

Technical Data Sheet

THICK FILM MATERIALS

Product Type: LTCC Materials

Product Name: X200W



White LTCC Dielectric Powder

Description

Heraeus' X-200W LTCC powder mix is designed to be cast into green tape used for module and passive component applications. In these applications the relatively low permittivity and low loss of this material allow for the production of high performance components and multilayer circuits.

X-200W is compatible with binder systems typically used in tape fabrication. In tape form this material is also compatible with Heraeus' silver and gold conductor systems.

Key Benefits

- Silver conductor compatible
- Lead and cadmium free
- High Q
- Near zero T_f (temperature coefficient of frequency)

Typical Properties (Powder)

Particle Size	D90: 5.0 – 7.0 μm D50: 2.25 – 3.25 μm
Surface Area	2.4 – 3.0 m^2/g
Fired Density	3.0 – 3.2 g/cm^3

Burnout and Firing in a Box Oven

Heating Rate	5 – 5.5 $^{\circ}\text{C}/\text{min}$
Peak Temperature	870 – 880 $^{\circ}\text{C}$
Dwell Time at Peak	20 – 30 mins
Cooling Rate	~ 3 – 6 $^{\circ}\text{C}/\text{min}$
Setter	96 % alumina

Typical Fired Properties

Dielectric Constant at 30 MHz, 25 $^{\circ}\text{C}^*$	8.8 – 9.5
Dissipation Factor at 30 MHz	$\leq 2 \times 10^{-3}$
Thermal Coefficient of Expansion (25 – 300 $^{\circ}\text{C}$)	5.6 $\text{ppm}/^{\circ}\text{C}$
Breakdown Voltage	> 1 kV at 25 μm
Insulation Resistance (at 25 $^{\circ}\text{C}$)	> $10^{13} \Omega\text{cm}$
Thermal Coefficient of Frequency (T_f) (-40 – 80 $^{\circ}\text{C}$)	< 10 $\text{ppm}/^{\circ}\text{C}$
Thermal Conductivity	3 W/mK

*30 MHz data measured on pressed disc, ~20mm diameter x 1.7 mm thick.

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