min, psi [MPa]	60 000 [420]	60 000 [420] 75 000 [520] 80 000 [550	80 000 [550]
Elongation in 8 in. [200 mm], min, %			
Bar Designation No.			
10, 12, 16, 20	9	7	7
25. 22	00	7	7

28, 32, 36, 40, 50, 60

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

03 February 2024

Test performed by:

Professor, Dept. of Civil Engg., BUET Dr. Md. Mafizur Rahman

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 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 secure. 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

Bureau of Research, Testing & Consultation

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

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

Project:

S S

Samples were received in UNSEALED condition. Date of Test: 31/1/2024

Ref.: Letter; Dt 31/1/2024

BRTC No.: 1103-12956/CE/23-24; Dt. 31/3/2024

-	-				-	1			1			ELITE 60 EIS B420 DWR	ELITE 60 EIS B420 DWR	ELITE 60 EIS B420 DWR				Identification	Frog Mark /
-		-	-	-								16	16	16	mm			dia.	Nominal
1	1		-		-				-	-	-	16.1	15.9	16.0	mm			dia.	Actual
	1	-				-	-	-	-	-	-	1.602	1.559	1.575	kg/m	Length	Unit	Per	Mass
							\$ - XXX						1.579		kg/m	Length	Unit	Mass Per	Average
					1										kN		Load	Proof	Yield or
			/// - 											•	MPa	ReH	Strength	Proof	Yield or
	,					1 88 III M				•					MPa	Ret	Strength,	Yield	Average
	7		A	1	-	1			7	•	1				Š			Load	Tensile
		-		-	7.20				-	-	1	•	1		MPa	λο ≘		Strength	Tensile
													1		MPa	.20 ≅	Strength,	Tensile	Average
													1						R _m /R _{es}
-			-				•		•	•	•	1	•	•	= 5d)	(G.length	(%)	Elongation	Total
										•			•			(%)	Elongation	Total	Average
-		-		,			,		-	-	•	-	1					Test	Bend
-		-	•		•	•	•		•		•	Satisfactory	Satisfactory	Satisfactory	Aug	samples)	(Seperate	Test	Rebend
		TIT	1-1-1-	TOTAL	The state of the s										3.0 1.575 5.9 1.559 1.57	MP	Length Length Length ReH Rm Rm Rm Rm Rm Rm Rm R	Unit Length Length Strength R _{SH} R	Ia. Per Unit Unit Unit Unit Load Mass Per Proof Strength Froof Strength Load Strength Tensile (%) Elongation (%) Total Elongation (%) Immorphy Length Length Length Reff Reff Reff Strength Strength (%) Elongation (%) Elongation (%) Elongation (%) Elongation (%) Elongation (%) Interest (%) Elongation (%) Interest (%)

Nominal cross section	Nominal barda, mm 28.3 Nominal bardas sectional area, sq.mm 28.3 50.3 78.5 113	28.3	50.3	10 78.5	TO 12 14 16 20 22* 25 28 32 40 50 78.5 113 154 201 314 380 491 616 804 1257 1964	154	16 201	20 314	20 22* 314 380	25 491	28	32	32 40 50 804 1257 196	560A)
Nominal mass per	Nominal, kg/m	0.222	0.395	0.616 0.887	0.887	121	1.58	2.46	2.98	3.85	4.84	6.31	9.87	121 1.58 2.46 2.98 3.85 4.84 6.31 9.87 15.42
unit length	Permissible deviation, % ±8	±8	±8	9∓	±6	±5	tt	±5	±5	は	±4	华	±	±5 ±5 ±6 ±4 ±4 ±4 ±4
2	m dia. bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle used for other bar sizes	5-2:201	6. Its p	roperti	es are	derive	d follo	gniwo	the pr	incipl	e usec	for o	ther b	ar sizes

1 1 1 1 1 1 1 1

ω Ν

. .

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	Yield S	Yield Strength, ReH, MPa	Du	Ductiliy Properties
Grade	Min.	Max.	Rm/ReH	Elongation
			min.	Total
B400C-R	400		1.15	14
B400CWR	400	-	1.15	14
B500C-R	500		1.15	14
B500CWR	500		1.15	14
B600C-R	600	-	1.15	10
B450CWR	450	1.25 R eH (min.)	1.15	-
B400DWR	400	1.3 R eH (min.)	1.25	17
B420DWR	420	1.3 R et (min.)	1.25	16
B500DWR	500	1.3 R eH (min.)	1.25	13

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge countersigned by:

> lest performed by: 17 February 2024

Professor, Dept. of Civil Engg., BUET Dr. Md. Mafizur Rahman

It is also recommended that the test results be collected by a duly authorized person. 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 s 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 the Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh