

## 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

Burbau or Responding

1 of 2

## 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:

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

76 04

Date of Test: 27/3/2024

Identification							963 2827	-	804	491 616	314 380	113 201	50.3 79 1	Nominal area, sq.mm	Nominal
Jnit Average Yield or Yield or eight Unit Proof Proof Proof Weight Load Strength  Weight KN MPa  461 143 456  418 2.442 153 488  446 2.442 153 488  447 456 488  448 443	1.0 N/mm <sup>-</sup> = 145 psi. Strengths are b	1.0 N/mm <sup>-</sup> = 145 psi.	1.0 N/mn	2 11	CTOI: 1.0 MI	Conversion tai	66	40	32	5	20 22	12 16	8 10	/Nominal dia, mm	100
Init Average Yield or Yield or Average Unit Unit Proof Proof Yield or Proof Load Weight Load Strength Strength (YS)  Weight Load Strength Strength (YS)  MPa MPa MPa MPa MPa MPa 446  143 456 462 180  139 443 (67000 psi) 191  178	2	2			200					17.7)	ars (Table	nal Area of b	ments and Nomi	15M-16 Weight Require	1 A6
Bar   Actual   Unit   Average   Yield or   Yield or   Average   Tensile					-					τ	1	-			7
Bar   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	1 - 1	1	1		-					1	1	1			
Bar   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	_		1		-					1	1	-			
Har   Actual   Unit   Average   Yield or   Average   Tensile	1	-	-		- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					1	1				
Har   Actual   Unit   Average   Yield or   Yield or   Average   Tensile		-			,					1		,			
Har   Actual   Unit   Average   Yield or   Yield or   Average   Tensile		1	-			1						1			1
Har   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	1		•		7		00/11/ <del>-</del> 85/11/	-		1					
Hog Mark / Bar   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	1											-			'
Har   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	1	-	-								-	1			
Har   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	-	-	-		-				08/08/08/08/08/08/08/08/08/08/08/08/08/0	- A	1	1			
Har   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	1	1	-		1	ı					1				
Har   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	1		•		1						1				'
Har   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	565	565	565	100	178		443	139		2.446	19.9	70	CARIN	1000	1 (
Identification    Bar   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	610 (84500 psi) 1.27		610			(67000 psi)	488	153	2.442	2.418	, w	2 6		EIS B420	w I
Identification  Desig./ bar Weight Unit Proof Proof Yield or Proof Vield or Proof Weight Unit Proof Proof Strength Strength On Proof Weight Load Strength Strength (YS)  mm kg/m kg/m kg/m kN MPa MPa	575 585		575	1//	180	462	456	143		2.461	20.0	2 0		ENS B420	ν.
Identification  Desig./ bar Weight Unit Proof Proof Yield or Proof Vield or Proof Load  Nominal dia.  Weight Load Strength (YS)	MPa MPa		MPa	1	ΚN	MPa	MPa	ΚŃ	kg/m	Kg/m	mm	5 1111	DIME	EIG BAOO	1
Identification    Bar   Actual   Unit   Average   Yield or   Yield or   Average   Tensile	(TS)	(TS)				(YS)						ola.			
Identification  Bar Actual Unit Average Yield or Yield or Average Tensile  Weight Unit Proof Proof Yield or Proof Load				944		Strength	Strength	Load	Weight		dia.	Nominal			
Flog wark / Bar Actual Unit Average Yield or Yield or Average Tensile	Tensile		Strength			Yield or Proof	Proof	Proof	Unit	Weight	bar	Desig./	ation	identifica	- Q
	Tensile   Average   TS/YS   Elongation	Tensile Averag	Tensile	11/11	Tensile	Average	Yield or	Yield or	Average	Unit	Actual	Bar	il K	FI OU IVI	2 0

Area and weight of 8mm and 22m dia. bars are derived based on principle follwed for other sizes in Table A1.1 Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length. Actual dia. and TSYS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16. Measured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in ASTM A615M-16. 0.888 | 1.578 | 2.466 | 2.98 | 3.853 | 4.834 | 6.313 | 7.99 | 9.865 | 15.41 | 22.2

Nominal weight, kg/m Nominal area, sq.mm

0.395

ASTM A615M-16 Tensile Requirements for Common Steel Grades

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	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
h, min. psi [MPa]	90 000 [620]	90 000 [620] 100 000 [690] 105 000 [725]	105 000 1725
min, psi [MPa]		60 000 [420] 75 000 [520] 80 000 [550]	80 000 [550]
in. [200 mm], min, %			

Elongation in 8 Bar Designation No.

Yield strength, Tensile strengt

28, 32, 36, 40, 50, 60 10, 12, 16, 20

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

01 April 2024

Assistant Professor, Dept. of Civil Engg., BUET

Dr. Sumaiya Afroz

lest performed by:

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. 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

Testing & Consulation

0



Project:

No

Identification

Frog Mark

EIS B420 DWR EIS B420 DWR EIS B420 DWR Sent by: Md. Moniruzzaman, Deputy General Manager, Sales & Marketing

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

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

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

Date of Test: 27/3/2024

Nominal mm 20 20 Actual 19.8 mm 2.418 Length 2.467 kg/m Mass Unit Mass Per Average Length 2.442 Unit kg/m Proof rield or Load Strength Proof Yield or Strength, Average Yield ₽ ₽ MPa lensile Load S Strength Samples were received in UNSEALED condition. lensile MPa Strength, Average Tensile *S*2 MPa Rm/ReH Elongation (G.length Total = 5d(%) Elongation Average Total Bend Test Satisfactory Satisfactory Satisfactory samples) Rebend Test Seperate TCE

22mm dia. bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle used for other bar sizes lominal mass per Nominal, kg/m ominal cross sectional area, sq mm ominal bar dia., mm Permissible deviation, % 0.222 0.395 0.616 28.3 50.3 78.5 1.58 | 2.46 | 2.98 201 314 20 22° 25 28 32 40 50 Onversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area 380 好 好 好 好 3.85 4.84 6.31 9.87 15.42 491 616 804 1257 1964

DS ISO 6935-2:2016 Weight Requirements, Nominal

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016

BDS ISO 6935-2 Tensile Requirements for Common Steel Grades

Steel	S PIGS	4	,		1
	a rigid o	rieid ottetigen, Kah, MPa	Du	Ductilly Properties	ties
Grade	Min.	Max.	Rm/ReH	Elongation,	n, % (min.)
			min.	Total	At Rm
B400C-R	400		1.15	14	
BANCINE	200				İ
MANAGORA	400	-	1.15	14	
B500C-R	500	-	1.15	14	
B500CWR	500		1 15	14	
00000	200			17	
B600C-R	600	-	1.15	10	
B450CWR	450	1.25 R ен (min.)	1.15	•	7.5
B400DWR	400	1.3 R <sub>ен</sub> (min.)	1.25	17	00
B420DWR	420	1.3 R et (min.)	1.25	16	00 0
B500DWR	500	1.3 R eH (min.)	125	3	

Countersigned by:

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

> lest performed by: 01 April 2024

Assistant Professor, Dept. of Civil Engg., BUET Dr. Sumaiya Afroz

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 secure 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