

High-Strength Copper Titanium Alloy

NKT322

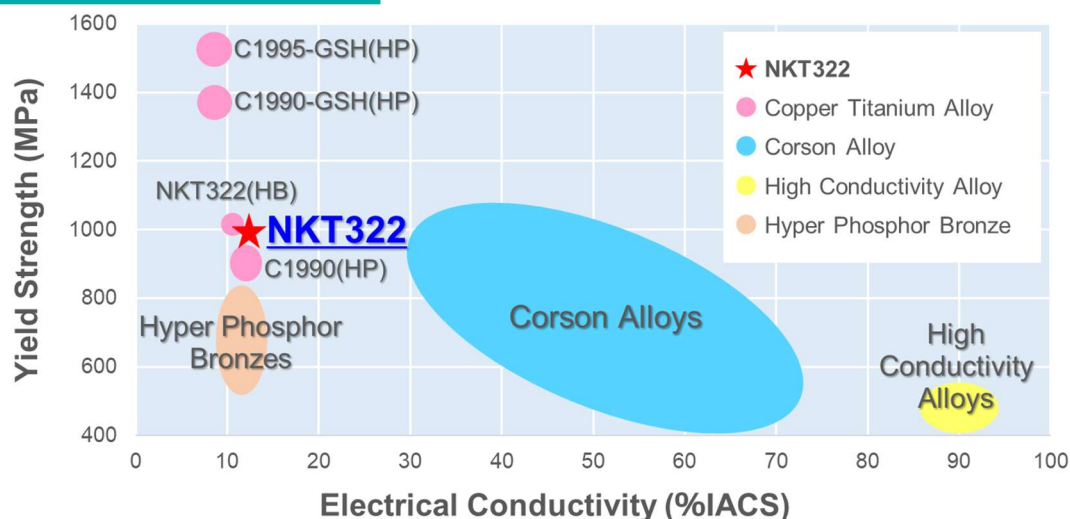
UNS C19910

※Data in this sheet are typical values (not specification).

Features

- NKT322 is a proprietary alloy we developed by adding small amounts of iron to copper titanium alloy (C1990) and further improving processes.
- NKT322 has the highest stress relaxation resistance among conventional commercial copper alloys and can maintain contact force at high temperatures.
- Compared to phosphor bronze, NKT322 has higher strength and higher bend formability, so higher contact force can be obtained when used in small contact terminals.
- NKT322 has the same strength as copper beryllium and is ideal as an alternative product.

Our Copper Alloy Lineup



Material Properties

1. Chemical Composition

Element	Cu	Ti	Fe
Nominal Value (wt%)	Bal.	3.2	0.2

2. Physical Properties

Electrical Conductivity (%IACS) (@20°C)	12
Specific Resistance (nΩ·m) (@20°C)	144
Thermal Conductivity (W/(m·K))	56
Thermal Expansion Coefficient (×10 ⁻⁶ /K) (@20~200°C)	18.0
Modulus of Elasticity (GPa)	120
Specific Gravity	8.70

Material Properties

3. Mechanical Properties

Temper	Tensile Strength (MPa)	Yield Strength (MPa)	Elongation (%)	Hardness (Hv)
H	950 (900 - 1000)	850 (800 - 900)	18.0 (≥ 12.0)	300 (250 - 350)
EH	970 (920 - 1020)	900 (850 - 950)	15.0 (≥ 10.0)	310 (280 - 360)
SH	1020 (970 - 1100)	950 (900 - 1000)	10.0 (≥ 6.0)	320 (290 - 370)
ESH	1070 (1010 - 1200)	1000 (950 - 1050)	5.0 (≥ 3.0)	340 (300 - 400)

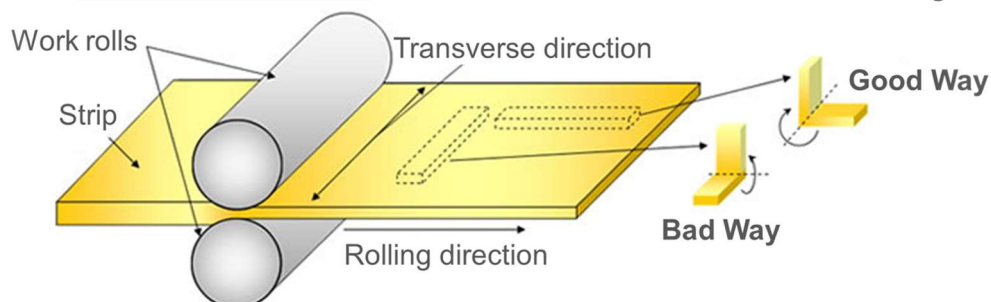
Upper : Typical value, Lower : Standard range

4. W-Shaped 90 degree Bend Formability

Width (mm)	Temper	Thickness (mm)	Minimum Bend Radius / Thickness	
			Good Way	Bad Way
10	H	< 0.15	0	0
		0.15~0.25	0	0.5
	EH	< 0.15	0	0.5
		0.15~0.25	0.5	1.0
	SH	< 0.12	0	1.0
		0.12~0.22	1.0	2.0
	ESH	< 0.10	1.0	2.0
		0.10~0.20	2.0	3.0
0.2	H	≤ 0.20	0	0
	EH	≤ 0.20	0	0
	SH	≤ 0.20	0	0
	ESH	≤ 0.15	0	0

※In accordance with Japan Copper and Brass Association technical standard (JCBA T307)

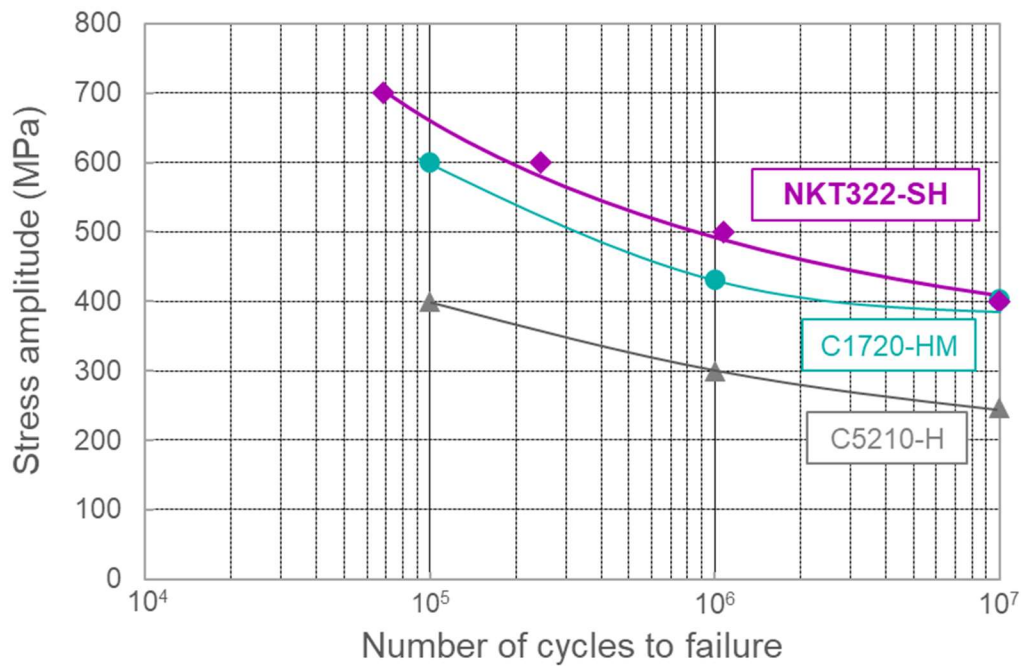
Bend direction from schematic illustration of rolling



Material Properties

5. Fatigue Property

- NKT322 has better fatigue properties than phosphor bronze (C5210) and copper beryllium (C1720).

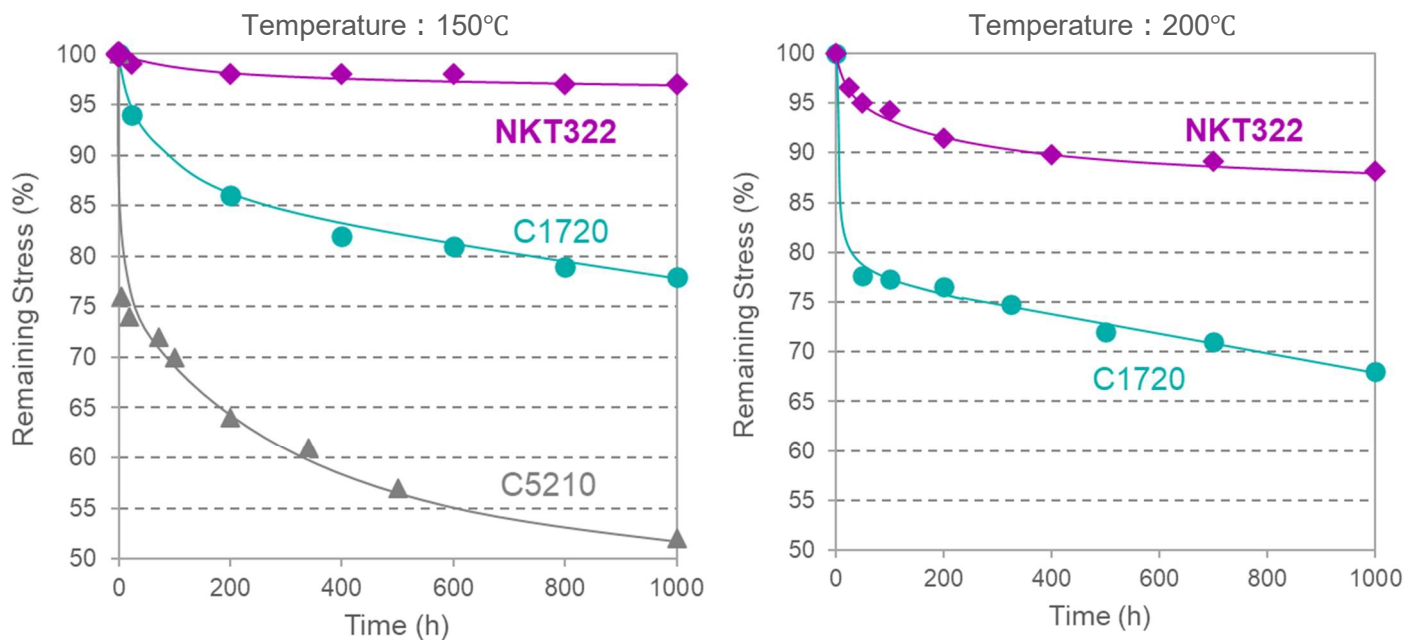


※Test method : JIS-Z-2273

Fatigue Property (Rolling Direction)

6. Thermal Stress Relaxation Resistance

- NKT322 has superior stress relaxation resistance compared to copper beryllium (C1720) and phosphor bronze (C5210), and this tendency is more pronounced under elevated temperature.



Thermal Stress Relaxation Resistance

※Test method : JCBA T309

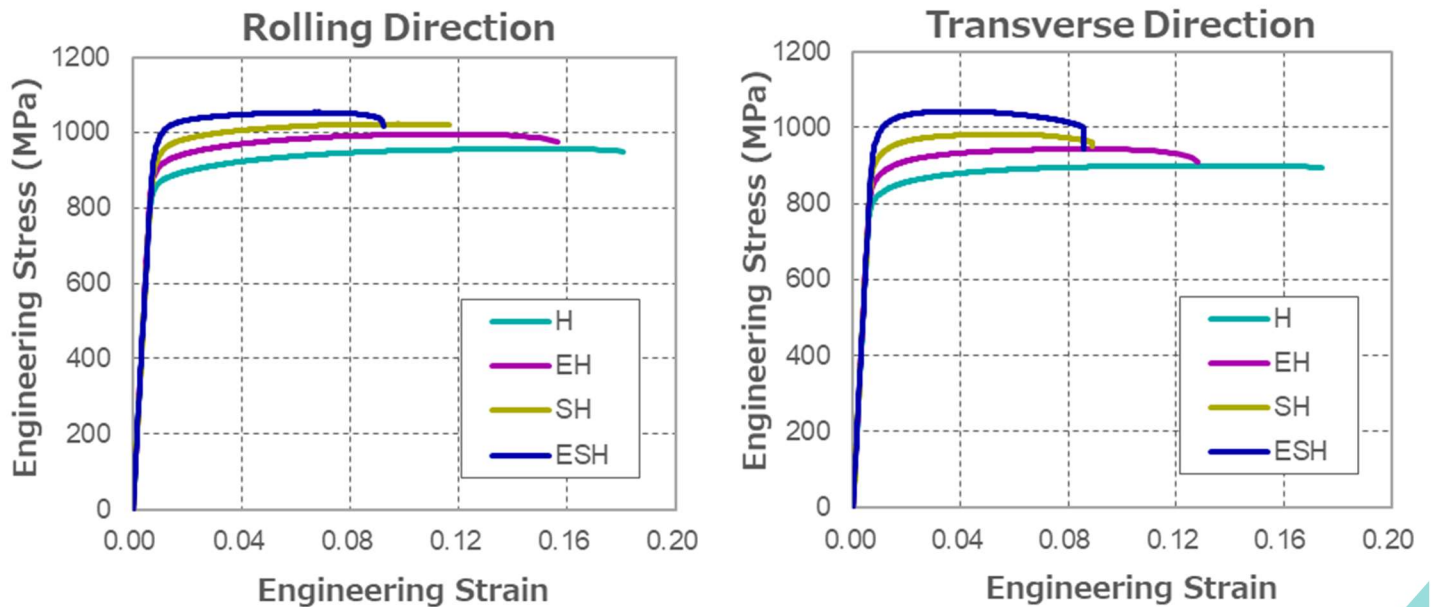
※Applied stress : Yield Stress $\times$ 80%

Material Properties

7. Stress-Strain Curve

- Engineering Stress-Strain Curves for each temper of NKT322 can be downloaded from our official website.

Download : https://www.jx-nmm.com/english/products/copper_foil_and_alloy/02cuti/excel/NKT322_S-S_Curve.xlsx



Stress-Strain Curves

Production Thickness Range

Temper	Thickness Range (mm)
H	0.10 ~ 0.50
EH	0.08 ~ 0.40
SH	0.08 ~ 0.30
ESH	0.10 ~ 0.30

- Please contact us for the latest stock status and inquiry of other thicknesses.

Contact Address

Web Site : <https://www.jx-nmm.com/english/>

NKT322 introduction URL : https://www.jx-nmm.com/english/products/copper_foil_and_alloy/02cuti/nkt322.html

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