

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

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 DEPARTMENT OF CIVIL ENGINEERING

70

Testing & Consu Bureau of Rese

STRENGTH OF MATERIALS LABORATORY

Sent by: Eng. Md. Maksudul Karim, General Manager (Plant) Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka.

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

Project: - - -

Date of Test: 10/2/2024

Ref.: Letter; Dt. 8/2/2024

BRTC No.: 1103-13677/CE/23-24; Dt. 8/2/2024

hived in INSEALED condition

241 /	95 0.617 0.888 1.578 2.466 2.98 3.853 4.834 6.313 7.99 9.803 13.41 22.2	1.99	0.313	4.834	3.853	2.98	2.466	1.578	0.888	0.617	0.395	Nominal weight, kg/m 0.395 0.617 0.888 1.578 2.466 2.98 3.853 4.834 6.313 7.99 9.605 15.41 22.2
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00	100		1	10		22	٨٥	õ		2	α	Bar desig./Nominal dia mm
,		1		3	,	3	1		>		•	

Actual dia, and TSIYS 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 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

10 1 CHOILE 110 Ham 5111 511 51 51 51 51 51 51 51 51 51 51			
	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
gth, min. psi [MPa]	90 000 [620]	90 000 [620] 100 000 [690] 105 000 [725]	105 000 [725]
h, min, psi [MPa]	60 000 [420]	60 000 [420] 75 000 [520]	80 000 [550]
1 8 in. [200 mm], min, %			
ion No.	0	7	4
		4	4
	8		

28, 32, 36, 40, 50, 60

Bar Designat Elongation in Yield strengtl Tensile stren

10, 12, 16, 20

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge XJ3HQWFLL



Test performed by: 12 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. 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 recommen 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



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STRENGTH OF MATERIALS LABORATORY

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

Sent by: Eng. Md. Maksudul Karim, General Manager (Plant) Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka.

Project:

Date of Test: 10/2/2024 Ref.: Letter; Dt. 8/2/2024 BRTC No.: 1103-13677/CE/23-24; Dt. 8/2/2024

ASIM		1	1				Ī			Ī			,	I	,		Ī		ယ	V.	, -	1				No.	SI.
ASIM A615M-16 Weight Requirements and Nominal Area of bars (Table A11)			•				1		Ť	in the second		1				•	1		SSRM B500 DWR	SSRM B500 DWR	OOKM BOOU DWX	000					Frog Mark /
Area of bars			1			1	-		'	1			1	-		_	1		3	ฆ	12	mm	cia.	dis di	No colg.	Design /	Bar
(Table A1 1	1		1	1		-	1			-	-					1	,	1	777	11.8	11.8	mm		ola.	7.001	7 000	Actual
	-		1	î		1				-							<u></u>	0.040	0 0 4 6	0.856	0.853	kg/m			Aveignin		Unit
																				0.851		kg/m		Weight	JIBO	Average Field Of Field Of	Avorsos
							•											57.1		61	61.9	kN		Load		r leid of	V
		•		•														505		540	550	MPa		Strength	Proof	Y leid of	W- I
																			(Coo psi)	7700	530	MPa	(YS)	Strength	Yield or Proof	11111	71//
	-	1			7		-	-						1	1			75.7	0.0	1000	78 8	Š			Load	Tensile	1///
	• • • • • • • • • • • • • • • • • • •	-		-	,		ı	•			•	1		•	•			670	695	000	605	MPa			Strength	Tensile	samples we
		-	1					•			•	-			-	1			(99500 psi)	000	363	MPa	(TS)	Strength	Tensile	Average	Samples were received in UNSEALED condition.
		-				1									-				1.29							TS/YS	UNSEALE
•		•	•		'	,					•	1			•	1		<u>بر</u>	4	14	700	200 mm	(G. lenath =	,	(%)	Elongation	D condition.
						ı													74				,	%	Elongation	Average	

SSS

Measured unit weight shall not be less than 94% of the nominal weight 8mm har size is not covered in ASTM ASTM ASTM ASTM ASTM ASTM ASTM ASTM	0.595 0.517 0.888 1.578 2.466 2.98 3.853 4.834 6.313 7.99 9.865 15.41 222	Nominal molines to the control of th	Nominal area sg mm 503 70 443 204 205 20 20 40 00	Bar desig./Nominal dia., mm 8 10 12 16 20 22 25 28 32 36 40 50 50
	500			Conversion factor: 1.0 MPa = 1.0 N/mm ² = 145 psi. Strengths are based on no

Area and weight of 8mm and 22m dia. bars are derived based on principle follwed for other sizes in Table A1: 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.

ASTM A615M-16 Tensile Requirements for C.

Elongation in 8 in. [200 mm], min, 9 Bar Designation No. 10, 12, 16, 20	Yield strength, min, psi [MPa] Yield strength, min, psi [MPa]	1	•	See Grades
9	90 000 [620] 60 000 [420]	[420]	Grade 60	STITE OF COURT
7	90 000 [620] 100 000 [690] 105 000 [725] 60 000 [420] 75 000 [520] 80 000 [550]	[520]	Grade 75	on steel Grade
7	105 000 [725] 80 000 [550]	[550]	Grade 80	5

Countersigned by:

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28, 32, 36, 40, 50, 60

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



9PJZj8B55



Dr. Md. Mafizur Rahman Test performed by:

Professor, Dept. of Civil Engg., BUET

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

Project: Sent by: Eng. Md. Maksudul Karim, General Manager (Plant) Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka

Date of Test: 10/2/2024

Ref.: Letter; Dt. 8/2/2024

BRTC No.: 1103-13677/CE/23-24; Dt. 8/2/2024

Samples were received in UNSEALED condition

AS		E	Ī			T			T	T	-	F	T			F	T	Ī		7		F				
TM AS	-	1			1		ا 	1	ŀ	e			_		1	1	c) N	ъ -	4				Ş	<u>z</u> ;	<u>s</u>
ASTM A615M-16 Weight Dequirements and New inch	-	-			1		•	I			4	7 ,	1			1	SURMI BOOD DWR	OORM BOOK DWX	COLVE DOOLDAY	CODM BEOD DWD				to el milicarion	Partition No.	From Mark /
A	ı	1	-		-	-		1	1				-		-	1	16	16	5	20	9	dia.	Nominal	Desig./		D >-
	1	1	1		1	1		-	,			,	1			1	16.0	16.0	16.0		3		dia.	bar	Acinal	12.12A
	-	ı	1		1	-						1				á	1.575	1.580	1.5/0	i initeri	kalm			Weight	MUO	
																		1.575		NUME	Vol.		Weight	Unit	Average Yield or Yield or	
								1									106	106	106	NIN	I.A.		Load	Proof	Yield or	
	* 1							100 A									525	525	525	VIT O			Strength	Proof	Yield or	
						1		1										(76500 psi)	525	MITA		(YS)	Strength	Yield or Proof	Average	///
		-	1			1				(200)			1	,		1	137	137	136	ž				Load	Tensile	
		-	•			•		•		-			•	•		1	680	680	675	MPa	i			Strength	Tensile	1000
		-				1										•		(98500 psi)	680	MPa	3	(TS)	Strength	Tensile	Average	0.0001100111
														•				1.30							TS/YS	0110000
•		-		1			•		•	•	,		•				16	16	15	200 mm)		G length -		(%)	Elongation Average	ינייסם יווי סייסבאבבט נסיימונוסוו.
					T	1				1				•				10					§ ;	Elongation	Average	

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

Conversion factor: 1.0 MPa = 1.0 N/mm² = 1	desig./Nominal dia., mm 8 10 12 16 20 22 25 28 32 36 40 50 60 Inal area, sq.mm 50.3 79 113 201 314 380 491 616 804 1018 1257 1963 2827 Inal 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 sured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in ASTM ASTM ASTAM AST					1
Conversion factor: 1.0 MPa = 1.0 N/mm² = 1	Conversion factor: 1.0 MPa = 1.0 N/mm² = 1.3	Measured unit weight shall n	Nominal Weight, kg/m	Nominal area, sq.mm	Bar desig./Nominal dia., mm	
Conversion factor: 1.0 MPa = 1.0 N/mm² = 1	Conversion factor: 1.0 MPa = 1.0 N/mm² = 1	ot be less than 9	0.395 0.617	50.3 79	8 10	1.00
Conversion factor: 1.0 MPa = 1.0 N/mm² = 1	Conversion factor: 1.0 MPa = 1.0 N/mm² = 1	4% of the nomina	7 0.888 1.578 2	113 201	12 16	Similar Fried Of De
version factor: 1.0 MPa = 1.0 N/mm² = 57	version factor: 1.0 MPa = 1.0 N/mm² = 57	al weight 8mm ba	2.466 2.98 3.85	314 380 491	20 22 25	ara (rabic Al.i)
version factor: 1.0 MPa = 1.0 N/mm² = 57	version factor: 1.0 MPa = 1.0 N/mm² = 57	r size is not cove	3 4.834 6.313	616 804 1	28 32	
version factor: 1.0 MPa = 1.0 N/mm² = 57	version factor: 1.0 MPa = 1.0 N/mm² = 57	red in ASTM A61	7.99 9.865 15.4	018 1257 1963	36 40 50	
version factor: 1.0 MPa = 1.0 N/mm² = 57	version factor: 1.0 MPa = 1.0 N/mm² = 57	3M 48	22.2	2827	60	
	145 psi. Strengths are based on nor				CHACLOICH IO	onversion fo

Actual dia, and TSYS 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 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
	[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]		75 000 [520]	80 000 [550]
Elongation in 8 in. [200 mm], min, %		1/1	
Bar Designation No.			
10, 12, 16, 20	9	7	
25, 22	8	7	•
28, 32, 36, 40, 50, 60	7	6	3 3, •

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



9SZTS5BrZ



12 February 202

Professor, Dept. of Civil Engg., BUET Dr. Md. Mafizur Rahman Test performed by:

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STRENGTH OF MATERIALS LABORATORY

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

Project: Sent by: Eng. Md. Maksudul Karim, General Manager (Plant) Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka

No.

ω N

Ref.: Letter; Dt. 8/2/2024

BRTC No.: 1103-13677/CE/23-24; Dt. 8/2/2024

Date of Test: 10/2/2024

SSRM B500 DWR SSRM B500 DWR SSRM B500 DWR Identification Frog Mark / Nominal Desig./ Bar mm dia 1 20 20 20 20.0 Actual 20.0 20.0 mm dia bar Weight 2.467 2.457 2.467 kg/m Unit î Weight Average 2.464 Unit kg/m Yield or Proof Load 183 T) 185 183 ž Strength Proof Yield or 590 585 585 MPa 1 Yield or Proof (85000 psi) Strength Average 585 MPa (YS) Tensile Load 243 243 243 r Ž Samples were received in UNSEALED condition. Strength ensile 775 775 775 . (112000 psi) Strength Tensile Average MPa (TS) 775 1.32 TS/YS Elongation (G. length = 200 mm) 17 , 17 Elongation Average 8 7 S တ တ

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

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

Are			N Bar
weasured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in ASTM A6 Area and weight of 8mm and 22m dia, bars are derived based on principle follwed for other sizes in Table A1.1	iiiiai weight, kg/m	Nominal area, squiiii	desig./Nominal dia., mm
e less t dia. ba	0.395	20.3	8
han 94° rs are c	0.617	6,	10
% of the ferived	0.888 1.578 2.466 2.98 3.853 4.834 6.313 7.99	173	12
nomii based	1.578	102	16
nal wei on pri	2.466	314	20
ght.8m nciple	2.98	380	22
m bar follwed	3.853	491	25
size is	4.834	616	28
not co	6.313	804	32
ered in	7.99	1018	36
ASTN	9.865	1257	40
A615N	15.41	1963	50
A-16.	22.2	2827	60

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length. Actual dia, and TS/VS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16.

ASTM A615M-16 Tensile Requirements for Common

Grade 75 Grade 75		Grade 60 Grade 75 Grade 80 [420] [520] [550] 90 000 [620] 100 000 [690] 105 000 [725] 60 000 [420] 75 000 [520] 80 000 [550]	Grade 80 [550] 105 000 [725] 80 000 [550]
	[420]	[520]	[550]
Tensile strength, min. psi [MPa]	90 000 [620]	100 000 [690]	105 000 [72:
Yield strength, min, psi [MPa]		75 000 [520]	80 000 [550
Elongation in 8 in. [200 mm], min, %	1/2		
Bar Designation No.			
10, 12, 16, 20	9		7
25, 22	8	7	4
28, 32, 36, 40, 50, 60	7	6	3) •

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



BJf3JTtdQ



12 February 2024

Professor, Dept. of Civil Engg., BUET Dr. Md. Mafizur Rahman Test performed by:

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Bureau of Re

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STRENGTH OF MATERIALS LABORATORY

Sent by: Eng. Md. Maksudul Karim, General Manager (Plant)

TEST OF DEFORMED M.S.

BARS [ASTM A 615M-16]

Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka

Project: ---

Samples were received in UNSEALED condition

Date of Test: 10/2/2024 Ref.: Letter; Dt. 8/2/2024 BRTC No.: 1103-13677/CE/23-24; Dt. 8/2/2024

ASTM	ı	1	_	1	1			1			-	ı	ယ	N	1				No.	SI.
ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)	1	1	•	•	•		75 VI		•	1	1	- C	SSRM B500 DWR	SSRM B500 DWR	SSRM B500 DWR				Identification	Frog Mark /
al Area of ba	1	1	1	-	1	-	-	-		1	1	1	25	25	25	mm	dia.	Nominal	Desig./	Bar
rs (Table A	-	1	1	1	1	+	-	-		-	1		25.0	24.9	25.0	mm		dia.	bar	Actual
			1	1				-					3.853	3.824	3.839	kg/m			Weight	Unit
														3.839		kg/m		Weight	Unit	Average Yield or Yield or
													260	257	261	kN		Load	Proof	Yield or
		1		1					100				530	525	530	MPa		Strength	Proof	Yield or
Conversion fac			•		1	-					ACC.			(76500 psi)	530	MPa	(YS)	Strength	Yield or Proof	Average
otor: 1.0 MF		-	-	-	1	-	-			-	-	1	356	355	358	X			Load	Tensile
a = 1.0 N/mn	-	1	1	•	•	•			•	-	-	•	725	720	730	MPa			Strength	Tensile
Conversion factor: 1.0 MPa = 1.0 N/mm ² = 145 psi. Strengths are based on nominal area.		1	1		1	•					1	1		(105000 psi)	725	MPa	(TS)	Strength	Tensile	Average
ingths are		,									•			1.37						TS/YS
based on nomi		1	1	1	-		1		ı		1	-	17	1 80	17	200 mm)	(G. length =		(%)	Elongation
inal area.								•						7.7	1			(%)	Elongation	Average
													U.	· ·	ွှ		(A)			

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

Vominal area, sq.mm 50.3 79 113 201 314 380 491 616 804 1018 1257 1963 2827

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length Actual dia, and TSVS 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 AS in Ab 13m-10. Area and weight of 8mm and 22m dia. bars are derived based on principle follwed for other sizes in Table At:

ASTM A615M-16 Tensile Requir

I M A013M-10 Lettelle Keduli elliettis tot Collillott Oteet Crades	III OF COMMITTEE	Il oteel Olanes	
	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
nsile strength, min. psi [MPa]	90 000 [620]	90 000 [620] 100 000 [690] 105 000 [725]	105 000 [725]
eld strength, min, psi [MPa]	60 000 [420]	75 000 [520]	80 000 [550]
ongation in 8 in. [200 mm], min, %			
r Designation No.			
, 12, 16, 20	9	7	7
, 22	8	7	7
33 36 40 50 60	7	5	3

Ter Yie Elo Bar 10,

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





12 February 2024

FHd6bYTW4

Professor, Dept. of Civil Engg., BUET

Dr. Md. Mafizur Rahman Test performed by:

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