

# SPRING WIRE

HARD DRAWN STEEL WIRE  
PIANO(MUSIC) WIRE



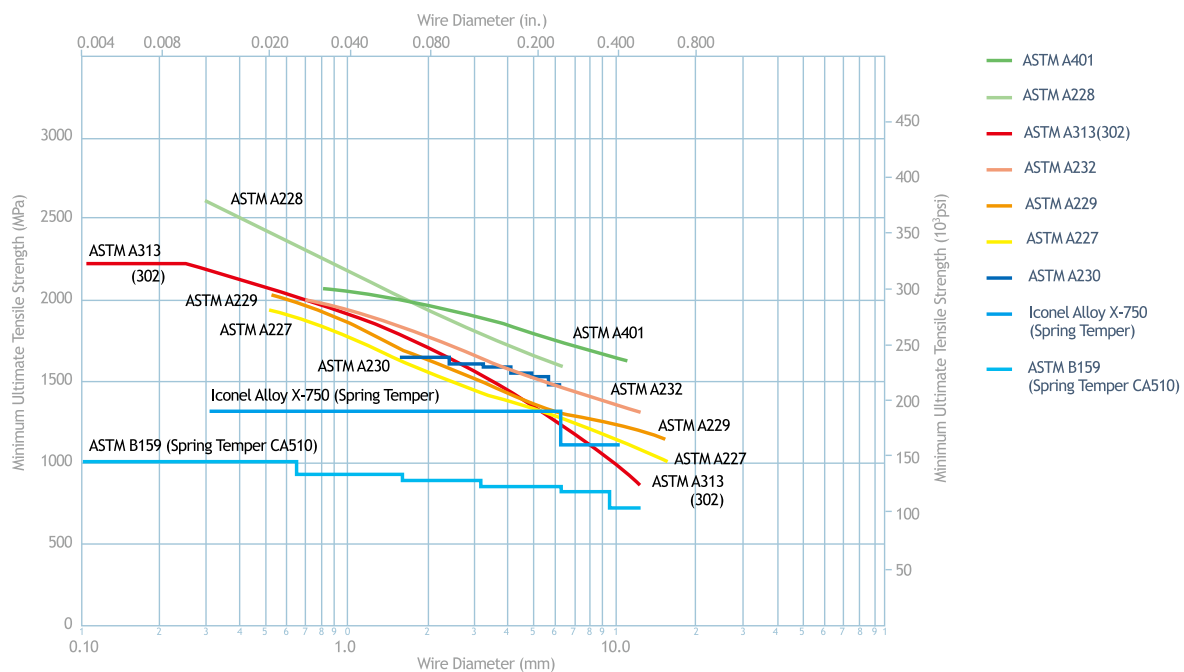
# Hard Drawn Steel Wire and Piano(Music) Wire

For compression, extension and torsion springs of minor to applications, Kiswire offers a broad range of high quality materials for your specific needs and also for the needs beyond the spec.

## Product and Specifications

Classification	ASTM	JIS	DIN	BS	EN	SAE	KS
Hard Drawn Steel Wire	A 227 / A 764 Class I , II	G 3521 SW -A/B/C	17223 Pt1 Grade A/B/C	5216 Type NS/HS	10270-1 Type SL/SM/SH	J113 -	D 3510 SW-A/B/C
Piano(Music) Wire	A228 -	G 3522 SWP-A/B	17223 Pt1 Grade D	5216 Type M	10270-1 Type DM/DH	J178 -	D 3556 PW-1/2

## Tensile Strengths of Spring Wire



# Hard Drawn Steel Wire

## Classification

Classification	Grade	Diameter (mm)
Hard drawn Steel Wire	SW-A	0.05~10.0
	SW-B	0.05~12.0
	SW-C	0.05~12.0

## Chemical Composition

(Unit : %)

Classification	ASTM A 227 Class I, II	JIS G 3521 SW-A/B/C	DIN 17223 Pt1		BS 5216 Type NS/HS	EN 10270-1 Type SL/SM/SH	KS D 3510 SW-A/B/C
			0.70~6.00 mm	6.00~13.0mm			
Carbon (C)	0.45~0.85	0.24~0.86	0.40~0.85	0.55~0.85	0.40~0.85	0.35~1.00	0.24~0.86
Manganese (Mn)	0.30~1.30	0.30~0.90	0.30~1.00	0.30~1.00	0.30~1.00	0.50~1.20	0.30~0.90
Phosphorus (P)	0.040 Max	0.030 Max	0.040 Max	0.040 Max	0.040 Max	0.035 Max	0.035 Max
Sulfur (S)	0.050 Max	0.030 Max	0.040 Max	0.040 Max	0.040 Max	0.035 Max	0.035 Max
Silicon (Si)	0.15~0.35	0.15~0.35	0.35 Max	0.35 Max	0.35 Max	0.10~0.30	0.15~0.35
Copper (Cu)	-	-	-	-	-	0.20 Max	-

## Torsion

Diameter (mm)	Specification
0.05 ~ 0.07	-
0.08 ~ 2.00	≥ 20 times
2.01 ~ 3.50	≥ 15 times
3.51 ~ 6.00	≥ 10 times

## Wire diameter tolerance and ovality

Diameter (mm)	Tolerance (mm)	Ovality (mm)	Remark
0.05-0.07	± 0.002	≤ 0.001	1. Ovality The difference between maximum and minimum wire diameter to the same test point.
0.08-0.10	± 0.006	≤ 0.006	
0.11-0.20	± 0.008	≤ 0.008	
0.21-0.50	± 0.015	≤ 0.015	
0.51-1.00	± 0.020	≤ 0.020	
1.01-2.00	± 0.030	≤ 0.030	
2.01-3.20	± 0.040	≤ 0.040	
3.21-5.50	± 0.050	≤ 0.050	
5.51-8.50	± 0.060	≤ 0.060	
8.51-13.0	± 0.070	≤ 0.070	

# Piano(Music) Wire

## Classification

Classification	Grade	Diameter (mm)
Piano(Music) Wire A Type	SWP-A	0.05~10.0
Piano(Music) Wire B Type	SWP-B	0.05~8.0

## Chemical Composition

(Unit : %)

Classification	ASTM A 228	JIS G 3552 SWP-A/B	DIN 17223 Pt1		BS 5216 Type M	EN 10270-1 Type DM/DH	KS D 3556 PW-1/2
			0.70~6.00mm	6.00~13.0mm			
Carbon (C)	0.70~1.00	0.60~0.95	0.70~1.00	0.50~1.00	0.70~1.00	0.45~1.00	0.60~0.95
Manganese (Mn)	0.20~0.60	0.30~0.90	0.30~1.50	0.30~1.50	0.25~0.75	0.50~1.20	0.30~0.90
Phosphorus (P)	0.025 Max	0.025 Max	0.030 Max	0.030 Max	0.030 Max	0.020 Max	0.025 Max
Sulfur (S)	0.025 Max	0.025 Max	0.030 Max	0.030 Max	0.030 Max	0.025 Max	0.025 Max
Silicon (Si)	0.10~0.30	0.12~0.32	0.35 Max	0.35 Max	0.35 Max	0.10~0.30	0.12~0.30
Copper (Cu)	-	0.20 Max	0.20 Max	0.20 Max	-	0.12 Max	0.20 Max

## Torsion

Diameter (mm)	Specification
0.05 ~ 0.07	-
0.08 ~ 2.00	≥ 25 times
2.01 ~ 3.50	≥ 20 times
3.51 ~ 6.00	≥ 15 times

## Wire diameter tolerance and ovality

Diameter (mm)	Tolerance (mm)	Ovality (mm)	Remark
0.05~0.07	± 0.002	≤ 0.001	1. Ovality The difference between maximum and minimum wire diameter to the same test point
0.08~0.20	± 0.004	≤ 0.004	
0.20~0.50	± 0.008	≤ 0.008	
0.51~1.00	± 0.010	≤ 0.010	
1.01~2.00	± 0.015	≤ 0.015	
2.01~3.20	± 0.020	≤ 0.020	
3.21~5.50	± 0.030	≤ 0.030	
5.51~8.50	± 0.040	≤ 0.040	
8.51~10.0	± 0.050	≤ 0.050	

## Tensile Strength

	Diameter (mm)	Piano(Music) Wire (JIS G 3522)			Hard Drawn Steel Wire (JIS G 3521)		
		Tensile Strength (N/mm <sup>2</sup> )			Tensile Strength (N/mm <sup>2</sup> )		
		SWP-A	SWP-B	SWP-KH	SW-A	SW-B	SW-C
UN-Galv.	0.05	3,090-3,430	3,430-3,780	4,130-4,530	-	-	-
	0.06	2,990-3,330	3,330-3,680	4,030-4,430	-	-	-
	0.07	2,940-3,240	3,240-3,530	3,980-4,380	-	-	-
	0.08	2,890-3,190	3,190-3,480	3,930-4,330	2,110-2,450	2,450-2,790	2,790-3,140
	0.09	2,840-3,140	3,140-3,430	3,770-4,170	2,060-2,400	2,400-2,750	2,750-3,090
	0.10	2,790-3,090	3,090-3,380	3,680-4,080	2,010-2,350	2,350-2,700	2,700-3,040
	0.12	2,750-3,040	3,040-3,330	3,630-3,980	1,960-2,300	2,300-2,650	2,650-2,990
	0.14	2,700-2,990	2,990-3,290	-	1,960-2,260	2,260-2,600	2,600-2,940
	0.16	2,650-2,940	2,940-3,240	-	1,910-2,210	2,210-2,550	2,550-2,890
	0.18	2,600-2,890	2,890-3,190	-	1,910-2,210	2,210-2,500	2,500-2,840
	0.20	2,600-2,840	2,840-3,140	-	1,910-2,210	2,210-2,500	2,500-2,790
	0.23	2,550-2,790	2,790-3,040	-	1,860-2,160	2,160-2,450	2,450-2,750
	0.26	2,500-2,750	2,750-2,990	-	1,810-2,110	2,110-2,400	2,400-2,700
	0.29	2,450-2,700	2,700-2,940	-	1,770-2,060	2,060-2,350	2,350-2,600
	0.32	2,400-2,650	2,650-2,890	-	1,720-2,010	2,010-2,300	2,300-2,600
	0.35	2,400-2,650	2,650-2,890	-	1,720-2,010	2,010-2,300	2,300-2,600
	0.40	2,350-2,600	2,600-2,840	-	1,670-1,960	1,960-2,260	2,260-2,550
	0.45	2,300-2,550	2,550-2,790	-	1,620-1,910	1,910-2,210	2,210-2,500
	0.50	2,300-2,550	2,550-2,790	-	1,620-1,910	1,910-2,210	2,210-2,500
	0.55	2,260-2,500	2,500-2,750	-	1,570-1,860	1,860-2,160	2,160-2,450
	0.60	2,210-2,450	2,450-2,700	-	1,570-1,810	1,810-2,110	2,110-2,400
	0.65	2,210-2,450	2,450-2,700	-	1,570-1,810	1,810-2,110	2,110-2,400
	0.70	2,160-2,400	2,400-2,650	-	1,520-1,770	1,770-2,060	2,060-2,350
	0.80	2,110-2,350	2,350-2,600	-	1,520-1,770	1,770-2,010	2,010-2,300
	0.90	2,110-2,350	2,300-2,500	-	1,520-1,770	1,770-2,010	2,010-2,260
	1.00	2,060-2,260	2,260-2,450	-	1,470-1,720	1,720-1,960	1,960-2,210
	1.20	2,010-2,300	2,210-2,400	-	1,420-1,670	1,670-1,910	1,910-2,160
	1.40	1,960-2,160	2,160-2,350	-	1,370-1,620	1,620-1,860	1,860-2,110
	1.60	1,910-2,110	2,110-2,300	-	1,320-1,570	1,570-1,810	1,810-2,060
	1.80	1,860-2,060	2,060-2,260	-	1,270-1,520	1,520-1,770	1,770-2,010
	2.00	1,810-2,010	2,010-2,210	-	1,270-1,470	1,470-1,720	1,720-1,960
	2.30	1,770-1,960	1,960-2,160	-	1,230-1,420	1,420-1,670	1,670-1,910
	2.60	1,770-1,960	1,960-2,160	-	1,230-1,420	1,420-1,670	1,670-1,910
2.90	1,720-1,910	1,910-2,110	-	1,180-1,370	1,370-1,620	1,620-1,860	
3.20	1,670-1,860	1,860-2,060	-	1,180-1,370	1,370-1,570	1,570-1,810	
3.50	1,670-1,810	1,810-1,960	-	1,180-1,370	1,370-1,570	1,570-1,770	
4.00	1,670-1,810	1,810-1,960	-	1,180-1,370	1,370-1,570	1,570-1,770	
4.50	1,620-1,770	1,770-1,910	-	1,130-1,320	1,320-1,520	1,520-1,720	
5.00	1,620-1,770	1,770-1,960	-	1,130-1,320	1,320-1,520	1,520-1,720	
5.50	1,570-1,710	1,710-1,860	-	1,080-1,270	1,270-1,470	1,470-1,670	
6.00	1,520-1,670	1,670-1,810	-	1,030-1,230	1,230-1,420	1,420-1,620	
6.50	1,520-1,670	1,670-1,810	-	1,030-1,230	1,230-1,420	1,420-1,620	
7.00	1,470-1,620	1,620-1,770	-	980-1,180	1,180-1,370	1,370-1,570	
8.00	1,470-1,620	1,620-1,770	-	980-1,180	1,180-1,370	1,370-1,570	
9.00	1,420-1,570	-	-	930-1,130	1,130-1,320	1,320-1,520	
10.0	1,420-1,570	-	-	930-1,130	1,130-1,320	1,320-1,520	
11.0	-	-	-	-	1,080-1,270	1,270-1,470	
12.0	-	-	-	-	1,080-1,270	1,270-1,470	
13.0	-	-	-	-	1,030-1,230	1,230-1,420	

\* Remarks : For the Wire of intermediate diameter, the value in this table for the nearest larger size than that shall be applied.

## Tensile Strength

Diameter (mm)	Piano(Music) Wire			Hard Drawn Steel Wire			
	Tensile Strength (N/mm <sup>2</sup> )		Coating Wt (g/m <sup>2</sup> )	Tensile Strength (N/mm <sup>2</sup> )			Coating Wt (g/m <sup>2</sup> )
	SWP-A	SWP-B		SW-A	SW-B	SW-C	
0.08	2,890-3,190	3,190-3,480	Min 10	2,110-2,450	2,450-2,790	2,790-3,140	Min 10
0.09	2,840-3,140	3,140-3,430	Min 10	2,060-2,400	2,400-2,750	2,750-3,090	Min 10
0.10	2,790-3,090	3,090-3,380	Min 10	2,010-2,350	2,350-2,700	2,700-3,040	Min 10
0.12	2,750-3,040	3,040-3,330	Min 10	1,960-2,300	2,300-2,650	2,650-2,990	Min 10
0.14	2,700-2,990	2,990-3,290	Min 10	1,960-2,260	2,260-2,600	2,600-2,940	Min 10
0.16	2,650-2,940	2,940-3,240	Min 10	1,910-2,210	2,210-2,550	2,550-2,890	Min 10
0.18	2,600-2,890	2,890-3,190	Min 10	1,910-2,210	2,210-2,550	2,550-2,890	Min 10
0.20	2,600-2,840	2,840-3,140	Min 20	1,910-2,210	2,210-2,550	2,550-2,890	Min 20
0.23	2,550-2,790	2,790-3,040	Min 20	1,860-2,160	2,160-2,450	2,450-2,750	Min 20
0.26	2,500-2,750	2,750-2,990	Min 25	1,810-2,110	2,110-2,400	2,400-2,700	Min 25
0.29	2,450-2,700	2,700-2,940	Min 25	1,770-2,060	2,060-2,350	2,350-2,600	Min 25
0.32	2,400-2,650	2,650-2,890	Min 25	1,720-2,010	2,010-2,300	2,300-2,600	Min 25
0.35	2,400-2,650	2,650-2,890	Min 25	1,720-2,010	2,010-2,300	2,300-2,600	Min 25
0.40	2,350-2,600	2,600-2,840	Min 25	1,670-1,960	1,960-2,260	2,260-2,550	Min 25
0.45	2,300-2,550	2,550-2,790	Min 30	1,620-1,910	1,910-2,210	2,210-2,500	Min 30
0.50	2,300-2,550	2,550-2,790	Min 35	1,620-1,910	1,910-2,210	2,210-2,500	Min 35
0.55	2,260-2,500	2,500-2,750	Min 35	1,570-1,860	1,860-2,160	2,160-2,450	Min 35
0.60	2,210-2,450	2,450-2,700	Min 40	1,570-1,810	1,810-2,110	2,110-2,400	Min 40
0.65	2,210-2,450	2,450-2,700	Min 40	1,570-1,810	1,810-2,110	2,110-2,400	Min 40
0.70	2,160-2,400	2,400-2,650	Min 45	1,520-1,770	1,770-2,060	2,060-2,350	Min 45
0.80	2,110-2,350	2,350-2,600	Min 50	1,520-1,770	1,770-2,010	2,010-2,300	Min 50
0.90	2,110-2,350	2,300-2,500	Min 55	1,520-1,770	1,770-2,010	2,010-2,260	Min 55
1.00	2,060-2,260	2,260-2,450	Min 60	1,470-1,720	1,720-1,960	1,960-2,210	Min 60
1.20	2,010-2,300	2,210-2,400	Min 65	1,420-1,670	1,670-1,910	1,910-2,160	Min 65
1.40	1,960-2,160	2,160-2,350	Min 70	1,370-1,620	1,620-1,860	1,860-2,110	Min 70
1.60	1,910-2,110	2,110-2,300	Min 70	1,320-1,570	1,570-1,810	1,810-2,060	Min 70
1.80	1,860-2,060	2,060-2,260	Min 75	1,270-1,520	1,520-1,770	1,770-2,010	Min 75
2.00	1,810-2,010	2,010-2,210	Min 80	1,270-1,470	1,470-1,720	1,720-1,960	Min 80
2.30	1,770-1,960	1,960-2,160	Min 85	1,230-1,420	1,420-1,670	1,670-1,910	Min 85
2.60	1,770-1,960	1,960-2,160	Min 95	1,230-1,420	1,420-1,670	1,670-1,910	Min 95
2.90	1,720-1,910	1,910-2,110	Min 100	1,180-1,370	1,370-1,620	1,620-1,860	Min 100
3.20	1,670-1,860	1,860-2,060	Min 105	1,180-1,370	1,370-1,570	1,570-1,810	Min 105
3.50	1,670-1,810	1,810-1,960	Min 105	1,180-1,370	1,370-1,570	1,570-1,770	Min 105
4.00	1,670-1,810	1,810-1,960	Min 110	1,180-1,370	1,370-1,570	1,570-1,770	Min 110
4.50	1,620-1,770	1,770-1,910	Min 110	1,130-1,320	1,320-1,520	1,520-1,720	Min 110
5.00	1,620-1,770	1,770-1,960	Min 110	1,130-1,320	1,320-1,520	1,520-1,720	Min 110
5.50	1,570-1,710	1,710-1,860	-	1,080-1,270	1,270-1,470	1,470-1,670	Min 110
6.00	1,520-1,670	1,670-1,810	-	1,030-1,230	1,230-1,420	1,420-1,620	Min 110
6.50	1,520-1,670	1,670-1,810	-	1,030-1,230	1,230-1,420	1,420-1,620	-
7.00	1,470-1,620	1,620-1,770	-	980-1,180	1,180-1,370	1,370-1,570	-
8.00	1,470-1,620	1,620-1,770	-	980-1,180	1,180-1,370	1,370-1,570	-

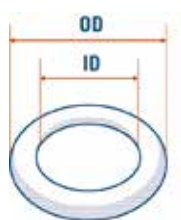
Zinc Galv.

\* Remarks : For the Wire of intermediate diameter, the value in this table for the nearest larger size than that shall be applied.

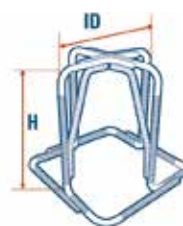
# Standard Packing

## Packaging Specifications by Standard Diameter : Piano (Music) Wire and Hard Drawn Steel Wire

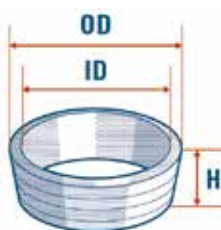
Classification	Diameter (mm)	Catchweight Coil				Carrier		Reel (Spool)		Reelless
		Weight (kg)	ID (mm)	OD (mm)	H (mm)	Weight (kg)	ID x H x W (mm)	Weight (kg)	Flange (mm)	Weight (kg)
Piano (Music) Wire / Hard Drawn Steel Wire	0.05-0.13	0.5	80	100	20	-	-	0.5	100	-
		1.5	80	100	20	-	-	1.5	150	-
	0.14-0.26	5	100	200	70	-	-	20	254 (DIN 250)	-
		10	150	250	80	-	-	20	254 (DIN 250)	-
	0.27-0.35	10	150	250	80	-	-	30	355 (DIN 355)	-
		10	190	310	100	-	-	20	254 (DIN 250)	-
	0.36-0.44	25	190	310	100	-	-	40	355 (DIN 355)	-
		30	220	370	110	-	-	20	254 (DIN 250)	-
	0.45-0.60	50	250	400	150	-	-	45	355 (DIN 355)	-
		80	270	420	230	-	-	45	355 (DIN 355)	450
	0.61-0.85	-	-	-	-	-	-	150	560 (DIN 560)	-
		100	280	500	230	400	300 x 950 x 600	150	560 (DIN 560)	450
	0.86-1.39	-	-	-	-	-	-	480	760 (DIN 760, 鐵製)	-
		-	-	-	-	-	-	400	760 (DIN 760, 木製)	-
		100, 200	400	600	300	400	580 x 950 x 800	400	760 (DIN 760)	450
	1.81-2.50	150-300	540	800	500	1,000	510 x 1,250 x 950	-	-	450
	2.30-3.50	150-400	540	800	500	1,000	600 x 1,250 x 980	-	-	-
3.51-4.20	150-400	600	850	500	1,000	600 x 1,250 x 980	-	-	-	
4.0-10.0	150-400	650	1,000	600	1,000	600 x 1,250 x 1,200	-	-	-	
9.0-13.0	-	-	-	-	-	600 x 1,250 x 1,200	-	-	-	



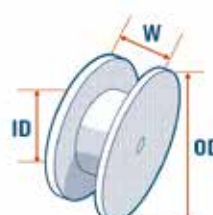
Catchweight Coil



Carrier



Reelless Coil



Wooden or Steel Reel





## OFFICE

**KISWIRE LTD. /  
HONGDUK INDUSTRIAL CO., LTD.  
HEADQUARTERS**  
37, Gurak-ro 141beon-gil, Suyeong-gu,  
Busan, 48212, Korea  
Tel. 82-51-760-1700  
Fax. 82-51-760-1980

**KISWIRE LTD. /  
HONGDUK INDUSTRIAL CO., LTD.  
SEOUL OFFICE**  
20F, Janggyo Bldg., 363, Samil-daero,  
Jung-gu, Seoul, 04541, Korea  
Tel. 82-2-316-6114  
Fax. 82-2-316-6280

**KISWIRE CHINA REGIONAL HQ**  
Room 04-05, 33A, Bldg A, TOP Yihe  
International, 10H.K. Mid Rd., Qingdao,  
Shandong, 266071, China  
Tel. 86-0532-6688-8722  
Fax. 86-0532-6688-8731

**KISWIRE (SHANGHAI) TRADING CO.,  
LTD. SHANGHAI BRANCH**  
Rm 1003, Block A, Oriental Financial Plaza,  
Property Management Center, No. 1168 Century  
Avenue, Pudong, Shanghai, 200122, China  
Tel. 86-21-5208-0929  
Fax. 86-21-5208-2878

**KISWIRE SOUTH-EAST ASIA REGIONAL HQ**  
No. 33, Jalan Senyum, Kampung Wadihana,  
80300, Johor Bahru, Johor, Malaysia  
Tel. 60-7-340-4000  
Fax. 60-7-332-8950

**KISWIRE JAPAN CO. (TOKYO)**  
Kiswire Bldg, 4-5F, 4-5 Ohdenma-Cho,  
Nihonbashi Chuo-Ku, Tokyo, 103-0011, Japan  
Tel. 81-3-3808-2839  
Fax. 81-3-3808-2835

**KISWIRE JAPAN CO. (OSAKA)**  
Kiswire Bldg 4F, 3-8-24, Nanbanaka,  
Naniwa-Ku, Osaka, 556-0011, Japan  
Tel. 81-6-6636-6607  
Fax. 81-6-6636-7751

**KISWIRE SINGAPORE LTD.**  
35 Marsiling Industrial Estate Road 3,  
Unit 05-05, Singapore 739257  
Tel. 65-6227-0939

**KISWIRE LOTUS CO., LTD.**  
140 One Pacific Place Bldg. 17/F Unit 1701  
Sukhumvit Road, Klongtoey, Bangkok 10110,  
Thailand  
Tel. 66-2-653-2820-1  
Fax. 66-2-653-2822

**KISWIRE CHENNAI OFFICE**  
C/O Am-Zone International Pvt Ltd  
DBS House, Suite No 311, 31 A Cathedral  
Garden Road, Nungambakkam Chennai,  
600034, India  
Tel. 91-44-40509200 Ext311

**KISWIRE AMERICA**  
3890 Steve Reynolds Blvd. Norcross, GA 30093,  
USA  
Tel. 1-470-447-2500

**KISWIRE INTERNATIONAL S. A.**  
12, rue Graham Bell, L-3235 Bettembourg  
Grand-Duchy of Luxemburg  
Tel. 352-28-10-24  
Fax. 352-52-08-49

## FACTORY

**KISWIRE LTD.  
SPRING WIRE FACTORY**  
1314, Yangsan-daero, Sangbuk-myeon, Yangsan-si,  
Gyeongsangnam-do, 50565, Korea  
Tel. 82-55-375-3500-4  
Fax. 82-55-375-3505

**HONGDUK INDUSTRIAL CO., LTD.  
POHANG SPRING WIRE FACTORY**  
51, Jangheung-ro 39beon-gil, Nam-gu, Pohang-si,  
Gyeongsangbuk-do, 37871, Korea  
Tel. 82-54-271-3600  
Fax. 82-54-271-0699

**HONGDUK INDUSTRIAL CO., LTD.  
POHANG SILK WIRE FACTORY**  
81, Songdeok-ro, Daesong-myeon, Nam-gu,  
Pohang-si, Gyeongsangbuk-do, 37872, Korea  
Tel. 82-54-271-6500  
Fax. 82-54-271-6594

## SERVICE CENTER

**TECHNICAL SERVICE CENTER,  
KISWIRE CHINA REGIONAL HQ**  
No.45 Zhongyang Road, Economic &  
Technological Development Zone, Nantong,  
Jiangsu, 226009, China  
Tel. 86-513-8598-9013  
Fax. 85-0513-8598-0119

**HYROPE HONG KONG LTD.**  
DD129 Lots 3178 Ping Ha Road, Lau Fau  
Shan, Yuen Long, New Territories(NT),  
Hong Kong  
Tel. 852-2615-0629  
Fax. 852-3126-9160

**KISWIRE INDONESIA, PT**  
Jl. Panglima Polim Raya No. 86 Lt.2 Gedung  
Harvia Place, Jakarta Selatan 12150,  
Indonesia  
Tel. 62-21-2942-6248-9  
Fax. 62-21-2942-6276 Fax. 82-54-271-6594

**HYROPE (THAILAND) CO., LTD.**  
700/766 Moo 1, Amata Nakorn Industrial  
Estate Phase 8, Phanthong Sub-District,  
Phanthong District,  
Chonburi, 20160, Thailand  
Tel. 66-38-079-216-7  
Fax. 66-38-079-218