



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51054/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0915/2024-2025



pidizuldcee

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _{el} / R _m	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _p	Bend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)
GPH QUANTUM B600 D-R 10	1	10	9.96	0.612	0.611	50.82	647	646 (93,500)	65.24	831	830 (1,20,500)	1.28	20	18	14	Satisfactory
	2	10	9.94	0.609		50.88	648		65.33	832		1.28	18		12	Satisfactory
	3	10	9.96	0.612		50.60	644		64.95	827		1.28	16		9	Satisfactory

Test Performed by

M. Moniruzzaman
10/05/2025

Dr. Md. Moniruzzaman
Professor

Countersigned by

H. M. Mamun Al Rashed
10 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation/Nominal Diameter, mm	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.81	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±8	±8	±5	±5	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	110	201	314	491	804	1257

Steel Grade	Upper Yield Strength		Security Properties		
	R _{el}		R _{el} /R _m		A _p
	Minimum	Maximum	Minimum	Minimum	Maximum
B400C-B / B400C/B	400	—	1.35	14	7
B500C-B / B500C/B	500	—		10	—
B600C-B	600	—		17	—
B400D/B	400	—	1.25	16	8
B500D/B	500	—		13	—
B500D/B	500	—		18	—
B600D-B	600	—	1.2 x R _{el} (min.)	—	—

Please Note: The client supplied the sample and the results given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

020729



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51055/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0916/2024-2025



19deipu54c66

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R_{eH}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R_m	Average Tensile Strength	R_{eH}/R_m	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A_g	Bend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)
GPH QUANTUM B600 D-R 12	1	12	11.98	0.884	0.886	71.16	629	634 (92,000)	89.89	795	798 (1,15,500)	1.26	22	21	13	Satisfactory
	2	12	11.99	0.886		72.17	638		90.70	802		1.26	20		12	Satisfactory
	3	12	11.99	0.886		71.67	634		90.12	797		1.26	21		12	Satisfactory

Test Performed by

Mamun
10/05/2025

Dr. Md. Moniruzzaman
Professor

Countersigned by

Hashed
10 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Rebar Designation (Nominal Diameter, mm)	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.223	0.395	0.617	0.886	1.58	2.47	3.85	4.88	6.31
Permissible Variation of Nominal Mass per Unit Length, %	±4	±4	±4	±4	±5	±5	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	516	804

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

Steel Grade	Upper Yield Strength		Ductility Properties		
	R_{eH} MPa		R_{eH}/R_m	A _g	A ₅
	Minimum	Maximum	Minimum	Minimum	Minimum
B400C-B / B400C-WB	400	—	1.15	14	7
B500C-B / B500C-WB	500	—		10	
B600C-B	600	—		17	
B400D-WB	400	1.2 x R_{eH} (min.)	1.25	16	8
B420D-WB	420			15	
B500D-WB	500	1.2 x R_{eH} (min.)		19	
B600D-B	600			—	—

020728



Client: Engr. Md. Tanjidul Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51056/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0917/2024-2025



eq23izux7cdd

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Prog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _{el} / R _m	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)
GPH QUANTUM B600 D-R 16	1	16	15.98	1.575	1.576	126.34	628	632 (91,500)	166.32	827	829 (1,20,000)	1.32	18	18	11	Satisfactory
	2	16	15.99	1.576		126.60	630		166.67	829		1.32	19		12	Satisfactory
	3	16	15.99	1.577		128.10	637		166.92	830		1.30	17		11	Satisfactory

Test Performed by

Hamm
10/05/2025

Dr. Md. Moniruzzaman
Professor

Countersigned by

Rashed
10 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation (Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.83	6.31	10.0
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±6	±6	±5	±5	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	804	1257

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

Steel Grade	Upper Yield Strength		Ductility Properties		
	R _{el}		R _{el} /R _m	A	A _g
	Minimum	Maximum	Minimum	Minimum	Minimum
B400C (S 420MPa)	420	—	1.15	14	7
B500C (S 500MPa)	500	—	—	10	—
B600C (S 600MPa)	600	—	—	17	—
B400DWR	400	1.3 × R _{el} (min.)	1.25	15	8
B500DWR	500	—	—	12	—
B600DWR	600	1.3 × R _{el} (min.)	—	16	—

020724



Client: Engr. Md. Tanjidul Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51058/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0918/2024-2025



rvdgugud0ckk

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _u	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _u / R _m	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)
GPH QUANTUM B600 D-R 20	1	20	19.97	2.458	2.457	193.76	617	618 (89,500)	245.26	781	782 (1,13,500)	1.27	21	21	14	Satisfactory
	2	20	19.97	2.458		194.18	618		245.89	783		1.27	19		13	Satisfactory
	3	20	19.95	2.454		194.28	618		245.35	781		1.26	24		14	Satisfactory

Test Performed by

Mamun
10/05/2025

Dr. Md. Moniruzzaman
Professor

Countersigned by

Rashed 10 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation Number/Nominal Bar Diameter, mm	5	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.93	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±6	±6	±5	±3	±4	±4	±6
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	804	1257

Steel Grade	Upper Yield Strength		Ductility Properties		
	R _y		R _u /R _y	A	A _g
	Minimum	Maximum			
B490C-B1/B490C-W1	490	—	1.25	14	7
B590C-B1/B590C-W1	590	—		18	
B690C-B1	690	—		17	
B490D-W1	490	1.3 x R _y (min.)	1.25	16	8
B420D-W1	420			15	
B590D-W1	590			18	
B690D-B1	690	1.3 x R _y (min.)	—	18	—

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

020727



Client: Engr. Md. Tanjidul Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51059/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0919/2024-2025



x0dearug6cvy

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Prog Mark/ Identification	Sample No	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _m / R _{el}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)
GPH QUANTUM B600 D-R 25	1	25	24.96	3.842	3.841	315.70	643	644 (93,500)	401.10	817	817 (1,18,500)	1.27	18	17	10	Satisfactory
	2	25	24.96	3.841		317.57	647		401.66	818		1.26	16		10	Satisfactory
	3	25	24.96	3.842		315.39	643		400.30	815		1.27	17		9	Satisfactory

Test Performed by

Mamun
10/05/2025

Dr. Md. Moniruzzaman
Professor

Countersigned by

Hashed 10 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation Number/Nominal Bar Diameter, mm	6	8	10	12	16	20	25	28	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.80	4.98	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±6	±6	±5	±5	±4	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	616	804	1257

Please Note: The client supplied the sample and the results given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misclassification, if any, of the sample.

Steel Grade	Upper Yield Strength		Elongation Properties		
	R_{el}		R_m/R_{el}	A	A_{gt}
	MPa			%	%
	Minimum	Maximum	Minimum	Minimum	Minimum
B400C-B / B400CAB	400	—	1.15	14	7
B500C-B / B500CAB	500	—		16	
B600C-B	600	—		17	
B400DAB	400	1.3 x R_{el} (min.)	1.25	15	8
B410DAB	410			15	
B500DAB	500			17	
B600D-B	600	1.2 x R_{el} (min.)		30	

020726



Client: Engr. Md. Tanjidel Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51060/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0920/2024-2025



9dq4u2uzycll

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Prog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R_{eH}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R_m	Average Tensile Strength	R_m/R_{eH}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A_g	Bend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)
GPH QUANTUM B600 D-R 32	1	32	31.91	6.279	6.312	506.35	630	637 (92,500)	638.69	794	803 (1,16,500)	1.26	18	18	13	Satisfactory
	2	32	32.02	6.320		514.80	640		648.31	806		1.26	16		10	Satisfactory
	3	32	32.05	6.335		515.05	640		650.66	809		1.26	20		11	Satisfactory

Test Performed by

Mamun
10/05/2025

Dr. Md. Moniruzzaman
Professor

Countersigned by

Hashed 10 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Weight Requirements and Nominal Cross-Sectional Area for Steel Rebar (As Per BDS ISO 6935-2 2021 Table 2)

Bar Designation (Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.885	1.58	2.47	3.85	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±6	±6	±5	±5	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	816	1257

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

Minimum Tensile Requirements for Steel Rebar (As Per BDS ISO 6935-2 2021 Table 6)

Steel Grade	Upper Yield Strength		Ductility Properties		
	R_{eH}		R_m/R_{eH}		A_g
	Minimum	Maximum	Minimum	Maximum	Minimum
B400C-B 1.1400CWR	400	—	1.13	14	7
B500C-B 1.1500CWR	500	—			
B600C-B	600	—			
B400DWR	400	1.3 x R_{eH} (min.)	1.25	16	8
B500DWR	500				
B600DWR	600				
B600D-B	600	1.2 x R_{eH} (min.)	10		

020725



Client: Engr. Md. Tanjidiul Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51036/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

14 May 2025
MME 0906/2024-2025



weqnbTu5pc77

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _m / R _{el}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH B500 DWR 8	1	8	7.92	0.386	0.386	27.60	549	548 (79,500)	36.50	726	725 (1,05,000)	1.32	24	25	10	Satisfactory	Satisfactory
	2	8	7.91	0.386		27.19	541		36.10	718		1.33	26		11	Satisfactory	Satisfactory
	3	8	7.91	0.386		27.91	555		36.68	730		1.31	26		9	Satisfactory	Satisfactory

Test Performed by

Miftaur Rahman
14.05.25

Mr. Md. Miftaur Rahman
Assistant Professor

Countersigned by

Hoshed 14 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation (Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	28	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.85	5.84	8.71	13.8
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±6	±6	±5	±5	±4	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	636	804	1257

Steel Grade	Upper Yield Strength		Ductility Properties		
	R _{el}		R _m /R _{el}		A _g
	Minimum	Maximum	Minimum	Maximum	Minimum
B400C (R10000, HR)	400	—	1.13	14	7
B500C (R10000, HR)	500	—			
B600C (R10000, HR)	600	—			
B400E (R10000, HR)	400	—	1.25	16	8
B500E (R10000, HR)	500	—			
B600E (R10000, HR)	600	—			
B400R (R10000, HR)	400	1.2 x R _{el} (max.)	1.25	17	8
B500R (R10000, HR)	500	1.2 x R _{el} (max.)			
B600R (R10000, HR)	600	1.2 x R _{el} (max.)			

Please Note: The client supplied the sample and the results given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the result/significance, if any, of the sample.

020744

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 362 504 ☎ +880 2 5516 7228-57 Ext 7629 ✉ btrc@mme.buet.ac.bd



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51039/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

14 May 2025
MME 0907/2024-2025



0rptjuxpcvw

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _u	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _u / R _m	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _B	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH QUANTUM B500 DWR 10	1	10	9.96	0.611	0.613	42.30	539	535 (77,500)	55.68	709	700 (1,01,500)	1.32	24	25	11	Satisfactory	Satisfactory
	2	10	10.00	0.617		42.05	535		53.89	686		1.28	29		10	Satisfactory	Satisfactory
	3	10	9.94	0.609		41.81	532		55.43	706		1.33	21		11	Satisfactory	Satisfactory

Test Performed by

Miftaur Rahman
14.05.25

Mr. Md. Miftaur Rahman
Assistant Professor

Countersigned by

Rashed 14 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation (Nominal Bar Diameter, mm)	8	10	12	16	20	25	32	40	50
Nominal Mass per Unit Length (kg/m)	0.222	0.349	0.617	0.888	1.58	2.47	3.85	4.84	8.31
Permissible Variation of Nominal Mass per Unit Length (%)	±8	±8	±6	±5	±5	±5	±5	±5	±4
Nominal Cross-Sectional Area, mm ²	35.3	50.3	78.5	113	201	314	491	616	1213

Steel Grade	Upper Yield Strength		Tensile Properties		
	R _y		R _u /R _y	A	A _B
	Minimum	Maximum	Minimum	Minimum	Maximum
B40C-E / B40C-WR	400	—	1.15	14	7
B50C-E / B50C-WR	500	—		16	—
B60C-E	600	—		17	—
B40D-WR	400	—	1.25	16	—
B50D-WR	500	1.3 x R _y (min)		17	—
B60D-WR	600	1.3 x R _y (min)		18	—
B800C-E	800	1.3 x R _y (min)	—	18	—

Please Note: The client supplied the sample and the results given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the authentication, if any, of the sample.

020739

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 352 504 📠 +880 2 5516 7225-57 Ext 7629 ✉ brtc@mme.buet.ac.bd



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51042/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

14 May 2025
MME 0908/2024-2025



qxpxhvuq9cee

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R_{eH}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R_m	Average Tensile Strength	R_{eH}/R_m	Elongation after Fracture (G.L. Sd)	Average Elongation after Fracture, A	Elongation at Maximum Force, A_g	Bend Test (Separate Sample)	Rebend Test (Separate Sample)
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%		
GPH QUANTUM B500 DWR 12	1	12	11.92	0.876	0.875	63.68	563	551 (80,000)	80.23	709	699 (1,01,500)	1.26	25	21	10	Satisfactory	Satisfactory
	2	12	11.92	0.876		62.10	549		78.60	695		1.27	16		9	Satisfactory	Satisfactory
	3	12	11.90	0.874		61.21	541		78.22	692		1.28	21		13	Satisfactory	Satisfactory

Test Performed by

Miftaur Rahman
14.05.25

Mr. Md. Miftaur Rahman
Assistant Professor

Countersigned by

Hashed 14 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation Number/Nominal Bar Diameter, mm	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.885	1.78	2.47	3.85	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±5	±5	±5	±5	±5	±5	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	804	1257

Steel Grade	Upper Yield Strength		Ductility Properties			
	R_{eH}		R_{eH}/R_m		A	A_g
	Minimum	Maximum	Minimum	Maximum	%	%
B500C-B / B500C-W	450	—	1.15	—	14	8
B500C-B / B500C-W	500	—			17	
B500C-B	600	—			17	
B500D-W	450	—	1.25	—	14	
B500D-W	500	—			17	
B500D-B	600	—			17	

Please Note: The client supplied the sample and the results given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misclassification, if any, of the sample.

020743

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 362 504 📠 +880 2 5516 7228-57 Ext 7629 ✉ brc@mme.buet.ac.bd



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51043/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

14 May 2025
MME 0909/2024-2025



nx7pc4u0kc66

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _{el} / R _m	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH QUANTUM B500 DWR 16	1	16	15.95	1.569	1.569	107.18	533	535 (77,000)	144.10	717	717 (1,04,000)	1.34	20	22	13	Satisfactory	Satisfactory
	2	16	15.95	1.568		107.61	535		144.04	716		1.34	23		14	Satisfactory	Satisfactory
	3	16	15.95	1.568		107.73	536		144.47	719		1.34	23		12	Satisfactory	Satisfactory

Test Performed by

M. Rahman
14.05.25

Mr. Md. Miftaur Rahman
Assistant Professor

Countersigned by

H. M. Mamun Al Rashed
14 MAY 2025
Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation Number/Nominal Bar Diameter mm	6	8	10	12	16	20	25	28	32	40
Nominal Mass per Unit Length kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.85	4.84	6.31	9.86
Permissible Variation of Nominal Value per Unit Length, %	±8	±8	±6	±6	±5	±7	±4	±4	±4	±4
Nominal Cross-Sectional Area mm ²	28.3	50.1	78.5	113	201	314	491	616	804	1257

Steel Grade	Upper Yield Strength		Ductility Properties		
	R _y		R _{el} /R _m	A	A _g
	Minimum	Minimum			
B500C-R / B400CWR	400	—	1.13	14	7
B500C-R / B500CWR	500	—		17	
B500C-R	600	—		17	
B500CWR	400	1.3 × R _y (min.)	1.25	14	7
B500CWR	430			17	
B500CWR	500			17	
B500C-R	600	1.2 × R _y (min.)	1.25	10	7
B500C-R	600	1.2 × R _y (min.)		10	

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the authentication, if any, of the sample.

020745

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 362 504 📠 +880 2 5516 7226-57 Ext 7629 ✉ btrcmme@mme.buet.ac.bd



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51046/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

14 May 2025
MME 0910/2024-2025



2g92hku40cj

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Freg Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _{el} / R _m	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH QUANTUM B500 DWR 20	1	20	19.96	2.457	2.459	171.65	546	546 (79,000)	221.22	704	704 (1,02,000)	1.29	20	20	15	Satisfactory	Satisfactory
	2	20	19.95	2.454		171.52	546		220.95	703		1.29	20		14	Satisfactory	Satisfactory
	3	20	20.00	2.466		171.28	545		221.74	706		1.29	20		11	Satisfactory	Satisfactory

Test Performed by

Miftaur Rahman
14.05.25
Mr. Md. Miftaur Rahman
Assistant Professor

Countersigned by

Hashed
14 MAY 2025
Dr. H. M. Mamun Al Rashid
Professor and Head

Page 1 of 1

Bar Designation Number/Nominal Bar Diameter, mm	6	8	10	12	14	16	18	20	22	25	28	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.21	1.57	2.01	2.47	2.97	3.55	4.21	4.91	5.85
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±6	±6	±5	±5	±4	±4	±4	±4	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	20.1	50.3	78.5	113	151	201	251	314	381	471	581	701	1257

Steel Grade	Upper Yield Strength		Ductility Properties		
	R _{el}		A		A _g
	MPa		%	%	%
B400C-B / B400C-WB	400	—	15	14	7
B400C-B / B400C-WB	500	—		10	
B400C-B	600	—		17	
B400D-WB	400	1.2 x R _{el} (min.)	1.25	16	4
B400D-WB	420			13	
B400D-WB	500			10	
B500D-B	500	1.2 x R _{el} (min.)	—	—	—

Please Note: The client supplied the sample and the results given hereunder corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

020746

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 362 504 📠 +880 2 5516 7228-57 Ext 7629 ✉ btrcmme@mme.buet.ac.bd



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram- 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51047/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0911/2024-2025



3p95c7udec66

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d mm	Actual Diameter mm	Mass per Unit Length kg/m	Average Unit Weight kg/m	Upper Yield Load kN	Upper Yield Strength, R _{el} MPa	Average Upper Yield Strength MPa (psi)	Tensile Load kN	Tensile Strength, R _m MPa	Average Tensile Strength MPa (psi)	R _m / R _{el}	Elongation after Fracture (G.L. 5d) %	Average Elongation after Fracture, A %	Elongation at Maximum Force, A _g %	Bend Test (Separate Sample)	Rebend Test (Separate Sample)
GPH B500 DWR 22	1	22	21.95	2.969	2.968	208.67	549	543 (79000)	270.85	713	708 (102500)	1.30	20	22	12	Satisfactory	Satisfactory
	2	22	21.94	2.968		206.11	542		268.19	706		1.30	22		11	Satisfactory	Satisfactory
	3	22	21.94	2.968		204.98	539		268.56	706		1.31	24		11	Satisfactory	Satisfactory

Test Performed by

Hashed 10/05/2025
Dr. H. M. Mamun Al Rashed
Professor

Countersigned by

Hashed 10 MAY 2025
Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation (Nominal/Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	28	32	40
Nominal Mass per Unit Length, kg/m	0.227	0.385	0.617	0.888	1.58	2.47	3.85	4.86	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±3	±3	±3	±3	±3	±3	±3	±3	±3	±3
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	638	834	1257

Please Note: The client supplied the sample and the result given hereon corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

020738

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 362 504 📠 +880 2 5516 7228-57 Ext 7629 ✉ btrcmme@mme.buet.ac.bd

Steel Grade	Upper Yield Strength		Ductility Properties		
	R _{el}		R _m /R _{el}	A	A _g
	MPa		%	%	%
	Minimum	Maximum	Minimum	Minimum	Minimum
B500C-R / B500C-WR	450	—	1.25	14	8
B500C-R / B500C-WR	500	—		18	
B500C-R	600	—		17	
B400C-WR	400	1.2 x R _{el} (min.)	1.25	18	8
B400C-WR	475			18	
B300C-WR	300			13	
B600C-R	600	1.2 x R _{el} (min.)	—	18	—



Client: Engr. Md. Tanjidal Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram- 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51049/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0912/2024-2025



7lwrf3uevcpp

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{uH}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _m / R _{uH}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH QUANTUM BS00 DWR 25	1	25	25.02	3.859	3.859	255.04	520	521 (75500)	339.61	692	693 (100500)	1.53	22	21	13	Satisfactory	Satisfactory
	2	25	24.99	3.852		255.48	520		340.60	694		1.33	21		12	Satisfactory	Satisfactory
	3	25	25.04	3.867		257.03	524		340.35	693		1.32	21		12	Satisfactory	Satisfactory

Test Performed by

Hashed 10/05/2025

Dr. H. M. Mamun Al Rashed
Professor

Countersigned by

Hashed 10 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation/Nominal Bar Diameter, mm	6	8	10	12	16	20	25	28	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.298	0.617	0.888	1.58	2.47	3.85	4.84	6.31	8.86
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±6	±6	±5	±5	±4	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	618	804	1257

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

020740

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 362 504 📠 +880 2 5516 7228-57 Ext 7629 ✉ brtcmmem@mme.buet.ac.bd

Steel Grade	Upper Yield Strength		Ductility Properties		
	R _{yH}		R _m /R _{yH}		A
	MPa		%		A _g
	Minimum	Maximum	Minimum	Minimum	Maximum
B40C-B / 1420C/HR	400	—	1.15	14	7
B50C-B / 1820C/HR	500	—		13	
B60C-B	600	—		17	
B60D/HR	600	—	1.35	16	9
B420D/HR	420	1.2 x R _{yH} (min.)		13	
B580D/HR	580	1.2 x R _{yH} (min.)		10	
B660D-B	660	1.2 x R _{yH} (min.)			



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram- 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51051/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0913/2024-2025



5464ulu9wcgg

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{uH}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _{el} / R _{ut}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH B500 DWR 28	1	28	27.92	4.806	4.805	341.60	555	552 (80000)	455.49	740	737 (107000)	1.33	21	22	12	Satisfactory	Satisfactory
	2	28	27.92	4.806		339.27	551		454.26	738		1.34	22		13	Satisfactory	Satisfactory
	3	28	27.91	4.802		338.08	549		452.03	734		1.34	22		13	Satisfactory	Satisfactory

Test Performed by

Hashed 10/05/2025

Dr. H. M. Mamun Al Rashed
Professor

Countersigned by

Hashed 10 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation (Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	28	32	40
Nominal Mass per Unit Length, kg/m	0.223	0.335	0.617	0.898	1.58	2.47	3.85	4.84	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±0	±0	±0	±0	±0	±0	±0	±0	±0	±0
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	616	804	1257

Steel Grade	Upper Yield Strength		Ductility Properties		
	F _{yk}		R _{el} /R _m	A	A _g
	MPa				
	Minimum	Maximum	Minimum	Minimum	Minimum
B400C-B / B400C-WR	400	---	1.15	14	T
B500C-B / B500C-WR	500	---		10	
B600C-B	600	---		17	
B400DWR	400	1.3 x R _m (min.)	1.25	17	8
B420DWR	420			18	
B500DWR	500			17	
B600D-B	600	1.3 x R _m (min.)		18	

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

020741

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 362 504 📠 +880 2 5516 7228-57 Ext 7629 ✉ btrcmme@mme.buet.ac.bd



Client: Engr. Md. Tanjidul Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram- 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51053/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0914/2024-2025



k5likiyulc00

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _m / R _{el}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test (Separate Sample)	Rebend Test (Separate Sample)
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%		
GPH QUANTUM B500 DWR 32	1	32	31.69	6.193	6.198	439.37	546	550 (80000)	560.81	697	700 (101500)	1.28	18	19	11	Satisfactory	Satisfactory
	2	32	31.70	6.196		444.74	553		564.56	702		1.27	20		12	Satisfactory	Satisfactory
	3	32	31.72	6.205		443.87	552		564.55	702		1.27	18		10	Satisfactory	Satisfactory

Test Performed by

Hashed 10/05/2025

Dr. H. M. Mamun Al Rashed
Professor

Countersigned by

Hashed 10 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Weight Requirements and Nominal Cross-Sectional Area for Steel Rebar (As Per BDS ISO 6935-2 2021 Table 2)

Bar Designation Number/Nominal Bar Diameter, mm	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.85	4.84	6.31
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±6	±6	±5	±5	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	20.1	50.3	78.5	113	201	314	491	625	1257

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

020742

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 382 504 📠 +880 2 5516 7228-57 Ext 7629 ✉ brcmme@mme.buet.ac.bd

Minimum Tensile Requirements for Steel Rebar (As Per BDS ISO 6935-2 2021 Table 6)

Steel Grade	Upper Yield Strength		Ductility Properties		
	R _{el}		R _m /R _{el}		A
	MPa		%		A _g
	Minimum	Maximum	Minimum	Maximum	Minimum
B480C-R / B480C-WR	480	—	1.15	14	7
B580C-R / B580C-WR	580	—			
B680C-R	680	—			
B480WR	480	1.2 × R _{el} (min.)	1.25	16	8
B480CWR	480				
B580CWR	580				
B680C-R	680	1.2 × R _{el} (min.)		16	



Client: Engr. Md. Tanjidul Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51026/MME/2024-25; 29/04/2025
Sample Condition: Not Scaled

10 May 2025
MME 0900/2024-2025



jpgzuka000q

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R_{eH}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R_m	Average Tensile Strength	R_m/R_{eH}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A_g	Elongation at Maximum Force, A_{g0}	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH B420 DWR 10	1	10	9.97	0.612	0.614	36.48	464	464 (67,500)	52.33	666	668 (97,000)	1.44	23	22	11	Satisfactory	Satisfactory
	2	10	10.00	0.616		36.51	465		52.51	669		1.44	24		11	Satisfactory	Satisfactory
	3	10	9.97	0.613		36.46	464		52.44	668		1.44	18		11	Satisfactory	Satisfactory

Test Performed by

Mr. Humayun Kabir
12/05/25

Mr. Humayun Kabir
Assistant Professor

Countersigned by

Dr. H. M. Mamun Al Rashed
12 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation (Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.82	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±6	±6	±5	±4	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	804	1257

Please Note: The client supplied the sample and the results given here with corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BRTC takes no responsibility regarding the misidentification, if any, of the sample.

Steel Grade	Upper Yield Strength		Tensile Properties		
	R_{eH}	R_m/R_{eH}	A_g	A_{g0}	$A_{g0.2}$
	Minimum	Minimum	Minimum	Minimum	Minimum
B400C-E / B400C-WB	400	—	1.15	14	7
B400C-E / B400C-WB	500	—	—	18	—
B400C-E	500	—	—	18	—
B400C-WB	400	—	—	17	—
B420C-WB	420	1.15 x R_{eH} (min.)	1.25	16	4
B420C-WB	500	—	—	17	—
B420C-WB	600	1.2 x R_{eH} (min.)	—	18	—

020735

Department of MME, Old Academic Building, 1st Floor, BUET, Dhaka 1000 ☎ +880 1741 362 504 📠 +880 2 5516 7228-57 Ext 7629 ✉ btrcmme@mme.buet.ac.bd



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51028/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0901/2024-2025



v400b2u10e33

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _m / R _{el}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A _g	Elongation at Maximum Force, A _m	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH B420 DWR 12	1	12	12.05	0.895	0.889	53.44	473	454 (66,000)	73.65	651	648 (94,000)	1.38	23	25	13	Satisfactory	Satisfactory
	2	12	11.98	0.884		50.26	444		73.02	646		1.45	27		12	Satisfactory	Satisfactory
	3	12	11.99	0.886		50.35	445		73.05	646		1.45	25		11	Satisfactory	Satisfactory

Test Performed by

Mr. Humayun Kabir
Assistant Professor

Countersigned by

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Weight Requirements and Nominal Cross-Sectional Area for Steel Rebar (As Per BDS ISO 6935-2 2021 Table 2)

Bar Designation (Nominal Diameter), mm	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.223	0.395	0.617	0.888	1.78	2.47	3.85	4.84	5.73
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±8	±8	±7	±7	±6	±6	±6
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	471	616	804

Please Note: The client supplied the sample and the result given here with corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

Minimum Tensile Requirements for Steel Rebar (As Per BDS ISO 6935-2 2021 Table 4)

Steel Grade	Upper Yield Strength		Tensile Properties		
	R _{el}		R _m /R _{el}	A _g	A _m
	Minimum	Maximum	Minimum	Maximum	Minimum
B400C-B / B400C-WB	400	—	1.15	14	7
B500C-B / B500C-WB	500	—	—	12	—
B600C-B	600	—	—	17	—
B400D-WB	400	1.3 x R _{el} (Min.)	1.25	16	8
B420D-WB	420	—	—	17	—
B500D-WB	500	—	—	17	—
B600D-B	600	1.2 x R _{el} (Min.)	—	16	—

020734



Client: Engr. Md. Tanjiddul Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51029/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0902/2024-2025



gj17szuk1cnn

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _{el} / R _m	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test (Separate Sample)	Rebend Test (Separate Sample)
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%		
GPH B420 DWR 16	1	16	15.99	1.577	1.573	93.49	465	465 (67,500)	134.94	671	667 (96,500)	1.44	26	26	13	Satisfactory	Satisfactory
	2	16	15.96	1.571		93.37	464		134.16	667		1.44	26		13	Satisfactory	Satisfactory
	3	16	15.96	1.571		93.58	465		133.51	664		1.43	25		13	Satisfactory	Satisfactory

Test Performed by

12/05/25

Mr. Humayun Kabir
Assistant Professor

Countersigned by

Hashed 12 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation (Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.85	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±4	±4	±4	±4	±5	±5	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	804	1257

Steel Grade	Upper Yield Strength		Density Properties		
	R _{el}		A _g		
	Minimum	Maximum	Maximum	Maximum	Maximum
B420C-B / B420C-WR	460	—	1.15	14	?
B500C-B / B500C-WR	500	—	—	10	—
B500C-B	500	—	—	17	—
B420DWR	420	1.3 × R _{el} (min.)	1.25	16	8
B500DWR	500	—	—	13	—
B600D-B	600	1.2 × R _{el} (min.)	—	10	—

Please Note: The client supplied the sample and the results given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

020733



Client: Engr. Md. Tanjidul Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51030/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0903/2024-2025



zn30heul4cax

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _u	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _u / R _m	Elongation after Fracture (G.L. S _d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test (Separate Sample)	Rebend Test (Separate Sample)
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%		
GPH B420 DWR 20	1	20	19.95	2.455	2.461	149.29	475	478 (69,500)	207.92	662	665 (96,500)	1.39	21	22	14	Satisfactory	Satisfactory
	2	20	19.98	2.462		149.87	477		208.87	665		1.39	23		13	Satisfactory	Satisfactory
	3	20	20.00	2.467		151.25	481		209.45	667		1.39	21		12	Satisfactory	Satisfactory

Test Performed by

Mr. Humayun Kabir
12/05/25

Mr. Humayun Kabir
Assistant Professor

Countersigned by

Dr. H. M. Mamun Al Rashed
2 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation (Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.85	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±6	±8	±6	±6	±5	±5	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	110	201	314	491	804	1257

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

020732



Client: Engr. Md. Tanjiful Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51032/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0904/2024-2025



6y9vru12cl

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frsg Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R_{eH}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R_m	Average Tensile Strength	R_m/R_{eH}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A_{gt}	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH B420 DWR 25	1	25	24.97	3.843	3.837	209.83	427	442 (64,000)	310.80	633	645 (93,500)	1.48	27	24	14	Satisfactory	Satisfactory
	2	25	24.95	3.838		221.94	452		320.96	654		1.45	23		14	Satisfactory	Satisfactory
	3	25	24.93	3.831		219.08	446		318.63	649		1.46	23		14	Satisfactory	Satisfactory

Test Performed by

Mr. Humayun Kabir
12/05/25

Mr. Humayun Kabir
Assistant Professor

Countersigned by

Dr. H. M. Mamun Al Rashed
2 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Bar Designation (Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.81	6.34	9.86
Permissible Variation of Nominal Mass per Unit Length, %	±8	±8	±8	±8	±5	±5	±4	±4	±4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	79.5	113	201	314	491	804	1257

Please Note: The client supplied the sample and the results given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

Steel Grade	Upper Yield Strength		Tensile Properties		
	R_{eH}		R_m/R_{eH}	A	A_{gt}
	Minimum	Maximum			
GRADE 6 / B420C/WR	400	—	1.35	18	7
GRADE 8 / B420C/WR	500	—		18	
GRADE 10	600	—		17	
GRADE 16	400	1.7 x R_{eH} (min.)	1.25	18	8
GRADE 20	450			17	
GRADE 25	500			17	
GRADE 32	600	1.2 x R_{eH} (min.)	—	18	—

020731



Client: Engr. Md. Tanjidal Islam
Sr. Manager, Quality Control
GPH Ispat Limited
Crown Chamber
325 Asadgonj, Chattogram 4000

Client's Ref: Nil; 22/04/2025
BRTC Ref: 1103-51034/MME/2024-25; 29/04/2025
Sample Condition: Not Sealed

10 May 2025
MME 0905/2024-2025



1p9zspuvTcg

TEST OF DEFORMED M.S. REBAR (Test Method BDS ISO 6935-2 2021)

Frog Mark/ Identification	Sample No.	Bar Designation/ Nominal Diameter, d	Actual Diameter	Mass per Unit Length	Average Unit Weight	Upper Yield Load	Upper Yield Strength, R _{el}	Average Upper Yield Strength	Tensile Load	Tensile Strength, R _m	Average Tensile Strength	R _m / R _{el}	Elongation after Fracture (G.L. 5d)	Average Elongation after Fracture, A	Elongation at Maximum Force, A _g	Bend Test	Rebend Test
		mm	mm	kg/m	kg/m	kN	MPa	MPa (psi)	kN	MPa	MPa (psi)		%	%	%	(Separate Sample)	(Separate Sample)
GPH B420 DWR 32	1	32	32.07	6.341	6.312	371.25	462	457 (66,500)	516.56	642	639 (92,500)	1.39	24	24	12	Satisfactory	Satisfactory
	2	32	31.96	6.296		364.58	453		510.62	635		1.40	24		13	Satisfactory	Satisfactory
	3	32	31.97	6.301		367.32	457		515.01	640		1.40	25		16	Satisfactory	Satisfactory

Test Performed by

12/05/25

Mr. Humayun Kabir
Assistant Professor

Countersigned by

2 MAY 2025

Dr. H. M. Mamun Al Rashed
Professor and Head

Page 1 of 1

Weight Requirements and Nominal Cross-Sectional Area for Steel Rebar (As Per BDS ISO 6935-2 2021 Table 2)

Bar Designation (Nominal Bar Diameter, mm)	6	8	10	12	16	20	25	32	40
Nominal Mass per Unit Length, kg/m	0.222	0.395	0.617	0.888	1.58	2.47	3.85	6.31	9.86
Permissible Variation of Nominal Mass per Unit Length, %	+8	+8	+8	+8	+5	+5	+4	+4	+4
Nominal Cross-Sectional Area, mm ²	28.3	50.3	78.5	113	201	314	491	804	1257

Please Note: The client supplied the sample and the result given herewith corresponds to the sample tested only. The Department of Materials and Metallurgical Engineering of BUET takes no responsibility regarding the misidentification, if any, of the sample.

Minimum Tensile Requirements for Steel Rebar (As Per BDS ISO 6935-2 2021 Table 4)

Steel Grade	Upper Yield Strength		Tensile Properties		
	R _{el}		R _m /R _{el}	A	A _g
	Minimum	Maximum	Minimum	Minimum	Minimum
B400C-B / B400C-WR	400	—	1.15	14	7
B500C-B / B500C-WR	500	—		18	
B600C-B	600	—		21	
B400D-B-R	400	1.7 x R _{el} (min.)	1.25	15	8
B475D-B-R	475			15	
B500D-B-R	500			15	
B600D-B-R	600	1.7 x R _{el} (min.)	—	20	—

020730