

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

Bureau of Re

Testing & Cor

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.

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

No.	Frog Mark / Identification	Bar Desig./ Nominal dia.	Actual bar dia.	<u> </u>	Average Yield or Yield or Unit Proof Proof Weight Load Strength	Yield or Proof Load	Yield or Proof Strength	Average Yield or Proof Strength (YS)	ē	Tensile Strength	Tensile Average TS/YS Elongation Strength Strength (TS) (G. length =	TS/YS	Elongation Average (%) Elongation (%) (%) (G. length =
	CORDA DASO DASO	mm	mm	kg/m	kg/m	ź	MPa	MPa	ź	MPa	MPa		
1	SSRM B420 DWR	ó	9.9	0.603		34.5	437	437	47.8	605	610		
2	SSRM B420 DWR	10	9.9	0.608	0.605	34.5	437	(63500 psi)	48.7	615	(88000 psi)	1.40	
3	SSRM B420 DWR	10	9.9	0.605		34.5	437		47.8	605	•		
-	•	-	1						1	1	-		
	1	-	-						1	•	1	•	
-	1	-	-						1	1			_
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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

Bar desig./Nominal dia., mm	ď	10	12	16	20	22	25	28	33 23	36	40 50	09
Nominal area, sq.mm	50.3	79	113	102	314 380 491	380	491	616	804	1018	1018 1257 196	1963 2827
lominal weight, kg/m	205 0	0.617	0.888	1.578	2.466	2.98	3.853	4.834	6.313	7.99		15.41 22.2

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.

ASTM A615M-16 Tensile Require

SI M AO I SM-10 TELISHE KEHUITEINIS IOT COMMON Steel Grades	LIPS TOT CONTIN	angle in clane	•
	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
ensile 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]	60 000 [420] 75 000 [520]	80 000 [550]
ongation in 8 in. [200 mm], min, %			
ar Designation No.			
), 12, 16, 20	9	7	7
5, 22	8	7	7
32 36 40 50 60	•	,	•

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



-SXP2gWWB



12 February 2024

Dr. Md. Mafizur Rahman

Test performed by:

Professor, Dept. of Civil Engg., BUET

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 recommend 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 It is also recommended that the test results be collected by a duly authorized person.



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

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

o ω N SSRM B420 DWR SSRM B420 DWR SSRM B420 DWR Identification Frog Mark / Desig./ Nominal dia. Bar mm m 1 12 12 12 Actual 11.8 11.8 11.8 bar m m Weight 0.861 0.861 0.857 kg/m Unit 3 1 Average Weight 0.860 Unit kg/m Yield or Proof 50.9 50.9 Load 50 ž Strength Proof Yield or 450 MPa 450 442 (65000 psi) Yield or Proof Strength Average MPa (YS) 448 Load lensile 69.9 69.9 69 Ž Strength Tensile 610 MPa 620 620 . 1 (89500 psi) Average Strength Tensile MPa 615 (SI)SWST .37 Elongation (G. length = 200 mm) 1 17 7 18 Elongation Average 17 S S Sa

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

	3	not be less than 90% of the nominal weight 8mm har size is not covered in ASTM A615M-16	rodino	of cove	ח פו פלוי	m har c	aht an	ימוו וכחי	1000	10/06	thano	the lees	Moscured unit weight chall not
	22.2	865 15.41	7.99 9.	6.313 7	2.466 2.98 3.853 4.834 6.	3.853	2.98	2.466	1.578	0.888	5 0.617	0.395	Nominal weight, kg/m
7	2827	257 1963	1018 1257 19	804 1	201 314 380 491 616 804	491	380	314	201	113	79	50.3	Nominal area, sq.mm
	60	40 50	36	32	28	25	22	20	16	12	10	8	Bar desig./Nominal dia., mm
Conversion factor: 1.0 MPa = 1.0 N/mm ² = 145 psi. S						3	of bars (Table A1.1	bars (T	Area of	I Nominal Area of bars	and N	irements and No	ASTM A615M-16 Weight Requir

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 TS/YS ratio are provided for informative purpose only. These are not requirements of ASTM A615M-16.

ASTM A615M-16 Tensile Requirements for Common Steel Grades

Grade 60 Grade 75 [420] [520] Tensile strength, min. psi [MPa] 90 000 [620] 100 000 [690] Yield strength, min. psi [MPa] 60 000 [420] 75 000 [520] Elongation in 8 in. [200 mm], min, %	Grade 60 [420] 90 000 [620] 60 000 [420]	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]
Tensile strength, min. psi [MPa] Yield strength, min, psi [MPa]	90 000 [620] 60 000 [420]	100 000 [690] 75 000 [520]	105 000 [725] 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

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



Strengths are based on nominal area



Professor, Dept. of Civil Engg., BUET

Dr. Md. Mafizur Rahman

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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

Samples were received in UNSEALED condition.

ASTM A		,		-								_	3	Ν	1				No.	SI.
ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)	_	_		-	•		•		-	•	ı	-	SSRM B420 DWR	SSRM B420 DWR	SSRM B420 DWR				Identification	Frog Mark /
al Area of ba	1	1	-	_	1	-	•		•		-	,	16	16	16	mm	dia.	Nominal	Desig./	Bar
ers (Table A	ı	-	1	1	1	-	1	1	1	-	-	1	16.0	15.9	16.0	mm		dia.	bar	Actual
(1)	1	1	î	1	1	- 2	/ · · · · · · · · · · · · · · · · · · ·	- 6	1	7			1.572	1.567	1.583	kg/m			Weight	Unit
														1.574		kg/m		Weight	Unit	Average
													89	89	90	kN		Load	Proof	Yield or
		•	1										443	443	448	MPa		Strength	Proof	Yield or
Conversion fac		1	ì		1	ı								(64500 psi)	444	MPa	(YS)	Strength	Yield or Proof	Average
tor: 1.0 MF		-	_	-	1	(mp-	-	-	-	-	1	1	123	123	125	ΚŻ			Load	Tensile
a = 1.0 N/mm	-	1	-	-	1				•	-		•	610	610	620	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	1		(89000 psi)	615	MPa	(TS)	Strength	Tensile	Average
ingths are		1			ı						1			1.39	·					TS/YS
based on nomi	-	-	1		•	-			•	•	1	1	18	18	18	200 mm)	(G. length =		(%)	Elongation
nal area.		1			-			1			ı			18				(%)	Elongation	Average
													Sa	Sa	Sa		s	<u> </u>		

Bar desig./Nominal dia., mm	00	10	12	16	20	22	25	28	32	30	36 40	90 60
Nominal area, sq.mm	50.3	79	113	102	6.5	380	491	616	804	1018	1257 1	314 380 491 616 804 1018 1257 1963 2827
Nominal weight, kg/m	0.395	0.617	0.888	1.578	0.888 1.578 2.466 2.98 3.853 4.834 6.313 7	2.98	3.853	4.834	6.313	7.99	9.865	9.865 15.41 22.2

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length. 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.

ASTM A615M-16 Tensile Requirements for Common Steel Grades

Grade 60 Grade 75 [420] [520] Tensile strength, min. psi [MPa] 90 000 [620] 100 000 [690]	Grade 60 [420] 90 000 [620]	Grade 60 Grade 75 Grade 80 [420] [520] [550] 90 000 [620] 100 000 [690] 105 000 [725]	Grade 80 [550] 105 000 [725]
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

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



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Test performed by:

12 February 2024

Dr. Md. Mafizur Rahman

Professor, Dept. of Civil Engg.,

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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

pived in IINSEAI ED con

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

Ref.: Letter; Dt. 8/2/2024 Date of Test: 10/2/2024

	Bar desig./N	ASTM A615N	-	1	_	ı	-	-	-	1		-	-	-	3	12	_				ĕ.	SI.
500	Bar desig./Nominal diamm 8 10	ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1)	1	1	1	1	T	-1			1	1	1	1	SSRM B420 DWR	SSRM B420 DWR	SSRM B420 DWR				Identification	Frog Mark /
	12 16	nal Area of ba	-	1	1	1	1	1	,		1			-	20	20	20	mm	dia.	Nominal	Desig./	Bar
1	20 22	rs (Table A1	1	1	1	1	1	1	1	1	-	1	-	1	20.0	20.0	20.0	mm		dia.	bar	Actual
1	25 28				1	-				- «				á-	2.466	2.469	2.463	kg/m			Weight	Unit
44	32 36															2.466		kg/m		Weight	Unit	Average
	40 50		•						-						153	154	153	kN		Load	Proof	Yield or
1	0 60				•			10 10 10 10 10 10 10 10 10 10 10 10 10 1							488	191	488	MPa		Strength	Proof	Average Yield or Yield or
	Conversion lac	Conversion for			•		1	1						•		(71000 psi)	489	MPa	(YS)	Strength	Yield or Proof	Average
	(OI. 1.0 IVIT	tor 10 ME		1	-		-	-	-	-	-	1	1	1	213	213	212	Š			Load	Tensile
	a I TO WHITE	5 = 1 0 N/mm		ı	-	-	1	1		•	•	-	1	1	680	680	675	MPa			Strength	Tensile
	lactor. 1.0 MFa = 1.0 Millin = 145 ps. Sueriguis are based off florilinal area.	2 - 115 pei Stro		•	1		1	1		i	•		1	•		(98500 psi)	089	MPa	(TS)	Strength	Tensile	Average
	inguis are i	noths are					1			•			•			1.39						TS/YS
	based on norm	rased on pomir		-	1	1	1	1	•	•	1	•	1	1	17	17	16	200 mm)	(G. length =		(%)	Elongation
	rial area.	200											1			17				(%)	Elongation	Average
															Sat	Sai	Sat		S	ŝ		

ASTM A615M-16 Tensile Requirements for Common Steel Grades Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length.

Actual dia. and TS/YS 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.:

Measured unit weight shall not be less than 94% of the nominal weight. 8mm bar size is not covered in ASTM A615M-16.

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

Nominal area, sq.mm

50.3

201

118 20

380

491

616

804

1018 1257

15.41 22. 1963 50 60

Nominal weight, kg/m

	Grade 60	Grade 75	Grade 80
	[420]	[520]	[550]
Tensile strength, min. psi [MPa]	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]
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

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

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



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Test performed by:

12 February 2024

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

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

ASTM A615M-16 Weight Requirements and Nominal Area of bars (Table A1.1) 8 S ω N SSRM B420 DWR SSRM B420 DWR SSRM B420 DWR Identification Frog Mark 1 Nominal Desig./ dia. 田田 Bar 25 25 25 Actua 24.8 25.3 24.8 dia mm bar 1 Weight 3.942 3.798 3.789 kg/m Unit 1 Average Weight 3.843 Unit kg/m Yield or Proof Load 237 231 237 ź 1 Strength Yield or Proof 482 470 MPa 484 (69500 psi) Yield or Proof Strength Average MPa (YS) 478 Load ensile 318 318 322 ŝ Samples were received in UNSEALED condition. Strength Tensile 645 MPa 645 655 (94500 psi) Average Strength Tensile MPa (TS) 650 1.36 Elongation (G. length = 200 mm) 8 3 18 7 Elongation Average 18 Sa Sa Sa S

Actual diameter is the diameter of a perfectly round plain bar having same mass per unit length Actual dia. and TS/YS 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

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

Nominal weight, kg/m

Nominal area, sq.mm

Bar desig./Nominal dia., mm

6

6

33

201

314 20

380

491

616 28

804 1018

1257

<u>ა</u>

40

60

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

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	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]
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25, 22	8	7	7

28, 32, 36, 40, 50, 60

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