



You can order the patented drawn spring steel wire as coils, spools or straightened bars. The standard lengths of the straightened rods are one, two or three meters.

The straightened bars can be cut in length according to your wishes.

Material	Material Number	DIN Material Code	Other Descriptions
SH	-	Sorte C	Piano wire
DH	-	Sorte D	Piano wire

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<b>Material Standard</b>	DIN EN 10270-1
<b>Dimension standard</b>	DIN EN 10270-1
	DIN EN 10218-2
<b>Products</b>	Wire (coils)
	Wire (spools)
	Straightened rods
<b>Dimensions</b>	Coils/spools: 0,20 mm to 8,00 mm diameter
	Bars: approx. 0,50 mm to 16,00 mm diameter
<b>Tensile strength (Rm)</b>	1300 - 2940 N/mm <sup>2</sup> depending on the diameter of the wire
<b>Surface</b>	matt gray, polished on request
<b>Coating</b>	phosphated
<b>Information</b>	<ul style="list-style-type: none"> <li>• Most common quality for springs</li> <li>• Suitable for tension springs, pressure springs and torsion springs with a high static load and a low dynamic load</li> <li>• The E-Modulus is approx. 206 Gigapascal, the shear modulus is approx. 81,5 Gigapascal</li> </ul>

## CHEMICAL ANALYSIS (IN %) ACCORDING TO DIN EN 10270-1, TABLE 2

Material Code	C	Si	Mn	P	S	Cu	Remark
SH	0,35 - 1,00	0,10 - 0,30	0,50 - 1,20	≤ 0,035	≤ 0,035	≤ 0,20	The analysis also applies to material S
DH	0,45 - 1,00	0,10 - 0,30	0,50 - 1,20	≤ 0,020	≤ 0,025	≤ 0,12	The analysis also applies to materi

## ADDITIONAL INFORMATION

### TOLERANCES

### TOLERANCES OF DIAMETER ACCORDING EN 10270-1, TABLE 3 (EXCERPT)

All dimensions in mm.

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Diameter	Tolerance
0.05	± 0,003
0.06	± 0,003
0.07	± 0,003
0.08	± 0,003
0.09	± 0,003
0.1	± 0,004
0.11	± 0,004
0.12	± 0,004
0.14	± 0,004
0.16	± 0,004
0.18	± 0,005
0.2	± 0,005
0.22	± 0,005
0.25	± 0,005
0.28	± 0,008
0.3	± 0,008
0.32	± 0,008
0.34	± 0,008
0.36	± 0,008
0.38	± 0,008
0.4	± 0,008
0.43	± 0,008
0.45	± 0,008
0.48	± 0,008
0.5	± 0,008
0.53	± 0,008

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Diameter	Tolerance
0.56	± 0,008
0.6	± 0,008
0.63	± 0,008
0.65	± 0,010
0.7	± 0,010
0.75	± 0,010
0.8	± 0,015
0.85	± 0,015
0.9	± 0,015
0.95	± 0,015
1	± 0,015
1.05	± 0,015
1.1	± 0,015
1.2	± 0,015
1.25	± 0,015
1.3	± 0,015
1.4	± 0,015
1.5	± 0,015
1.6	± 0,015
1.7	± 0,015
1.8	± 0,025
1.9	± 0,025
2	± 0,025
2.1	± 0,025
2.25	± 0,025
2.4	± 0,025

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Diameter	Tolerance
2.5	± 0,025
2.6	± 0,025
2.8	± 0,030
3	± 0,030
3.2	± 0,030
3.4	± 0,030
3.6	± 0,030
3.8	± 0,030
4	± 0,030
4.25	± 0,035
4.5	± 0,035
4.75	± 0,035
5	± 0,035
5.3	± 0,035
5.6	± 0,040
6	± 0,040
6.3	± 0,040
6.5	± 0,040
7	± 0,040
7.5	± 0,045
8	± 0,045
8.5	± 0,045
9	± 0,045
9.5	± 0,045
10	± 0,050
10.5	± 0,070

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Diameter	Tolerance
11	± 0,070
12	± 0,080
12.5	± 0,080
13	± 0,080
14	± 0,080
15	± 0,090
16	± 0,090
17	± 0,090
18	± 0,090
19	± 0,100

**TOLERANCE OF THE DIAMETER OF STRAIGHTENED RODS ACCORDING EN 10270-1, TABLE 8**

All dimensions in mm.

Diameter d	Lower limit	Upper limit
$0,05 \leq d < 0,12$	-0.005	0.007
$0,12 \leq d < 0,22$	-0.005	0.008
$0,22 \leq d < 0,26$	-0.005	0.009
$0,26 \leq d < 0,37$	-0.006	0.012
$0,37 \leq d < 0,47$	-0.008	0.015
$0,47 \leq d < 0,65$	-0.008	0.018
$0,65 \leq d < 0,80$	-0.01	0.022
$0,80 \leq d < 1,01$	-0.015	0.03
$1,01 \leq d < 1,35$	-0.02	0.04
$1,35 \leq d < 1,78$	-0.02	0.045
$1,78 \leq d < 2,01$	-0.025	0.055
$2,01 \leq d < 2,35$	-0.025	0.06

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Diameter d	Lower limit	Upper limit
$2,35 \leq d < 2,78$	-0.025	0.065
$2,78 \leq d < 3,01$	-0.03	0.075
$3,01 \leq d < 3,35$	-0.03	0.08
$3,35 \leq d < 4,01$	-0.03	0.09
$4,01 \leq d < 4,35$	-0.035	0.1
$4,35 \leq d < 5,01$	-0.035	0.11
$5,01 \leq d < 5,45$	-0.035	0.12
$5,45 \leq d < 6,01$	-0.04	0.13
$6,01 \leq d < 7,12$	-0.04	0.15
$7,12 \leq d < 7,67$	-0.045	0.16
$7,67 \leq d < 9,01$	-0.045	0.18
$9,01 \leq d < 10,01$	-0.05	0.2
$10,01 \leq d < 11,12$	-0.07	0.24
$11,12 \leq d < 12,01$	-0.08	0.26
$12,01 \leq d < 14,52$	-0.08	0.3
$14,52 \leq d < 17,34$	-0.09	0.35
$17,34 \leq d < 18,37$	-0.09	0.37
$18,37 \leq d < 20,01$	-0.1	0.4

## TOLERANCE IN LENGTH ACCORDING EN 10270-1, TABLE 7

For all values: - 0 mm.

Length (L)	Class 1	Class 2	Class 3
$L \leq 300$	+ 1,00 mm	+ 1 %	0.02
$300 < L \leq 1000$	+ 2,00 mm	+ 1 %	0.02
$1000 < L$	0.002	+ 1 %	0.02

## MECHANICAL PROPERTIES

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## TENSILE STRENGTHS ACCORDING EN 10270-1, TABLE 3

The tensile strength of straightened rods can be up to 10% lower.

Diameter	SH (Rm, lower limit)	SH (Rm, upper limit)	DH (Rm, lower limit)	DH (Rm, upper limit)
0.05			2800	3520
0.06			2800	3520
0.07			2800	3520
0.08			2800	3480
0.09			2800	3430
0.1			2800	3380
0.11			2800	3350
0.12			2800	3320
0.14			2800	3250
0.16			2800	3200
0.18			2800	3160
0.2			2800	3110
0.22			2770	3080
0.25			2720	3010
0.28			2680	2970
0.3	2660	2940	2660	2940
0.32	2640	2920	2640	2920
0.34	2610	2890	2610	2890
0.36	2590	2870	2590	2870
0.38	2570	2850	2570	2850
0.4	2560	2830	2560	2830
0.43	2530	2800	2530	2800
0.45	2510	2780	2510	2780
0.48	2490	2760	2490	2760
0.5	2480	2740	2480	2740

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Diameter	SH (Rm, lower limit)	SH (Rm, upper limit)	DH (Rm, lower limit)	DH (Rm, upper limit)
0.55	2400	2720	2400	2720
0.56	2440	2700	2440	2700
0.6	2410	2670	2410	2670
0.63	2390	2650	2390	2650
0.65	2380	2640	2380	2640
0.7	2360	2610	2360	2610
0.75	2330	2580	2330	2580
0.8	2310	2560	2310	2560
0.85	2290	2530	2290	2530
0.9	2270	2510	2270	2510
0.95	2250	2490	2250	2490
1	2230	2470	2230	2470
1.05	2210	2450	2210	2450
1.1	2200	2430	2200	2430
1.2	2170	2400	2170	2400
1.25	2150	2380	2150	2380
1.3	2140	2370	2140	2370
1.4	2110	2340	2110	2340
1.5	2090	2310	2090	2310
1.6	2060	2290	2060	2290
1.7	2040	2260	2040	2260
1.8	2020	2240	2020	2240
1.9	2000	2220	2000	2220
2	1980	2200	1980	2200
2.1	1970	2180	1970	2180
2.25	1940	2150	1940	2150
2.4	1920	2130	1920	2130
2.5	1900	2110	1900	2110

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Diameter	SH (Rm, lower limit)	SH (Rm, upper limit)	DH (Rm, lower limit)	DH (Rm, upper limit)
2.6	1890	2100	1890	2100
2.8	1860	2070	1860	2070
3	1840	2040	1840	2040
3.2	1820	2020	1820	2020
3.4	1790	1990	1790	1990
3.6	1770	1970	1770	1970
3.8	1750	1950	1750	1950
4	1740	1930	1740	1930
4.25	1710	1900	1710	1900
4.5	1690	1880	1690	1880
4.75	1680	1860	1680	1860
5	1660	1840	1660	1840
5.3	1640	1820	1640	1820
5.6	1620	1800	1620	1800
6	1590	1770	1590	1770
6.3	1570	1750	1570	1750
6.5	1560	1740	1560	1740
7	1540	1710	1540	1710
7.5	1510	1680	1510	1680
8	1490	1660	1490	1660
8.5	1470	1630	1470	1630
9	1450	1610	1450	1610
9.5	1430	1590	1430	1590
10	1410	1570	1410	1570
10.5	1390	1550	1390	1550
11	1380	1530	1380	1530
12	1350	1500	1350	1500
12.5	1320	1480	1320	1480

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Diameter	SH (Rm, lower limit)	SH (Rm, upper limit)	DH (Rm, lower limit)	DH (Rm, upper limit)
13	1320	1470	1320	1470
14	1290	1440	1290	1440
15	1270	1410	1270	1410
16	1240	1390	1240	1390
17	1220	1360	1220	1360
18	1200	1340	1200	1340
19	1180	1320	1180	1320
20	1160	1300	1160	1300

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