

Data Sheet Spring Steel Wire 1.4310

Page 1 of 3

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		+ 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		+ 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/m²

Data Sheet Spring Steel Wire 1.4310

Page 2 of 3

Tensile strength according EN 10270-3, table 2

Diameter (in mm)	Tensile strength in N/mm ²	
	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

Data Sheet Spring Steel Wire 1.4310

Page 3 of 3

Diameter tolerance according EN 10270-3, table 5

diameter (d)	coils/spools	straightened bars	
		lower tolerance	upper tolerance
$d < 0,21$	$\pm 0,005$	- 0,005	+ 0,009
$0,21 \leq d < 0,26$	$\pm 0,005$	- 0,005	+ 0,009
$0,26 \leq d < 0,41$	$\pm 0,008$	- 0,008	+ 0,018
$0,41 \leq d < 0,65$	$\pm 0,008$	- 0,008	+ 0,018
$0,65 \leq d < 0,81$	$\pm 0,010$	- 0,010	+ 0,025
$0,81 \leq d < 1,01$	$\pm 0,010$	- 0,010	+ 0,025
$1,01 \leq d < 1,61$	$\pm 0,015$	- 0,015	+ 0,040
$1,61 \leq d < 2,26$	$\pm 0,015$	- 0,015	+ 0,050
$2,26 \leq d < 3,20$	$\pm 0,020$	- 0,020	+ 0,070
$3,20 \leq d < 4,01$	$\pm 0,020$	- 0,020	+ 0,080
$4,01 \leq d < 4,51$	$\pm 0,025$	- 0,025	+ 0,100
$4,51 \leq d < 6,01$	$\pm 0,025$	- 0,025	+ 0,120
$6,01 \leq d < 6,26$	$\pm 0,025$	- 0,025	+ 0,120
$6,26 \leq d < 7,01$	$\pm 0,030$	- 0,030	+ 0,135
$7,01 \leq d < 9,01$	$\pm 0,030$	- 0,030	+ 0,160
$9,01 \leq d < 10,00$	$\pm 0,035$	- 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
$L \leq 300$	+ 1,00 mm	+ 1 %	+ 2%
$300 < L \leq 1000$	+ 2,00 mm		
$1000 < L$	+ 0,2%		

All dimensions in mm.