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# ALN71 Gold Conductor

## Thick Film Composition

All values reported here are results of experiments in our laboratories intended to illustrate product performance potential with a given experimental design. They are not intended to represent the product's specifications, details of which are available upon demand.

### Product Description

ALN71 is a mixed bonded cadmium free gold conductor composition for use on Aluminium Nitride substrates. The ALN71 contains an alloying agent for Al wire bonding and is capable of excellent automatic wire bonding yields with both Au and Al wire.

### General

Yield and performance will depend to a large degree on care exercised during processing, particularly in screen printing. Scrupulous care should be taken to keep the composition, printing screens and other tools free of metal contamination. Dust, lint and other particulate matter may also contribute to poor yields.

### Printing

The composition should be thoroughly mixed before use. Printing should be performed in a clean and 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.

Note: optimum printing characteristics are generally achieved in the room temperature range of 20°C-23°C. It is therefore

### Table Composition Properties

<b>Viscosity</b> [Pa.s] (Brookfield HBT, SC-4-16/6R [UC &SP, 10rpm,25°C]	200 - 300
<b>Coverage</b> [cm <sup>2</sup> /g]	50 - 80
<b>Thinner</b>	8672
<b>Retest</b> [months]	6

### Processing

<b>Printing</b>	A 325-mesh stainless steel screen with a 12µm emulsion thickness is recommended. Printing speeds up to 15 cm/s can be achieved
<b>Drying</b>	Allow prints to level 5-10 minutes at room temperature. Then dry 10-15 minutes at 150°C, in a well ventilated oven or belt dryer.
<b>Firing</b>	Fire in well ventilated furnace, in air with a 30 or 60 minutes cycle to a peak temperature of 850° C for 5-10 minutes.

### Typical Physical Properties<sup>1</sup>

<b>Fired Thickness</b> [µm]	8 - 12
<b>Line Resolution</b> [µm] (line/space) <sup>2</sup>	100/100
<b>Resistivity</b> [mΩ/sq @ 10µm]	≤ 6.0

### Wire Bond Properties

Automatic Thermosonic Gold Wire Bonding <sup>3</sup>	
25µm Wire Diameter	
<b>Pull Strengths Initial</b> [g]	11

- 1) Properties are based on tests on Aluminium Nitride substrates.
- 2) Using special screens designed for fine line printing.
- 3) Hughes 2460-III Automatic Gold Wire Bonder, stage 150°C, ceramic tool, 25µm Au wire, tensile strength 8g min, elongation 3 to 5%.

important that the composition, in its container, is at this temperature prior to commencement of printing.

### Drying

Allow prints to level at room

temperature, then dry in a well ventilated oven or conveyor dryer. Refer to table - "Processing Conditions"

**Firing**

Fire in a 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 table - "Processing Conditions"

**Thinner**

This composition is optimized for printing, 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. Refer to table - "Composition Properties"

**Compatibility**

Whilst DuPont has tested this composition with the specified materials and under the recommended processing conditions, it is impossible or impractical to cover every combination of materials, customer processing conditions and circuit layouts.

It is therefore essential that customers thoroughly evaluate the material in their specific situations in order to completely satisfy themselves with the overall quality and suitability of the composition for its intended application(s).

**Storage**

Containers of ALN71 should be stored in a clean, stable environment at room temperature <25°C, with the container lids tightly sealed. Storage in freezers (temperature <0°C) is NOT recommended as this could cause irreversible changes in the

composition. For guidance regarding storage of the composition, please consult DuPont Technical Note EUT 7.2 "Shelf Life Policy".

**Shelf life**

This composition has a shelf life of 6 months from date of shipment for factory-sealed (unopened) containers, stored under room-temperature conditions.

**Health/Safety considerations**

DuPont's thick film compositions are intended for use in an industrial environment by trained personnel. All appropriate health / safety regulations regarding storage, handling and processing of such materials should be complied with. For information on health / safety regulations please refer to the specific product MSDS and to the DuPont Safety Guide EUT 7.1 "Practical Safe Handling of Thick Film Compositions".