

MUSIC SPRING WIRE

Music Spring Wire is made of high carbon steel. Its excellence in chemical & physical properties is used in automobile, electronic equipment, precision machines, and other precision spring with the excellent strength, elasticity, creep, and resistance to fatigue.

▪ Chemical Composition (JIS G 3502)

Classification	Chemical Composition (%)					
	C	Si	Mn	P	S	Cu
SWRS 62A	0.60 ~ 0.65	0.12 ~ 0.32	0.30 ~ 0.60	0.025 under	0.025 under	0.20 under
SWRS 62B	0.60 ~ 0.65	0.12 ~ 0.32	0.60 ~ 0.90	0.025 under	0.025 under	0.20 under
SWRS 67A	0.65 ~ 0.70	0.12 ~ 0.32	0.30 ~ 0.60	0.025 under	0.025 under	0.20 under
SWRS 67B	0.65 ~ 0.70	0.12 ~ 0.32	0.60 ~ 0.90	0.025 under	0.025 under	0.20 under
SWRS 72A	0.70 ~ 0.75	0.12 ~ 0.32	0.30 ~ 0.60	0.025 under	0.025 under	0.20 under
SWRS 72B	0.70 ~ 0.75	0.12 ~ 0.32	0.60 ~ 0.90	0.025 under	0.025 under	0.20 under
SWRS 75A	0.73 ~ 0.78	0.12 ~ 0.32	0.30 ~ 0.60	0.025 under	0.025 under	0.20 under
SWRS 75B	0.73 ~ 0.78	0.12 ~ 0.32	0.60 ~ 0.90	0.025 under	0.025 under	0.20 under
SWRS 77A	0.75 ~ 0.80	0.12 ~ 0.32	0.30 ~ 0.60	0.025 under	0.025 under	0.20 under
SWRS 77B	0.75 ~ 0.80	0.12 ~ 0.32	0.60 ~ 0.90	0.025 under	0.025 under	0.20 under
SWRS 80A	0.78 ~ 0.83	0.12 ~ 0.32	0.30 ~ 0.60	0.025 under	0.025 under	0.20 under
SWRS 80B	0.78 ~ 0.83	0.12 ~ 0.32	0.60 ~ 0.90	0.025 under	0.025 under	0.20 under
SWRS 82A	0.80 ~ 0.85	0.12 ~ 0.32	0.30 ~ 0.60	0.025 under	0.025 under	0.20 under
SWRS 82B	0.80 ~ 0.85	0.12 ~ 0.32	0.60 ~ 0.90	0.025 under	0.025 under	0.20 under
SWRS 87A	0.85 ~ 0.90	0.12 ~ 0.32	0.30 ~ 0.60	0.025 under	0.025 under	0.20 under
SWRS 87B	0.85 ~ 0.90	0.12 ~ 0.32	0.60 ~ 0.90	0.025 under	0.025 under	0.20 under
SWRS 92A	0.90 ~ 0.95	0.12 ~ 0.32	0.30 ~ 0.60	0.025 under	0.025 under	0.20 under
SWRS 92B	0.90 ~ 0.95	0.12 ~ 0.32	0.60 ~ 0.90	0.025 under	0.025 under	0.20 under

▪ Packing

Inner dia. of coil		Dia. (mm)	Packing Unit (Kg)						
Inch	mm		Coil	Carrier	Steel Reel	Din 355	MEG Bobbin	Z-2 Coil	Z-3 Coil
8	220	0.20 ~ 0.29	10	-	-	40	15	-	-
10	250	0.30 ~ 0.49	20	-	150	40	15	-	-
12	300	0.50 ~ 0.69	50	-	300	40	15	400	-
14	350	0.70 ~ 0.89	70	-	400	-	-	250	-
16	400	0.90 ~ 1.49	100	400	400	-	-	400	-
20	500	1.50 ~ 1.99	150	600	400	-	-	400	-
24	600	2.00 ~ 2.99	250	800	400	-	-	400	-
28	700	3.00 ~ 6.00	250	1,000	-	-	-	-	1,000
30	760	3.00 ~ 6.00	250	1,000	-	-	-	-	-
32	820	5.50 ~ 12.50	300	2,000	-	-	-	-	-



▪ Mechanical Properties (KS D 3556)

Dia. (mm)	PW-1				PW-2			
	Tensile Strength (N/mm ²)		Tensile Strength (kgf/mm ²)		Tensile Strength (N/mm ²)		Tensile Strength (kgf/mm ²)	
	Min	Max	Min	Max	Min	Max	Min	Max
0.20	2600	2840	265	290	2840	3090	290	315
0.23	2550	2790	260	285	2790	3040	285	310
0.26	2500	2750	255	281	2750	2990	281	305
0.29	2450	2700	250	276	2700	2940	276	300
0.32	2400	2650	245	270	2650	2890	270	295
0.35	2400	2650	245	270	2650	2890	270	295
0.40	2350	2600	240	265	2600	2840	265	290
0.45	1200	2550	235	260	2550	2790	260	285
0.50	2300	2550	235	260	2550	2790	260	285
0.55	2260	2500	231	255	2500	2750	255	281
0.60	2210	2450	226	250	2450	2700	250	276
0.65	2210	2450	226	250	2450	2700	250	276
0.70	2160	2400	220	245	2400	2650	245	270
0.80	2110	2350	215	240	2350	2600	240	265
0.90	2110	2300	215	235	2300	2500	235	255
1.00	2060	2260	210	231	2260	2450	231	250
1.20	2010	2210	205	226	2210	2400	226	245
1.40	1960	2160	200	220	2160	2350	220	240
1.60	1910	2110	195	215	2110	2300	215	235
1.80	1860	2060	190	210	2060	2260	210	231
2.00	1810	2010	185	205	2010	2210	205	226
2.30	1770	1960	181	200	1960	2160	200	220
2.60	1770	1960	181	200	1960	2160	200	220
2.90	1720	1910	176	195	1910	2110	195	215
3.00	1670	1860	170	190	1860	2060	190	210
3.20	1670	1860	170	190	1860	2060	190	210
3.50	1670	1810	170	185	1810	1960	185	200
4.00	1670	1810	170	185	1810	1960	185	200
4.50	1620	1770	165	181	1770	1910	181	195
5.00	1620	1770	165	181	1770	1910	181	195
5.50	1570	1710	160	174	1710	1860	174	190
6.00	1520	1670	155	170	1670	1810	170	185
6.50	1520	1670	155	170	1670	1810	170	185
7.00	1470	1620	150	165	1620	1770	165	181
8.00	1470	1620	150	165	-	-	-	-
9.00	1420	1570	145	160	-	-	-	-
10.00	1420	1570	145	160	-	-	-	-

▪ Mechanical Properties (JIS G 3522)

Dia. (mm)	SWP-A				SWP-B			
	Tensile Strength (N/mm ²)		Tensile Strength (kgf/mm ²)		Tensile Strength (N/mm ²)		Tensile Strength (kgf/mm ²)	
	Min	Max	Min	Max	Min	Max	Min	Max
0.20	2600	2840	265	290	2840	3090	290	315
0.23	2550	2790	260	285	2790	3040	285	310
0.26	2500	2750	255	281	2750	2990	281	305
0.29	2450	2700	250	276	2700	2940	276	300
0.32	2400	2650	245	270	2650	2890	270	295
0.35	2400	2650	245	270	2650	2890	270	295
0.40	2350	2600	240	265	2600	2840	265	290
0.45	2300	2550	235	260	2550	2790	260	285
0.50	2300	2550	235	260	2550	2790	260	285
0.55	2260	2500	231	255	2500	2750	255	281
0.60	2210	2450	226	250	2450	2700	250	276
0.65	2210	2450	226	250	2450	2700	250	276
0.70	2160	2400	220	245	2400	2650	245	270
0.80	2110	2350	215	240	2350	2600	240	265
0.90	2110	2300	215	235	2300	2500	235	255
1.00	2060	2260	210	231	2260	2450	231	250
1.20	2010	2210	205	226	2210	2400	226	245
1.40	1960	2160	200	220	2160	2350	220	240
1.60	1910	2110	195	215	2110	2300	215	235
1.80	1860	2060	190	210	2060	2260	210	231
2.00	1810	2010	185	205	2010	2210	205	226
2.30	1770	1960	181	200	1960	2160	200	220
2.60	1770	1960	181	200	1960	2160	200	220
2.90	1720	1910	176	195	1910	2110	195	215
3.00	1670	1860	170	190	1860	2060	190	210
3.20	1670	1860	170	190	1860	2060	190	210
3.50	1670	1810	170	185	1810	1960	185	200
4.00	1670	1810	170	185	1810	1960	185	200
4.50	1620	1770	165	181	1770	1910	181	195
5.00	1620	1770	165	181	1770	1910	181	195
5.50	1570	1710	160	174	1710	1860	174	190
6.00	1520	1670	155	170	1670	1810	170	185
6.50	1520	1670	155	170	1670	1810	170	185
7.00	1470	1620	150	165	1620	1770	165	181
8.00	1470	1620	150	165	-	-	-	-
9.00	1420	1570	145	160	-	-	-	-
10.00	1420	1570	145	160	-	-	-	-

- Zinc-Coated Music Spring Wire PW1 and SWP-A grade can be produced from 0.7mm to 7.0mm
- Zinc-Coated Music Spring Wire PW2 and SWP-B grade can be produced from 0.7mm to 4.2mm

▪ Calculation of Weight and Length for Music Spring Wire

- Weight for Hard Drawn Steel Wire(kg) = Diameter(mm) × Diameter(mm) × 0.006165 × Length(M)
- Length for Hard Drawn Steel Wire(M) = Weight(kg) ÷ Diameter(mm) ÷ Diameter(mm) ÷ 0.006165

MUSIC SPRING WIRE

Mechanical Properties (BS 5216)

Dia. (mm)	Grade4		Grade5	
	Tensile Strength (N/mm ²)			
	Min	Max	Min	Max
0.20	2760	3090	3090	3420
0.224	2720	3030	3030	3340
0.25	2680	2980	2980	3280
0.28	2650	2940	2940	3230
0.30	2640	2920	2920	3200
0.315	2620	2890	2890	3160
0.335	2600	2860	2860	3120
0.355	2570	2830	2830	3090
0.375	2550	2800	2800	3050
0.40	2520	2770	2770	3020
0.42	2510	2750	2750	2990
0.45	2480	2720	2720	2960
0.48	2460	2690	2690	2920
0.50	2440	2670	2670	2900
0.53	2430	2650	2650	2870
0.56	2420	2630	2630	2840
0.60	2410	2610	2610	2810
0.63	2400	2590	2590	2780
0.67	2380	2570	2570	2760
0.71	2370	2550	2550	2730
0.75	2350	2530	2530	2710
0.80	2320	2490	2490	2660

Dia. (mm)	Grade4		Grade5	
	Tensile Strength (N/mm ²)			
	Min	Max	Min	Max
0.85	2290	2460	2460	2630
0.90	2280	2440	2440	2600
0.95	2260	2420	2420	2580
1.00	2240	2390	2390	2540
1.06	2210	2360	2360	2510
1.12	2190	2340	2340	2490
1.18	2160	2310	2310	2460
1.25	2140	2290	2290	2440
1.32	2120	2270	2270	2420
1.40	2090	2240	2240	2390
1.50	2060	2210	2210	2360
1.60	2040	2190	2190	2340
1.70	2020	2170	2170	2320
1.80	2000	2150	2150	2300
1.90	1990	2140	2140	2290
2.00	1970	2120	2120	2270
2.12	1950	2100	2100	2250
2.24	1930	2080	2080	2230
2.36	1920	2070	2170	2220
2.50	1900	2050	2050	220
2.65	1890	2040	2040	2190

Dia. (mm)	Grade4		Grade5	
	Tensile Strength (N/mm ²)			
	Min	Max	Min	Max
2.80	1870	2020	2020	2170
3.00	1850	2000	2000	2150
3.15	1840	1990	-	-
3.35	1820	1970	-	-
3.55	1800	1950	-	-
3.75	1790	1940	-	-
4.00	1770	1920	-	-
4.25	-	-	-	-
4.50	-	-	-	-
4.75	-	-	-	-
5.00	-	-	-	-
5.30	-	-	-	-
5.60	-	-	-	-
6.00	-	-	-	-
6.30	-	-	-	-
6.70	-	-	-	-
7.10	-	-	-	-
7.50	-	-	-	-
8.00	-	-	-	-
8.50	-	-	-	-
9.00	-	-	-	-

• Zinc-Coated Music Spring Wire GRADE 4 can be produced from 0.7mm to 4.0mm

• Zinc-Coated Music Spring Wire GRADE 5 can be produced from 0.7mm to 2.0mm

Mechanical Properties (ASTM A 228)

Dia. (inch)	Tensile Strength (Kpsi)	
	Min	Max
0.008	399	441
0.009	393	434
0.010	387	428
0.011	382	422
0.012	377	417
0.013	373	412
0.014	369	408
0.015	365	404
0.016	362	400
0.018	356	393
0.020	350	387
0.022	345	382
0.024	341	377
0.026	337	373
0.028	333	368

Dia. (inch)	Tensile Strength (Kpsi)	
	Min	Max
0.030	330	365
0.032	327	361
0.034	324	358
0.036	321	355
0.038	318	352
0.040	315	349
0.042	313	346
0.045	309	342
0.048	306	339
0.051	303	335
0.052	301.5	333
0.055	300	331
0.059	296	327
0.063	293	324
0.067	290	321

Dia. (inch)	Tensile Strength (Kpsi)	
	Min	Max
0.072	287	317
0.076	284	314
0.079	283	313
0.080	282	312
0.085	279	308
0.090	276	305
0.095	274	303
0.100	271	300
0.102	270	299
0.107	268	296
0.110	267	295
0.112	266	294
0.121	263	290
0.125	261	288
0.130	259	286

Dia. (inch)	Tensile Strength (Kpsi)	
	Min	Max
0.135	258	285
0.138	256	283
0.140	256	283
0.145	254	281
0.150	253	279
0.156	251	277
0.162	249	275
0.177	245	270
0.192	241	267
0.207	238	264
0.225	235	260
0.250	230	255

• Zinc-Coated Music Spring Wire can be produced from 0.028inch to 0.225inch

Mechanical Properties (AS 1472)

Dia. (mm)	Range3	
	Tensile Strength (Mpa=N/mm ²)	
	Min	Max
0.56	2460	2780
0.63	2430	2750
0.69	2400	2710
0.71	2400	2710
0.80	2370	2680
0.90	2340	2640
1.00	2280	2570
1.12	2240	2530
1.25	2200	2480

Dia. (mm)	Range3	
	Tensile Strength (Mpa=N/mm ²)	
	Min	Max
1.40	2150	2430
1.60	2100	2370
1.80	2050	2320
2.00	2010	2270
2.24	1970	2230
2.50	1920	2170
2.80	1880	2120
3.15	1840	2080
3.55	1820	2060

Dia. (mm)	Range3	
	Tensile Strength (Mpa=N/mm ²)	
	Min	Max
4.00	1780	2010
4.50	1730	1960
5.00	1700	1920
5.60	1650	1860
6.30	1620	1860
7.10	1590	1790
8.00	1540	1740
9.00	1500	1700

• Zinc-Coated Music Spring Wire can be produced from 1.4mm to 2.0mm

• Please inquire us about diameters not specified below the Spec table

Mechanical Properties (DIN 17223)

Dia. (mm)	CLASS C		CLASS D	
	Tensile Strength (N/mm ²)			
	Min	Max	Min	Max
0.20	-	-	2800	3100
0.22	-	-	2770	3060
0.25	-	-	2720	3010
0.28	-	-	2680	2970
0.30	-	-	2660	2940
0.32	-	-	2640	2920
0.34	-	-	2610	2890
0.36	-	-	2590	2870
0.38	-	-	2570	2850
0.40	-	-	2560	2830
0.43	-	-	2530	2800
0.45	-	-	2510	2780
0.48	-	-	2490	2760
0.50	-	-	2480	2740
0.53	-	-	2460	2720
0.56	-	-	2440	2700
0.60	-	-	2410	2670
0.63	-	-	2390	2650
0.65	-	-	2380	2640
0.70	-	-	2360	2610
0.75	-	-	2330	2580
0.80	-	-	2310	2560
0.85	-	-	2290	2530

Dia. (mm)	CLASS C		CLASS D	
	Tensile Strength (N/mm ²)			
	Min	Max	Min	Max
0.90	-	-	2270	2510
0.95	-	-	2250	2490
1.00	-	-	2230	2470
1.05	-	-	2210	2450
1.10	-	-	2200	2430
1.20	-	-	2170	2400
1.25	-	-	2150	2380
1.30	-	-	2140	2370
1.40	-	-	2110	2340
1.50	-	-	2090	2310
1.60	-	-	2060	2290
1.70	-	-	2040	2260
1.80	-	-	2020	2240
1.90	-	-	2000	2220
2.00	1980	2200	1980	2200
2.10	1970	2180	1970	2180
2.25	1940	2150	1940	2150
2.40	1920	2130	1920	2130
2.50	1900	2110	1900	2110
2.60	1890	2100	1890	2100
2.80	1860	2070	1860	2070
3.00	1840	2040	1840	2040
3.20	1820	2020	1820	2020

Dia. (mm)	CLASS C		CLASS D	
	Tensile Strength (N/mm ²)			
	Min	Max	Min	Max
3.40	1790	1900	1790	1990
3.60	1770	1970	1770	1970
3.80	1750	1950	1750	1950
4.00	1740	1930	1740	1930
4.25	1710	1900	1710	1900
4.50	1690	1880	1690	1880
4.75	1680	1860	1680	1860
5.00	1660	1840	1660	1840
5.30	1640	1820	1640	1820
5.60	1620	1800	1620	1800
6.00	1590	1770	1590	1770
6.30	1570	1750	1570	1750
6.50	1560	1740	1560	1740
7.00	1540	1710	1540	1710
7.50	1510	1680	1510	1680
8.00	1490	1660	1490	1660
8.50	1470	1630	1470	1630
9.00	1450	1610	1450	1610
9.50	1430	1590	1430	1590
10.00	1410	1570	1410	1570
10.50	1390	1550	1390	1550

• Zinc-Coated Music Spring Wire can be produced from 0,7mm to 6,0mm

Mechanical Properties (EN 10270-1)

Dia. (mm)	DM		DH	
	Tensile Strength (Mpa=N/mm ²)			
	Min	Max	Min	Max
0.20	-	-	2800	3100
0.22	-	-	2770	3060
0.25	-	-	2720	3010
0.28	-	-	2680	2970
0.30	2370	2650	2660	2940
0.32	2350	2630	2640	2920
0.34	2330	2600	2610	2890
0.36	2310	2580	2590	2870
0.38	2290	2560	2570	2850
0.40	2270	2550	2560	2830
0.43	2250	2520	2530	2800
0.45	2240	2500	2510	2780
0.48	2220	2480	2490	2760
0.50	2200	2470	2480	2740
0.53	2180	2450	2460	2720
0.56	2170	2430	2440	2700
0.60	2140	2400	2410	2670
0.63	2130	2380	2390	2650
0.65	2120	2370	2380	2640
0.70	2090	2350	2360	2610
0.75	2070	2320	2330	2580
0.80	2050	2300	2310	2560

Dia. (mm)	DM		DH	
	Tensile Strength (Mpa=N/mm ²)			
	Min	Max	Min	Max
0.85	2030	2280	2290	2530
0.90	2010	2260	2270	2510
0.95	2000	2240	2250	2490
1.00	1980	2220	2230	2470
1.05	1960	2200	2210	2450
1.10	1950	2190	2200	2430
1.20	1920	2160	2170	2400
1.25	1910	2140	2150	2380
1.30	1900	2130	2140	2370
1.40	1870	2100	2110	2310
1.50	1850	2080	2090	2310
1.60	1830	2050	2060	2290
1.70	1810	2030	2040	2260
1.80	1790	2010	2020	2240
1.90	1770	1990	2000	2220
2.00	1760	1970	1980	2200
2.10	1740	1960	1970	2180
2.25	1720	1930	1940	2150
2.40	1700	1910	1920	2130
2.50	1690	1890	1900	2110
2.60	1670	1880	1890	2100
2.80	1650	1850	1860	2070

Dia. (mm)	DM		DH	
	Tensile Strength (Mpa=N/mm ²)			
	Min	Max	Min	Max
3.00	1630	1830	1840	2040
3.20	1610	1810	1820	2020
3.40	1590	1780	1790	1990
3.60	1570	1760	1770	1970
3.80	1550	1740	1750	1950
4.00	1530	1730	1740	19*30
4.25	1510	1700	1710	1900
4.50	1500	1680	1690	1880
4.75	1480	1670	1680	1860
5.00	1460	1650	1660	1840
5.30	1440	1630	1640	1820
5.60	1430	1610	1620	1800
6.00	1400	1580	1590	1770
6.30	1390	1560	1570	1750
6.50	1380	1550	1560	1740
7.00	1350	1530	1540	1710
7.50	1330	1500	1510	1680
8.00	1310	1480	1490	1660
8.50	1290	1460	1470	1630
9.00	1270	1440	1450	1610
9.50	1260	1420	1430	1590
10.00	1240	1400	1410	1570

• Zinc-Coated Music Spring Wire can be produced from 0,7mm to 5,3mm