



# DUPONT™ LS200

## 5:1 AgPd CONDUCTOR COMPOSITION

### PRODUCT DESCRIPTION

DuPont™ LS200 5:1 AgPd conductor is intended to be applied to ceramic substrates by screen printing and fired in a conveyor furnace in an air (oxidising) atmosphere. It has been developed to enable post drying laser structuring.

### PRODUCT BENEFITS

- Laser ablatable (1064nm YAG)
- High back light density
- High conductivity
- Compatible with Resistor Series 2000
- Good overlap cosmetics with LS100 Ag and QR150 Au conductor
- Dibutyl Phthalate, Lead, Cadmium, Nickel oxide free\*

\*Dibutyl Phthalate, Cadmium and Nickel oxide 'free' as used herein means that cadmium, phthalate and nickel oxide are not intentional ingredients in and are not intentionally added to the referenced product. Trace amounts however may be present

### PROCESSING SUMMARY

#### Screen Type

200-400 mesh stainless steel screen with a 10 µm emulsion build up.

#### Drying

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

#### Laser Ablating

Line and space resolution will depend on the 1064nm YAG laser spot size, trim rate and power.

Good edge resolution is created on the first pass, but some optimization of laser conditions and number of passes may be required depending on dried print thickness and desired edge cosmetics.

Overlaps with LS100 Ag, and QR150 Ag may also be laser ablated when both (or all three) pastes remain in the dried state.

Laser parameters will have to be adjusted to cope with the additional thickness in the overlap region.

#### Firing

850°C peak held for 10 minutes on 30 minute cycle in an air atmosphere.

Table 1. Typical Physical Properties

Property	Value
Viscosity, (Pa.s) Brookfield HBT, 10 rpm, SC4-14/6R utility cup and spindle, 25°C±0.2°C)	180 – 280
Coverage, (cm <sup>2</sup> /gram) at 15µm dried thickness	100 – 120
Shrinkage (%), dried to fired	45
Resistivity, (mohm/sq @15µm fired thickness)	<10
Thinner	4553
Shelf Life (months)	6

### STORAGE AND SHELF LIFE

Containers may be stored in a clean, stable environment at room temperature (between 5°C – 30°C) with their lids tightly sealed. Storage in high temperature (<30°C) or in freezers (temperature <0°C) is NOT recommended as this could cause irreversible changes in the material. The shelf life of compositions in factory-sealed (unopened) containers between (5°C – 30°C) is 6 months from date of shipment.

### SUBSTRATES

Substrates of different compositions and from various manufacturers may result in variations in performance properties.

### THINNER

LS200 5:1 composition is optimized for screen printing and thinning is not normally required. Use the DuPont recommended thinner for slight adjustments to viscosity or to replace evaporation losses. The use of too much thinner or the use of a non-recommended thinner may affect the rheological behaviour of the material and its printing characteristics. Please refer to table 1. *Typical Physical Properties*.

### PRINTING

The composition should be thoroughly mixed before use. This is best achieved by slow, gentle hand-stirring with a clean burr-free spatula (flexible plastic or stainless steel) for about 1-2 minutes. Care must be taken to avoid air entrapment. Printing should be performed in a well-ventilated area. Additional information on requirements for printing areas is contained in DuPont Technical Guide EUT 7.3 *Processing-Screen Printing Rooms* available on request.



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Note: optimum printing characteristics are generally achieved in the room temperature range of 20°C-23°C. It is therefore important that the material, in its container, is at the temperature prior to commencement of printing. Class 10,000 printing area is recommended for building complex hybrids and multilayer circuits, otherwise severe yield losses could occur. Refer to *Processing Summary*.

### DRYING

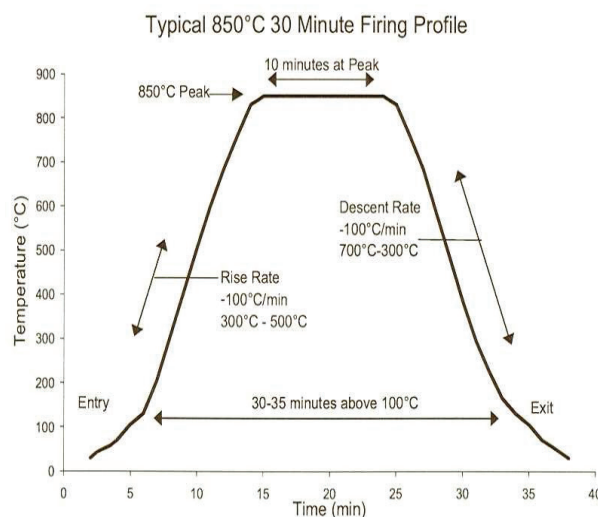
Allow prints to level at room temperature, then dry in a well-ventilated oven or conveyor dryer. Refer to *Processing Summary*.

### FIRING

Fire in well-ventilated belt, conveyor furnace or static furnace. 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.

Full information on requirements for firing is contained in DuPont Technical Guide EUT 7.4 *Process Guide-Firing*. Refer to *Processing Summary*.

Chart 1. Firing Profile



**FOR MORE INFORMATION ON DUPONT™ LS200 OR OTHER DUPONT MICROCIRCUIT MATERIALS, PLEASE CONTACT YOUR LOCAL REPRESENTATIVE:**

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CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement," H-50102-5 K-28892 (4/15)