

DuPont Microcircuit Materials

THICK FILM COMPOSITION

8091 Pb-Free Glass Encapsulant

Product Description

8091 encapsulant is Pb-free, and designed for use as a protective coating for hybrid circuits and ceramic components.

Product Benefits

- Pb-free
- Compatible with 2100 series resistors
- Hermetic fired film with excellent chemical durability
- Provides excellent protection from adverse environment
- Contains easy burnout organic vehicles

Processing

Printing

Print to a dried print thickness of 20-25 μ m with a 200 mesh stainless steel screen.

Note: Prior to use, 8091 should be thoroughly mixed with a clean spatula. Abrupt mixing should be avoided, as it causes excess of air trapped inside the paste. Printing should be carried out in a clean and well-ventilated room.

To obtain optimal printing results, 8091 should be stored at 20-23°C prior to printing.

Drying

Prints should be allowed to level at room temperature for 5-10 minutes and then dried for 10 minutes at 150°C.

Firing

Fire to peak temperature of 550-560°C for 5-6 minutes at peak with a total firing cycle of 20-30 minutes. Allow adequate time (5-10 mins) during heating cycle to avoid entrapment of organics in the fired film. See Figure 1.

Note: 8091 is optimized for screen printing. Thinning is not recommended. For minor adjustment, thinner 8250 is recommended.

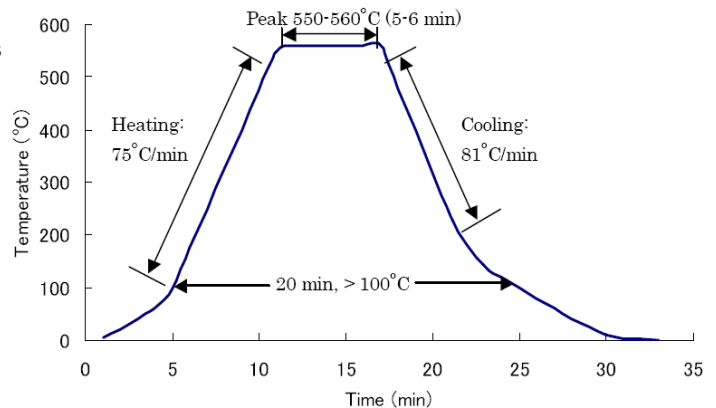
Table 1
Typical Physical Properties

Density (g/cm ³)	2.4
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Table 2
Composition Properties

Viscosity (Pa.s) (Brookfield HBT, Utility cup & spindle, @10rpm, 25°C)	100-160
Solids (750°C) (%)	74.0-76.0
Coefficient of Thermal Expansion (TCE)	6.7E-6/K
Thinner	8250

Figure 1. DuPont Profile (550-560°C x 5-6 min)



Storage and Shelf Life

8091 should be stored in a clean, stable environment at temperature 5-30°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 3 months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

Safety and Handling

This product contains organic solvent and materials. The following precautions should be taken when handling the product. Read the Material Safety Data Sheet (MSDS) and product labels before using the product;

- 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 contact with skin. Avoid prolonged breathing of vapours and dusts/particulates.
- Ensure that no metal impurities and contaminants on the printing equipment.
- Keep exposure levels within the required or recommended limits. Always use sufficient ventilation as noted above.

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The data shown is the result of experiments in DuPont's laboratories intended to illustrate product performance potential within a given experimental design.

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