DuPont Microcircuit Materials

5775 Gold Conductor

Aluminum and Gold Wire Bondable Conductor

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.

Product Description

5775 is a cadmium free, screen printable, composition. It is used as a gold and aluminium wire-bondable conductor for use over 96% alumina and multilayer dielectrics. Outstanding aged adhesion of aluminium wire bonds distinguish it from other aluminium wire bondable products.

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 μ m (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 60 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.

Table 1Typical Fired Properties		
Line Resolution ¹	100/100 µm lines/spaces	
Fired Thickness	7-10 μm	
Resistivity	<7.0 mΩ/sq @ 10 µm fired thickness	
" Using special screens designed for fine line printing.		

Table 2Composition Properties				
Viscosity (Pa.s) (Brookfield 2xHA, SC-4-14/6r [UC&SP], 10 rpm, 25°C)	240-400			
Coverage, (cm²/g)	50-80			
Thinner	8672			

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.

Table 3 Wirebond Properties					
Automatic Thermosonic					
2.0 mil Wire Diameter On Alumina 1 mil wire Pull Strengths Initial 42 g Aged: 150°C, 1000 hrs 40g	Diameter 9 g 8 g				
Aluminum Wire Bonding ³ on Alumina					
1.0 mil Wire Bonding Pull Strengths Initial Aged: 315ºC, 1.25 hr	12 g 6.5 g				
10.0 mil Wire Bonding Pull Strengths Initial Aged: 315°C, 1.25 hr	600 g 445 g				
² See Bonding conditions. All wire breaks. No bonds lifts					

Safety and Handling

DuPont thick film products are intended for industrial use by trained personnel. These products contain organic and inorganic ingredients. It is important for workers to avoid overexposure to chemicals contained in these products or that might be become available when processing them. Overexposure to other materials used in the operation should also be avoided, for example, cleaning solvents and degreasing fluids. Well-designated area and personal air sampling/analysis can show if exposures are within required and recommended limits. Properly designed engineering controls, such as local ventilation and process enclosures, are effective in limiting employee exposure and to avoid the creation of hazardous conditions (e.g. forming an explosive vapor concentration). Engineering controls and procedures must comply with all applicable federal, state and local safety, health and environmental laws and regulations.

The following additional precautions should be taken when handling these products:

- Read the Material Safety Data Sheet (MSDS) and product labels before using the products;
- Use appropriate personal protective equipment (PPE) and practice good industrial hygiene. DO NOT INGEST! DANGEROUS IF SWALLOWED!
- Keep product container closed when not in use to prevent solvent evaporation and spilling hazards;
- If contact with skin occurs, wash affected area immediately with soap and water;
- Avoid prolonged breathing of vapors and dust/particulates. Keep exposure levels within the required or recommended limits. Always use sufficient ventilation as noted above.

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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

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MCM5775 (10/2003) Printed in U.S.A.