



————— Lead Free Flux-Cored Solder Wire —————



Flux-Cored Solder Wire
SN100C (030)

Product Catalog

**For Environmental
Conservation**



ecology of the
earth
environment
economically in
electrical &
electronic products for
eternity

Nihon Superior has been working to develop environmentally friendly lead-free solders and related materials and can now supply products that deliver high reliability. We also stand ready to work with customers in developing improved soldering materials and processes. Our objective is maximizing customer satisfaction by achieving the best possible quality and yield.

your partner for soldering solution

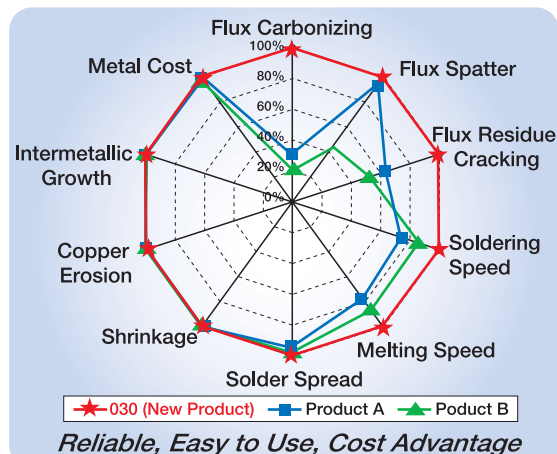


NIHON SUPERIOR

The flux-cored solder wire enables fast soldering with less carbonizing of soldering tip and less flux spatter providing greater productivity than existing products.

Features

- Less Tip Carbonizing
- Less Flux Spatter
- Less Cracking of Flux Residue
- Fast Soldering
- Fast Melting
- Good Spread
- No Shrinkage Defect, Reduced Copper Erosion, and Stable Intermetallic Layer
- Substantial Cost Advantage



High performance flux 030 delivers high productivity through increased work efficiency.

Carbonizing Test

Flux Spatter Test

Flux Residue Test

Soldering Speed Test

Melting Speed Test

Spread Test

Comparison Wires / •Flux Type :030, Product A, Product B •Alloys :SN100C (Sn-0.7Cu-0.05Ni+Ge) •Diameter:0.8mm •Flux Content:3%

Carbonizing Test

Less Carbonizing of Soldering Tip and Pad

Tip carbonizing test

Carbonizing conditions

[Conditions] 380°C

Product code	Time	0sec	2sec	4sec	10sec	15sec
030 (New product)						
Product A						
Product B						

[Result]

Time of start of carbonizing(sec.)

Product	030 (New product)	Product A	Product B
Carbonizing start time	13sec. later	3sec. later	2sec. later

[Test method]

The soldering tip is fixed and tip temperature set at 380°C Solder wire is fed into the tip and the process recorded with a video camera while the temperature is monitored.



Carbonizing test on pad

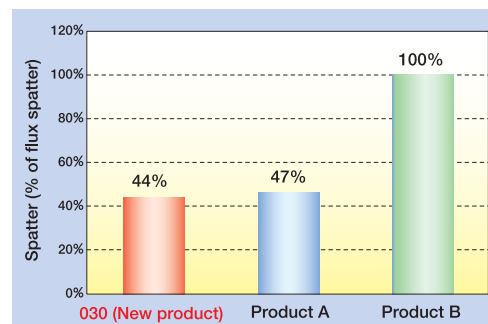
Comparison of carbonizing

[Conditions] 380°C

Product	030 (New product)	Product A	Product B
Carbonization on pad			

Flux Spatter Test

Reduction in Flux Spatter

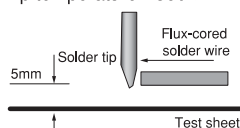


[Test method]

The soldering tool is fixed with the tip vertical, the flux-cored wire solder wire fed into it and the flux spatter measured. (See figure on right)

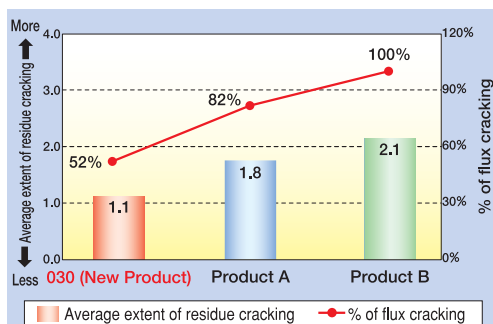
[Test parameters]

- Solder feed rate : 2.5mm/sec
- Length of solder : 10cm
- Tip temperature : 380°C



Flux Residue Test

Less Cracking of Flux Residue



[Test method]

The extent of cracking of the flux residue is rated on the basis of the six level illustrated below and the average of six samples taken.

[Test parameters]

- Test piece : doubled sided FR4 board
- Temperatures : 280°C, 300°C, 320°C, 340°C, 360°C, 380°C
- Soldering time : 3.0sec

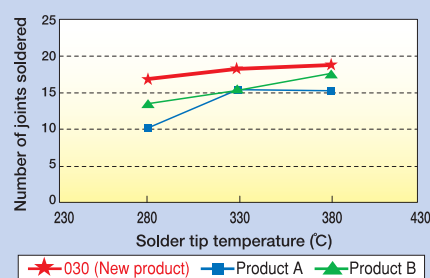
[Evaluation standard]

..... Crack rate of flux residue

Rank	0	1	2	3	4	5
Extent of residue cracking						
Evaluation	No residue cracking	<1/4 of total residue is cracked	<1/2 of total residue is cracked	<3/4 of total residue is cracked	>3/4 of total residue is cracked	Entire residue is cracked

Soldering Speed Test

Fast Soldering at High and Low Temperature



Number of joints soldered

Product code	Solder tip temperature (°C)		
	280	330	380
030 (New product)	16.7	18.3	18.7
Product A	10.2	15.2	15.3
Product B	13.2	15.2	17.7

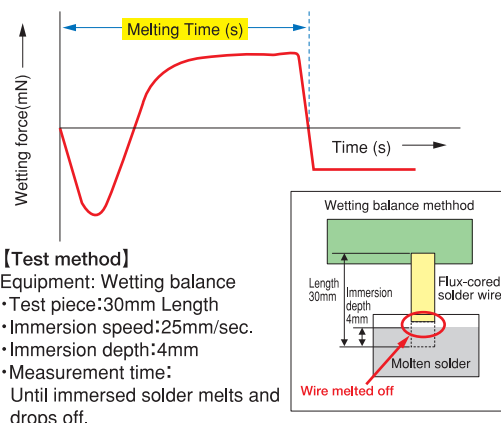
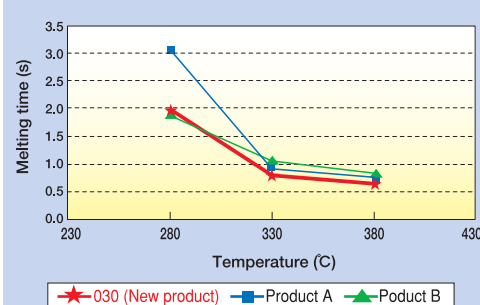
[Test method]

Count the number of joints that can be soldered in 30 sec.

Printed circuit board:
Single sided

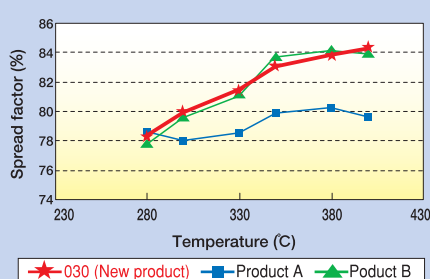
Melting Speed Test

Fast Soldering at Normal Temperatures



Spread Test

Sustained Flux Activity at High Temperature



[Test method]

A coil of 0.2g of solder wire is placed on a clean copper plate on a hotplate for 5 seconds. After cooling the flux residues are removed with IPA. The spread factor is calculated from the measured height of the solder.



The Ni & Ge impart good solderability and high reliability to SN100C (Sn-0.7Cu-0.05Ni+Ge).

Shrinkage

Copper Erosion Test

Cross Section Test of Intermetallic Compound

Shrinkage

Fewer Shrinkage Defects

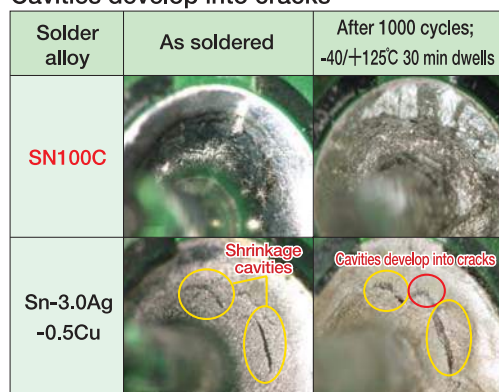
SN100C forms crack-free fillets.



SN100C

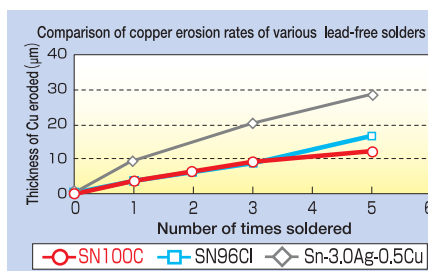
Sn-3.0Ag-0.5Cu

Cavities develop into cracks



Copper Erosion Test

SN100C erodes copper more slowly than the other alloys tested.



[Test method]

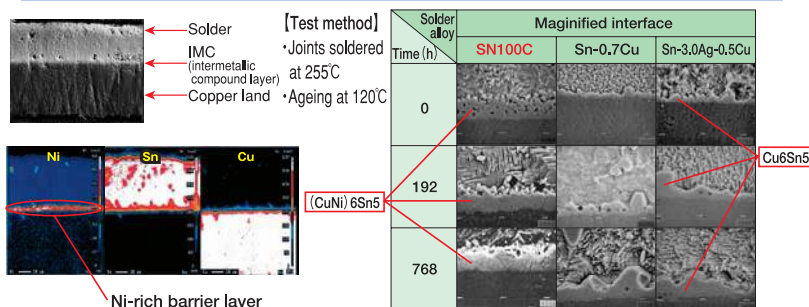
The thickness of the remaining copper was measured after robotic soldering.

[Test parameters]

- Test piece: Copper pad, initial thickness 58μm
- Solders: SN100C, SN96CI, SAC305
- Soldering robot: J-CAT-200 (Apollo-seiko)
- Soldering tool tip: TM/TS-16FPR
- Tip temperature: 370°C
- Contact time: 8.5sec.

Intermetallic Growth

The Ni addition Stabilizes the Intermetallic Layer



Features

Property	SN100C (030)	SN100C (020)	SN100C (010)	SN100C (011)	Test Method
Alloy composition	Sn-0.7Cu-0.05Ni+Ge				—
Flux type	RMA	RMA	RMA	RMA	—
*1 Flux categories	ROL0	ROL0	ROL1	ROL1	ANSI/IPC J-STD-004A
Flux content (mass%)	3.0	3.0	3.0	3.0	JIS Z 3197 8.1.2
Halide content (mass%)	0	0	≤0.05	≤0.04	JIS Z 3197 8.1.4.2.1
Resistivity of water extract (Ωm)	≥3000	≥3000	≥2000	≥3000	JIS Z 3197 8.1.1
Copper plate corrosion Test	Pass	Pass	Pass	Pass	JIS Z 3197 8.4.1
Copper mirror corrosion Test	Pass	Pass	Pass	Pass	JIS Z 3197 8.4.2
Dryness test	Pass	Pass	Pass	Pass	JIS Z 3197 8.5.1
*2 Insulation resistance (Ω)	≥1.0×10 ⁹	≥1.0×10 ⁹	≥1.0×10 ¹⁰	≥1.0×10 ¹⁰	JIS Z 3197 8.5.3
*3 Electromigration	Pass	Pass	Pass	Pass	JIS Z 3197 8.5.4
Spread factor (%)	≥80	≥80	≥75	≥80	The wire is melted for 5 sec on a copper plate at 380°C.

*1 Flux categories (Halide content in Rosin Base Flux) : ROL0;0%, ROL1;<0.5%

*2 Insulation Resistance : Test Condition B 85°C85%RH 168hrs

*3 Electromigration : Test Condition B 85°C85%RH 1000hrs

Soldering

We recommend the use of a soldering iron which has a high heat capacity to minimize temperature drop and enough power for fast temperature recovery.

Size

Diameters
0.3, 0.4, 0.5, 0.6, 0.8, 1.0, 1.2, 1.6mm

Packing

500g/Reel 10Reel/Carton(5kg)



www.nihonsuperior.co.jp

Go to our website for more detail

Existing products A and B are other Nihon Superior core fluxes

Note : All statements, technical information and recommendations contained herein are based on the data or other information available to us that we believe to be reliable but the accuracy and completeness of which we can not guarantee.

NS^e SN100C: Registered Trade Mark of Nihon Superior Co., Ltd., in U.S.A.

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