

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

STRENGTH OF MATERIALS LABORATORY

TEST OF DEFORMED M.S. BARS IBDS ISO 6935-2:2016

Sent by: Engr. Md. Maksudul Karim, General Manager Shahriar Steel Mills Ltd., Konapara, Jatrabari, Dhaka

Project:

No S

identification +rog Mark. Nomina Actual dia. Per Unit Mass Per Average Unit Proof Load rield or Strength rield or Strength Average Yield Load Samples were received in UNSEALED condition Strength Tensile Average Tensile スシスを Elongation (%) Total Elongation Average Total (Seperate Bend Test Rebenc Test

Date of Test: 4/12/2024 Ref.: Letter, Dt. 3/12/2024 BRTC No.: 1103-37749/CE/24-25; Dt. 3/12/2024

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	A CONTRACTOR OF						A STATE OF THE STA		•						SSRM B420 DWR	SSRM B420 DWR	COKM D420 DWX					
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												ti.			9.9	10.0	U.U	000	mm			
200	0 0 10 10							,							0.605	0.611	0.000	0.605	tg/m	Lengin		0.1.
					•			9.0								0.607			kg/m	Lengin		0
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-																	1 27					
				1	•	700								5	76	3 8	20	32	= 5d)		(G length	
								28	SERT S							-	N N			No. of the same of	10,0	
	•			r.						•					Datiolactory	Satisfactory	Satisfactory	Satisfactory			samples)	
																	į.	•		71,		

-	unit length Permis	Nominal mass per Nominal, kg/m	Nominal cross sectional area, sq.mm	Nominal bar dia., mm	BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).
3500 000 000	Permissible deviation, $\%$ ± 8 ± 8 ± 6 ± 6 ± 5 ± 5 ± 5 ± 5 ± 4				nt Requirements, No
3.304	ta ta	0.222	28.3	6	minal
1600	1#8	0.395	50.3	00	Area e
-	±6	0.616	78.5	10	tc. (Tat
מיני מיני	±6	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	28.3 50.3 78.5 113 154 201 314 380 491 616 804 1257 1964	12	ole 2).
doniva	±5	1.21	154	14	
	ts	1.58	201	16 20 22 25 28 32 40 50	
1000	15	2.46	314	20	
מיות	15	2.98	380	22.	
Cinie	14	3.85	491	25	
Sed to	144	.84	516	28	
or othe	14	3.31	304 1	32	
er bar	14	18.	157	40	
SIZES	114	5.42	964	5	
					Conversion factor: 1.0 MPa =
					$MPa = 1.0 \text{ N/mm}^2 = 145 \text{ psi. Strength}$
			10 1		s are based on nominal area.

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 *22mm dia. bar is not covered in BDS ISO 6935-2:2016. Its properties an

400 400 500 500 400 450	Steel	Yield S	Steel Yield Strength, R ett, MPa Ductiliy Propertion	Duc	Ductiliy Properties	per
400 400 500 500 600 450	5			min.		Total
400 500 500 600 450	B400C-R	400	:	1.15		14
500 500 600 450	B400CWR	400	:	1.15		14
500 600 450	B500C-R	500		1.15		14
450 400	B500CWR	500		1.15		14
450	B600C-R	600	:	1.15		10
400	B450CWR	450	1.25 R et (min.)	1.15		:
	RADODWR	400	1.3 R et (min.)	1.25		17

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

B420DWR 420

500

1.3 R + (min.) | 1.25 1.3 R et (min.)

1.25

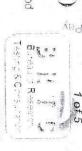
Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh

Dr. Abdul Jabbar Khan Test performed by:

07 December 2024

Professor, Dept. of Civil Engg

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 security paper. 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



(I) Testing & Consultation



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STRENGTH OF MATERIALS LABORATORY

Shahriar Steel Mills Ltd., Konapara, Jatrabari, Dhaka

Sent by: Engr. Md. Maksudul Karım, General Managei

TEST OF DEFORMED M.S. BARS IBDS ISO 6935-2:20161

Date of Test: 4/12/2024 Ref.: Letter; Dt. 3/12/2024

BRTC No.: 1103-37749/CE/24-25; Dt. 3/12/2024

Samples were received in UNSEALED condition

BDS ISC				c 5 c	3 2 1	SI.
BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).					SSRM B420 DWR SSRM B420 DWR SSRM B420 DWR	Frog Mark / Identification
inal Area et						
c. (Table 2					12 12 12	Nominal dia.
).	T 1/4 - T	e la le	1 1 1	n a a	11.8 11.9 11.8	Actual dia.
16 20 2	1 . 1		a . v . v	n a n	0.857 0.868 0.860	Mass Per Unit Length
2 25 28	·				0.862	Average Mass Per Unit Length
32 40			, i e i e		53.3 56.3 54.3	Yield or Proof Load
50 Convers					472 498 481	Yield or Proof Strength R _{eH} MPa
sion factor: 1.				1.	484	Average Yield Strength, R _{eH}
0 MPa = 1.0			C [71.6 74.6 73.6	Tensile Load kN
$N/mm^2 = 145$					635 660 650	Tensile Strength R _m MPa
psi. Strengt	ı	r	1	ū	650	Average Tensile Strength, R _m
ns are base	3	,		•	1.34	R → Z e ±
etc. (Table 2). Conversion factor: 1.0 MPa = 1.0 N/mm² = 145 psi. Strengths are based on nominal area.					25 27 25	Total Elongation (%) (G.length = 5d)
area.		1			26	Average Total Elongation (%)
				9 2 ZF	Satisfactory Satisfactory Satisfactory	Bend Test (Seperate samples)
	50 F					Test

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unit length Permissible deviation, % ±8 ±6 ±6 ±5 ±5 ±5 ±4 ±4 ±4 ±4 ±4	Nominal mass per Nominal, kg/m	Nominal cross sectional area, sq.mm	Nominal bar dia., mm
Permissible deviation, % ±8 ±8 ±6 ±5 ±5 ±5 ±5 ±4 ±4 ±4 ±4 ±4	, kg/m	a, sq.mm	
±8	0.222	28.3	6
±8	0.395	50.3	00
±6	0.616	78.5	10
#8	0.887	113	12
±5	1.21	154	14
±5	1.58	201	16
±5	2.46	314	20
±5	2.98	380	22
±4	3.85	491	25
±4	4.84	616	28
±4	6.31	804	32
±4	9.87	1257	40
±4	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	28.3 50.3 78.5 113 154 201 314 380 491 616 804 1257 1964	50

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

Dept. of Civil Engg., BUET, Dhaka-1000, Bangladesh	8	13	1.25	1.3 R et (min.)	500	B500DWR
Prof. Dr. Hasib Monammed Ansan, Test-In-Charge	00	16	1.25	1.3 R # (min.)	420	B420DWR
D. C. H. I. M. L. L. Albana Task in Obassa	80	17	1.25	1.3 R # (min.)	400	B400DWR
Countersigned by:	7.5	1	1.15	1.25 R et (min.)	450	B450CWR
Yes of the	7	10	1.15		600	B600C-R
	7	14	1.15	:	500	B500CWR
	7	14	1.15	:	500	B500C-R
	7	14	1.15	:	400	B400CWR
	7	14	1.15	:	400	B400C-R
80	At Rm	Total	min.			
2	n, % (min.)	Elongation, % (min.)	Rm/Res	Max.	Min.	Grade
	ties	Ductiliy Properties	. Du	Yield Strength, Ren, MPa	Yield St	Steel

NA4SPPYE5

Test performed by:

Professor, Dept. of Civil Engg. Dr. Abdul Jabbar Khan

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

BUETCE



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STRENGTH OF MATERIALS LABORATORY

BRTC No.: 1103-37749/CE/24-25; Dt. 3/12/2024

Sent by: Engr. Md. Maksudul Karim, General Manager Shahriar Steel Mills Ltd., Konapara, Jatrabari, Dhaka

TEST OF DEFORMED M.S. BARS IBDS ISO 6935-2:20161

Samples were received in UNSEALED condition

BUETCE

0.5 %

Ref.: Letter; Dt. 3/12/2024 Date of Test: 4/12/2024

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		1 1 1	E 2 E	a . a	ω ∧ ় →		No.
					SSRM B420 DWR SSRM B420 DWR SSRM B420 DWR		Frog Mark / Identification
			7		DWR DWR DWR		
					16 16	mm	Nominal dia.
		1	r 1 r		16.0 16.0 16.0	mm	Actual dia.
		1 L 11	D 1 1 1 1 1 1 1 1 1		1.571 1.576 1.578	Unit Length kg/m	Mass Per
	ı	ı	ı	•	1.575	Unit Length kg/m	Average Mass Per
			D 9 3		89.1 89.1 89.1	Load	Yield or Proof
					443 443	Strength R _{eH} MPa	
			F.		443	Strength, R _{eH} MPa	Average Yield
		T. T. P.			132 132 131		Tensile Load
			1 1 1 1 1	- 100 COMPANY - 100 PM	660 660 655	R _m MPa	Tensile Strength
	29.	i			655	Strength, R m MPa	Average Tensile
	ř.	•	i		1.48		スプスを
					28 28 29	(%) (G.length = 5d)	Lotal Elongation
	r				28	Elongation (%)	Average Total
	# # W				Satisfactory Satisfactory Satisfactory	(Seperate samples)	Test
					Fa t W	50	Test

BDS ISO 6935-2:2016	BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).	ominal	Area e	tc. (Tal	ble 2).							100000		- Contraction	Conversion factor: 1.0 MPa = 1.0 N/mm ² = 145 nsi. Strengths are based on nominal ar
Nominal bar dia., mm		6	00	10	12	14	16 20 22* 25 28 32 40 50	20	22*	25	28	32	40	14	
Nominal cross section	al cross sectional area, sq.mm	28.3	28.3 50.3 78.5 113 154 201 314 380 491 616 804 1257 1964	78.5	113	154	201	314	380	491	616	804	1257	1964	
Nominal mass per Nominal, kg/m		0.222	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	0.616	0.887	1.21	1.58	2.46	2.98	3.85	4.84	6.31	9.87	15.42	
unit length P	Permissible deviation, % ±8 ±8 ±6 ±5 ±5 ±5 ±5 ±4 ±4 ±4 ±4 ±4	8∓	±8	9∓	91	±5	±5	±5	±5	±4	±4	14	±4	±4	
*22mm dia har is not	*22mm dia har is not covered in BDS ISO 6935-2-2016. Its properties are derived following the principle used for other har sizes	-0C-C-	f Ite n	nonerti.	es are	derive	d follo	Wind t	he nri	cinle	neser!	for oth	er ba	SIZES	

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 Requ

Steel	Yield S	Yield Strength, R ett, MPa	ng	Ductiliy Properties	ties
Grade	Min.	Max.	Rm/ReH	Elongation, % (min.)	n, % (mi
			min.	Total	At R m
B400C-R	400		1.15	14	7
B400CWR	400	:	1.15	14	7
B500C-R	500	:	1.15	14	7
B500CWR	500		1.15	14	7
B600C-R	600		1.15	10	7
B450CWR	450	1.25 R eH (min.)	1.15		7.5
B400DWR	400	1.3 R eH (min.)	1.25	17	8
B420DWR	420	1.3 R et (min.)	1.25	16	%

countersigned by:

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

500

1.3 R et (min.) 1.25

07 December 2024

Dr. Abdul Jabbar Khan Test performed by:

Professor, Dept. of Civil Engg.

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 security paper 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 the



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But Resident Tesma & Consultation 4 of 5

STRENGTH OF MATERIALS LABORATORY

Sent by: Engr. Md. Maksudul Karim, General Manager TEST OF DEFORMED M.S. BARS IBDS ISO 6935-2:2016

Shahriar Steel Mills Ltd., Konapara, Jatrabari, Dhaka

Date of Test: 4/12/2024

Ref.: Letter; Dt. 3/12/2024

BRTC No.: 1103-37749/CE/24-25; Dt. 3/12/2024

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BUETCE

Samples were received in UNSEALED condition.

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BDS ISO 6335-2:2016 Weight Requirements, Nominal Area etc. (Table 2).	81 41		= 10 d	SSF SSR SSR	<u>.</u>	
ght Requireme	. p			 SSRM B420 DWR SSRM B420 DWR SSRM B420 DWR	Identification	mark /
ents, Nominal				ਨੇ ਨੇ ਨੇ		
Area etc. (Tab				 20 20 20	dia.	Nominal
_	1 4 -1	1 1 1		19.9 20.0 20.0	dia.	Actual
14 16 20 22*				 2.452 2.457 2.464	Per Unit Length	Mass
	,	,		2.458	Mass Per Unit Length	Average
25 28 32 40 50				 142 143 144	Proof Load kN	Yield or
				 453 456 459	Proof Strength R _{eH}	Yield or
Conversion factor: 1.0 MPa		* E		456	Yield Strength,	Average
1.0 MPa = 1.0				216 217 218		Tensile
$N/mm^2 = 14$				 690 695	Strength R _m MPa	lensile
5 psi. Streng		1		690	Tensile Strength, R _m MPa	Average
ths are base	r	31		1.51		スモスを
= 1.0 N/mm ² = 145 psi. Strengths are based on nominal area.				23 24 24	Elongation (%) (G.length = 5d)	IOIA
area.				24	Total Elongation (%)	Avelage
				 Satisfactory Satisfactory Satisfactory	· · · · · · · · · · · · · · · · · · ·	מומ
					Test	I Vaparia

oss sect																
Nominal bardia, mm 6 8 10 12 14 16 20 27 25 28 32 40 50 19 19 19 19 19 19 19 19 19 19 19 19 19		1+4	±4	1+4	±4	±4	1+5	±5	1+5	±5	16	1+6	±8	1+8	Permissible deviation, %	unit length
Nominal bar dia, mm 28.3 50.3 78.5 113 154 201 314 380 491 616 804 1257 1964 Nominal cross sectional area, sq.mm 28.3 50.3 78.5 113 154 201 314 380 491 616 804 1257 1964		74.61	3.07	0.5	4.04	3.03	2.30	2.40	1.00	17.1	0.887	0.676	0.395	0.222		Nominal mass per
Nominal bardia, mm 6 8 10 12 14 16 20 27 25 28 32 40 50 19 10 10 10 10 10 10 10 10 10 10 10 10 10		15/3	0 07	001	101	300	200	2	200		2007	2	2	-		
Nominal bar dia, mm 6 8 10 12 14 16 20 22 25 28 32 40 50		1964	125/	804	616	491	380	314	201	154	113	78.5	50.3	28.3		Nominal cross sect
14 16 20 22* 25 28 32 40																
			40	32	28	25	22*	20	16	14	12	10	8	6	ım	Nominal bar dia., m
	COLVE		1	1	1						-				to stellight requirement, in	000100 0000-2.20

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	ties
Grade	Min.	Max.	Rm/Re	Elongation, % (min.)	n, % (mi
			min.	Total	At Rm
B400C-R	400	:	1.15	14	7
B400CWR	400	:	1.15	14	7
B500C-R	500	1	1.15	14	7
B500CWR	500	:	1.15	14	7
B600C-R	600	:	1.15	10	7
B450CWR	450	1.25 R _{ен} (min.)	1.15		7.5
B400DWR	400	1.3 R et (min.)	1.25	17	8
B420DWR	420	1.3 R et (min.)	1.25	16	8
B500DWR	500	1.3 R et (min.)	1.25	13	8

Countersigned by:

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

Test performed by:

Smb4PMKC6

Professor, Dept. of Civil Engg. Dr. Abdul Jabbar Khan

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STRENGTH OF MATERIALS LABORATORY

TEST OF DEFORMED M.S. BARS IBDS ISO 6935-2:2016

Sent by: Engr. Md. Maksudul Karim, General Manager

Shahriar Steel Mills Ltd., Konapara, Jatrabari, Dhaka

Ref.: Letter; Dt. 3/12/2024 BRTC No.: 1103-37749/CE/24-25; Dt. 3/12/2024

Date of Test: 4/12/2024

Samples were received in UNSEALED condition

DS!
,
330 675
323 660
327 665
MPa kN MPa
R _{eH} R _m
gth, Strength,
Yield Load Strength Tensile
ge Tensile Tensile Average

Nominal bar dia., mm	m	6	œ	10	12	14	16	20	22.	25	28	32	40	50
Nominal cross sect	inal cross sectional area, sq.mm	28.3	50.3	78.5	113	154 201	201	314	380	491 616	616	804	1257	1964
Nominal mass per	Nominal, kg/m	0.222	0.395	0.616	0.616 0.887	1.21	1.58	2.46 2.98 3.85 4.84	2.98	3.85	4.84	6.31	6.31 9.87	15.42
unit length	Permissible deviation, %	±8 ±8	±8	±6	±6	±5	±5	±5	±5	±5 ±4 ±4 ±4 ±4 ±4	14.	1,4	14	1+

Actual diameter of bars are shown for informative purpose only. It is not a requirement of BDS ISO 6935-2:2016. 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 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	ties
Grade	Min.	Max.	Rm/Re	Elongation, % (min.)	n, % (mii
			min.	Total	At Rm
B400C-R	400		1.15	14	7
B400CWR	400	:	1.15	14	7
B500C-R	500	:	1.15	14	7
B500CWR	500	:	1.15	14	7
B600C-R	600		1.15	10	7
B450CWR	450	1.25 R eH (min.)	1.15		7.5
B400DWR	400	1.3 R eH (min.)	1.25	17	8
B420DWR	420	1.3 R et (min.)	1.25	16	8
B500DWR	500	1.3 R et (min.)	1.25	13	8

Countersigned by:

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

WCfnHdmPf

Dr. Abdul Jabbar Khan est performed by:

Professor, Dept. of Civil Engg.

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