

Technical Data Sheet

Electronic Glass Materials

DL11-210 Pb-Free, Alkali-free Sealing Glass Paste

Application

DL11-210 is a lead, cadmium, and alkali free thick film glass paste designed for sealing silicon and metal substrates at reduced firing temperature.

DL11-210 is especially suited for hermetic sealing of micromechanical devices such as vibration, pressure, yaw and accelerometer sensors.

DL11-210 Sealing Glass paste is formulated and processed to be RoHS and REACH compliant.

Typical Formulation Properties

Color: Grey

Viscosity: 35 ± 15 Pa·s

Solids Content: $87 \pm 2\%$

Storage and Shelf Life: This product should be stored in tightly sealed containers at 20 to 25°C, in a dry place away from direct sunlight. The shelf life of a factory sealed container is a minimum of 6 months from date of shipment.

Typical Fired Properties

- | | |
|--------------------------------|-------------------|
| • Thermal Expansion @ 260 °C | 9.3 ± 0.5 ppm |
| • Glass Transition Temperature | 370 °C |
| • Fired Thickness | 10 µm |

Typical Process Parameters

Thinning: This paste is formulated at the appropriate viscosity for the intended application. Contact your local Ferro Technical Service representative for appropriate thinner to use should solvent replacement becomes necessary.

Printing: Screen print using a 250 to 325 mesh stainless steel screen, with 12 µm emulsion, will typically yield a 20 µm dried thickness.

Leveling: 5 to 7 minutes at room temperature.

Drying: 7 to 10 minutes at 100°C to 120°C in an oven with forced air flow or an equivalent conveyor drier.

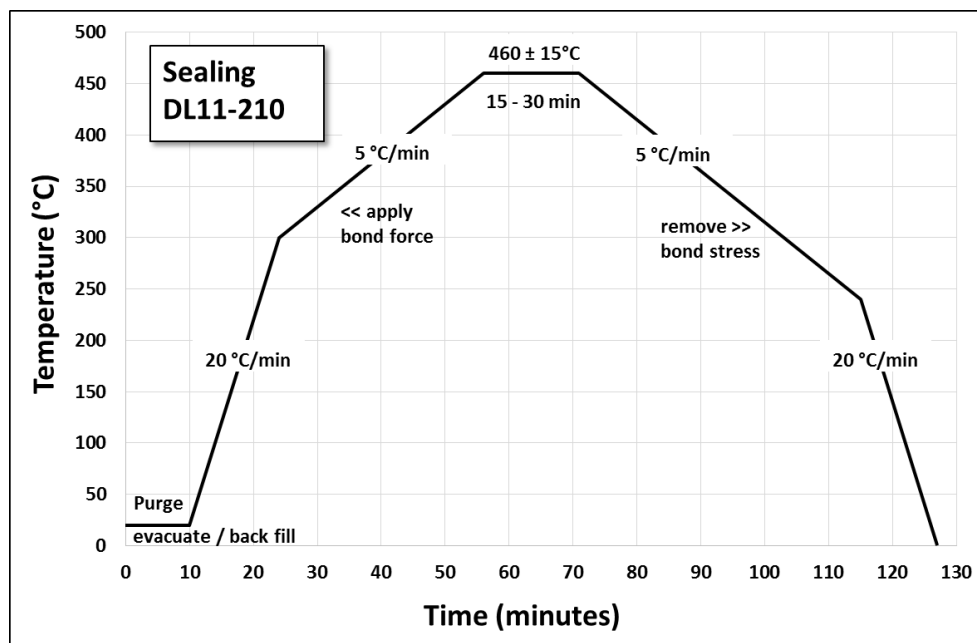
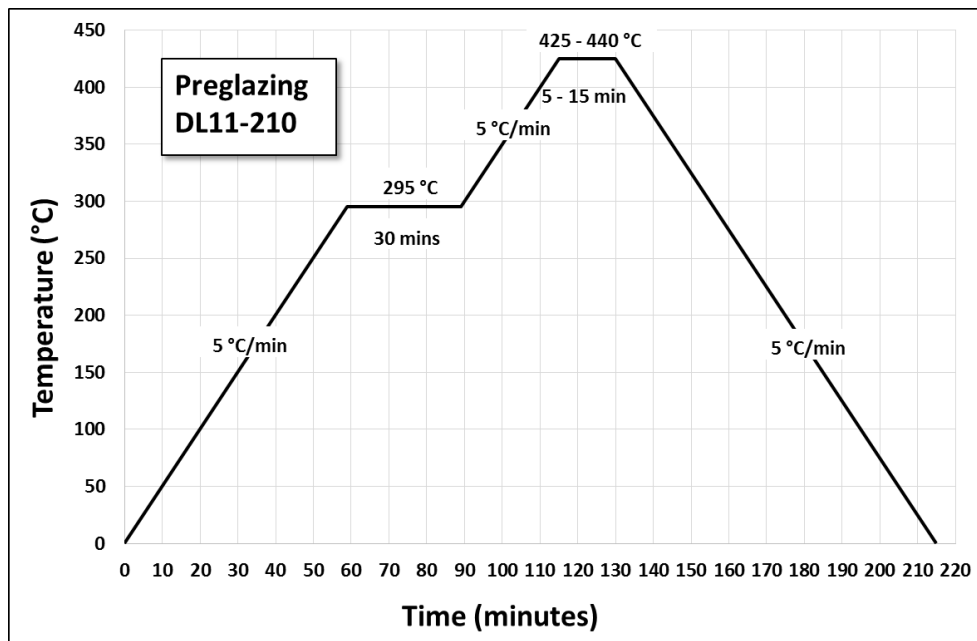
Binder Burnout and Glazing: Removal of organics and glazing (sintering) of the glass layer is typically carried out in a programmable furnace, under oxidizing atmosphere at specified temperatures as indicated in pre-glaze profile provided below.

Firing: Materials to be sealed are then mated together and fired as indicated in the sealing profile provided below.

It may be necessary to optimize these sealing profiles, depending upon the size and thermal mass of the parts being sealed.

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