STAHLBECKER

Data Sheet Spring Steel Wire 1.4310

Material Code	X10CrNi18-8
Material No.	1.4310
Quality according to	BS EN 10270-3
Tolerances according to	BS EN 10270-3 and BS EN 10218-2; partial ground and polished: BS EN 10278

Former descriptions according EN 10270-3 Table B.1

Country	Standard	Material Code
D	DIN 17224:1982	X 12 CrNi 17-7
F	AFNOR	Z 12 CN 18-09
GB	BS2056:1991	302S26
S	MMS 900	SS-Stahl 2331
Intern.	ISO 6931-1:1994	Nummer 1 X 9 CrNi 18-8

Chemical Analysis (%) according BS EN 10270-3, Table 1

C	0,05 to 0,15
Si	max. 2,00
Mn	max. 2,00
P	max. 0,045
S	max. 0,015
Cr	16,0 to 19,00
Mo	max. 0,80
Ni	6,00 to 9,50
N	max. 0,11

E Modulus in GPa (Gigapascal) at room temperature (guide value)

tensile strength in MPa (Megapascal)	condition of the wire	
	delivery condition	+ heat treatment
ca. 1800	180	195
ca. 1300	174	189

Shear Modulus in GPa (Gigapascal) at room temperature (guide value)

tensile strength in MPa (Megapascal)	condition of the wire	
	delivery condition	+ heat treatment
ca. 1800	70	73
ca. 1300	68	71

With rising temperatures the levels of E modulus and shear modulus decline. The specifications for the shear modulus apply to measurement with a torsion pendulum at wires with max. 2,8 mm diameter. The E-modulus is calculated from the shear modulus with the poissons constant of 0,30. 1 Pascal = 1 N/m^2

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Tensile strength according EN 10270-3, table 2

Diameter (in mm)	Tensile strength in N/mm² NS (normal strength)	HS (higher strength)
d ≤ 0,20	2200	2350
0,20 < d ≤ 0,30	2150	2300
0,30 < d ≤ 0,40	2100	2250
0,40 < d ≤ 0,50	2050	2200
0,50 < d ≤ 0,65	2000	2150
0,65 < d ≤ 0,80	1950	2100
0,80 < d ≤ 1,00	1900	2050
1,00 < d ≤ 1,25	1850	2000
1,25 < d ≤ 1,50	1800	1950
1,50 < d ≤ 1,75	1750	1900
1,75 < d ≤ 2,00	1700	1850
2,00 < d ≤ 2,50	1650	1750
2,50 < d ≤ 3,00	1600	1700
3,00 < d ≤ 3,50	1550	1650
3,50 < d ≤ 4,25	1500	1600
4,25 < d ≤ 5,00	1450	1550
5,00 < d ≤ 6,00	1400	1500
6,00 < d ≤ 7,00	1350	1450
7,00 < d ≤ 8,50	1300	1400
8,50 < d ≤ 10,00	1250	1350

Notes:

- after straightening the wire the tensile strength can be about 10 % lower
- highest tensile strength = minimum tensile strength + 15% of the minimum
- the tensile strength can be increased by heat treatment

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Diameter tolerance according EN 10270-3, table 5

		straightened bars	
diameter (d)	**coils/spools**	**lower tolerance**	**upper tolerance**
d < 0,21	± 0,005	- 0,005	+ 0,009
0,21 ≤ d < 0,26	± 0,005	- 0,005	+ 0,009
0,26 ≤ d < 0,41	± 0,008	- 0,008	+ 0,018
0,41 ≤ d < 0,65	± 0,008	- 0,008	+ 0,018
0,65 ≤ d < 0,81	± 0,010	- 0,010	+ 0,025
0,81 ≤ d < 1,01	± 0,010	- 0,010	+ 0,025
1,01 ≤ d < 1,61	± 0,015	- 0,015	+ 0,040
1,61 ≤ d < 2,26	± 0,015	- 0,015	+ 0,050
2,26 ≤ d < 3,20	± 0,020	- 0,020	+ 0,070
3,20 ≤ d < 4,01	± 0,020	- 0,020	+ 0,080
4,01 ≤ d < 4,51	± 0,025	- 0,025	+ 0,100
4,51 ≤ d < 6,01	± 0,025	- 0,025	+ 0,120
6,01 ≤ d < 6,26	± 0,025	- 0,025	+ 0,120
6,26 ≤ d < 7,01	± 0,030	- 0,030	+ 0,135
7,01 ≤ d < 9,01	± 0,030	- 0,030	+ 0,160
9,01 ≤ d < 10,00	± 0,035	- 0,035	+ 0,185

All dimensions in mm.

Tolerance of length according EN 10270-3, table 6

length (L)	**class 1**	**class 2**	**class 3**
L ≤ 300	+ 1,00 mm		
300 < L ≤ 1000	+ 2,00 mm	+ 1 %	+ 2%
1000 < L	+ 0,2%		

All dimensions in mm.

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