

Ultra High-Strength Copper Titanium Alloy

C1990-GSH(HP)

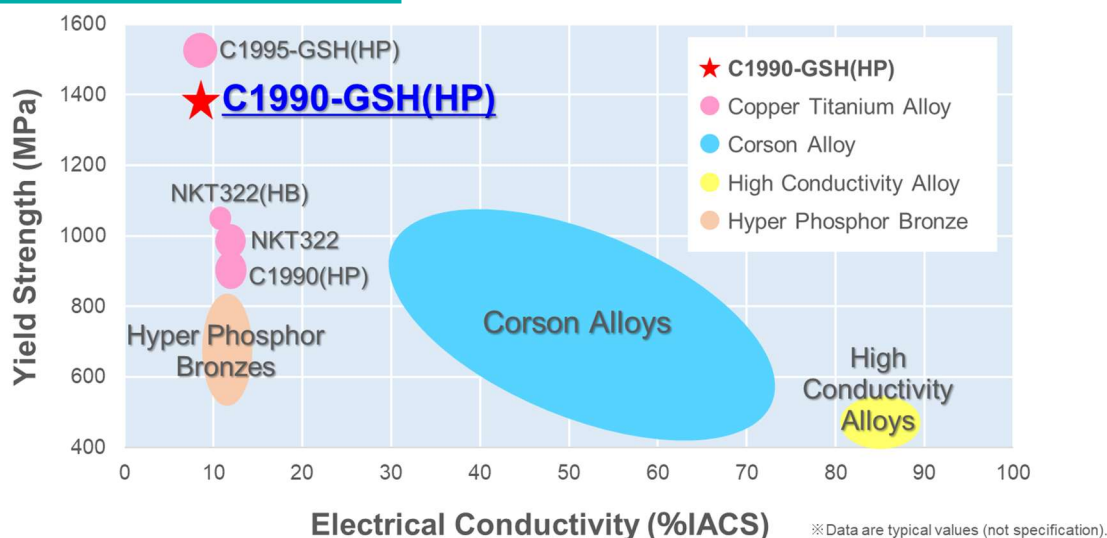
UNS C19900

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

Features

- C1990-GSH(HP) is the copper titanium foil with the highest level of strength of all commercialized copper alloys.
- A higher thickness accuracy can be achieved by optimizing the manufacturing process conditions, resulting in improvement of spring force stability.
- C1990-GSH(HP) is recognized as the best substitute for beryllium copper foil due to its high strength and high spring properties.

Our Copper Alloy Lineup



Material Properties

1. Chemical Composition

Element	Cu	Ti
Nominal Value (wt%)	Bal.	3.0

2. Physical Properties

Electrical Conductivity (%IACS) (@20°C)	8
Specific Resistivity (nΩ·m) (@20°C)	216
Thermal Conductivity (W/(m·K))	39
Thermal Expansion Coefficient (×10 ⁻⁶ /K) (@20~200°C)	18.6
Modulus of Elasticity (GPa)	127
Specific Gravity	8.70

Material Properties

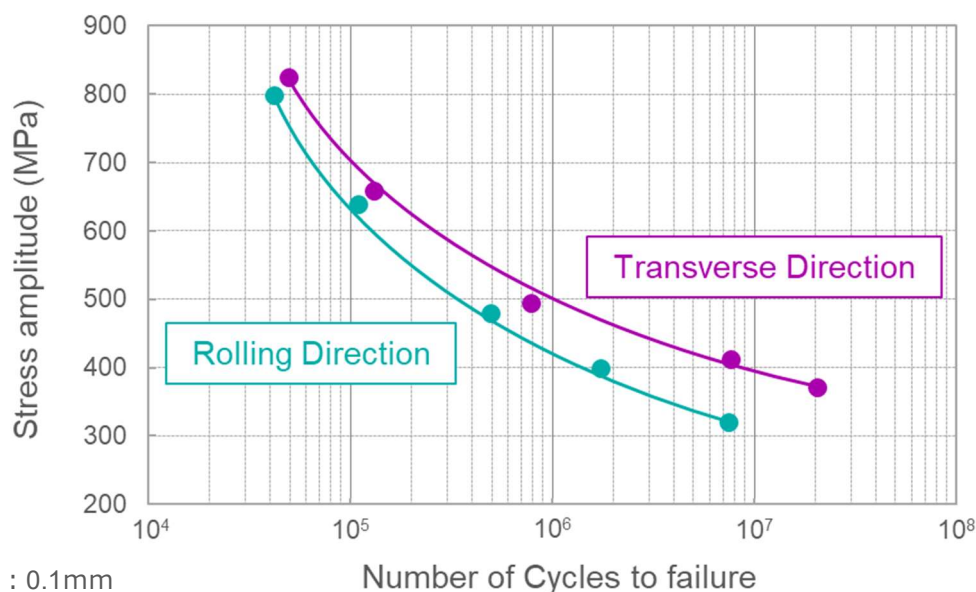
3. Mechanical Properties

Temper	Tensile Strength (MPa)	Yield Strength (MPa)	Hardness (Hv)
GSH	1400 (1300 - 1600)	1390 (-)	400 (350 - 450)

Upper : Typical value, Lower : Standard range

4. Fatigue Property

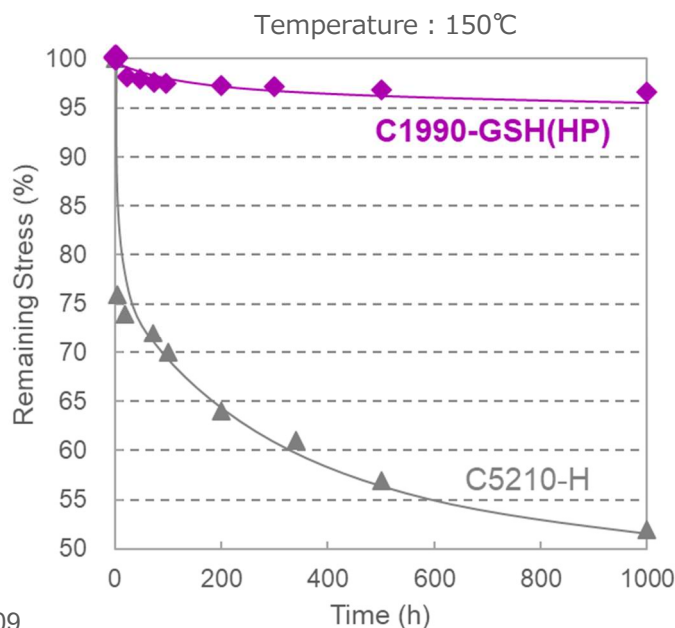
- C1990-GSH(HP) has the best fatigue properties among copper alloys.



※ Thickness : 0.1mm
 ※ Test method : JIS-Z-2273

5. Thermal Stress Relaxation Resistance

- C1990-GSH(HP) has excellent stress relaxation properties among copper alloys.

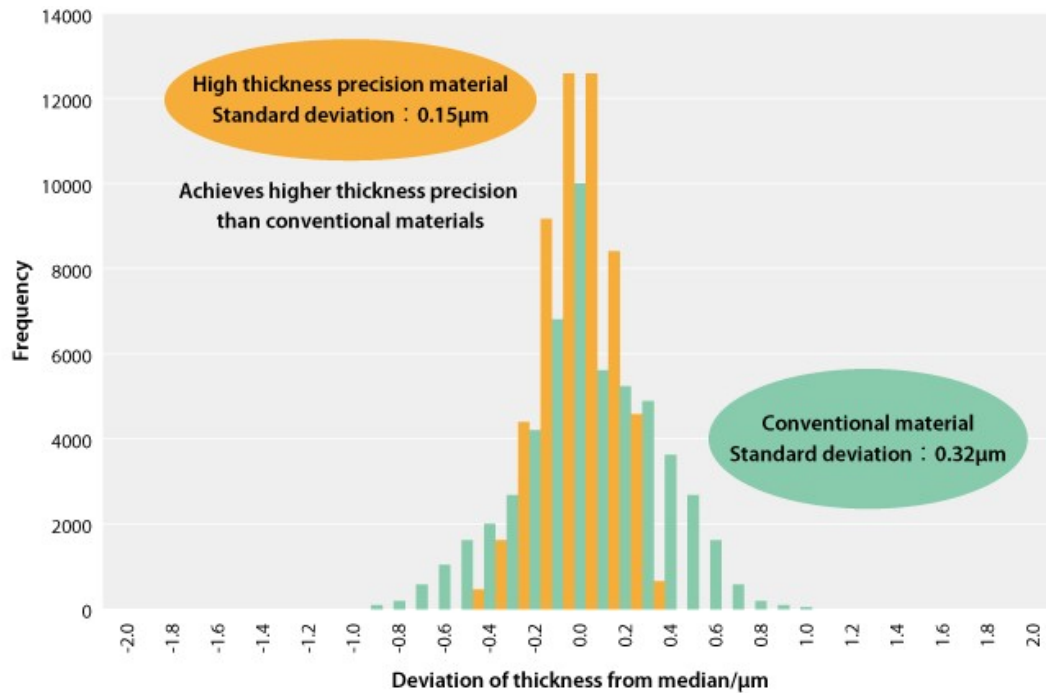


※ Test method : JCBA T309
 ※ Applied stress : Yield Stress × 80%

Material Properties

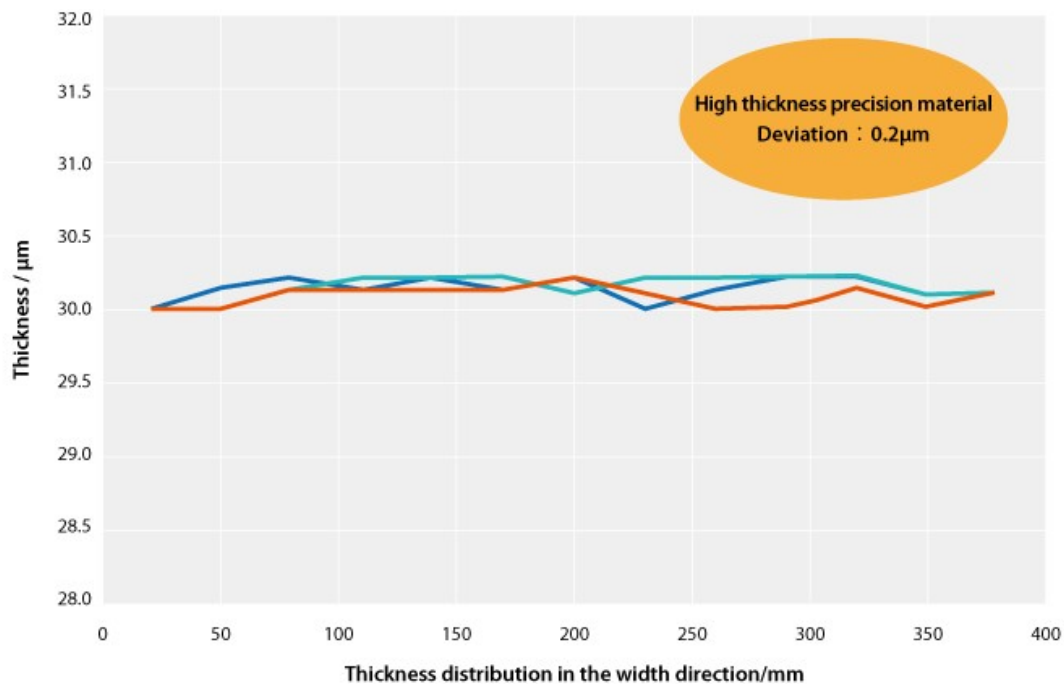
6. thickness accuracy

- By optimizing the manufacturing process, we have achieved higher thickness accuracy than conventional materials. High plate thickness accuracy improves the stability of spring properties.



**Histogram of thickness distribution in the longitudinal direction
(Thickness : 30 μ m)**

- ※ Data obtained by X-ray measurements of thickness at the center of the transverse direction (perpendicular to the rolling direction) of the mother coil, taken every 0.01 seconds for approximately 1,000 meters.
- ※ The values shown are typical values and are not intended as specifications.



**Thickness distribution in the transverse direction
(high thickness precision material N = 3, thickness 30 μ m)**

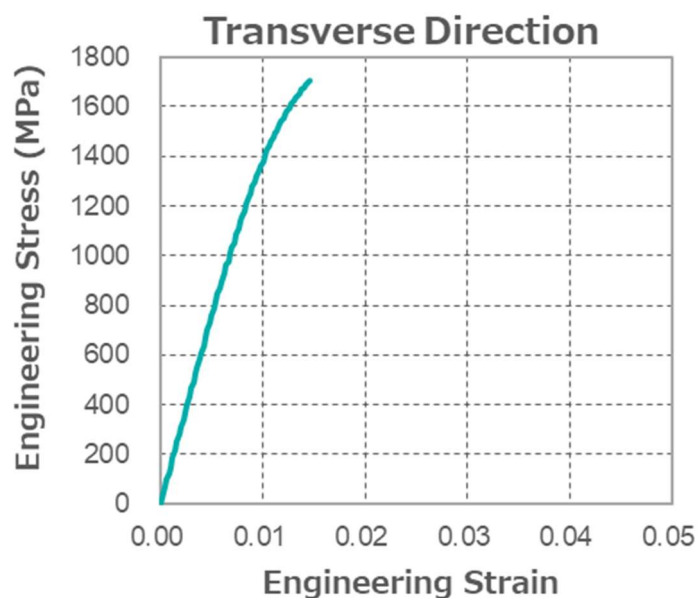
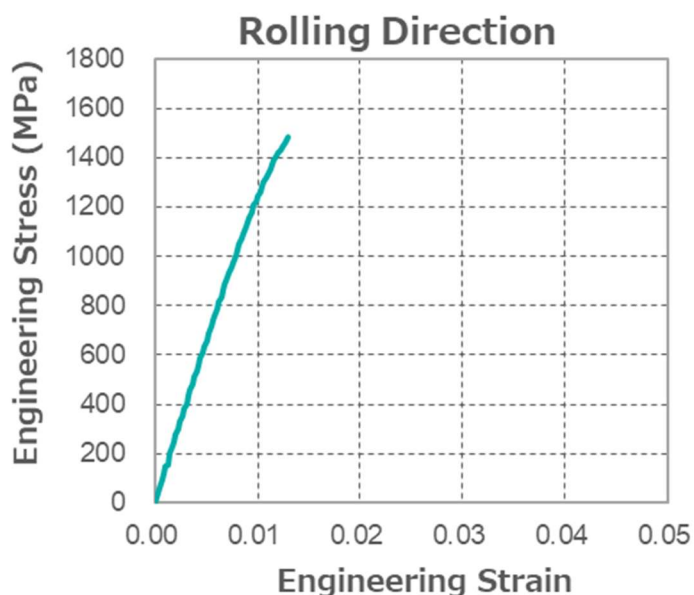
- ※ Thickness distribution was measured in the transverse direction using a direct contact thickness gauge.
- ※ The values shown are typical values and are not intended as specifications.

Material Properties

7. Stress-Strain Curve

- Engineering Stress-Strain Curves for each temper of C1990-GSH(HP) can be downloaded from our official website.

Download : https://www.jx-nmm.com/english/products/copper_foil_and_alloy/02cuti/excel/C1990-GSHHP_S-S_Curve.xlsx



Production Thickness Range

Temper	Thickness Range (mm)
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GSH	0.025 ~ 0.20
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- Please contact us for the latest stock status and inquiry of other thicknesses.

Contact Address

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

C1990-GSH(HP) Introduction URL : https://www.jx-nmm.com/english/products/copper_foil_and_alloy/02cuti/c1990-gshhp.html

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