



Palladium/Silver Conductor Composition 6130

General Purpose Solderable Conductor

A low-priced, general purpose microcircuit composition suitable for many high performance applications.

Features include:

- A mixed binder system (glass plus oxide) for high initial and aged adhesion with excellent solder acceptance.
- Good resistance to solder leaching in 62 Sn/36 Pb/2 Ag or 63 Sn/37 Pb solders.
- Low resistivity of 10-15 mΩ/□.
- SPRINT*, a new slow-drying release printing vehicle, permitting squeegee speeds up to 30 cm/s. and long production runs for maximum throughput with high-speed automated printers.
- Compatibility with resistors and crossover dielectrics.

Typical Fired Conductor Properties¹

Fired Thickness	17-20 μm
Print Resolution	200-250 μm lines and spaces
Resistivity	10-18 mΩ/□ at a fired thickness of 18 μm
Solder Acceptance² 62 Sn/36 Pb/2 Ag, 220°C 63 Sn/37 Pb 240°C	≥95% coverage ≥95% coverage
Solder Leach Resistance² 62 Sn/36 Pb/2 Ag, 230°C 63 Sn/37 Pb 250°C	8-10 cycles 5- 6 cycles
Adhesion³ Initial Aged 48 hrs at 150°C	20-35 N 18-34 N

Test Procedure

¹ Typical fired properties are based on laboratory tests. Unless expressly noted elsewhere the following processing conditions have been used:

Printing: 200-mesh stainless steel screen, 12-14 μm emulsion thickness.

Firing: 3×60 minute cycle to a peak temperature of 850°C for 10 minutes.

All tests performed on 96% alumina substrates.

² Using Alpha 611 flux. Solder coverage measured after a 5 s. dip in solder. A leaching cycle is represented by a 10 s. dip in solder. See soldering test procedure for details.

³ 90° wire peel test on 2 mm × 2 mm pads soldered with 62 Sn/36 Pb/2 Ag solder at 220°C and using mildly-activated flux, Alpha 611. See wire peel adhesion test procedure for details.

* Du Pont's trademark.

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Compatibility

Resistor compatibility

6130 may be used to terminate Du Pont standard resistors such as BIROX[®] Series HS80. However, there may be a shift of TCR and resistance values from those stated for the standard termination.

Dielectric compatibility

6130 is fully compatible with Du Pont Low-K dielectrics with no significant degradation of dielectric or conductor properties.

For optimum results separate firing of conductor and dielectric composition is normally suggested.

Composition Properties

Viscosity

155-215 Pa.s (Brookfield HBT, Utility cup and spindle (SC4-14/6R), 10 rpm, 25°C ± 1°C).

Thinner

6130 is optimized for screen printing, thinning is not normally required. Du Pont Electronic Com-

position Thinner 9936 is recommended for slight adjustments to viscosity or to replace evaporation losses.

Coverage

60-70 cm²/g based on a wet film thickness of 50 µm.

Recommended Processing Procedure

Storage

6130 should be mixed thoroughly before use. Jar rolling is not recommended.

Substrates

Properties are based on tests on 96% alumina substrates. Substrates of other compositions and from various manufacturers may result in variations in performance properties.

Printing

Printing should be performed in a clean and well ventilated area. A 200 or 325 mesh stainless steel screen with a 12-14 µm emulsion thickness is normally suggested.

Print speeds of 5 to 30 cm/s. may be used.

At high printing speeds optimum results are obtained with a sharp squeegee, a 30° or 45° angle of attack, a squeegee force of 10-20 N and

a snap-off of between 0,5 mm and 1,0 mm depending on pattern size.

Drying

Allow prints to level for 5-10 minutes at room temperature, then dry for 10-15 minutes at 150°C.

Firing

Fire in a well ventilated belt or conveyor furnace, in air with a 60 minute cycle to a peak temperature of 850°C held for 10 minutes.

Properties are relatively unaffected by multiple refirings at 850°C.

Air flows and extraction rates should be optimized to ensure that oxidizing conditions exist within the muffle, and that no exhaust gases enter the room.

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