



NC611 (Sn100e)
NO CLEAN LEAD-FREE
DELTA[®] SOLDER WIRE

CORPORATE HEADQUARTERS USA: 315 Fairbank St. Addison, IL • 630-628-8083 • FAX 630-628-6543
EUROPE UK: Unit 9 Apex Ct. Bassendale Rd. Bromborough, Wirral CH62 3RE • 44 151 334 0888 • FAX 44 151 346 1408
ASIA-PACIFIC HEADQUARTERS SINGAPORE: 6 Tuas South St. 5 Singapore 637790 • 65 6795 7757 • FAX 65 6795 7767
PHILIPPINES: Phase 1 Qualitek Ave. Mariveles, Bataan Philippines C-2106 • 6347 935 4163 • FAX 63475613717
CHINA: 3B/F, YiPa Print Bldg. 351 # JiHua Rd., Buji Shenzhen, China 518112 • 86 755 28522814 • FAX 86 755 28522787

This data is based on information that the manufacturer believed to be reliable and offered in good faith. Qualitek International, Inc. makes no warranties expressed or implied as to its accuracy and assumes no responsibilities and liabilities arising out of its use by others as conditions and methods of use of the products is beyond the control of Qualitek International, Inc. The user must determine the suitability of the product before using it on a commercial basis. The warranties extend only to the conformity of the product to the physical descriptions. In no event will Qualitek International, Inc. be responsible for special, incidental and consequential damages whether the claim is in contract, negligence or otherwise. Qualitek specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.

Description

Flux Core

Delta® Solder Wire NC611 is a no clean formulation, specifically designed for lead-free applications. NC611 has improved activity over other no clean solder wire for fast spreading action. NC611 has a clear residue and is shown to have virtually no spattering. NC611 is available with Qualitek® Sn100e alloy, which is a tin, copper, cobalt based alloy that provides better product performance than Sn/Cu/Ni alloys and is more cost effective than SAC alloys.

Main Features

- Designed for lead-free applications
- Improved activity
- Clear residue
- Low spattering

Technical Data (Flux Extract)

	Specification	Test Method
Color & Appearance	Light yellow opaque solid	Visual
Flux Classification	RELO	J-STD-004
Copper Mirror	No removal of copper film	IPC-TM-650 2.3.32
Corrosion	Pass	IPC-TM-650 2.6.15
SIR		
J-STD-004, Pattern Up	1.29 x 10 ¹¹	IPC-TM-650 2.6.3.3
Acid Value (mgKOH/g)	190-210	IPC-TM-650 2.3.13
Flux Residue Dryness	Pass	IPC-TM-650 2.4.47
Spitting of Flux-Cored Solder	0.2%	IPC-TM-650 2.4.48
Solder Spread	120 mm ²	IPC-TM-650 2.4.46

Wire Diameter

Delta Solder Wire NC611 with Sn100e alloy is available in a variety of diameters. The chosen diameter is based on application methods, pad size, and desired solder joint volume. Generally, the diameter of the wire should be slightly larger than the width/diameter of the joint or connection to be soldered. Below is a list of standard diameters.

Standard wire diameters

Diameter/Inch	0.125	0.092	0.062	0.050	0.040	0.032	0.028	0.025	0.020	0.015	0.010
Diameter/mm	3.18	2.33	1.57	1.27	1.01	0.81	0.71	0.63	0.51	0.38	0.25
Std. Wire Gauge	11	13	16	18	19	21	22	23	25	28	31
Tolerance, in.	+/-0.006	+/-0.005	+/-0.003	+/-0.003	+/-0.002	+/-0.002	+/-0.002	+/-0.002	+/-0.002	+/-0.002	+/-0.002

Flux Percentage

Qualitek utilizes a state-of-the-art automatic wire extrusion and wire drawing machines to manufacture consistent solder. The introduction of flux core in the wire extrusion process involves continual monitoring of flux percentage to ensure minimal flux voids and irregular wire. Typical flux percentage for the Sn100e alloy solder is **1.1 – 3.3%**.

Physical Properties

Solder Composition

Qualitek has developed a no clean resin based core flux, NC611, with our Sn100e (Sn/Cu/Co) alloy. Qualitek alloys conform to and exceed the impurity requirements of IPC-J-STD-006C.

Typical Analysis														
Sn	Ag	Cu	Pb	Sb	Bi	In	As	Fe	Ni	Cd	Al	Zn	Au	Co
Bal	0.100 Max	0.3- 0.7	0.070 Max	0.200 Max	0.100 Max	0.100 Max	0.030 Max	0.020 Max	0.010 Max	0.002 Max	0.005 Max	0.003 Max	0.050 Max	0.03- 0.07

	Sn100e
Melting Point, °C	228 E
Hardness, Brinell	9 HB
Coefficient of Thermal Expansion	Pure Sn= 23.5
Tensile Strength, Mpa	28
Density, g/cc	7.40
Electrical Resistivity (μohm-cm)	0.123
Thermal Conductivity (J/m-s-K)	82

Flux Residues & Cleaning

NC611 is a no clean formulation; therefore, residue removal is not required for typical applications. If residue removal is desired, the use of Everklean 1005 Buffered Saponifier with a 5-15% concentration in hot 60 °C (140 °F) de-ionized water will aid in residue removal.

Storage & Shelf Life

Delta® Solder Wire NC611 should be stored in a dry environment away from direct heat. We recommend using gloves when handling solder wire directly. Solder wire has an indefinite shelf life.

Packaging

Qualitek flux-core wire and solid wire are packed in

12.5lb -box of ½ lb spools
25 lb -box of 1 lb spools
12.5kg -box of ½ kg spools
8 kg -box of 1kg spools
40 lb -box of 5 lb spools
20 lb -box of 20 lb spools

Disposal

Sn100e NC611 lead-free solder should be disposed of in accordance with federal, state & local authority requirements.