



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

5 (ii) of 5



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

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

Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka.

Project: ----

BRTC No.: 1103-29646/CE/24-25; Dt. 25/8/2024

Ref.: Letter; Dt. 25/8/2024

Date of Test: 27/8/2024

Samples were received in UNSEALED condition.

Sl. No.	Frog Mark / Identification	Nominal dia.	Actual dia.	Mass Per Unit Length	Average Mass Per Unit Length	Yield or Proof Load	Yield or Proof Strength R_{eH}	Average Yield Strength, R_{eH}	Tensile Load	Tensile Strength R_m	Average Tensile Strength, R_m	R_m/R_{eH}	Total Elongation (%) (G.length = 5d)	Average Total Elongation (%)	Bend Test (Seperate samples)	Rebend Test (Seperate samples)
1	SSRM B500 DWR	10	10.0	0.612	0.611	43.1	545	540	58.4	740	745	1.38	30	30	Satisfactory	Satisfactory
2	SSRM B500 DWR	10	10.0	0.612		42.1	535		59.4	750			30		Satisfactory	Satisfactory
3	SSRM B500 DWR	10	9.9	0.610		43.1	545		58.4	740			30		Satisfactory	Satisfactory
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BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).

Nominal bar dia., mm	6	8	10	12	14	16	20	22*	25	28	32	40	50
Nominal cross sectional area, sq.mm	28.3	50.3	78.5	113	154	201	314	380	491	616	804	1257	1964
Nominal mass per unit length	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
Permissible deviation, %	±8	±8	±6	±6	±5	±5	±5	±5	±4	±4	±4	±4	±4

*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 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 Grade	Yield Strength, R_{eH} , MPa		Ductility Properties		
	Min.	Max.	R_m/R_{eH} min.	Elongation, % (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_{eH} (min.)	1.25	16	8
B500DWR	500	1.3 R_{eH} (min.)	1.25	13	8

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



3ZbgCMrLH

Countersigned by:

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge

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

28 August 2024

Test performed by:

Dr. Munaz Ahmed Noor

Professor, Dept. of Civil Engg., BUET



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STRENGTH OF MATERIALS LABORATORY

4 (ii) of 5



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

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

Shahriar Steel Mills Limited, Konapara, Jatrabari, Dhaka.

Project: - - -

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Ref.: Letter, Dt. 25/8/2024

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		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa					
1	SSRM B500 DWR	12	12.2	0.919	0.900	66.5	590	565	83.8	740	725	1.28	25	24	Satisfactory	Satisfactory
2	SSRM B500 DWR	12	12.2	0.922		66.5	590		83.8	740			25		Satisfactory	Satisfactory
3	SSRM B500 DWR	12	11.8	0.860		59.4	525		77.7	685			23		Satisfactory	Satisfactory
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BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).

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

*22mm dia. bar is not covered in BDS ISO 6935-2:2016. Its properties are derived following the principle used for other bar sizes

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BDS ISO 6935-2 Tensile Requirements for Common Steel Grades

Steel Grade	Yield Strength, R_{el} , MPa		Ductility Properties		
	Min.	Max.	R_m / R_{el} min.	Elongation, % (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_{el} (min.)	1.15	--	7.5
B400DWR	400	1.3 R_{el} (min.)	1.25	17	8
B420DWR	420	1.3 R_{el} (min.)	1.25	16	8
B500DWR	500	1.3 R_{el} (min.)	1.25	13	8

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



4fhKNEj6S

Countersigned by:

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge

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

28 August 2024

Test performed by:

Dr. Munaz Ahmed Noor

Professor, Dept. of Civil Engg., BUET



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		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa					
1	SSRM B500 DWR	16	16.0	1.578	1.575	120	595	590	148	735	735	1.25	20	20	Satisfactory	Satisfactory
2	SSRM B500 DWR	16	16.0	1.576		118	585		147	730			20		Satisfactory	Satisfactory
3	SSRM B500 DWR	16	16.0	1.572		120	595		148	735			19		Satisfactory	Satisfactory
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BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).

Nominal bar dia., mm	6	8	10	12	14	16	20	22 ^a	25	28	32	40	50
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BDS ISO 6935-2 Tensile Requirements for Common Steel Grades

Steel Grade	Yield Strength, R_{eH} , MPa		Ductility Properties		
	Min.	Max.	R_m/R_{eH} min.	Elongation, % (min.)	
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_{eH} (min.)	1.25	16	8
B500DWR	500	1.3 R_{eH} (min.)	1.25	13	8

Countersigned by:

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge

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



JfH65gSRD

28 August 2024

Test performed by:

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Professor, Dept. of Civil Engg., BUET



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STRENGTH OF MATERIALS LABORATORY

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

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		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa					
1	SSRM B500 DWR	20	20.0	2.455	2.459	178	570	570	232	740	740	1.30	23	23	Satisfactory	Satisfactory
2	SSRM B500 DWR	20	20.0	2.468		181	575		235	745			22		Satisfactory	Satisfactory
3	SSRM B500 DWR	20	20.0	2.455		177	565		233	740			23		Satisfactory	Satisfactory
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Nominal bar dia., mm	6	8	10	12	14	16	20	22*	25	28	32	40	50
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	Min.	Max.	R_m/R_{eH} min.	Elongation, % (min.)	
B460C-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_{eH} (min.)	1.25	16	8
B500DWR	500	1.3 R_{eH} (min.)	1.25	13	8

Countersigned by:

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge

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		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa					
1	SSRM B500 DWR	25	25.2	3.912	3.912	273	555	555	353	720	720	1.30	23	24	Satisfactory	Satisfactory
2	SSRM B500 DWR	25	25.2	3.917	3.912	271	550	555	353	720	720	1.30	24	24	Satisfactory	Satisfactory
3	SSRM B500 DWR	25	25.2	3.907	3.912	270	550	555	352	715	720	1.30	24	24	Satisfactory	Satisfactory
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BDS ISO 6935-2:2016 Weight Requirements, Nominal Area etc. (Table 2).

Nominal bar dia., mm	6	8	10	12	14	16	20	22*	25	28	32	40	50
Nominal cross sectional area, sq.mm	28.3	50.3	78.5	113	154	201	314	380	491	616	804	1257	1964
Nominal mass per unit length	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
Permissible deviation, %	±8	±8	±6	±6	±5	±5	±5	±5	±4	±4	±4	±4	±4

*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 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 Grade	Yield Strength, R_{eH} , MPa		Ductility Properties		
	Min.	Max.	R_m/R_{eH} min.	Elongation, % (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_{eH} (min.)	1.25	16	8
B500DWR	500	1.3 R_{eH} (min.)	1.25	13	8

Countersigned by:

Prof. Dr. Hasib Mohammed Ahsan, Test-in-Charge

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



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[Signature]

28 August 2024

Test performed by:

Dr. Munaz Ahmed Noor

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 recommended that the samples are sent in a secure and sealed cover/packet/container under the signature of a competent authority. In order to avoid fraudulent 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.

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