

# DuPont 4899

SOLDERABLE SILVER TERMINATION

## Technical Data Sheet

### Product Description

DuPont 4899 is a solderable Cadmium-free\* and lead-free\* silver termination for lead attachment to multilayer capacitors. This product has good solderability and high adhesion over a wide range of capacitor bodies. This termination may be employed on parts where platable terminations are not desired but which will be subjected to soldering conditions.

### Product Benefits

- Cadmium-free\*, lead-free\*
- Good adhesion and solderability
- Dip even large size parts without a blot

\*Cadmium and lead "free" as used herein means that cadmium and lead are not intentional ingredients and are not intentionally added to the referenced product. Trace amounts however may be present.

### Processing

#### Application

Carrier plate-type dipping.

#### Substrates

Ceramic capacitors bodies.

#### Typical Drying Conditions

160-180°C peak, 15 minute cycle on belt dryer.

#### Typical Firing

850°C for 10 minutes at peak, 40 minute cycle.

**Table 1**  
**Typical Physical Properties**

Test	Properties
Solids (%)	74.5 - 76.5
Viscosity (Pa.s) (Brookfield RVT, 14/6R @ 10 rpm, 25°C)	40 - 60
Thinner	DuPont 4553

This table shows anticipated typical physical properties for DuPont 4899 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

### Dipping

DuPont 4899 termination 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 1-2 minutes, or by slow jar rolling for 24 hours. Dipping should be carried out in a clean, well-ventilated area. Note: Optimum dipping characteristics of DuPont 4899 are generally achieved in the temperature range of 21°C-25°C.

### **Firing**

Care must be taken to ensure that any gases/vapors from other chemicals or materials (e.g. halogenated solvents) do not enter the furnace muffle. It is also essential that the air supply to the furnace is clean, dry and free of contaminants. Air flows and extraction rates should be optimized to ensure that oxidizing conditions exist within the muffle, and that no furnace exhaust gases enter the room. DuPont 4899 termination composition is fired on a 40 minute firing cycle to a peak of 850°C, held for 10 minutes. Variations in the peak firing temperature and/or time at the peak temperature (e.g. 850-900°C for 5-10 minutes at peak can be considered) may result in variations in the final fired properties. Care must be taken to assess the appropriate firing conditions for a particular body type.

### **Thinner**

DuPont 4899 is optimized for dipping and thinning is not normally required. DuPont 4553 may be used sparingly for slight adjustments to viscosity or to replace evaporation losses. However, the use of too much thinner or the use of a non-recommended thinner may affect the rheological behavior of the material and its dipping characteristics.

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### **Storage and Shelf Life**

Containers should be stored, tightly sealed, in a clean, stable environment at room temperature (<25°C). Shelf life of material in unopened containers is six months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

### **Safety and Handling**

For Safety and Handling information pertaining to this product, read the Material Safety Data Sheet (MSDS).

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