

Advanced Materials

X-200W

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 Powder Properties:**

Particle Size (microns):

D90: 5.0 – 7.0

D50: 2.25 – 3.25

Surface Area (m^2/g): 2.4 – 3.0

Fired Density (g/cm^3): 3.0 – 3.2

Burnout and Firing in a Box Oven:

Heating Rate 5-5.5°C/minute

Peak Temperature 870-880°C

Dwell Time @ Peak 20-30 minutes

Cooling Rate ~ 3 – 6 °C/min

Setter 96% Alumina

● **Typical Fired Properties:**

Dielectric Constant

@ 30 MHz, 25°C * 8.8 – 9.5

Dissipation Factor

@ 30 MHz $\leq 2 \times 10^{-3}$

Thermal Coefficient of Expansion (25°C to 300°C)

5.6 ppm/°C

Breakdown Voltage

> 1 kV @ 25 μ m

Insulation Resistance

(@ 25°C)

> $10^{13} \Omega cm$

Temperature Coefficient of Frequency (T_f)

<10 ppm/°C (-40 to 80 °C)

Thermal Conductivity

3 W/mK

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

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The descriptions and engineering data shown here have been compiled by Heraeus using commonly-accepted procedures, in conjunction with modern testing equipment, and have been compiled as according to the latest factual knowledge in our possession. The information was up-to date on the date this document was printed (latest versions can always be supplied upon request). Although the data is considered accurate, we cannot guarantee accuracy, the results obtained from its use, or any patent infringement resulting from its use (unless this is contractually and explicitly agreed in writing, in advance). The data is supplied on the condition that the user shall conduct tests to determine materials suitability for a particular application.

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