

DuPont 9615R

GLASS ENCAPSULANT

Technical Data Sheet

Product Description

High temperature glass encapsulant composition DuPont 9615R intended for use as final encapsulant to provide hermetic protection for screen printed capacitors. DuPont 9615R is applied to ceramic substrate by screen printing and fired in an air (oxidizing) atmosphere.

Product Benefits

- Red color dried film, colorless fired film
- Coefficient of thermal expansion 6.3×10^{-6} in/in/°C (0-300°C)
- Hermetic fired film with excellent chemical durability
- Fired at a peak temperature of 850°C
- Phthalate, cadmium, and nickel oxide free*

*Phthalate, cadmium, and nickel "free" as used herein means that these are not intentionally added to the referenced product. Trace amounts however may be present.

Processing Printing

Encapsulant composition DuPont 9615R should be thoroughly mixed before use. This is best achieved by slow, gentle hand stirring with a clean, burr-free spatula (flexible plastic or stainless steel) for 1-2 minutes. Care must be taken to avoid air-bubble entrapment. Printing should be carried out in a clean, well-ventilated area.

Note: optimum printing characteristics of DuPont 9615 are generally achieved in the temperature range 20°C-23°C. It is therefore important that the material, in its container, is at this temperature prior to commencement of printing.

Screen printed with a 200 mesh stainless steel screen to obtain a fired thickness of 12µm. Two layers separately fired are recommended for maximum hermetic.

Composition Properties

Test	Properties
Viscosity (Pa.s) (Brookfield HBF, spindle#5, 10 rpm, 25°C)	170 - 230
Coverage (cm ² /gm)	83
Thinner	DuPont 9180R

This table shows anticipated typical physical properties for DuPont 9615R based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

Drying

Allow prints to level for 5-10 minutes at room temperature in a clean, draught-free environment, followed by drying for 10-15 minutes at 150°C in a well ventilated oven or conveyor dryer.

Firing

Fire in a well ventilated belt or conveyor furnace in air with a 30-60 minute cycle with a peak of 850°C held for 10 minutes. See Figure 1 & Figure 2. Care must be taken to ensure that any gases/vapors from other chemicals/materials (e.g. halogenated solvents) do not enter the furnace muffle. It is also essential that the air supply to the furnace is clean, dry and free of contaminants. Air flows and extraction rates should be optimized to ensure that oxidizing conditions exist within the muffle, and that no furnace exhaust gases enter the room.

General

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

Figure 1 - 30 minutes Profile

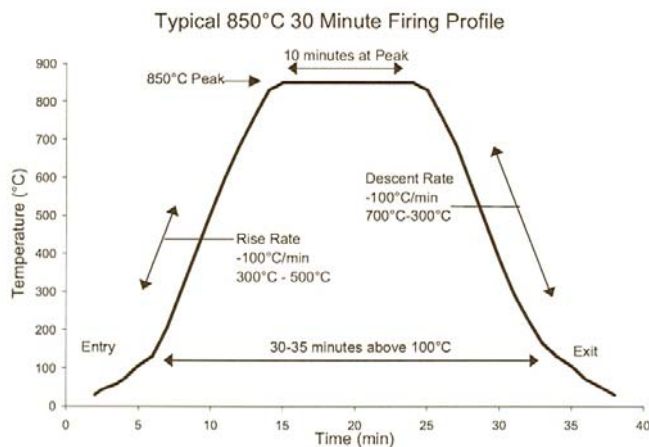
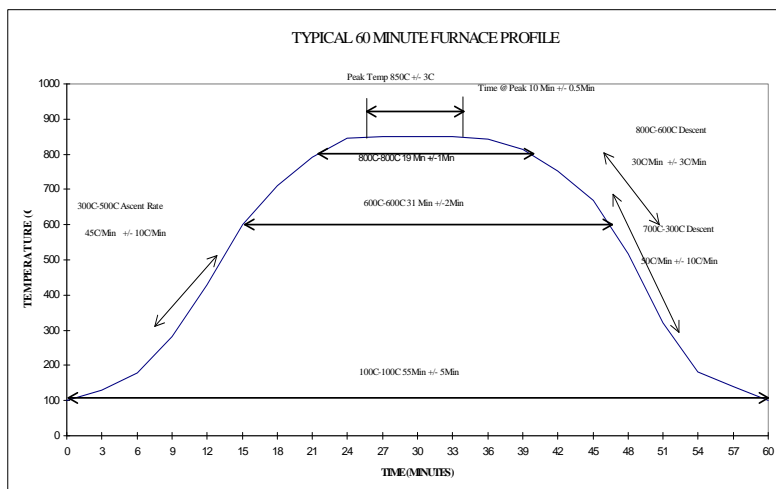


Figure 2 - 60 minutes Profile (Typical 850°C 60 minute Profile)



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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