



High-Strength Copper Titanium Alloy

C1990(HP)

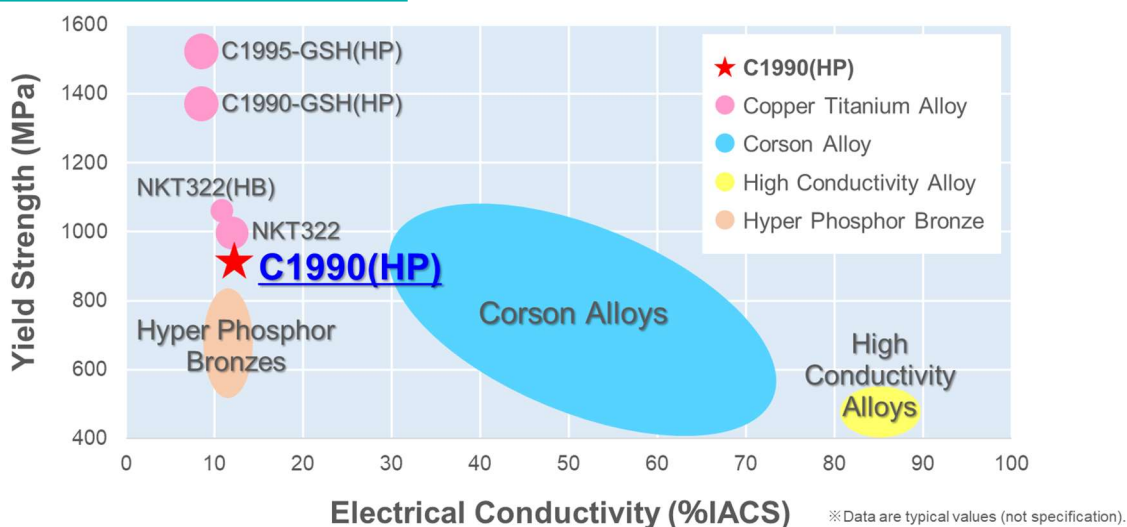
UNS C19900

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

Features

- C1990(HP) has the same chemical composition as the JIS standard product, C1990. An improvement in the strength-bendability balance has been achieved by optimizing the manufacturing process conditions.
- C1990(HP) has the highest level of stress relaxation resistance among all commercialized copper alloys, which enables a stable spring contact force to be maintained at elevated temperatures.
- C1990(HP) provides higher strength and better bending performance than phosphor bronze and C1990, making it possible to obtain high contact force even with small terminals.

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)	12
Specific Resistivity (nΩ·m) (@20°C)	144
Thermal Conductivity (W/(m·K))	54
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)	Elongation (%)	Hardness (Hv)
EH	- (885 - 1080)	860 (780 - 930)	17.0 (≥ 10.0)	300 (≥ 280)
SH	- (910 - 1110)	890 (810 - 960)	14.0 (≥ 8.0)	320 (≥ 300)
ESH	- (1000 - 1180)	1030 (950 - 1100)	3.0 (-)	340 (≥ 320)

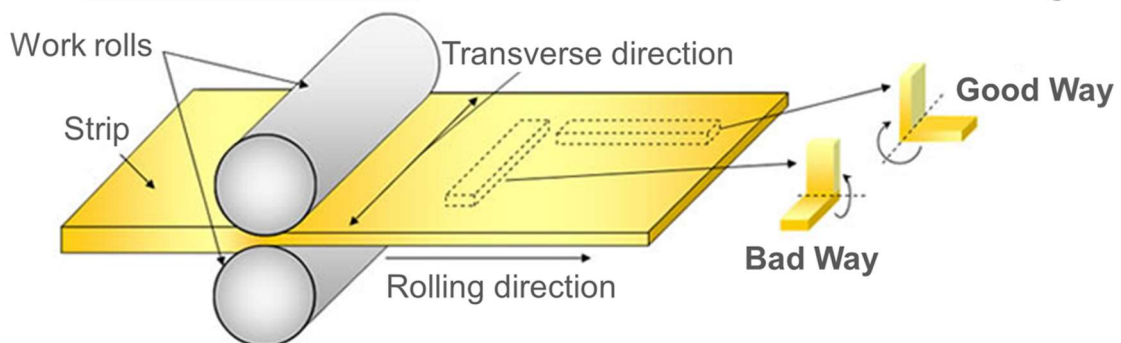
Upper : Typical Value, Lower : Standard Range

4. W-Shaped 90 degree Bend Formability

Width (mm)	Temper	Thickness (mm)	Minimum Bend Radius / Thickness	
			Good Way	Bad Way
10	EH	≤ 0.20	0	2.0
	SH	≤ 0.20	0.5	3.0
	ESH	≤ 0.20	3.0	-

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

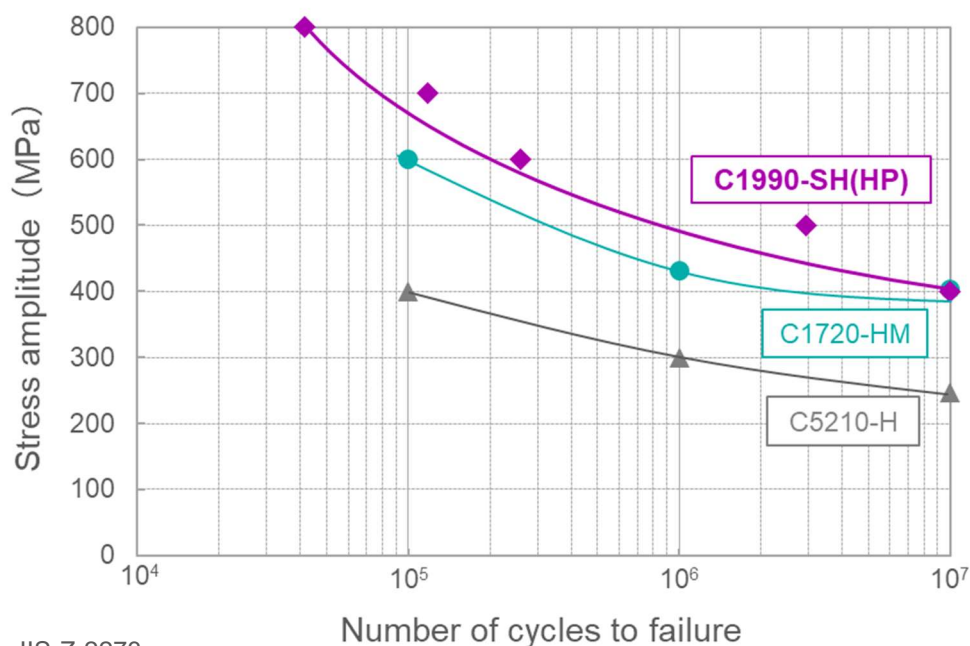
Bend direction from schematic illustration of rolling



Material Properties

5. Fatigue Property

- C1990(HP) has better fatigue properties than phosphor bronze (C5210) and copper beryllium (C1720).

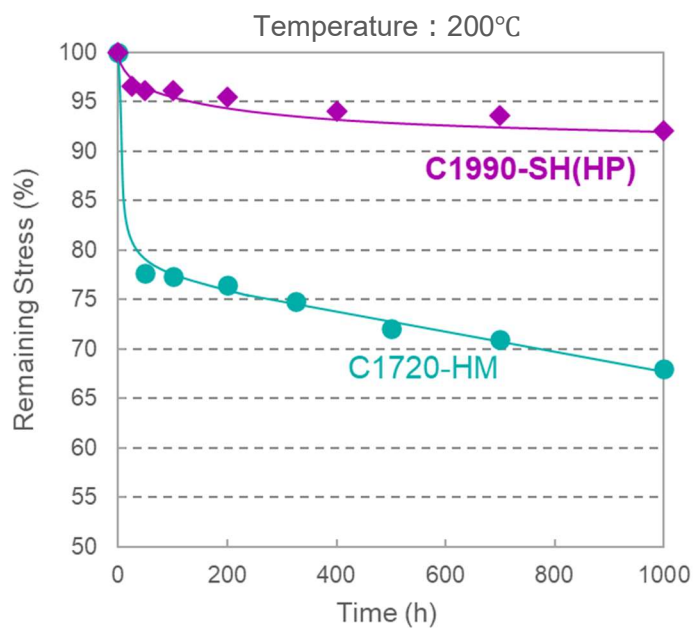
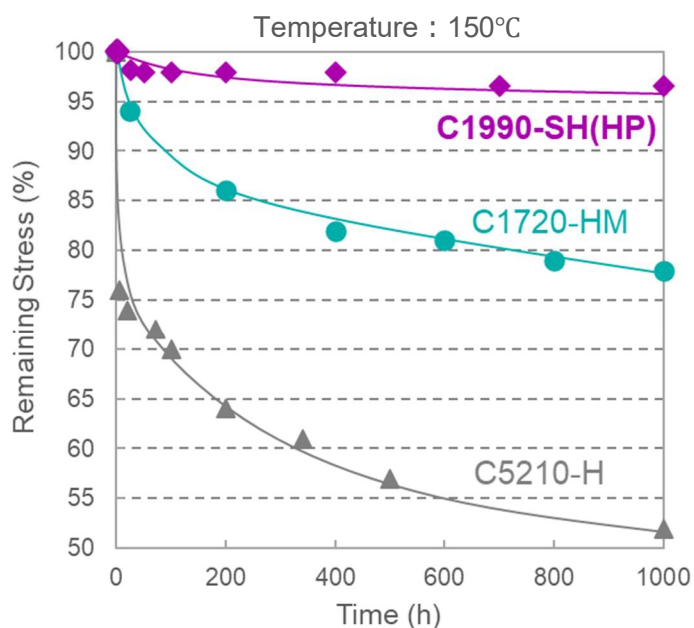


※Test method : JIS-Z-2273

Fatigue Property (Rolling Direction)

6. Thermal Stress Relaxation Resistance

- C1990(HP) 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

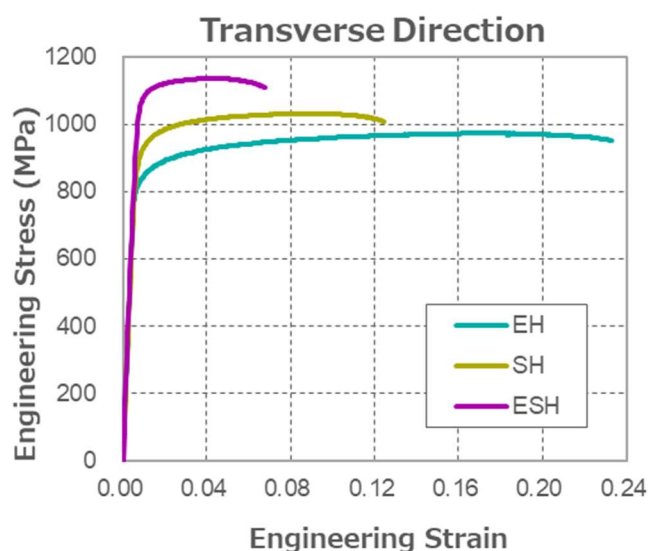
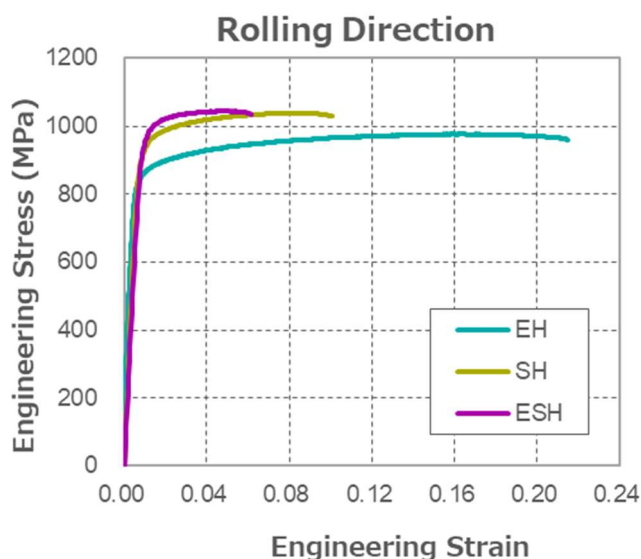
※Applied stress : Yield Stress×80%

Material Properties

7. Stress-Strain Curve

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

Download : https://www.jx-nmm.com/english/products/copper_foil_and_alloy/02cuti/excel/C1990HP_S-S_Curve.xlsx



Production Thickness Range

Temper	Thickness Range (mm)
EH	0.08 ~ 0.30
SH	0.08 ~ 0.20
ESH	0.08 ~ 0.20

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

Contact Address

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

C1990(HP) introduction URL : https://www.jx-nmm.com/english/products/copper_foil_and_alloy/02cuti/hptc.html

JX Advanced Metals Corporation

Functional Materials Division

Advanced Materials Group

10-4, Toranomom 2-chome, Minato-ku, Tokyo 105-8417, Japan

Call : +81-3-6433-6000



JX Advanced Metals Corporation