

Hot Rolled Steel Bars for The Reinforcement of Concrete

Specification	Grade	Chemical Composition (%)							Size (mm)	Min Yield (N/mm ²)	Min Tensile (N/mm ²)	Min Stress Ratio	Min EL GL = 5.65√SO (%)	Total EL of Max Load Min Agt (%)	Former Ø for 180° Bend Test(mm)	Former Ø for 45° Rebend Test(mm)	Former Ø for 90° Rebend Test(mm)
		C% Max	Si% Max	Mn% Max	P% Max	S% Max	CE% Max	N% Max									
MS 144 : 2014	Plain Bar G250	0.22	-	-	0.050	0.050	0.42	0.012	5.5 - 12	250	-	1.15	-	5	2D	-	-
MS 146 : 2014	High Yield Deformed Bar GB500B	0.22	-	-	0.050	0.050	0.50		All Sizes	500 - 600	-	1.08	-	5	-	-	≤ 16 = 4D > 16 = 7D
MS 146 : 2006	Plain Bar G250	0.25	-	-	0.060	0.060	0.42		All Sizes	250	-	1.05	22	-	2D	2D	-
BS 4449 : 1997	High Yield Deformed Bar G460	0.25	-	-	0.050	0.050	0.51	0.012	All Sizes	460	-	1.08	14	5	-	D ≤ 16 = 5D D > 16 = 7D	-
	Plain Bar G250	0.25	-	-	0.060	0.060	0.42		All Sizes	250	-	1.15	22	-	-	2D	-
BS 4449 : 2005 GB500B	High Yield Deformed Bar GB500B	0.22	-	-	0.050	0.050	0.50		10 - 40	500	-	1.08	-	5	-	-	≤ 16 = 4D > 16 = 7D
SS2 Part 2 : 1999	High Yield Deformed Bar G500	0.22	0.60	1.70	0.050	0.050	0.50	0.012	All Sizes	500	550	1.05	14	2.5	20 - 250	-	32 - 400
SS Part 1 : 1999	Plain Bar G300	-	-	-	0.060	0.060	Nil		6 - 20	300	330	1.10	16	-	12.50 - 63	-	-
AS/NZS 4671 : 2001	High Yield Deformed Bar G500N	0.22	-	-	0.050	0.050	0.44	-	12 - 36	500 - 650	-	1.08	-	5	D ≥ 20 = 4D	-	D ≤ 16 = 4D
	Deformed Bar G250N	0.22	-	-	0.050	0.050	0.43		12 - 36	250	-	1.08	-	5	D ≥ 20 = 4D	-	D ≤ 16 = 4D
	High Yield Deformed Bar G500E	0.22	-	-	0.050	0.050	0.49		6 - 40	500 - 600	-	1.15 - 1.40	-	10	D ≥ 20 = 4D	-	D ≤ 16 = 4D
	Deformed Bar G300E	0.22	-	-	0.050	0.050	0.43		6 - 25	300 - 380	-	1.15 - 1.50	-	15	D ≥ 20 = 4D	-	D ≤ 16 = 4D

Note : CE

$$\text{Carbon Equivalent} = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$

- EL - Elongation
- GL - Gauge Length
- SO - Original Cross Sectional Area of Test Piece
- D - Nominal Size of Bar
- Ø - Diameter

Torsid Bar - TORSID bars are produced from low carbon steel by a special heat treatment process during rolling giving the bar an exceptional combination of strength, toughness, ductility and weldability and has the exact properties of TEMPCORE bars. It complies with all the test requirements of BS 4449 : 1997, BS 4449 : 2005 GB500B, MS 146 : 2006, SS2 PART 1 & 2 : 1999 and AS/NZS 4671 : 2001 pertaining to yield stress, tensile strength, elongation, bending, rebending and weldability.



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Weight Table and Sizes for MS 146 : 2014 Standards

Norminal Diameter (mm)	10	12	13	16	20	22	25	28	32	40	50
Cross-Sectional Area (mm ²)	78.5	113	133	201	314	380	491	616	804	1257	1963
Mass Per Meter Run (kg/m)	0.617	0.888	1.04	1.58	2.47	2.98	3.85	4.83	6.31	9.86	15.4
Pieces Per Bundle (12m)	138	96	80	54	34	28	22	18	14	9	11
Norminal Weight Per Bundle (MT)	1.022	1.023	0.998	1.024	1.008	1.001	1.016	1.043	1.060	1.065	2.033
Deviation Over and Under The Nominal Mass Per Meter Run (%)	±4.5%										

Weight Table and Sizes for MS 144 : 2014 Standards

Norminal Diameter (mm)	5.5	6	6.5	7	8	9	10	12
Cross-Sectional Area (mm ²)	23.8	28.3	33.1	38.5	50.3	63.6	78.5	113
Mass Per Meter Run (kg/m)	0.187	0.222	0.260	0.302	0.395	0.499	0.617	0.888
Pieces Per Bundle (12m)	450	375	320	276	200	168	138	96
Norminal Weight Per Bundle (MT)	1.010	0.999	0.998	1.000	0.948	1.006	1.022	1.023
Deviation Over and Under The Nominal Mass Per Meter Run (%)	±6.0%					±4.5%		

Weight Table and Sizes for MS 146 : 2006 And BS 4449 : 1997 Standards

Norminal Diameter (mm)	10	12	13	16	20	22	24	25	28	32	36	38	40	50	
Cross-Sectional Area (mm ²)	78.50	113.10	132.70	201.10	314.20	380.10	452.40	490.90	615.80	804.20	1017.90	1134.10	1256.60	1963.50	
Mass Per Meter Run (kg/m)	0.616	0.888	1.042	1.579	2.466	2.984	3.551	3.854	4.834	6.313	7.991	8.903	9.864	15.413	
Pieces Per Bundle (12m)	138	96	80	54	34	28	24	22	18	14	11	10	9	6	
Norminal Weight Per Bundle (MT)	1.020	1.023	1.000	1.023	1.006	1.003	1.023	1.017	1.044	1.061	1.055	1.068	1.065	1.110	
Deviation Over and Under The Nominal Mass Per Meter Run (%)	±6.5%											±4.5%			

Weight Table and Sizes for SS2 Part 2 & Part 1 : 1999 Standards

Norminal Diameter (mm)	10	12	13	16	20	22	26	28	32	38	40
Cross-Sectional Area (mm ²)	78.5	113.1	133.0	201.1	314.0	380.0	491.0	616.0	804.0	1134.0	1256.6
Mass Per Meter Run (kg/m)	0.617	0.888	1.042	1.579	2.466	2.984	3.854	4.834	6.313	8.905	9.864
Pieces Per Bundle (12m)	138	96	80	54	34	28	24	22	18	14	11
Norminal Weight Per Bundle (MT)	1.022	1.023	1.000	1.023	1.006	1.003	1.023	1.017	1.044	1.061	1.055
Deviation Over and Under The Nominal Mass Per Meter Run (%)	±5.0%						±4.0%				

Weight Table and Sizes for AS/NZS 4671 : 2001 And BS 4449 : 2005 GB500B Standards

Norminal Diameter (mm)	10	12	16	20	24	25	28	32	36	40	50
Cross-Sectional Area (mm ²)	78.5	113	201	314	452	491	616	804	1020	1257	1963
Mass Per Meter Run (kg/m)	0.617	0.888	1.58	2.47	3.55	3.85	4.83	6.31	7.99	9.86	15.4
Pieces Per Bundle (12m)	138	96	54	34	24	22	18	14	10	9	11
Norminal Weight Per Bundle (MT)	1.022	1.023	1.024	1.008	1.023	1.017	1.044	1.061	1.068	1.065	2.033
Deviation Over and Under The Nominal Mass Per Meter Run (%)	±4.5%										