

LTCC Materials

51K65



Lead Free Powder for LTCC Tape Casting

Description

51K65 is a premixed lead free gray LTCC powder designed for tape application such as Heratape CT 765 or other LTCC ceramic substrates which allow production of multilayer circuits.

Key Benefits

- Very low dielectric loss
- Compatible with Heraeus binder system TOP 7765 D and other binder systems typically used in tape fabrication.
- In tape form called as CT 765 which is compatible with Heraeus silver and gold conductor systems.
- Free of lead, cadmium and nickel
- Free of phthalate
- REACH ¹ and RoHS ² compliant

Typical Properties (Powder)

Powder Density:	5.3 – 5.9 g/cm ³ (Pycnometer in Helium)
Average Particle Size (d ₅₀):	0.35 – 0.75 μm (Equipment: Helos BA)
Specific Surface Area (BET):	6.0 – 10.0 m ² /g (Equipment: Gemini)
Pb Element Content ³ :	< 100 ppm (ICP analysis method) ⁴
Shelf Life:	12 months from date of shipment with correct storage (in a dry, cool (at 5- 25 °C) and dark place with container tightly shut)

Typical Properties (Fired)

Color ⁵ :	Gray
Rel. Diel. Constant K (ε _r) ⁶ :	61 - 67 (1.5 VAC, 1 MHz, 25 °C)
Dissipation Factor (tan δ) ⁶ :	< 0.01 (1.5 VAC, 1 MHz, 25 °C)
TCE ⁵ : (Temp. Coeff. of Expansion)	Approx. 9.1 ppm / K (25 - 300 °C)

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- 1 REACH compliant according to the Commission Regulation (EU) No 143/2011 of 17 February 2011 amending Annex XIV to Regulation (EC) No 1907/2006 of the European Parliament and of the council on the Registration, Evaluation, Authorisation and Restriction of Chemicals ("REACH") by European Chemicals Agency and its subsequent amendments; the material does not contain any substance listed in Annex XIV.
- 2 RoHS compliant according to the Directives (European Union) No 2011/65/EC of Restriction of Hazardous Substances ("RoHS") and its subsequent amendments (including the exceptions No. 7. c. I of the EU Directive e.g. related to Pb)
- 3 Recipe of raw materials applied entirely lead free
- 4 Inductively Coupled Plasma
- 5 Measured on fired tape.
- 6 Measured on discs manufactured according to Test Procedure "TP LTCC 2".

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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