

DuPont 5771

GOLD CONDUCTOR

Technical Data Sheet

Product Description

DuPont 5771 is a cadmium free*, screen printable, composition. It is used as a gold wire bondable conductor in high density hybrids. DuPont 5771 is capable of good automatic gold wire bonding yields with 1-mil and 2-mil wire. DuPont 5771 works well over multilayer dielectrics, such as DuPont QM44

*Cadmium "free" as used herein means that this is not intentionally added to the referenced product. Trace amounts however may be present.

Processing

Substrates

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

Screen Printing Equipment

A 325 mesh stainless steel screen with an 12 μm (0.5 mil) emulsion thickness is recommended. Printing speeds up to 15 cm/s (6 in/s) can be achieved.

Drying

Allow the wet print to level for 10-15 minutes at room temperature. Dry for 15 minutes at 150°C.

Firing

Dried prints should be fired in a belt furnace. Use a 30 minute cycle with a peak temperature of 850°C for 10 minutes. No significant changes in performance characteristics were seen after multiple refirings at 850°C. See Figure 1.

Bonding Conditions

Hughes 2460-III Automatic Gold Wire Bonder, stage 150°C, ceramic tool, 1.0 mil Au wire, tensile strength 8g min, elongation 3 to 5%.
Hughes 2460-III Automatic Gold Wire Bonder, stage 150°C, ceramic tool, 2.0 mil Au wire, tensile strength 40-45g min, elongation 3 to 5%.

Composition Properties

Test	Properties
Viscosity (Pa.s) (Brookfield 2xHA, UC&SP SC-4-14/6r, 10 rpm, 25°C)	350-500
Solids (%)	83.7 - 85.7
Coverage (cm ² /g)	50 - 80
Thinner	DuPont 8672

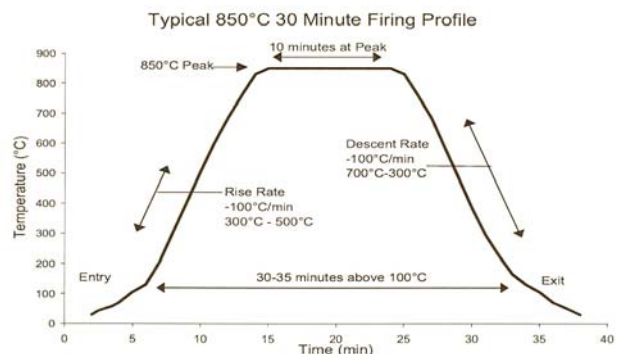
Typical Fired Properties

Line Resolution (μm) (lines/spaces)	< 150 / > 100
Fired Thickness (μm) (mil)	6 - 9 0.3 - 0.5
Resistivity (m Ω /sq @ 10 μm fired thickness)	≤ 7.0

This table shows anticipated typical physical properties for DuPont 5771 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

K&S Model 4123 Ultrasonic Wedge Bonder, tool #41471-2535-152, 1.0 mil Al wire (1% silicon).

Figure 1 - 30 minutes profile



Wirebond Properties

Automatic Thermosonic

Gold Wire Bonding ¹ 1.0 mil Diameter Initial (gms) 1000 hrs, 150°C Thermal Aging	<u>Al₂O₃</u>	<u>QM44</u>
	≥10	≥10
	≥10	≥10
2.0 mil Diameter Initial (gms) 1000 hr, 150° Aging	≥35	≥35
	≥35	≥35
Aluminum Wire Bonding 1.0 mil Diameter 315°C, 1.25 hr Aging	≥10	
	≥6	

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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