



NC601E (Sn/Ag/Cu) NO CLEAN DELTA[®] SOLDER WIRE

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Description

Flux Core

Delta® Solder Wire NC601E is a no clean, organic-based, cored solder wire that is available with both lead-containing alloys and tin/silver/copper lead-free alloys, such as SAC305 and SAC405 (LF217). NC601E contains purely organic acid activators so spreads rapidly and leaves minimal residue. NC601E exhibits virtually no spattering and conforms to IPC-J-STD-004B.

Main Features

- ☐ Excellent wettability
- ☐ Non-tacky residue
- ☐ Shiny joints
- ☐ RoHS compliant

Technical Data (Flux Extract)

	Specification	Test Method
Color & Appearance	Light yellow solid	Visual
Flux Classification	ORLO	IPC-J-STD-004B
Copper Mirror	No removal of copper film	IPC-TM-650 2.3.32
Corrosion	Pass	IPC-TM-650 2.6.15
SIR	$>1 \times 10^8$ ohms	IPC-TM-650 2.6.3.3
Post Reflow Flux Residue	55%	TGA Analysis
Acid Value	280 - 320	IPC-TM-650 2.3.13
Flux Residue Dryness	Pass	IPC-TM-650 2.4.47
Spitting of Flux-Cored Solder	0.3%	IPC-TM-650 2.4.48
Solder Spread	100 mm ²	IPC-TM-650 2.4.46

Wire Diameter

Sn/Ag/Cu NC601E Delta Solder Wire 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
Diameter/mm	3.18	2.33	1.57	1.27	1.01	0.81	0.71	0.63	0.51	0.38
Std.Wire	11	13	16	18	19	21	22	23	25	28
Gauge										
Tolerance, in.	+/-0.006	+/-0.005	+/-0.002	+/-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 lead-free solder is **1.1 – 3.3%**.

Physical Properties

Solder Composition

Qualitek® has developed a no clean organic based core flux with tin/silver/copper (SAC) alloys. Qualitek SAC alloys conform to and exceed the impurity requirements of IPC-J-STD-006C.

Typical Analysis														
	Sn	Ag	Cu	Al	As	Au	Bi	Cd	Fe	In	Ni	Pb	Sb	Zn
LF955-38	Bal	3.6-4.0	0.5-0.9	0.005 Max	0.030 Max	0.050 Max	0.100 Max	0.002 Max	0.020 Max	0.100 Max	0.010 Max	0.070 Max	0.200 Max	0.003 Max
LF958-35	Bal	3.3-3.7	0.5-0.9	0.005 Max	0.030 Max	0.050 Max	0.100 Max	0.002 Max	0.020 Max	0.100 Max	0.010 Max	0.070 Max	0.200 Max	0.003 Max
LF965-30	Bal	2.8-3.2	0.3-0.7	0.005 Max	0.030 Max	0.050 Max	0.100 Max	0.002 Max	0.020 Max	0.100 Max	0.010 Max	0.070 Max	0.200 Max	0.003 Max
LF217	Bal	3.8-4.2	0.3-0.7	0.005 Max	0.030 Max	0.050 Max	0.100 Max	0.002 Max	0.020 Max	0.100 Max	0.010 Max	0.070 Max	0.200 Max	0.003 Max

	Sn/Ag/Cu
Melting Point, °C	217-221
Hardness, Brinell	15HB
Coefficient of Thermal Expansion	Pure Sn= 23.5
Tensile Strength, psi	4312
Density, g/cc	7.39
Electrical Resistivity, (μohm-cm)	13.0
Electrical Conductivity, %IACS	16.6

	Sn/Ag/Cu
Yield Strength, psi	3724
Total Elongation	27
Joint Shear Strength, at 0.1mm/min 20 °C	27
Joint Shear Strength, at 0.1mm/min 100 °C	17
Creep Strength, N/mm ² at 0.1mm/min 20 °C	13.0
Creep Strength, N/mm ² at 0.1mm/min 100 °C	5
Thermal Conductivity, W/m-K	58.7

Flux Residues & Cleaning

NC601E is a no clean formulation; therefore, the residues do not need to be removed for typical applications. If residue removal is desired, the use of Everkleen 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

Solder wire storage should be in a 65-80 °F 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

Sn/Ag/Cu NC601E leaded solder wire should be disposed of according to all local, regional, national and international regulations.

Qualitek® and Delta® are brands of Qualitek International, Inc. For Health and Safety information refer to Safety Data Sheet.