


**LEAD FRAME STRIP | 引线框架带**

## Copper Strip for Lead Frames

The material for lead frame is always made from alloy of copper, Iron and phosphorus, or copper, nickel and silicon, which have the common alloy No. of C192(KFC),C194 and C7025. These alloys have high strength and performance. C194 and KFC are most representative for copper, iron and phosphorus alloy, they are the most common alloy materials.

C7025 is the alloy of copper and phosphorus, silicon. It has high thermal conductivity and high flexibility, and do not need heat treatment, also it's easy for stamping. It has high strength, excellent thermal conductivity properties, and very suitable for lead frames, especially for assembly of high density integrated circuits.

### Main technical parameters:

#### Chemical composition

Name	Alloy No.	Chemical Composition(%)					
		Fe	P	Ni	Si	Mg	Cu
Copper-Iron-Phosphorus Alloy	QFe0.1/C192/KFC	0.05-0.15	0.015-0.04	---	---	---	Rem
	QFe2.5/C194	2.1-2.6	0.015-0.15	---	---	---	Rem
Copper-Nickel-Silicon Alloy	C7025	----	----	2.2-4.2	0.25-1.2	0.05-0.3	Rem

#### Technical Parameters

Alloy No.	Temper	Mechanical properties				
		Tensile Strength MPa	Elongation $\delta_2$ (%)	Hardness HV	Electricity Conductivity %IACS	Thermal Conductivity W/(m.K)
C192/KFC/C19210	O	260-340	$\geq 30$	<100	85	365

	1/2H	290-440	$\geq 15$	100-140		
	H	340-540	$\geq 4$	110-170		
C194/C19410	1/2H	360-430	$\geq 5$	110-140	60	260
	H	420-490	$\geq 2$	120-150		
	EH	460-590	----	140-170		
	SH	$\geq 550$	----	$\geq 160$		
C7025	TM02	640-750	$\geq 10$	180-240	45	180
	TM03	680-780	$\geq 5$	200-250		
	TM04	770-840	$\geq 1$	230-275		

Note: Above figures based on the material thickness 0.1~3.0mm.

**Typical Applications:**

Lead frame for Integrated Circuits, Electrical connectors, Transistors, LED stents.



 **BATTERY ED FOIL (D-SHINY) | 双面光锂电箔**

### ED Copper Foils for Li-ion Battery (Double-shiny)

#### Specification:

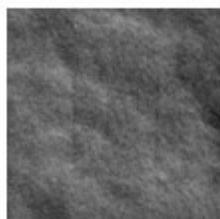
Thickness: 6 $\mu$ m~20 $\mu$ m

Width: 100mm~1340mm

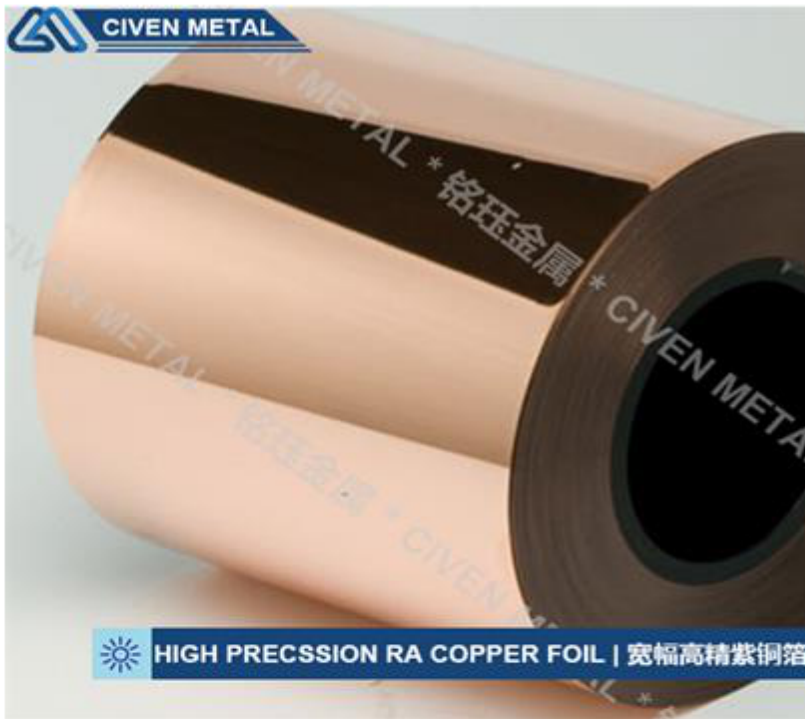
#### Performance:

Test Item	Unit	Specification						
		6 $\mu$ m	7 $\mu$ m	8 $\mu$ m	9/10 $\mu$ m	12 $\mu$ m	15 $\mu$ m	20 $\mu$ m
Cu Content	%	$\geq 99.9$						
Area Weight	mg/10cm <sup>2</sup>	54 $\pm$ 1	63 $\pm$ 1.25	72 $\pm$ 1.5	89 $\pm$ 1.8	107 $\pm$ 2.2	133 $\pm$ 2.8	178 $\pm$ 3.6
Tensile Strength(25 $^{\circ}$ C)	Kg/mm <sup>2</sup>	28~35						
Elongation(25 $^{\circ}$ C时)	%	5~10			5~15		10~20	
Roughness(S-Side)	$\mu$ m(Ra)	0.1~0.4						
Roughness(M-Side)	$\mu$ m(Rz)	0.8~2.0					0.6~2.0	
Width Tolerance	Mm	-0/+2						
Length Tolerance	m	-0/+10						
Pinhole	Pcs	None						
Change of Color	130 $^{\circ}$ C/10min 150 $^{\circ}$ C/10min	None						
Wave or Wrinkle	----	Width $\leq$ 40mm one allow					Width $\leq$ 30mm one allow	
Appearance	----	No drape, scratch, pollution, oxidation, discoloration and so on that effect using						
Winding method	----	The winding when facing up S side When the winding tension in the stable, no loose roll phenomenon.						

#### Metallographic:



Double-Shiny (3000 times)



### High-precision Rolled Copper Foil

Rolled Copper Foil has extraordinary strength, bendability, ductility and lustrous surface, plus its excellent mechanical capacity, makes it irreplaceable as a raw material.

**Base Material:** C11000 Copper, Cu > 99.96%

**Thickness Range:** 0.0002inch~0.004inch (0.006mm~0.10mm)

**Width Range:** 0.04inch~25.6inch (1.0mm~650mm)

**Temper:** Hard, Quarter Hard, Half Hard, Soft

**Application:** CCL, Electronics shielding and heat radiation, wide copper tape etc.

Name	GB	ALLOY NO.					SIZE (mm)
		(ISO)	(ASMT)	(JIS)	(BIS)	(DIN)	
Copper Foil	T2	Cu-ETP	C11000	C1100	C101	R-Cu57	Thickness: 0.006-0.1 /Max Width: 650

### Mechanical Properties

Temper	JIS Temper	Tensile Strength Rm/N/mm <sup>2</sup>	Elongation A50/%	Hardness HV
M	O	310~410	≥ 30	40~60
Y2	1/2H	320~450	≥ 20	55~85
Y	H	440~480	-	80~150
T	EH	450~540	-	-

Note: We can provide products with other properties according to customers' requirements.

### Physical Properties

Density: 8.9g/cm<sup>3</sup>

Electrical conductivity (20°C): min 90%IACS for annealed to temper  
min 80%IACS for rolled to temper

Thermal conductivity (20°C): 390W/(m°C)

Elastic modulus: 118000N/m

Softening temperature: ≥380°C

### Sizes and Tolerances (mm)

Thickness	Thickness Tolerances	Width	Width Tolerances
-----------	----------------------	-------	------------------

0.006~0.04	± 0.001	1.0~650	± 0.1
> 0.04~0.10	± 0.002		

### Specifications Available (mm)

Thickness	Width	Temper
0.006~0.04	1.0~650	O,1/2H,H,EH
0.04~0.10	1.0~650	O,1/2H,H,EH

### Carried Standard(Latest)

Nations	Standard No.	Standard Name
China	GB/T2059--2000	CHINA'S NATIONAL STANDARD
Japan	JIS H3100 :2000	COPPER AND COPPER ALLOY SHEETS,PLATES AND STRIPS
U.S.A	ASTM B36/B 36M -01	STANDARD SPECIFICATION FOR BRASS,PLATE,SHEET,STRIP AND ROLLED BAR
Germany	DIN-EN 1652:1997	COPPER AND COPPER ALLOYS PLATE,SHEET,STRIP AND CIRCLES FOR GENERAL PURPOSES
	DIN-EN 1758 :1997	COPPER AND COPPER ALLOYS STRIP FOR LEADFRAMES
SEMI	SEMI G4-0302	SPECIFICATION FOR INTERGRATED CIRCUIT LEADFRAME MATERIALS USED IN THE PRODUCTION OF STAMPED LEADFRAMES


**HIGH PRECSSION RA BRASS FOIL | 宽幅高精黄铜箔**

## High-precision Rolled Brass Foil

### Chemical Composition (%)

Alloy No.	Chemical Composition (% Max.)								
	Cu	Fe	Pb	Al	Mn	Sn	Ni	Zn	Impurity
H90	88.0-91.0	0.10	0.03	---	---	---	0.5	Rem	0.3
H85	84.0-86.0	0.10	0.03	---	---	---	0.5	Rem	0.3
H70	68.5-71.5	0.10	0.03	---	---	---	0.5	Rem	0.3
H68	67.0-70.0	0.10	0.03	---	---	---	0.5	Rem	0.3
H65	63.5-68.0	0.10	0.03	---	---	---	0.5	Rem	0.3

### Alloy Table

China	ISO	ASTM	JIS
H90	CuZn10	C22000	C2200
H85	CuZn15	C23000	C2300
H70	CuZn30	C26000	C2600
H68	-----	-----	-----
H65	CuZn35	C27000	C2700

### Physical Properties

Density: 8.5g/cm<sup>3</sup>

Electric conductivity(20 °C ): 27%IACS

Thermal conductivity (20 °C): 120W/(m °C )

Elastic modulus: 105000N/mm<sup>2</sup>

Thermal expansion coefficient (20-300 °C ) 20 X 10<sup>-6</sup> °C<sup>-1</sup>



## Specifications Available

Unit	Thickness	Width	Temper
mm	0.006~0.1	1.0~650	O、1/4H、1/2H、H
inch	0.0002~0.004	0.04~25.6	

## Sizes and Tolerances (mm)

Thickness	Thickness Tolerances	Width	Width Tolerances
0.006~0.04	± 0.001	1.0~650	± 0.1
> 0.04~0.10	± 0.002		

## Mechanical Properties

Temper	JIS Temper	Tensile Strength Rm/N/mm <sup>2</sup>	Elongation A50/%	Hardness HV
M	O	350~410	≥ 30	70~100
Y4	1/4H	380~445	≥ 20	105~145
Y2	1/2H	390~480	≥ 15	120~165
Y	H	460~510	≥ 10	135~185

Note: We can provide products with other properties according to customers' requirements.

## Application:

High precision radiator foil is main material in manufacturing automobile, farmer machine, mining machinery, engineering machinery, diesel locomotive, shipbuilding, generator set.

## Carried Standard(Latest)

Nations	Standard No.	Standard Name
China	GB/T2059--2000	CHINA'S NATIONAL STANDARD
Japan	JIS H3100 :2000	COPPER AND COPPER ALLOY SHEETS,PLATES AND STRIPS
U.S.A	ASTM B36/B 36M -01	STANDARD SPECIFICATION FOR BRASS,PLATE,SHEET,STRIP AND ROLLED BAR
Germany	DIN-EN 1652:1997	COPPER AND COPPER ALLOYS PLATE,SHEET,STRIP AND CIRCLES FOR GENERAL PURPOSES
	DIN-EN 1758 :1997	COPPER AND COPPER ALLOYS STRIP FOR LEADFRAMES
SEMI	SEMI G4-0302	SPECIFICATION FOR INTERGRATED CIRCUIT LEADFRAME MATERIALS USED IN THE PRODUCTION OF STAMPED LEADFRAMES