

PRE-PLATED WIRE

SAN-ETSU METALS manufacture Reflow Tin Plating,
Silver Plating, Nickel Plating products in-house
at our own plating facility.

Capable of accommodating large 200kg spool.

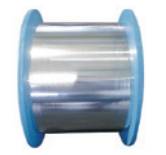
SAN-ETSU METALS can handle spools of 200kg winding. Spools are changed less frequently, improving production efficiency.
A wide variety of spools are lined up to meet customer`s needs.

Products Packaging

Spool Spec Number							
Spool Matrial	Iron made	Plastic made	Plastic made	Plastic made	Plastic made	Plastic made	Plastic made
Outside Diameter (mm)	800	560	455	450	440	400	300
Barrel Diameter (mm)	700	340	275	400	300	160	130
Inner distance (mm)	150	280	280	65	192	200	131
Shaft Diameter (mm)	45	127	130	30	52	52	30
Flange Width (mm)	10	38	35	5	15	25	15
Spool Weight (kg)	23~32	14.9	7.8	2.1	3.5	5	1.3
Products Weight (kg)	50	200	100	8	30	50	30
Spool Recycle	○	○	○	○	○	○	○

Spool Spec Number							
Spool Matrial	Plastic made	Plastic made	Resin made	Resin made	Resin made	Iron made	Iron made
Outside Diameter (mm)	285	270	210/230	300/315	200	600	750
Barrel Diameter (mm)	210	190	132/150	180/200	90	350	440
Inner distance (mm)	89	89	250	425	110	350	285
Shaft Diameter (mm)	52	52	30	100	25	135	135
Flange Width (mm)	7	7	15	38	12	10	10
Spool Weight (kg)	0.6	0.5	0.9	3.9	0.5	85	115
Products Weight (kg)	15	13	20	90	10	360	360
Spool Recycle	×	×	○	○	○	○	○

Packaging Example

12.5K spool export packaging		TSB-450 spool export packaging		800 spool packaging	
					
					



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*This brochure uses enviromentally freindly [waterless printing]and[non-VOC ink]
*Product specifications are subject to change without notice.

Printed on July 2025



SAN-ETSU METALS CO.,LTD

Pre-Plated Wire series

Reflow Tin Pre-Plated, Silver Plating, Nickel Plating

〈IATF16949 certified factory〉 SAN-ETSU METALS CO.,LTD.
TAKAOKA WORKS/Copper and Copper Alloy Wire Production

All processed are integrated production.

SAN-ETSU METALS Pre-Plated Wire is manufactured in a single factory, from the bare wire to the final plating.
We provide products that satisfy our customers thanks to our stable quality and delivery times.



Advantages of Pre-Plated Wire

All types of SAN-ETSU METALS pre-plated wires products have the following advantages.

Integrated production from the raw material.

High dimensional precision

Supports production of round, square, and rectangular shapes.

High quality with no scratches or unevenness

Plating is possible on all four sides.

Plating thickness is uniform and stable.

Compared to pressed products that is used strips, pre-plating wire has extremely low processing losses.

Reflow Tin Plating

- Excellent adhesion, workability, and corrosion resistance
- Complete whisker protection
- Excellent solderability
- Lead-free compatible

Silver Plating

- Excellent Electric Conductivity
- High radio frequency sensitivity
- High sterilizability and excellent hygiene.
- Extremely good thermal conductivity

Nickel Plating

- Excellent corrosion resistance
- Resistant to oxidation and discoloration
- High normal operating temperature limit allows use in high temperature environments.
- Excellent ductility and decorative properties.

Material Number, Cheminal Component

Unit : %

Material Number	Chemical Component % (Normal)	SAN-ETSU Material Number	Cu	Pb	Fe	Sn	Zn	Ni	P	Cu+Sn+P
C5071	Cu-2Sn-0.25Ni	C71	-	0.02 or lower	0.10 or lower	1.7~2.3	0.20 or lower	0.10~0.40	0.15 or lower	99.5 or higher ^(a)
C5111	Cu-4Sn-P	C73	-	0.02 or lower	0.10 or lower	3.5~4.5	0.20 or lower	-	0.03~0.35	99.5 or higher
C5102	Cu-5Sn-P	C72	-	0.02 or lower	0.10 or lower	4.5~5.5	0.20 or lower	-	0.03~0.35	99.5 or higher
C5191	Cu-6Sn-P	C75	-	0.02 or lower	0.10 or lower	5.5~7.0	0.20 or lower	-	0.03~0.35	99.5 or higher
C5212	Cu-8Sn-P	C78	-	0.02 or lower	0.10 or lower	7.0~9.0	0.20 or lower	-	0.03~0.35	99.5 or higher
Material Number	Chemical Component % (Normal)	SAN-ETSU Material Number	Cu	Pb	Fe	Zn	Ni	Mn	Al	
C1020	Cu	C20	99.96 or higher	-	-	-	-	-	—	
C1100	Cu	C21	99.90 or higher	-	-	-	-	-	—	
C2600	70Cu-30Zn	B42	68.5~71.5	0.02 or lower	0.02 or lower	REM ^(b)	0.02 or lower	0.02 or lower	0.02 or lower	
C2700	65Cu-35Zn	B62	63.0~67.0	0.02 or lower	0.02 or lower	REM ^(b)	0.02 or lower	0.02 or lower	0.02 or lower	
Material Number	Chemical Component % (Normal)	SAN-ETSU Material Number	Cu	Fe	Zn	P	Mg			
C19400	Cu-2.3Fe-0.1Zn-P	C86	97.0 or higher	2.1~2.6	0.05~0.20	0.015~0.15	-			
C19210	Cu-0.1Fe-P	C92	REM	0.05~0.15	-	0.025~0.04	-			
C19700	Cu-0.7Fe-0.2P-0.1Mg	C97	REM	0.30~1.2	-	0.10~0.40	0.01~0.20			
Copper-Magnesium Alloy	Cu-0.1Mg	C98L	REM	-	-	-	0.03~0.17			
Material Number	Chemical Component % (Normal)	SAN-ETSU Material Number	Cu	Fe	Zn	P				
C70250	Cu-3Ni-0.7Si-0.2Mg	CN3	REM	0.05~0.30	2.2~4.2	0.25~1.2				
Material Number	Chemical Component % (Normal)	SAN-ETSU Material Number	Cu	Pb	Bi	O ₂ (ppm)	Ag	Cu+Ag	Note(a) : Total of Cu+Sn+Ni+P Note(b) : The remainder contains elements not analyzed except	
C10700 (Silver inside)	Cu-0.085~0.102Ag	C20AG	-	0.003 or lower	0.001 or lower	10 or lower	0.085~0.102	99.95 or higher		

Note(a) : Total of Cu+Sn+Ni+P
Note(b) : The remainder contains elements not analyzed except Zn.

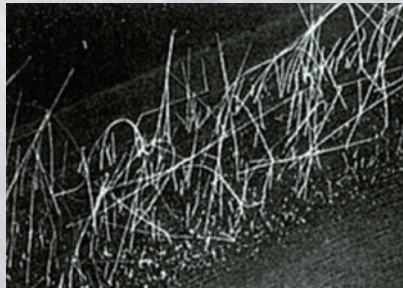
Mechanical Properties

Remark 1N/mm ² =1MPa					
Matrial Number	SAN-ETSU Material Number	Hardness	Diameter or distance between opposite sides (mm)	Tensile Strength (N/mm ²)	Elongation (%)
C5071	C71	O	0.4 or higher, 1.6 or lower	275 or higher	20 or higher
		1/8H	0.4 or higher, 1.6 or lower	345~440	10 or higher
		1/4H	0.4 or higher, 1.6 or lower	390~510	5 or higher
		1/2H	0.4 or higher, 1.6 or lower	490~610	-
		3/4H	0.4 or higher, 1.6 or lower	590~705	-
		H	0.4 or higher, 1.0 or lower	685~805	-
		EH	0.4 or higher, 0.8 or lower	785 or higher	-
C5111	C73	O	0.4 or higher, 1.6 or lower	295~410	-
		H	0.4 or higher, 1.0 or lower	490 or higher	-
C5102	C72	O	0.4 or higher, 1.6 or lower	305~420	-
		H	0.4 or higher, 1.0 or lower	635 or higher	-
C5191	C75	O	0.4 or higher, 1.6 or lower	315~460	-
		1/8H	0.4 or higher, 1.6 or lower	435~585	-
		1/4H	0.4 or higher, 1.6 or lower	535~685	-
		1/2H	0.4 or higher, 1.6 or lower	635~785	-
		3/4H	0.4 or higher, 1.6 or lower	735~885	-
		H	0.4 or higher, 1.0 or lower	835 or higher	-
		O	0.4 or higher, 1.6 or lower	345~490	-
C5212	C78	1/2H	0.4 or higher, 1.6 or lower	685~835	-
		H	0.4 or higher, 1.0 or lower	930 or higher	-
		O	0.4 or higher, 1.6 or lower	195 or higher	15 or higher
C1020	C20	1/2H	0.4 or higher, 1.6 or lower	255~365	-
		H	0.4 or higher, 1.0 or lower	345 or higher	-
C1100	C21	O	0.4 or higher, 1.6 or lower	195 or higher	15 or higher
		1/2H	0.4 or higher, 1.6 or lower	255~365	-
		H	0.4 or higher, 1.0 or lower	345 or higher	-
C70250	CN3	1/2H	0.4 or higher, 1.0 or lower	490~610	-
		H	0.4 or higher, 1.6 or lower	685~805	-
C10700	C20AG	F	0.4 or higher, 1.6 or lower	260 or higher	25 or higher

Matrial Number	SAN-ETSU Material Number	Hardness	Diameter or distance between opposite sides (mm)	Tensile Strength (N/mm ²)	Elongation (%)
C2600	B42	O	0.4 or higher, 1.6 or lower	275 or higher	20 or higher
		1/8H	0.4 or higher, 1.6 or lower	345~440	10 or higher
		1/4H	0.4 or higher, 1.6 or lower	390~510	5 or higher
		1/2H	0.4 or higher, 1.6 or lower	490~610	-
		3/4H	0.4 or higher, 1.6 or lower	590~705	-
		H	0.4 or higher, 1.0 or lower	685~805	-
		EH	0.4 or higher, 0.8 or lower	785 or higher	-
C2700	B62	O	0.4 or higher, 1.6 or lower	295 or higher	20 or higher
		1/8H	0.4 or higher, 1.6 or lower	345~440	10 or higher
		1/4H	0.4 or higher, 1.6 or lower	390~510	5 or higher
		1/2H	0.4 or higher, 1.6 or lower	490~610	-
		3/4H	0.4 or higher, 1.6 or lower	590~705	-
		H	0.4 or higher, 1.0 or lower	685~805	-
		EH	0.4 or higher, 0.8 or lower	785 or higher	-
C19400	C86	O	0.4 or higher, 1.6 or lower	270~395	-
		1/2H	0.4 or higher, 1.6 or lower	340~525	-
		H	0.4 or higher, 1.0 or lower	405~605	-
C19210	C92	O	0.4 or higher, 1.6 or lower	220~335	-
		1/2H	0.4 or higher, 1.6 or lower	260~440	-
		H	0.4 or higher, 1.0 or lower	335~510	-
		EH	0.4 or higher, 0.8 or lower	440 or higher	-
C19700	C97	O	0.4 or higher, 1.6 or lower	270~395	-
		1/2H	0.4 or higher, 1.6 or lower	340~525	-
		H	0.4 or higher, 1.0 or lower	405~605	-
		EH	0.4 or higher, 0.8 or lower	525 or higher	-
		O	0.4 or higher, 1.6 or lower	240~420	-
Magnesium Copper Alloy	C98L	1/2H	0.4 or higher, 1.6 or lower	420~560	-
		H	0.4 or higher, 1.0 or lower	560~660	-
		EH	0.4 or higher, 0.8 or lower	650 or higher	-

Whisker and reflow processing

Electroplating processed induce residual stress, also termed electrodeposition stress, in the deposited layer. The residual stress induces extrusion of metal atoms, resulting in the formation of whisker-like monocrystals. This can result in short circuits in the circuitry or at the terminals, causing signal integrity issues. Reflow processing is employed as a whisker prevention measure, involving the melting and resolidifying the plating layer, thereby reducing internal resifual stress. Furthermore, the plating surface can also be finished to a smooth and stable state.



Micrograph of whisker

About Inspection Facilities

In order to provie high quality products, we maintain full inspection facilities.

Electrolytic Plating Thickness Tester

Plating Evauation Equipment (e.g., Hull Cell Test)

X-ray Fluorescence (XRF) Plating Thickness Tester

ICP Emission Spectrometer (High-Precision Trace Element Analysis)

Presicion Constant Temperature Apparatus (Heat Resistance Test)

Solt water Spray Test Apparatus (Corrosion Resistance Test)

Reflow Tin Plating

Unit : mm			
Longitudinal or longitudinal distance	Round	Square	Rectanglar
0.30 or higher 0.40 or lower	±0.003	±0.005	±0.005
0.40 over 0.50 or lower	±0.005	±0.008	±0.008
0.50 over 1.0 or lower	±0.008	±0.010	±0.010
1.0 over 1.5 or lower	±0.010	±0.015	±0.015
1.5 over 2.8 or lower	-	-	±0.020

Rectangular production ranges from 0.5~2.8 on the long side, and 0.3~1.0 on the wide side. The ratio of long side to wide side guideline is 1:2.

Silver Plating		Unit : mm	
Diameter	Round	Diameter	Round
0.50 or higher, 1.0 or lower	±0.008	0.50 or higher, 1.0 or lower	±0.008
1.0 over 1.6 or lower	±0.010	1.0 over 1.6 or lower	±0.010

Plating Specification

Reflow Tin Plating

	Type	Plating thickness (μm)	Maximum plating thickness (μm)
Under Plating	Cu	0.5~3.0	3.0
	Ni	0.5~3.0	3.0
Finished Plating	Reflow Tin Plating	0.5~5.0	5.0

Silver plating

	Type	Plating thickness (μm)	Maximum plating thickness (μm)
Finished Plating	Silver plating	0.7~3.0	15.0

Nickel Plating

	Type	Plating thickness (μm)	Maximum plating thickness (μm)
Finished Plating	Nickel Plating	0.7~1.5	25.0

If you require a products with specifications outside the above range, please contact our sales representative.

IATF16949 certified

IATF16949 is a globally recognized quality management system standard specifically designed for automotive industry. The official name is [Quality management systems-Requirements for the application in the automotive industry]. Our Plant, which carries our integrated production from raw material to finishing, has obtained IATF16949 certification. We are one of the few material supplier capable of meeting the needs of the automotive industry, which requires a high level of management, it is the largest factory in Japan for copper and copper alloy wire, achieving both overwhelming high quality and production efficiency.