



**NGK**  
NGK BERYLCO

# Beryllium Copper Alloys

Meet tomorrow's technical challenges



**NON-SPARKING** Good formability  
**ELECTRICAL CONDUCTIVITY** **HIGH FATIGUE LIFE**  
Wear & abrasion resistance **MECHANICAL** **HIGH STRENGTH**  
**STRESS RELAXATION** Wide temperature range Hardness  
**THERMAL CONDUCTIVITY** **NON-MAGNETIC**  
Corrosion resistance

Security • Reliability • Performance

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## ADVANTAGES

- High strength
- High fatigue life
- Good conductivity
- Good formability
- Corrosion resistance
- Stress relaxation
- Wear & abrasion resistance
- Wide temperature range
- Anti-microbial
- Non-magnetic
- Non-Sparking



## MARKETS

- Automotive
- Aerospace
- Defence
- Railway
- Electrical & Electronic
- Telecommunication
- Nuclear energy
- Photovoltaic
- Hydrogen
- Offshore
- Biomedical & Medical
- Home appliances
- Watch making



### Unique combinations of mechanical and electrical properties

The Berylco Beryllium Copper alloys are the most versatile of all copper alloys.

NGK alloys offer a wide range of properties that make them the ideal choice to meet the most demanding requirements and in the most diverse markets where high performance is needed.

The Berylco alloys offer a wide-ranging combination of mechanical and electrical properties with excellent formability which is unique for copper alloys.

The mechanical strength that can be achieved after a simple heat treatment at low temperature, ranks highest amongst all the copper-based alloys, and this combined with its high electrical conductivity outperforms any bronze alloys.

Our alloys exhibit a wide range of desirable properties such as high fatigue strength, excellent corrosion, wear and abrasion resistance.

NGK's alloys are also anti-microbial, non-magnetic & non-sparking.

Manufacturing technologies such as casting, forging, extrusion, cold drawing, cold rolling, stamping, machining, soldering, plating, wire eroding amongst many others, can be used to produce any beryllium copper parts.

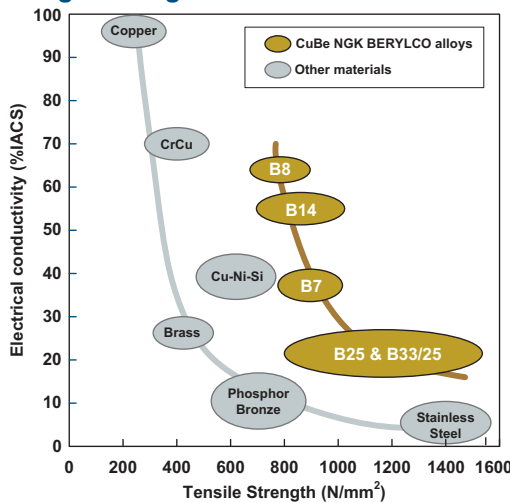
### Meet tomorrow's technological challenges

Demands for reducing cost, improving quality, miniaturization, reliability, safety, environmental protection and high-end general performance require suitable high-performance alloys such as Beryllium Copper.

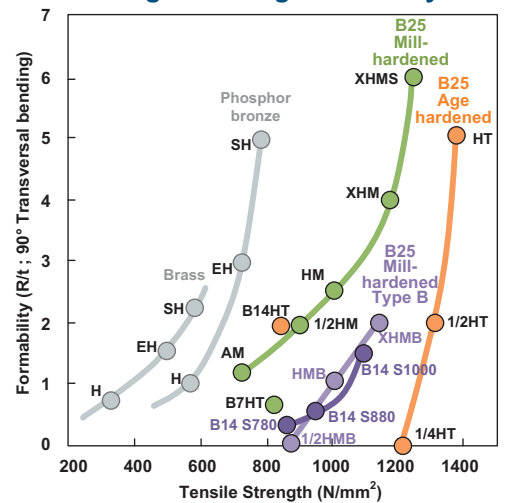
NGK has data available which can be referred to by the user to select the correct BeCu alloy and temper which will ensure the most suitable properties are selected to ensure peak performance whilst also taking into consideration the forming of any part.

If required NGK can investigate the possibility of improving the formability & performance while retaining the desired high mechanical properties. For these special investigations we offer the services of our engineers and technical advisors.

### High Strength & Electrical Conductivity



### High Bending Formability



## INDUSTRIAL HYGIENE

The routine daily use in solid form of our beryllium copper alloys which have a beryllium content of 2% maximum, presents no health risks, because the beryllium element is completely dissolved in the copper matrix. Therefore, common operations such as handling, stamping, slitting, cutting, CNC machining, turning, surface coating, or heat treating require no special precautions.

However, attention must be drawn to operations that may emit inhalable fumes or fine dust, which can cause the respiratory chronic beryllium disease (CBD or berylliosis). These include melting, casting, welding, grinding, sanding, polishing, pickling, electro-discharge machining (EDM), or any other abrasive operation.

Therefore, for this type of operation, it is necessary to implement appropriate aspiration and filtration systems in order to comply with the occupational exposure limit value for beryllium (8-hours inhalable OEL) of 0.6 followed by 0.2 µg/m<sup>3</sup> of air in July 2026, adopted by the European Union (Directive 2019/983).

The recommended OEL for beryllium in UK is **2 µg/m<sup>3</sup>**.

NGK Berylco has participated in the development of a Product Stewardship Program for beryllium containing materials: "Be Responsible". Available at [www.berylliumsafety.eu](http://www.berylliumsafety.eu).



Please note that Beryllium is not on the list of Substances of Very High Concern (SVHC) under the EU and UK REACH Regulation and is not restricted under the EU and UK RoHS Directive.

For more information on the regulatory compliance of our products, the risks and best practices associated with beryllium-containing products, or obtaining the Safety Information Sheet related to our articles in beryllium-copper alloys Berylco, please contact us.

## Beryco CuBe Alloys Properties

	Designation	Chemical composition (%)	Product form	Characteristics
High Strength alloys	<b>BERYLCO 25*</b>	Be: 1.8 - 2.0 % Co: 0.3 % max. Co + Ni + Fe: 0.6 % max. Cu + additions: 99.5 % min	Strip Plate Rod Wire	B25 alloy offers a wide combination of properties ranging from good electrical conductivity, good formability, and very high mechanical and electrical properties after heat treatment.
	<b>BERYLCO 33/25</b>	Be: 1.8 - 2.0 % Co: 0.3 % max. Co + Ni + Fe: 0.6 % max. Pb: 0.2 - 0.6 % Cu + additions: 99.5 % min	Rod Wire	Free machining very high strength alloys. Its small lead addition gives a very good machinability index. Its mechanical properties are identical to Berylco 25.
	<b>BERYLCO 14</b>	Be: 0.2 - 0.6 % Ni: 1.8 - 2.2 % Cu + additions: 99.5 % min	Strip Plate Rod Wire	B14 alloy combines good mechanical properties and high electrical conductivity. B14S mill hardened strip product offers an excellent formability superior to any other copper alloy.
High Conductivity alloys	<b>BERYLCO 8</b>	Be: 0.2 - 0.6 % Ni: 1.4 - 2.2 % Cu + additions: 99.5 % min	Strip	B8 alloy combines very high electrical conductivity (>60 %IACS) and good mechanical properties. It is recommended for products exposed to high temperature.
	<b>BERYLCO 7</b>	Be: 0.2 - 0.4 % Ni + Co: 1.8 - 2.5 % Al: 0.6 % max Cu+Be+Ni+Co+Al: 99.5 % min	Strip	B7 alloy offers an excellent combination of mechanical formability and electrical properties, and are recommended for large production batch applications.

\*The chemical composition complies with EN 1654 and EN 1652 standards.

### STRIP • ROD • WIRE • TUBE • PLATE • CHILL-VENT



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[www.ngk-alloys.com](http://www.ngk-alloys.com)

Physical properties after precipitation hardening		Berylco 25 & 33/25	Berylco 14	Berylco 8	Berylco 7
Melting point	°C	865	1004	1004	1050
Density	g/cm <sup>3</sup> at 20°C	8.3	8.8	8.8	8.7
Specific heat	J·kg <sup>-1</sup> ·K <sup>-1</sup> at 20°C	419	419	419	419
Coefficient of linear expansion	x10 <sup>-6</sup> /°C at 20° to 200°C	17.8	17.6	17.6	17.6
Electrical resistivity ρ (maxi)	10 <sup>-8</sup> Ω.m at 20°C	7.9	7.9	3.8	3.1
Electrical conductivity	% IACS at 20°C	21 - 25	55 - 67	60 - 70	41 - 45
Thermal conductivity	W/(m.K) at 20°C	85 - 100	220 - 270	280 - 300	170 - 200
Modulus of elasticity	N/mm <sup>2</sup>	127 000	132 000	132 000	127 000
Modulus of rigidity	N/mm <sup>2</sup>	49 000	52 000	52 000	49 000
Poisson's ratio		0.3	0.3	0.3	0.3
Magnetic permeability	μ (μ=1+4πk)	1.000042	1.000031	1.000031	1.000027
Fatigue resistance	N/mm <sup>2</sup> for 10 <sup>8</sup> cycles	≥ 300	≥ 240	≥ 240	≥ 250

The values given in the table above are provided just for information purposes only.

### Standards of Reference

Authority	Strip	Rod and Wire
EN	1652, 1654	12163, 12164, 12165, 12166, 12167
ASTM	B194, B534	B196, B197, B442, B441
CDA and SAE	C17200, C17000, C17510, C17530	C17200, C17300, C17510
JIS	H3130 C1720 P.R, H3130 C1751 P.R	H3270 C1720 B.W
AFNOR <sup>(1)</sup>	A51.109 <sup>(1)</sup>	A51.114 <sup>(1)</sup> , A51.414 <sup>(1)</sup>
DIN <sup>(1)</sup>	17666 <sup>(1)</sup> , 17670 <sup>(1)</sup> , 1777 <sup>(1)</sup>	17666 <sup>(1)</sup> , 17672 <sup>(1)</sup>
British Standard <sup>(1)</sup>	BS 2870 <sup>(1)</sup>	BS 2873 <sup>(1)</sup> , BS 2874 <sup>(1)</sup>
Federal USA <sup>(2)</sup>	QQ-C-533 <sup>(2)</sup>	QQ-C-530 <sup>(2)</sup>

Specifications replaced by the EN <sup>(1)</sup> and ASTM <sup>(2)</sup> specifications. Withdrawn and superseded specifications are listed for reference only and are not to be used for purchasing.

⚠ Any requirement must be specified at time of order placement.

Please contact NGK Berylco to determine the appropriate replacement specification

## Strip – Standard Mechanical and Electrical Properties

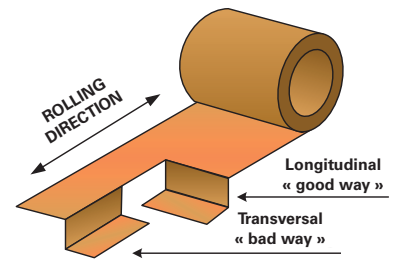
Alloy	Temper	TS (MPa)	YS 0.2% (MPa)	Elongation A <sub>50</sub> mini (%)	Hardness (HV)	*Electrical Conductivity (% IACS)	Heat Treatment	*Formability R/t at 90° bending	
								Long.	Trans.
High Strength B25	<b>Age hardenable (delivered material temper)</b>								
	A TB00	410 – 540	190 – 380	35	90 – 150	≥ 15	---	0.0	0.0
	1/4 H TD01	510 – 610	400 – 560	15	130 – 190	≥ 17		0.0	0.0
	1/2 H TD02	590 – 690	510 – 660	8	180 – 220	≥ 17		1.0	2.0
	H TD04	690 – 830	650 – 800	2	215 – 270	≥ 17		2.0	5.0
	<b>Age hardened (heat treated by client)</b>								
	AT TF00	1130 – 1350	960 – 1210	3	350 – 410	≥ 22	3h at 316°C	--	--
	1/4 HT TH01	1210 – 1400	1020 – 1280	3	360 – 430	≥ 22	2h at 316°C	--	--
	1/2 HT TH02	1260 – 1450	1090 – 1350	1	370 – 440	≥ 22		--	--
	HT TH04	1310 – 1520	1130 – 1420	1	380 – 450	≥ 22		--	--
	<b>Mill hardened (delivered material temper)</b>								
	AM TM00	690 – 800	480 – 660	16	210 – 250	≥ 19	M	1.0	1.3
	1/4 HM TM01	750 – 870	550 – 760	15	235 – 280	≥ 17		1.3	1.8
	1/2 HM TM02	830 – 960	650 – 850	12	260 – 310	≥ 20		1.5	2.0
	HM TM04	930 – 1080	750 – 980	9	290 – 350	≥ 23		2.3	2.5
	SHM TM05	1030 – 1150	860 – 1020	9	310 – 360	≥ 23		2.5	3.0
	XHM TM06	1100 – 1250	930 – 1180	4	345 – 395	≥ 23		3.0	4.0
	XHMS TM08	1200 – 1320	1030 – 1230	3	365 – 420	≥ 23		4.0	6.0
	<b>Mill hardened. high formability (delivered material temper)</b>								
	1/2 HMB	830 – 930	660 – 860	12	255 – 310	≥ 17	M	0.0	0.0
HMB	930 – 1030	760 – 930	9	280 – 340	≥ 20	1.0		1.0	
HMB-SHF	930 – 1030	760 – 930	9	280 – 340	≥ 20	0.8		0.8	
XHMB	1070 – 1210	930 – 1170	4	330 – 390	≥ 20	2.0		2.0	
XHMB-SHF	1070 – 1210	930 – 1170	4	330 – 390	≥ 20	1.5		1.5	
<b>Age hardenable (delivered material temper)</b>									
A TB00	250 – 380	140 – 300	20	60 – 130	≥ 22	---	0.0	0.0	
H TD04	480 – 600	370 – 560	2	140 – 185	≥ 22	---	2.0	3.0	
<b>Age hardened (heat treated by NGK or by client)</b>									
AT TF00	680 – 870	550 – 690	8	190 – 250	≥ 55	M or 3h at 480°C	--	--	
HT TH04	750 – 950	670 – 900	5	220 – 270	≥ 55	M or 2h at 480°C	2.0	2.0	
<b>Mill hardened. high formability (delivered material temper)</b>									
S780	780 – 930	680 – 850	12	220 – 270	≥ 60	M	0.3	0.3	
S880	880 – 1020	780 – 950	10	250 – 310	≥ 50		0.7	0.7	
SHC-S1000	930 – 1070	850 (min)	5	280 – 330	≥ 45		1.5	1.5	
<b>Mill hardened (delivered material temper)</b>									
1/2 HT TH02	650 – 800	550 – 690	10	180 – 230	≥ 60	M	0.8	0.8	
HT TH04	700 – 870	600 – 780	5	210 – 260	≥ 60		1.0	1.0	
<b>Mill hardened (delivered material temper)</b>									
1/2 HT TH02	670 – 800	550 – 760	10	195 – 250	≥ 38	M	0.0	0.0	
HT TH04	765 – 900	685 – 830	8	220 – 275	≥ 33		0.5	1.0	
EHT TH04	870 – 1000	750 – 930	4	250 – 310	≥ 30		1.0	1.5	

\*Values given for reference only

■ Properties are applicable for bands thickness  $0.1 \leq t < 1.0$  mm.

■ M ("Mill Hardened") indicates that the metal has been submitted to a heat treatment process at source designed to give characteristics falling within the guaranteed ranges specified as mill hardened in above table.

■ The formability R/t ratio allows a bending radius at 90° without cracking in the direction of rolling (transversal (good way) and longitudinal (bad way) bending ways). Typical R/t values are applicable for strip of 0.25 mm thick or less. R = radius of bending ; t = strip thickness.



### Notes

## Strip Dimensional Tolerances

### Tolerances on thickness (mm)

Thickness	Standard	Precision
< 0.099	± 0.004	± 0.004
0.10 – 0.149	± 0.005	± 0.004
0.15 – 0.199	± 0.006	± 0.004
0.20 – 0.249	± 0.007	± 0.005
0.25 – 0.299	± 0.008	± 0.006
0.30 – 0.399	± 0.009	± 0.007
0.40 – 0.499	± 0.010	± 0.008
0.50 – 0.599	± 0.013	± 0.009
0.60 – 0.799	± 0.015	± 0.010
0.80 – 0.999	± 0.030	On demand
1.00 – 1.199	± 0.035	On demand
1.20 – 1.499	± 0.045	On demand
1.50 – 2.000	± 0.050	On demand

### Tolerances on width (mm)

Thickness	Width	from 3 to 49.9	from 50 to 100	> 100
≤ 0.80 mm	standard	± 0.08	± 0.10	± 0.20
	precision	± 0.05	± 0.06	± 0.20
> 0.80 mm	standard	± 0.10	± 0.15	± 0.20

### Maximum Edgewise curvature

Ratio : Nominal Width/Thickness	Tolerances
8 – 15	8
15.1 – 30	6
30.1 – 60	4
60.1 – 120	3
> 120	2

■ If supplied A temper, only standard tolerances are possible.

**Strip – Mechanical Properties as per EN 1654 standard**

	Alloy	Temper	TS	YS 0.2% min.	Hardness	Elongation	
			(MPa)	(MPa)	(HV)	A <sub>50</sub> mini (%)	
High Strength	B25 (CW101C)	<b>Age hardenable (delivered material temper)</b>					
		R410	Y190	410 – 530	190	90 – 150	35
		R510	Y410	510 – 610	410	120 – 190	15
		R580	Y510	580 – 690	510	170 – 220	8
		R680	Y620	680 – 830	620	210 – 290	2
		<b>Age hardened (heat treated by client)</b>					
		R1130	Y960	1130 – 1350	960	350 – 410	3
		R1190	Y1020	1190 – 1420	1020	360 – 430	3
		<sup>(1)</sup> R1270	<sup>(1)</sup> Y1100	1270 – 1490	1100	370 – 440	--
		R1310	Y1130	1310 – 1520	1130	380 – 450	--
		<b>Mill hardened (delivered material temper)</b>					
		<sup>(1)</sup> R750	<sup>(1)</sup> Y550	750 – 830	550	230 – 280	15
		R820	Y650	820 – 930	650	250 – 310	12
<sup>(1)</sup> R930	<sup>(1)</sup> Y750	930 – 1040	750	280 – 350	9		
R1060	Y930	1060 – 1250	930	310 – 400	4		
R1200	Y1030	1200 – 1320	1030	360 – 420	3		
High Conductivity	B14 (CW110C)	<b>Age hardenable (delivered material temper)</b>					
		R240	Y130	240 – 380	130	60 – 130	20
		<sup>(1)</sup> R480	<sup>(1)</sup> Y370	480 – 590	370	140 – 180	2
		<b>Mill hardened (delivered material temper)</b>					
		R750	Y550	750 – 940	650	200 – 290	5
		<sup>(1)</sup> R820	<sup>(1)</sup> Y750	820 – 1040	750	210 – 290	--

<sup>(1)</sup> Available on request, if agreed after feasibility study.

■ Properties – The above table is valid for thickness ranges of between 0.1 and 1 mm; according to EN 1654 standard.



# Strips supplied to EN 1654

**Strip Dimensional Tolerances as EN 1654**

Tolerances on thickness (mm)		
Thickness	Class A	Class B
0.1 – 0.2	± 0.010	± 0.007
0.201 – 0.3	± 0.015	± 0.010
0.301 – 0.4	± 0.018	± 0.012
0.401 – 0.299	± 0.020	± 0.015
0.501 – 0.8	± 0.025	± 0.018
0.801 – 0.9	± 0.030	± 0.022

Tolerances on width (mm)			
Class	3 – 50	50.1 – 100	100.1 – 200
A	+0.2, -0	+0.3, -0	+0.4, -0
B	+0.1, -0	+0.15, -0	--

Edgewise curvature for strip condition "as rolled" (N)		
Nominal width (mm)	Up to and including 0.5	over 0.5
3 – 6	12	--
6.1 – 10	8	10
10.1 – 20	4	6
20.1 – 220	2	3

**Notes**

- The product designation must mention material condition designation, dimensions and tolerances classes for thickness and width (A or B).
- Tolerance on width for class B only available for t<0.6 mm.
- As standard, only the edgewise curvature is measured. On request and after prior agreement, it is possible to deliver the strip: "N – as rolled" with measurement of the edgewise curvature and transverse cross bow or "G – as flattened" (in accordance with EN 1654) with measurement of the edgewise curvature, transverse cross bow, coil set, and waviness.

**Bar and Rod Mechanical and Electrical Properties**

Alloy	Temper	Diameter (mm)	TS (MPa)	Ys 0.2% (MPa)	Elongation A <sub>50</sub> mini (%)	Hardness (HV)	Electrical Conductivity (% IACS)	Heat Treatment	
High Strength	<b>■ Age hardenable (delivered material temper)</b>								
	A	TB00	1 ≤ Ø ≤ 13.3	420 – 600	170 – 270	35	90 – 160	15 – 19	--
			Ø ≥ 12.7	410 – 590	≥ 140	35	90 – 170	--	--
	1/2 H	TD02	1 ≤ Ø ≤ 13.3	580 – 820	520 – 720	10	175 – 240	15 – 19	--
			Ø ≥ 12.7	620 – 800	550 – 800	8	200 – 250	15 – 19	--
	H	TD04	1 ≤ Ø ≤ 13.3	590* – 900*	≥ 520	8	180* – 275*	--	--
			Ø ≥ 12.7	590* – 900*	≥ 520	8	180* – 275*	--	--
	<b>■ Age hardened (heat treated by NGK or by client)</b>								
	AT	TF00	1 ≤ Ø ≤ 13.3	1150 – 1350	1000 – 1250	4	390 – 410	21 – 28	Mill hardened or 3h at 316°C
			Ø ≥ 12.7	≥ 1140*	≥ 965*	3	355 – 390	21 – 38	
	1/2 HT	TH02	1 ≤ Ø ≤ 13.3	1180 – 1450	1050 – 1300	2	365 – 430	21 – 28	Mill hardened or 2h at 316°C
			Ø ≥ 12.7	1300 – 1500	1150 – 1400	2	390 – 430	21 – 28	
HT	TH04	1 ≤ Ø ≤ 13.3	≥ 1220*	≥ 1035*	3	365* – 445*	21 – 38	Mill hardened or 2h at 316°C	
		Ø ≥ 12.7	≥ 1220*	≥ 1035*	3	365* – 445*	21 – 38		
B33/25	<b>■ Age hardenable (delivered material temper)</b>								
	H	TD04	1 ≤ Ø ≤ 25	620 – 860	550 – 800	8	200 – 250	15 – 19	--
			25 < Ø < 28	600 – 800	520 – 750	8	180 – 240	15 – 19	--
	<b>■ Age hardened (heat treated by client)</b>								
HT	TH04	1 ≤ Ø ≤ 25	1300 – 1500	1150 – 1400	2	390 – 430	21 – 28	Mill hardened or 2h at 316°C	
		25 < Ø < 28	1240 – 1480	1070 – 1400	4	380 – 430	21 – 28		
High Conductivity	<b>■ Age hardenable (delivered material temper)</b>								
	A	TB00	Ø ≥ 12.7	240 – 380	≥ 170	30	≤ 95	≥ 20	--
			1 ≤ Ø ≤ 13.3	490 – 635	--	--	130 – 190	≥ 30	--
	H	TD04	Ø ≥ 12.7	450 – 550	≥ 380	10	105 – 155	≥ 20	--
			1 ≤ Ø ≤ 13.3	760 – 965	--	--	230 – 280	≥ 50	Mill hardened or 2-3h at 450°C
	AT	TF00	Ø ≥ 12.7	≥ 690	≥ 550	10	200 – 250	≥ 45	
1 ≤ Ø ≤ 13.3			≥ 760	≥ 690	10	220 – 270	≥ 48		

\* Values can vary according to the diameter (please refer to ASTM B196).

- For 1 ≤ Ø ≤ 13.3 rods are produced in Japan and cannot be certified according to ASTM or AMS specifications.
- It is possible to produce B33/25 alloy as wire coils with the same mechanical properties as rods.

**B14 (CuNi2Be)**  
**Bar and Rod**  
**B25 (CuBe2)**  
**B33/25 (CuBe2Pb)**

**Rod Dimensional Tolerances**

Dimensional tolerances (Age hardenable)				Length / Diameter			
Berylco 14 and 25		Berylco 33/25		Berylco 14 and 25		Berylco 33/25	
Ø (mm)	± (mm)	Ø (mm)	± (mm)	Ø (mm)	L ± (mm)	Ø (mm)	L ± (mm)
1.0 – 3.0	+0/-0.025 (h9)	1.0 – 3.0	+0/- 0.014 (h8)	1.0 – 5.9*	2000 ±100	1.0 – 3.0	3000 +50/-10
3.1 – 6.0	+0/-0.030 (h9)	3.1 – 6.0	+0/- 0.018 (h8)	6.0 – 12.7*	3000 ±100	3.1 – 18.0	3000 ±50
6.1 – 10.0	+0/-0.036 (h9)	6.1 – 10.0	+0/- 0.022 (h8)	12.8 – 44.45	3505 ±457	18.1 – 28.0	3000 ±100
10.1 – 13.0	+0/-0.070 (h10)	10.1 – 13.0	+0/- 0.027 (h8)	44.46 – 53.95	3048 ±508		
12.7 – 25.4	±0.076	13.1 – 18.0	+0/- 0.043 (h9)	53.96 – 63.50	2438 ±610		
25.41 – 44.45	+0.508/-0 (or ±0.127)	18.1 – 26.0	+0/- 0.052 (h9)	63.51 – 87.33	2006 ±788		
44.46 – 66.7	+0.762/-0 (or ±0.127)	26.1 – 28.0	+0/- 0.084 (h10)	87.34 – 152.40	1524 ±610		
66.7 – 127	+1.524/-0			152.41 – 304.80	1524 ±610		
>127	+3.175/-0						

■ Rods can be delivered after centerless grinding down to h5 subject to feasibility by our subcontractor.

\* For 1.0 ≤ Ø ≤ 12.6 mm, age-hardened rods are delivered as 1 m +100/-0 mm.  
 ■ Berylco 33/25 rods are pointed and chamfered.

If non-standard properties are required, please enquire on NGK Berylco for specific manufacturing.

**Wire Properties**

Alloy	Temper	Diameter (mm)	TS (MPa)	YS 0.2% (MPa)	Elongation A <sub>50</sub> mini (%)	Hardness (HV)	Electrical Conductivity (% IACS)	Heat Treatment		
High Strength	B25	■ Age hardenable (delivered material temper)								
		*A	TB00	0.8 ≤ Ø ≤ 1.4	390 – 540	140 – 250	35	--	--	
		1/2H	TD02	0.8 ≤ Ø ≤ 10	550 – 780	470 – 750	10	--	--	
		H	TD04		750 – 1140	610 – 960	2	--	--	
		■ Age hardened (heat treated by client)								
		*AT	TF00	0.8 ≤ Ø ≤ 1.4	1150 – 1300	1000 – 1200	3	350 – 420	≥ 22	2h at 316°C
		1/2HT	TH02	0.8 ≤ Ø ≤ 10	1200 – 1450	1100 – 1350	2	--		
HT	TH04	1300 – 1550	1200 – 1460		2	370 – 440				
High Conductivity	B14	■ Age hardenable (delivered material temper)								
		*A	TB00	0.8 ≤ Ø ≤ 1.4	300 – 450	--	10 – 40	--	≥ 20	--

\* The surface of A temper is unfinished (without acid pickling) with oxide layer remaining.

- Elongation, electrical conductivity, and hardness are for design guidance only.
- Other wire diameter available on request.


**Dimensional Tolerances**

Diameter (mm)	0.10<Ø≤0.25	0.25<Ø≤0.30	0.30<Ø≤0.50	0.50<Ø≤1.00	1.00<Ø≤2.00	2.00<Ø≤4.00	4.00<Ø≤6.00	6.00<Ø≤10.00
Standard Tolerances	± 0.005	± 0.008	± 0.010	± 0.015	± 0.020	± 0.030	± 0.040	± 0.060



■ For the Ø>4 mm, please enquire on NGK Berylco for a study on feasibility.

**Coil Diameter and Weight**

Diameter (mm)	< 0.3	0.3 – 0.5	0.51 – 0.7	0.71 – 1.0	1.1 – 3.5	3.6 – 7.5	7.6 – 10
Coil Diameter (mm)	--	300 – 400	300 – 400	300 – 400	400 – 500	750 – 850	800 – 1000
Coil Weight (kg)	1 – 3	1 – 3	1 – 3	3 – 19	6 – 35	12 – 70	10 – 35

■ For wire Ø<0.3 mm, delivery only possible on a bobbin

**Visual Inspection of Wire**

Ø ≤ 1.0 mm	Ø > 1.0 mm
 <p>Shiny surface (drawing with liquid lubricant by diamond die)</p>	 <p>Slightly shiny surface (drawing with powder lubricant by carbide die)</p>

If non-standard properties are required, please enquire on NGK Berylco for specific manufacturing.



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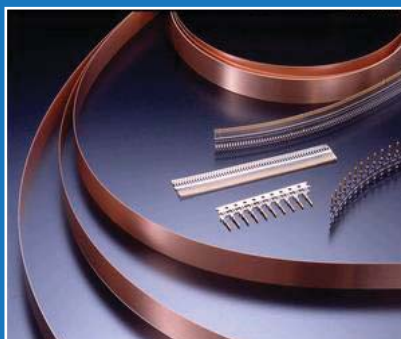
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