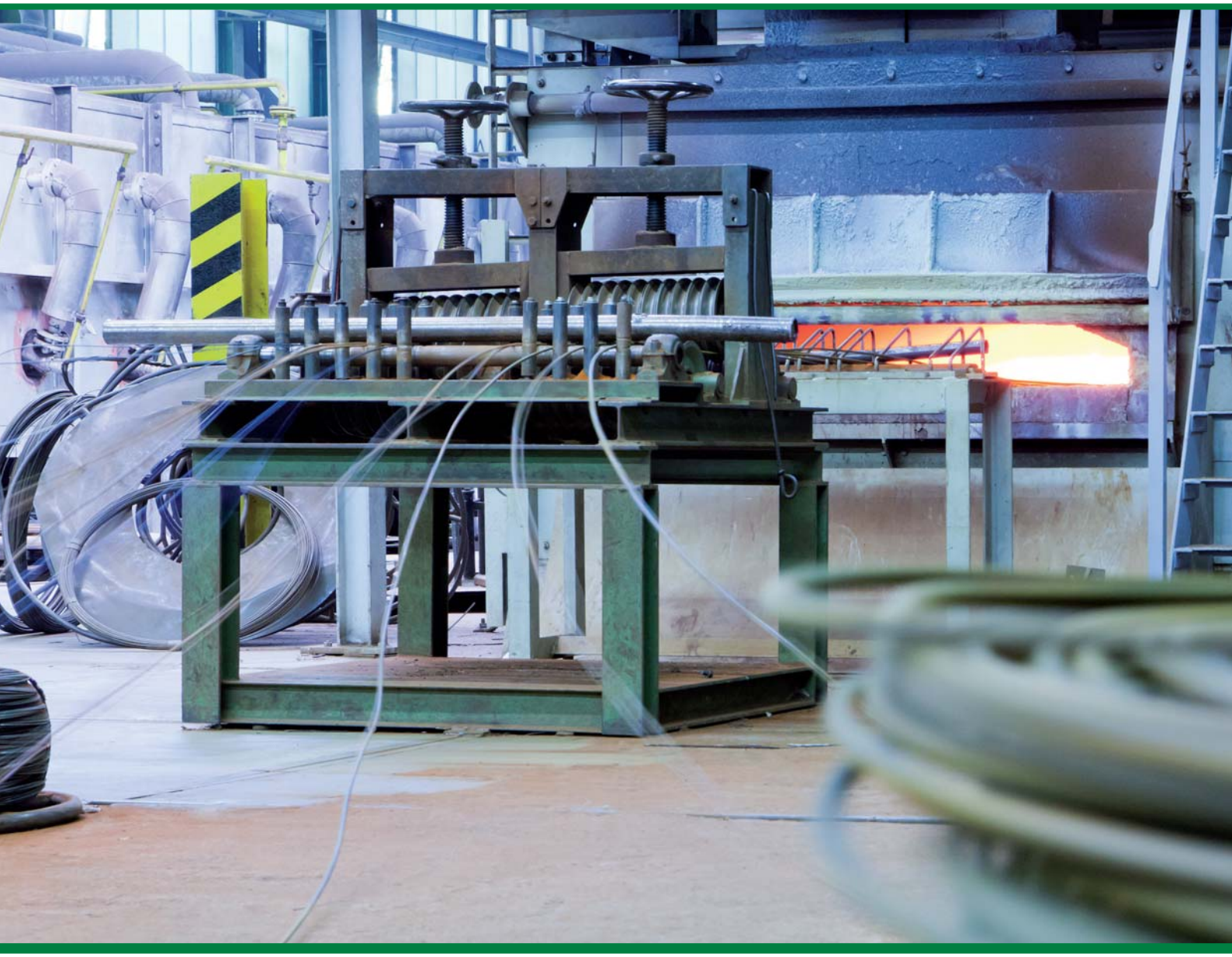
DRAHTWERK WAGENER
STAHLDRAHTWERKE ALTENA

KÜNNE GROUP



Innovation. Safety. Service.

DRAHTWERK WAGENER



Applications:

- Automotive
- Electronic
- Medicine
- Household
- Agriculture







History.

The company WAGENER has been established in 1875 at Altena/Germany. During four generations WAGENER belonged to the family of the founder.

Since 2009 WAGENER is part of the Künne Group, which is a traditional and also family-owned German group of steel wire producing companies.

WAGENER is a specialist for Spring Steel Wire and fulfills the demands of its customers worldwide.







Packages.







Rings						
Dia. (mm)	0,50 – 0,70	0,80 – 1,10	1,20 – 1,50	1,50 – 2,50	3,00 – 5,00	5,00 – 10,00
Weight (kg)	approx. 50	approx. 80 – 100	approx. 150	200 – 250	approx. 500	max. 1.250

Card board cores		
Dia. (mm)	1,30 – 3,00	3,50 – 5,00
Inner-dia. (mm)	464	660
Outer-dia. (mm)	750	900 – 1.000
Height (mm)	max. 900	approx. 1.000
Weight (kg)	max. 800	max. 1.250







Z2-/Z3-Coils

Coil	Z2-Coil	Z2-Coil	Z3-Coil	Z3-Coil
Dia. (mm)	0,80 – 2,30	0,80 – 3,60	1,40 – 2,50	2,50 – 10,00
Inner-dia. (mm)	358	355	610	540
Outer-dia. (mm)	700	710	950	950
Height (mm)	310	290	310	465
Weight (kg)	350 – 500	350 – 500	500 – 800	500 – 1.250

Mechanical Spring Wire.

EN10270-1 classes: SL, SM, SH, DM, DH

- phosphated
  0,50 mm – 10,00 mm
- galvanized
  0,70 mm – 7,00 mm

Chemical composition %

Wire Grade	C	Si	Mn	P	S	Cu
EN10270-1 : SL	0,35 – 1,00	–	–	max. 0,035	max. 0,035	max. 0,020
EN10270-1 : SM	0,35 – 1,00	–	–	max. 0,035	max. 0,035	max. 0,020
EN10270-1 : DM	0,45 – 1,00	0,10 – 0,30	0,50 – 1,20	max. 0,020	max. 0,025	max. 0,120
EN10270-1 : SH	0,35 – 1,00	–	–	max. 0,035	max. 0,035	max. 0,200
EN10270-1 : DH	0,45 – 1,00	–	–	max. 0,020	max. 0,025	max. 0,120

Dimensional tolerance

Diameter range (mm)	Tolerance (mm)
0,50 – 0,63	+/- 0,008
0,65 – 0,75	+/- 0,010
0,80 – 1,00	+/- 0,015
1,05 – 1,50	+/- 0,020
1,80 – 2,60	+/- 0,025
2,80 – 4,00	+/- 0,030
4,25 – 5,30	+/- 0,035
5,60 – 7,00	+/- 0,040
7,50 – 9,50	+/- 0,045
10,00	+/- 0,050

Minimum zinc coating

Diameter range (mm)	Coating (g/m²)
0,70 – 0,80	45
0,81 – 0,90	50
0,91 – 1,00	55
1,01 – 1,20	60
1,21 – 1,40	65
1,41 – 1,65	70
1,61 – 1,85	75
1,86 – 2,15	80
2,16 – 2,50	85
2,51 – 2,80	95
2,81 – 3,20	100
3,21 – 3,80	105
3,81 – 10,00	110

Tensile strength Rm in N/mm²

Dia. (mm)	SL	SM / DM	SH / DH
0,50	–	2200-2470	2480-2740
0,60	–	2140-2400	2410-2670
0,70	–	2090-2350	2630-2610
0,80	–	2050-2300	2310-2560
0,90	–	2010-2260	2270-2510
1,00	1720-1970	1980-2220	2230-2470
1,25	1660-1900	1910-2140	2150-2380
1,50	1600-1840	1850-2080	2090-2310
1,75	1550-1780	1790-2010	1790-2010
2,00	1520-1750	1760-1970	1760-1970
2,25	1490-1710	1720-1930	1720-1930
2,50	1460-1680	1690-1890	1690-1890
2,75	1420-1640	1650-1850	1650-1850
3,00	1410-1620	1630-1830	1840-2040
3,50	1350-1560	1570-1760	1770-1970
4,00	1320-1520	1530-1730	1740-1930
4,50	1290-1490	1500-1680	1690-1890
5,00	1260-1450	1460-1650	1660-1840
5,50	1230-1420	1430-1610	1620-1800
6,00	1210-1390	1400-1580	1590-1770
6,50	1180-1370	1380-1550	1560-1740
7,00	1160-1340	1350-1530	1540-1710
7,50	1140-1320	1330-1500	1510-1680
8,00	1120-1300	1310-1480	1490-1660
8,50	1110-1280	1290-1460	1470-1630
9,00	1090-1260	1270-1440	1450-1610
9,50	1070-1250	1260-1420	1530-1590
10,00	1060-1230	1240-1400	1410-1570

ASTM A228

- phosphated
  0,50 mm – 6,00 mm
- galvanized (not included in ASTM A228)
  0,70 mm – 6,00 mm

Chemical composition %

Wire Grade	C	Si	Mn	P	S	Cu
ASTM A228	0,70 – 1,00	0,10 – 0,30	0,20 – 0,70	max. 0,025	max. 0,030	–

Limited values on request.

Dimensional tolerance

Diameter range (mm)	Tolerance (mm)
0,50 – 0,70	+/- 0,008
0,71 – 1,50	+/- 0,010
1,51 – 2,00	+/- 0,013
2,01 – 10,00	+/- 0,030

Limited values on request.

Minimum zinc coating

Diameter range (mm)	Coating (g/m²)
0,70 – 0,80	45
0,81 – 0,90	50
0,91 – 1,00	55
1,01 – 1,20	60
1,21 – 1,40	65
1,41 – 1,65	70
1,61 – 1,85	75
1,86 – 2,15	80
2,16 – 2,50	85
2,51 – 2,80	95
2,81 – 3,20	100
3,21 – 3,80	105
3,81 – 10,00	110

Tensile strength Rm in Mpa

Dia. (mm)	SH / DH
0,50	2400-2650
0,60	2350-2600
0,70	2300-2550
0,80	2250-2500
0,90	2200-2450
1,00	2150-2400
1,20	2100-2350
1,60	2000-2250
1,80	1980-2220
2,00	1950-2200
2,20	1900-2150
2,50	1850-2100
2,80	1820-2050
3,00	1800-2000
3,50	1750-1950
3,80	1720-1920
4,00	1700-1900
4,50	1680-1880
5,00	1650-1850
5,50	1620-1820
6,00	1600-1800

Note: Zinc coating is not included in ASTM A228.

Mechanical Spring Wire.

ASTM A227

- phosphated
  0,50 mm – 10,00 mm
- galvanized (not included in ASTM A227)
  0,70 mm – 7,00 mm

Chemical composition %

Wire Grade	C	Si	Mn	P	S	Cu
ASTM A227	0,45 – 0,85	0,15 – 0,35	0,30 – 1,30	max. 0,040	max. 0,050	–

Limited values on request.

Dimensional tolerance

Diameter range (mm)	Tolerance (mm)
0,50 – 0,70	+/- 0,02
0,71 – 2,00	+/- 0,03
2,01 – 9,00	+/- 0,05
9,01 – 10,00	+/- 0,08

Limited values on request.

Minimum zinc coating

Diameter range (mm)	Coating (g/m²)
0,70 – 0,80	45
0,81 – 0,90	50
0,91 – 1,00	55
1,01 – 1,20	60
1,21 – 1,40	65
1,41 – 1,65	70
1,61 – 1,85	75
1,86 – 2,15	80
2,16 – 2,50	85
2,51 – 2,80	95
2,81 – 3,20	100
3,21 – 3,80	105
3,81 – 10,00	110

Tensile strength Rm in Mpa

Dia. (mm)	Class I	Class II
0,50	1960-2240	2240-2520
0,60	1920-2200	2200-2480
0,70	1870-2140	2140-2410
0,80	1830-2100	2100-2370
0,90	1800-2070	2070-2340
1,00	1770-2040	2040-2310
1,20	1720-1980	1980-2240
1,60	1640-1880	1880-2120
1,80	1600-1840	1840-2080
2,00	1580-1810	1810-2040
2,20	1550-1780	1780-2010
2,50	1510-1730	1730-1960
2,80	1480-1700	1700-1920
3,00	1460-1680	1680-1900
3,50	1420-1630	1630-1840
4,00	1380-1590	1590-1800
4,50	1350-1550	1550-1750
5,00	1320-1510	1510-1700
5,50	1300-1490	1490-1670
6,00	1280-1470	1470-1650
6,50	1250-1440	1440-1630
7,00	1220-1410	1410-1600
7,50	1200-1390	1390-1580
8,00	1190-1370	1370-1550
9,00	1160-1340	–
10,00	1130-1310	–

Note: Zinc coating is not included in ASTM A228.

JIS G 3522 SWPA/SWPB

- phosphated
  0,50 mm – 10,00 mm

Chemical composition %:
Values on request (not included in JIS G 3522)

Dimensional tolerance

Diameter range (mm)	Tolerance (mm)
0,50 – 1,00	+/- 0,010
1,01 – 2,00	+/- 0,015
2,01 – 3,20	+/- 0,020
3,21 – 5,50	+/- 0,030
5,51 – 8,50	+/- 0,040
8,51 – 10,00	+/- 0,050

Tensile strength Rm in N/mm²

Dia. (mm)	SWP-A	SWP-B
0,50	2300-2550	2550-2790
0,60	2210-2450	2450-2700
0,70	2160-2400	2400-2650
0,80	2110-2350	2350-2600
0,90	2110-2300	2300-2500
1,00	2060-2260	2260-2450
1,20	2010-2210	2210-2400
1,60	1910-2110	2110-2300
1,80	1860-2060	2060-2260
2,00	1810-2010	2010-2210
2,30	1770-1960	1960-2160
2,60	1770-1960	1960-2160
2,90	1720-1910	1910-2110
3,20	1670-1860	1860-2060
3,50	1670-1810	1810-1960
4,00	1670-1810	1810-1960
4,50	1620-1770	1770-1910
5,00	1620-1770	1770-1910
5,50	1570-1710	1710-1860
6,00	1520-1670	1670-1810
6,50	1520-1670	1670-1810
7,00	1470-1620	1620-1770
8,00	1470-1620	–
9,00	1420-1570	–
10,00	1420-1570	–

This data sheet is only for information. Wagener-Wire is not produced acc. to JIS G 3522.

Mechanical Spring Wire.

JIS G 3521

- phosphated
  0,50 mm – 10,00 mm

Chemical composition %

Wire Grade	C	Si	Mn	P	S	Cu
JIS G 3521	0,45 – 0,85	0,15 – 0,35	0,30 – 0,90	max. 0,035	max. 0,035	–

Dimensional tolerance

Diameter range (mm)	Tolerance (mm)
0,50 – 1,00	+/- 0,010
1,01 – 2,00	+/- 0,015
2,01 – 3,20	+/- 0,020
3,21 – 5,50	+/- 0,030
5,51 – 8,50	+/- 0,040
8,51 – 10,00	+/- 0,050

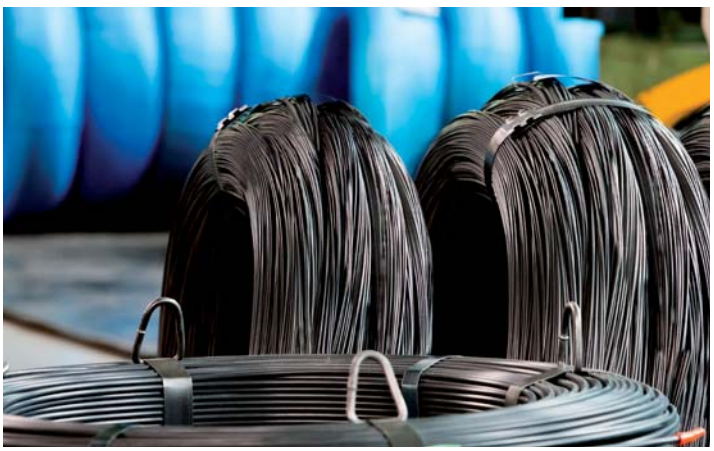
Tensile strength Rm in N/mm²

Dia. (mm)	SW-A	SW-B	SW-C
0,50	–	1910-2210	2210-2500
0,60	–	1810-2110	2110-2400
0,70	–	1770-2060	2060-2350
0,80	–	1770-2010	2010-2300
0,90	–	1770-2010	2010-2260
1,00	–	1720-1960	1960-2210
1,25	–	1620-1860	1860-2110
1,50	–	1570-1810	1810-2060
1,60	1320-1570	1570-1810	1810-2060
2,00	1270-1470	1470-1720	1720-1960
2,30	1230-1420	1420-1670	1670-1910
2,60	1230-1420	1420-1670	1670-1910
2,90	1180-1370	1370-1620	1620-1860
3,20	1180-1370	1370-1570	1570-1810
3,50	1180-1370	1370-1570	1570-1770
4,00	1180-1370	1370-1570	1570-1770
4,50	1130-1320	1320-1520	1520-1720
5,00	1130-1320	1320-1520	1520-1720
5,50	1080-1270	1270-1470	1470-1670
6,00	1030-1230	1230-1420	1420-1620
6,50	1030-1230	1230-1420	1420-1620
7,00	980-1180	1180-1370	1370-1570
8,00	980-1180	1180-1370	1370-1570
9,00	930-1130	1130-1320	1320-1520
10,00	930-1130	1130-1320	1320-1520

This data sheet is only for information. Wagener-Wire is not produced acc. to JIS G 3521.







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