

Chemical Composition (Maximum % by mass)

Standard	Grade	Cast/Product Analysis	Carbon C (max.)	Sulphur S (max.)	Phosphorus P (max.)	Nitrogen N (max.)	Copper Cu (max.)	Carbon Equivalent Ceq (max.)
BS 4449:2005	B500B	Cast Analysis	0.22	0.05	0.05	0.012	0.80	0.50
		Product Analysis	0.24	0.055	0.055	0.014	0.85	0.52

The carbon equivalent value Ceq, shall be calculated using below formula:

$$Ceq = C + (Mn/6) + ((Cr+Mo+V)/5) + ((Ni+Cu)/15)$$

“All other intentionally added elements, except those included within the carbon equivalent formula, shall be below the limit values specified in BS EN 10020:2000, Table 1.”

Nominal Cross-Sectional Area and Mass per Meter

Standard	Grade	Nominal Diameter (mm)	Nominal Cross-Section Area (mm ²)	Nominal Mass per Meter (kg/m)	Mass Tolerance (%)	Mass per Meter (kg/m) (min.)	Mass per Meter (kg/m) (max.)
BS 4449:2005	B500B	8	50.3	0.395	± 6.0	0.371	0.419
		10	78.5	0.617	± 4.5	0.589	0.645
		12	113	0.888	± 4.5	0.848	0.928
		16	201	1.58	± 4.5	1.509	1.651
		20	314	2.47	± 4.5	2.359	2.581
		25	491	3.85	± 4.5	3.677	4.023
		32	804	6.31	± 4.5	6.026	6.594

Mechanical Properties UNIROL STEEL REBARS

Standard	Grade	Nominal Diameter (mm)	Yield Strength, R_e MPa (min.)	Tensile/Yield Strength Ratio (R_m/R_e) (min.)	Total Elongation at Maximum Force, A_{gt} % (min.)
BS 4449:2005	B500B	8 - 32	500	1.08	5.0

Rebend Test Details

Standard	Grade	Nominal Diameter, d (mm)	Mandrel Diameter	Bend Angle	Rebend Angle (min.)
BS 4449:2005	B500B	≤ 16	4 d	90°	20°
		> 16	7 d	90°	20°

Surface Geometrical Characteristics

Standard	Grade	Nominal Diameter d (mm)	Transverse Rib Height			Rib Spacing			Rib Inclination β	Longitudinal Rib Height mm (max.)
			Range	Transverse Rib Height mm (min.)	Transverse Rib Height mm (max.)	Range	Rib Spacing mm (min.)	Rib Spacing mm (max.)		
BS 4449:2005	B500B	8	0.03d to 0.15d	0.24	1.20	0.4d to 1.2d	3.2	9.6	35° to 75°	0.8
		10		0.30	1.50		4.0	12.0		1.0
		12		0.36	1.80		4.8	14.4		1.2
		16		0.48	2.40		6.4	19.2		1.6
		20		0.60	3.00		8.0	24.0		2.0
		25		0.75	3.75		10.0	30.0		2.5
		32		0.96	4.80		12.8	38.4		3.2

Characteristic Relative Rib Area

Standard	Grade	Nominal Diameter d (mm)	Relative Rib Area (min.)
BS 4449:2005	B500B	8	0.040
		10	
		12	
		16	0.056
		20	
		25	
		32	