QUALITEK Technical Bulletin

NC600 63/37 SOLDER WIRE

DESCRIPTION

A no clean flux system that is available in lead-containing alloys. It provides the fluxing activity levels that promote fast wetting action and maximum wetting spread. Utilizing synthetically refined resin and very effective activator, NC600 wets and spreads like an RA type flux core. NC600 exhibits virtually no spattering and leaves minimal residue.

FEATURES AND BENEFITS

- Excellent wettability
- Yields clear, non-conductive residues

FEATURES AND BENEFITS

	Specification	**Test Method**
Colour & Appearance	Light yellow opaque solid	Visual
Flux Classification	REL0	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 JSTD-004, Pattern Down	2.05 x 10^{11}	IPC-TM-650 2.6.3.3
Electromigration	Pass	Bellcore GR-78-CORE 13.1.4
Post Reflow Flux Residue	55%	TGA Analysis
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	0.3%	IPC-TM-650 2.4.48
Solder Spread	100 mm^2	IPC-TM-650 2.4.46

WIRE DIAMETER

Delta Solder Wire NC600 63/37 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 /

Diamter/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 Gauge	11	13	16	18	19	21	22	23	25	28
Tolerance, in.	+/-0.006	+/-0.005	+/-0.003	+/-0.003	+/-0.002	+/-0.002	+/-0.002	+/-0.002	+/-0.002	+/-0.002

FLUX PERCENTAGE

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 leaded solder is 1.1 – 3.3%.

PHYSCIAL PROPERTIES

A no clean resin based core flux with alloy composition Sn63/Pb37, which is a eutectic alloy. 63/37 alloys conform to and exceed the impurity requirements of IPC-J-STD-006C.

Issue 1 - 25/02/20

TYPICAL ANALYSIS

Typical Analysis													
Sn	**Ag**	**Cu**	**Pb**	**Sb**	**Bi**	**In**	**As**	**Fe**	**Ni**	**Cd**	**Al**	**Zn**	**Au**
62.5 –63.5	0.100 Max	0.080 Max	Bal	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

	Sn63/Pb37
Melting Point, ℃	183 E
Hardness, Brinell	14 HB
Coefficient of Thermal Expansion	24.7
Tensile Strength, psi	4442
Density, g/cm^3	8.42
Electrical Resistivity, (μΩ-cm)	14.5
Electrical Conductivity, 10^4/ohm-cm	6.9

	Sn63/Pb37
Yield Strength, psi	3950
Total Elongation,%	48
Joint Shear Strength, at 0.1mm/min 20 ℃	23
Joint Shear Strength, at 0.1mm/min 100 ℃	14
Creep Strength, N/mm^2 at 0.1mm/min 20 ℃	3.3
Creep Strength, N/mm^2 at 0.1mm/min 100 ℃	1
Joint Fatigue Cycle, 15N/mm^2 20 ℃ 10N/mm^2 100 ℃	1100 900

FLUX RESIDUES & CLEANING

NC600 is a no clean formulation; therefore, residue removal is not required 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.

DISPOSAL

NC600 63/37 solder should be disposed of in accordance with federal, state & local authority requirements.