

5164N Pt/Ag Conductor Paste for Hybrid Circuit

(Hi-frequency circuit/Auto-motive control circuit)

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

5164N Pt/Ag Conductor is thick film conductor that meets the needs of low cost and high performance. Specially developed for the use of automotive, characteristic of excellent Electrical conductivity equal to Cu thick film and distinct Thermal Cycled Adhesion (TCA) with dense fired film and newly developed inorganic binder. And good Long Term Aging Adhesion (LTAA), excellent solderability, and super printability.

Product Benefits

- High TCA and no conductor crack even after 2,000 cycles (-40 ~+125°C), 150°C aging 3,000 hrs.
- Excellent solderability and high electrical conductivity (2.53~3.0 Ω/sq)
- Good Wire bondability
- Excellent printability and fine line capability
- Wide process window: Insensitive to firing temperature, firing period, firing times and film thickness
- Good compatibility to substrate, printing resistor, cross-over glass, and over-coat glass
- Good TCA and LTAA with 2% Ag solder and 10SN/90Pb solder
- Standard conductor for resistor Series 00X0

Processing

Substrates

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

Printing

200 - 325 Mesh stainless screen. Please mix well before printing.

Typical Fired Properties

Sheet Resistivity (mΩ/sq)	2.5~3.0
Fired Thickness]	10~14
Fine Line (μm)	~ 125
Solderability ¹ (mm)	4.4
Solder Leach Resistance ²	4 minutes
Adhesion	
Initial (N) ³	38 (24)
150°C Aging (N) (3,000 H)	25 (20)
Thermal Cycle ⁴ (N)(2,000)	25

¹ 2mm solder-ball Spread-test 230°C, 62Sn/36Pb/2Ag solder, 30 second

² Dipping time to 2 mm line solder leach (220°C, 62Sn/36Pb/2Ag solder)

³ 2.2 mm pad, 0.8 mm Wire peeling test

⁴ Same as above, ~40~125°C, each 30 min./cycle

Composition Properties

Viscosity (Pa.s) (Brookfield HBT, UC & S 10 rpm, 25°C ± 1°C)	150-250
Thinner	4553

Drying

Levelling at room temperature 5 ~ 10 min at 150°C for 10 min.

Firing

30 min profile (100°C ~ 100°C 30 min.), Peak 850°C 10 min. (60 min profile is OK)

Storage and Shelf Life

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

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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