

PRODUCT SPECIFICATIONS: Bright (Ungalvanized LRPC Strands)

INDIAN SPECIFICATIONS : IS-14268/1995

Class	Nominal Diameter of Strand (mm)	Tolerance (±mm)	Nominal area of Strand (mm ²)	Minimum Breaking Strength of Strand		0.2 Proof load (90% of Breaking Strength)		Minimum % Elongation GL=600mm	Nominal Weight of Strand (Approx) (kg/km)	Relaxation Loss (%)	Chemical Composition (%)
				(kN)	(kg)	(kN)	(kg)				
II	9.5	+0.66 -0.15	54.8	102.3	10434	92.1	9394	3.5	432	2.5 max. at 70% of specified min. breaking load after 1000 hours OR 1.8 max. at 70% of specified min. breaking load after 100 hours	S = .04 max. P = .04 max.
	11.1	+0.66 -0.15	74.2	137.9	14065	124.1	12658		582		
	12.7	+0.66 -0.15	98.7	183.7	18737	165.3	16860		775		
	15.2	+0.66 -0.15	140.0	260.7	26592	234.6	23929		1102		

BRITISH SPECIFICATIONS : BS-5896 : 1980

Type of Strand	Nominal Diameter (mm)	Tolerance of		Nominal area of Strand (mm ²)	Nominal Tensile strength (N/mm ²)	Specified Characteristic breaking strength (kN)	Load at 1% Elongation (kN)	Relaxation			Minimum Elongation at max load (L ₀ ≥ 500mm)	Nominal Mass (kg/1000m)
		dia (±mm)	Cross Sectional areas & mass					Initial load (% of actual breaking load)	Maximum after 1000 hrs	Class 1		
7 Wire Standard	9.3	+0.30 -0.15	+4% -2%	52	1770	92	81	60% 70% 80%	4.5% 8.0% 12%	1.0% 2.5% 4.5%	For all strands	408
	11.0			71	1770	125	110					557
	12.5			93	1770	164	144					730
	15.2			139	1670	232	204					1090
7 Wire Super	9.6	+0.30 -0.15	+4% -2%	55	1860	102	90	60% 70% 80%	4.5% 8.0% 12%	1.0% 2.5% 4.5%	3.5%	432
	11.3			75	1860	139	122					590
	12.9			100	1860	186	163					785
	15.7			150	1770	265	233					1180

ASTM SPECIFICATIONS : A416

Grade	Nominal Diameter of Strand		Tolerance		Nominal area of Strand		Minimum Breaking Strength of Strand		Minimum load at 1% Extension		Nominal Weight of Strand (Approx)		1000 hrs Relaxation	Minimum % Extension GL 600 mm
	(Inch)	(mm)	(±Inch)	(±mm)	(Inch ²)	(mm ²)	(lb)	(kN)	(lb)	(kN)	(lb/1000ft)	(kg/1000m)		
270	3/8	9.53	+0.026 -0.006	+0.66 -0.15	0.085	54.84	23000	102.30	20700	92.10	290	432	2.5% max. at 70% of specified min. breaking strength OR 3.5% max. at 80% of specified min. breaking strength.	3.5
	7/16	11.11			0.115	74.19	31000	137.90	27900	124.10	390	582		
	1/2	12.70			0.153	98.71	41300	183.70	37170	165.30	520	775		
	6/10	15.24			0.217	140.00	58600	260.70	52740	234.60	740	1102		

SPEC – prEN10138 – 3 : Dimension & Properties of Strands

Class	Steel Designation		Nominal ^{a*}				Specified				
	Steel Name	Steel Number	Diameter	Tensile Strength	Cross-Sectional Area ^{c*}	Mass	Permitted Deviation on Nominal Mass	Characteristic Value of Maximum Force	Maximum Value of Maximum Force	Characteristic Value of 0.1% Proof Force ^{d*}	
								F _m	F _{m max}	F _{p0.1}	
			(mm)	(Mpa)	(mm ²)	(g/m)		(%)	(kN)	(kN)	(kN)
A	Y1860S7	1.1366	9.0	1860	50	390	±2	93	106	80	
			11.0		75	586		140	160	120	
			12.5		93	726		173	198	149	
			13.0		100	781		186	213	160	
			15.2		140	1095		260	298	224	
	16.0	150	1170	279	319	240					
	Y1770S7	1.1365	15.2	1770	140	1095	±2	248	282	213	
			16.0		150	1170		265	302	228	

Notes :

1 MPa = 1 N / mm²

- a* The Nominal Modulus of Elasticity may be taken to be 195 GPa (kN/mm²)
- b* The Nominal Tensile Strength is calculated from the Nominal Cross-Sectional Area and the specified characteristic Maximum Force, rounded to the nearest 10 MPa.
- c* The Cross-Sectional Area is calculated from the Nominal Mass and Density of 7.81 kg/dm³
- d* The specified characteristics 0.1% Proof Force is approximately 86% of the specified characteristic Maximum Force

SPEC – AS – 1311 : Dimension, Masses and Minimum Breaking Force of 7 Wire Strand

Nominal Diameter of strand (mm)	Nominal area (mm ²)	Calculated mass (kg / 1000 m)	Minimum Breaking Force (kN)	Grade
9.3	52	410	94	REGULAR
10.9	71	555	125	
12.7	94	740	165	
15.2	139	1090	227	
9.3	55	430	102	SUPER
10.9	75	590	138	
12.7	100	785	184	
15.2	143	1125	250	
15.2	143	1125	261	EXTRA – HIGH TENSILE

SPEC – ISO 6934 – 4 : 1991 (E) : Dimension, Masses and Tensile Properties of 7 Wire Strand

Type of Strand ^{1*}	Nominal Stand Diameter ^{1*} (mm)	Nominal Tensile Strength ^{1*2*} (N/mm ²)	Nominal Cross-Sectional Area ^{2*} (mm ²)	Mass Per Length		Characteristic		
Diameter (mm)				Nominal (g/m)	Permissible Deviation (%)	Maximum Force ^{2*3*4*} (kN)	0.1% Proof Force ^{3*4*5*} (kN)	0.2% Proof Force ^{4*5*} (kN)
7-Wire Ordinary	9.5	1860	54.8	432.0	+4 -2	102.0	83.6	88.6
	10.8	1720	69.7	546.0		120.0	98.4	102.0
	11.1	1860	74.2	580.0		138.0	113.0	117.0
	12.4	1720	92.9	729.0		160.0	131.0	136.0
	12.7	1860	95.7	774.0		184.0	151.0	156.0
	15.2	1720	139.0	1101.0		239.0	196.0	203.0
	15.2	1860	139.0	1101.0		259.0	212.0	220.0

Notes :

- 1* The type of Strand, Nominal Diameter and Nominal Tensile Strength are for designation purposes only.
- 2* The nominal Tensile Strength is calculated from the nominal cross sectional area and the specified characteristic maximum force (see footnote 5*).
- 3* No single test result shall be less than 85% of the specified characteristic value.
- 4* Considering the small tolerance on mass per length, characteristic forces have been specified rather than stresses.
- 5* The 0.1% Proof Force is mandatory and the 0.2% Proof Force is for information only (see ISO 6934 - 1), except when otherwise agreed.