

BSRM Xtreme



RESULT OF ACTUAL TENSION, BEND & RE-BEND TESTS OF GRADE 500 DEFORMED BARS AT BSRM STEELS LTD.

Nominal Diameter	Actual Diameter	Nominal Area Under Test	Unit Weight	Tensile Test							Bend Test	Re-bend Test	Quality	Typical Chemical Composition as per Product Analysis					
				Yield or Proof Load	Yield or Proof Strength	Ultimate Load	Ultimate Strength	T/Y Ratio	%Elongation (gauge length-5D mm)	%Elongation at maximum force, A _{gt}				%C	%Mn	%Si	%S	%P	
mm	mm	mm ²	Kg/m	N	MPa	N	MPa			GL=200mm									
8	7.943	50.27	0.389	27143	540	32673	650	1.20	21.5	10.0	OK	OK	OK	0.22	0.65	0.17	0.031	0.029	
8	7.923	50.27	0.387	26892	535	32170	640	1.20	22.5	10.5	OK	OK	OK	0.21	0.66	0.20	0.034	0.027	
10	9.931	78.54	0.608	42412	540	51836	660	1.22	21.5	10.5	OK	OK	OK	0.21	0.67	0.17	0.028	0.035	
10	9.922	78.54	0.607	41626	530	51051	650	1.23	22.5	11.0	OK	OK	OK	0.22	0.65	0.20	0.031	0.031	
12	11.920	113.10	0.876	59942	530	72382	640	1.21	22.5	11.0	OK	OK	OK	0.19	0.68	0.18	0.034	0.029	
12	11.961	113.10	0.882	61638	545	76341	675	1.24	21.0	10.5	OK	OK	OK	0.23	0.73	0.21	0.031	0.027	
16	15.983	201.06	1.575	109579	545	133706	665	1.22	21.5	9.5	OK	OK	OK	0.23	0.68	0.20	0.031	0.036	
16	15.932	201.06	1.565	108574	540	131696	655	1.21	22.0	10.0	OK	OK	OK	0.22	0.70	0.19	0.026	0.037	
20	19.935	314.16	2.450	166505	530	207346	660	1.25	21.5	10.5	OK	OK	OK	0.23	0.64	0.20	0.032	0.037	
20	19.902	314.16	2.442	168076	535	202633	645	1.21	21.0	10.0	OK	OK	OK	0.22	0.67	0.19	0.033	0.035	
25	24.931	490.88	3.832	265073	540	326432	665	1.23	21.5	10.0	OK	OK	OK	0.23	0.69	0.22	0.033	0.028	
25	24.957	490.88	3.840	265073	540	331341	675	1.25	21.0	9.5	OK	OK	OK	0.21	0.72	0.25	0.026	0.030	
28	27.946	615.75	4.815	323271	525	403319	655	1.25	22.0	10.5	OK	OK	OK	0.22	0.71	0.23	0.031	0.026	
28	27.969	615.75	4.823	332507	540	406397	660	1.22	21.0	10.0	OK	OK	OK	0.22	0.73	0.19	0.035	0.027	
32	31.923	804.25	6.283	434295	540	542868	675	1.25	20.0	10.0	OK	OK	OK	0.23	0.71	0.22	0.032	0.031	
32	31.852	804.25	6.255	430274	535	534826	665	1.24	21.0	10.5	OK	OK	OK	0.19	0.75	0.23	0.026	0.029	
40	39.710	1256.64	9.722	684869	545	841949	670	1.23	21.5	10.5	OK	OK	OK	0.22	1.00	0.30	0.035	0.030	
40	39.680	1256.64	9.707	691152	550	879648	700	1.27	20.5	10.0	OK	OK	OK	0.21	1.10	0.28	0.035	0.030	

Dimensions, mass per unit length and permissible deviations as per BDS ISO 6935-2:2009

Nominal bar diameter ^a d mm	Nominal cross-sectional area ^b A _n mm ²	Mass per unit length	
		Requirement ^c kg/m	Permissible deviation ^d %
6	28.3	0.222	±8
8	50.3	0.395	±8
10	78.5	0.617	±6
12	113	0.888	±6
16	201	1.58	±5
20	314	2.47	±5
25	491	3.85	±4
28	616	4.84	±4
32	804	6.31	±4
40	1257	9.86	±4
50	1964	15.42	±4

a Diameters larger than 50 mm should be agreed between the manufacturer and purchaser. The permissible deviation on such bars shall be ±4%

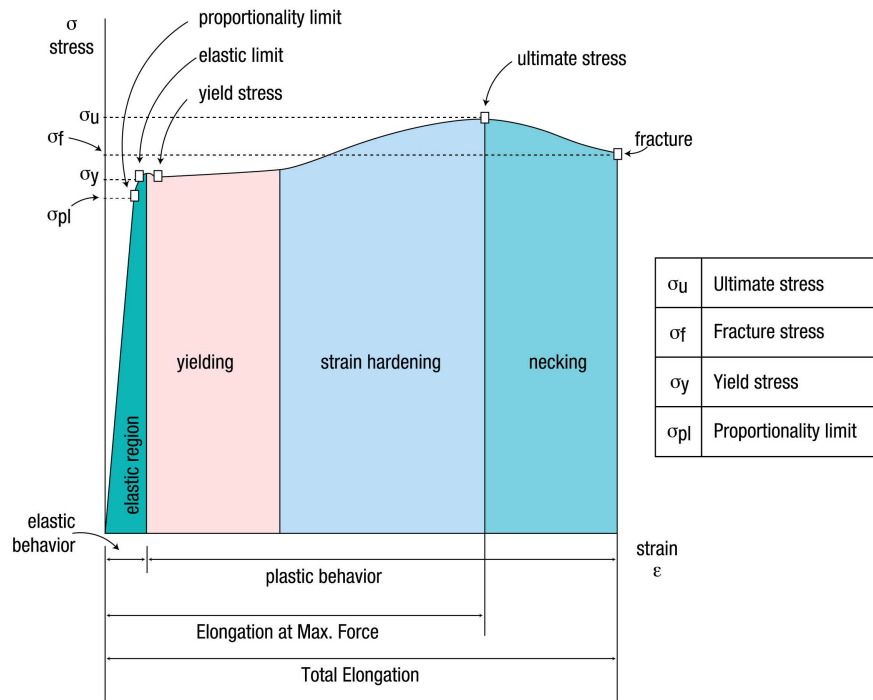
b $A_n = 0.7854 \times d^2$

c Mass per unit length = $7.85 \times 10^{-3} \times A_n$

d Permissible deviation refers to a Single bar

Tensile and Bend Test Requirements as per ISO Standards

Standard	Grade	Min. Yield Strength	Min. Ultimate Strength	Elongation Gauge: 8"	Elongation Max. Force	Elongation Gauge: 5 D	Bend Test Mandrel Dia: d*	Re-Bend Former Dia	Ductility Class
BDS ISO 6935	Grade 500W	500 Mpa (72,500 psi)	1.15 X Yield Strength	-	7%	14%	$\leq 16\text{mm}:3d$ $16\text{mm} < d \leq 32\text{mm} : 6d$ $32\text{mm} < d \leq 50\text{mm} : 7d$	$\leq 16\text{mm} : 5d$ $16\text{mm} < d \leq 25\text{mm} : 8d$ $25\text{mm} < d \leq 50\text{mm} : 10d$	C



Nomenclature in Tensile Test of Steel

Chemical Composition as per ISO, AISI Standards

	BDS ISO: 6935	AISI 1022	AISI 1035
C%	0.22 (max.)	0.18-0.23	0.32-0.38
Si%	0.6 (max.)	-	-
Mn%	1.6 (max)	0.70 -1.00	0.60 - 0.90
P%	0.05 (max)	0.04 (max)	0.04 (max)
S%	0.05 (max)	0.05 (max)	0.05 (max)
N%	0.012 (max)	-	-
C.E.V.	0.5 (max)	-	-

The carbon equivalent CEV, is calculated according to the following formula.

$$CEV = C + \frac{Mn}{6} + \frac{(Cr + V + Mo)}{5} + \frac{(Cu + Ni)}{15}$$

where C, Mn, Cr, V, Mo, Cu and Ni are the mass fractions, expressed as percentages, of the respective chemical elements of the steel.



The Colossus rises out of the Mighty Padma



BSRM Steel Mills Ltd. The Flagship Plant of the BSRM Group.

Corporate Office

Ali Mansion, 1207/1099 Sadarghat Road, Chittagong, Bangladesh.

Tel: +88 031 2854901-10, Fax: +88 031 610101, E-mail: mail@bsrm.com, Web: www.bsrm.com

Dhaka Corporate Office

Nasir Uddin Tower, 4th Floor, Bir Uttam Samsul Alam Road
104/1 Kakrail, Dhaka-1000
Tel: +88 02 8300591-95
Fax: +88 02 8300590
E-mail: dhaka@bsrm.com

Uttara Office

Atlanta Trade Center
Level # 6, Plot # 1, Road # 1/A, Sector # 4,
Uttara Model Town, Dhaka
Tel: +8802-58957891, +8802-48958029
Fax: +8802-48956496

Cox's Bazar Office

S.K Tower, 2nd Floor,
Taraboinarchora Khurushkul Road,
Coxsbazar
Tel: 01730-014986

Khulna Office

Naushin Tower (3rd floor), 11, KDA Avenue, Khulna.
Tel: +88 041-733753, 01708494898
Fax: +88 041-733752

Bogra Office

Tin Matha Rail Gate (Near to North Bengal Petrol Pump),
Puran Bogra, Bogra.
Tel: +88051-60792, +88051-64169, +8801714-084368

Comilla Office

Chandrima Super Market, Airport Road
(Near the EPZ Main Gate), Comilla.
Tel: +88081-71988, +8801714080657

Barisal Office

Shohid Mukhtojoddha ADC Kazi Azizul Islam Sarak,
(30 go-down Road), South Alekanda, Barisal
Tel: +880431-2177518, +880431-62048, 01755-545910

Rangpur Office

BSRM Warehouse, Ujipur Market,
Goneshpur, RK Road, Rangpur
Tel: +88 01714 105058

Sylhet Office

Samad Mansion, Mendibag, Upa-Shahar, Sylhet.
Tel: +8801714080544, +880-0821-721239
Fax: +880821-2832751