

Freyssibar+ 1200



FREYSSINET
SUSTAINABLE TECHNOLOGY

- High Tensile & Yield Strengths
- Resilience
- Ductility
- Large diameters

Prestressing Bars

Technical Sheet Reference: FT En C III 3 3

Description

Freyssibar+ 1200 prestressing bars are manufactured using specific industrial processes including heat treatment (quench & tempered) that ensures increased mechanical characteristics.

The resulting ductility, tensile and yield strengths are greater than for typical prestressing bars (the bars may be bent 90 degrees at tight radii without fracture).

Applications for use of **Freyssibar+ 1200** prestressing bars include heavy lifting, lifting tie downs and structural connections where their greater yield strength allows for more compact solutions.

Freyssibar+ 1200 prestressing bars are also well suited for structures subject to seismic loadings and possess excellent cold temperature properties.

Advantages

Freyssibar+ 1200 prestressing bars present many advantages over typical prestressing bars:

- Higher tensile strength;
- Higher yield strength;
- Consistent mechanical properties throughout the entire cross section;
- Consistent Modulus of Elasticity for bars, with a tolerance of +/- 5 GPa;
- Enhanced Fatigue Performance and Strength;
- High Ductility;
- Guaranteed Resilience for cold temperature applications.



Ketley Bridge - United Kingdom

Technical Characteristics

Threading is performed by cold rolling, in accordance with ISO 965-1.

The main mechanical characteristics of **Freyssibar+ 1200** are the following:

Modulus of Elasticity: $E = 200 \text{ GPa}$

Minimum Guaranteed Ultimate Tensile Strength: $f_{pk} = 1,200 \text{ MPa}$

Minimum Yield Strength: $f_{p0.2k} = 1,050 \text{ MPa}$

Minimum Elongation at Break (on sample): $A\% = 10$

Stress relaxation after 1000h: 4%*

The guaranteed characteristics of Resilience for **Freyssibar+ 1200** are indicated below:

- Resilience at 20°C: 50 J
- Resilience at 0°C: 30 J
- Resilience at -20°C: 20 J

Resilience characteristics at colder temperature (-40°C, -60°C) can be provided upon request.

* In the bar initially loaded to 70% of its actual ultimate tensile strength, as per prEN 10138-4 testing.



Hammersmith flyover, UK

* Q + T: Quenched and Tempered

Quality Insurance

Production of **Freyssibar+ 1200** prestressing bars is carried out under a strict Quality Assurance System in compliance with ISO 9001: 2008.

Each delivery is accompanied by a Certificate of Conformity 3.1 in compliance with the norm EN 10204 for each heat treatment lot.

Each bar is individually marked with its heat treatment lot number.

Specific Orders

Freyssibar+ 1200 prestressing bars are available in maximum 14.80 m lengths or may be pre-cut to specific lengths. Threads are provided at the ends with sufficient thread length to accommodate anchorage hardware, anticipated elongation, standard construction tolerances and as may be otherwise specified.

Freyssibar+ 1200 prestressing bars can be manufactured to large diameters.

Protection

Permanent protection of the bars may be provided onsite through the use of flexible filler material (petroleum wax, grease) or by means of a bonded filler material (cementitious grout, epoxy,...). The bars can also be provided with a factory applied corrosion protection system:

- Lamellar Zinc coating;
- Epoxy coating;
- Specific paint;
- Denso Protection;
- Heat-shrink sleeves.

Depending on specific project requirements, other corrosion protection systems may be proposed.

Catalog available of Bars

The nominal diameters are indicated in the table below:

Nominal Diameter mm	Thread Pitch mm	Resistant Area mm ²	Linear Weight kg/m	F _{rg} kN	F _e kN	F tension Max ⁽¹⁾ kN
27	3.5	560	4.70	672	588	529
30	3.5	693	5.78	832	728	654
32	4	816	6.83	979	857	771
35	4	975	8.08	1,170	1,024	921
41	4.5	1,306	10.83	1,567	1,371	1,234
51	5.5	2,030	16.84	2,436	2,132	1,918
58	6	2,675	22.14	3,210	2,809	2,528
66	6	3,459	28.44	4,151	3,632	3,268
70	6	3,889	31.89	4,667	4,083	3,674
75	6	4,344	35.61	5,213	4,561	4,105
80	6	4,948	40.45	5,937	5,196	4,676
85	6	5,591	45.60	6,709	5,870	5,283
95	6	6,695	56.82	8,393	7,344	6,610

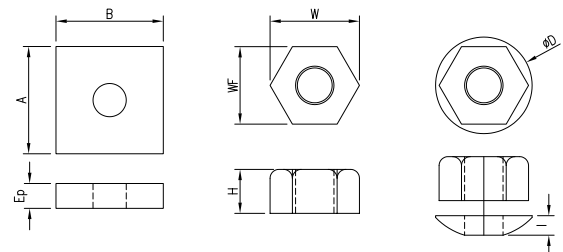
⁽¹⁾ Maximum Tensioning Force in accordance with Eurocode 2.

Anchorage

All bar diameters are available either with standard plate anchorages and hex nuts or with spherical/hinged anchorages on request.

Nominal Diameter mm	A mm	B mm	E _p mm	WF mm	W mm	H mm	D mm	I mm
27	120	120	35	45	53	28.5	52	15
30	140	140	35	49	56.5	32.5	57	15.5
32	140	140	35	50	57.5	34.5	58	16
35	160	160	40	60	69	37.5	70	17.2
41	180	180	40	70	81	40.5	81	17.5
51	240	240	50	85	98	50.5	98	21
58	260	260	55	95	110	57.5	110	26
66	300	300	60	105	121.5	65	122	29
70	310	310	60	110	127	68.5	127	30
75	330	330	65	115	133	72	133	32
80	350	350	70	120	138.6	76.5	140	34
85	380	380	75	130	150	81	150	36
95	430	430	85	145	167.5	90	168	40

The dimensions of the plates are given for a minimum concrete strength of 30 MPa cylinder strength at time of stressing (or 37 MPa based on cube strengths). For different concrete strengths, the dimensions shall be adjusted.



Local sales contact