

# TECHNICAL DATA SHEET

## "K"-85 COG dielectric

### "LF-085"

LF-085 is an environmentally friendly low fire high dielectric constant COG dielectric. It contains a low percentage of bismuth-based compounds, but is not formulated with lead or cadmium. LF-085 is an excellent choice for range extension of COG products.

### Key Features

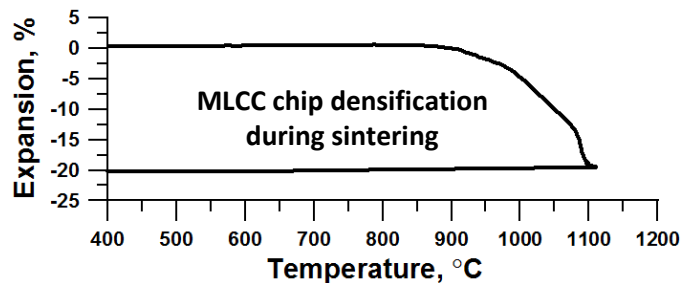
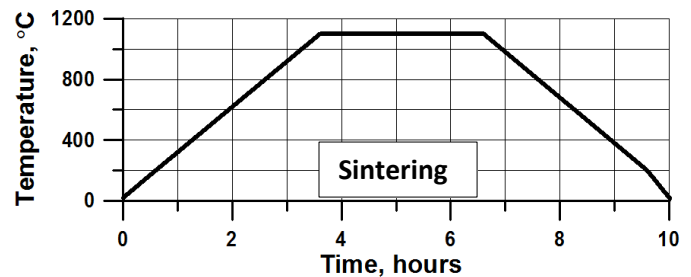
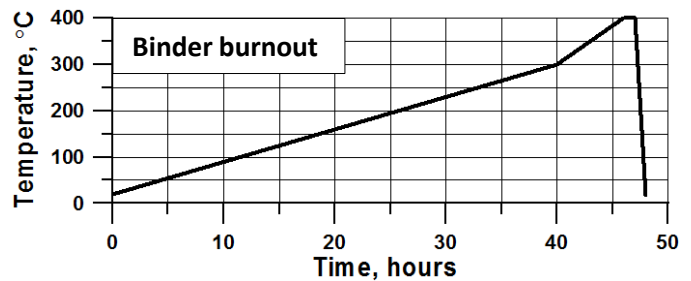
- ❖ Environmentally friendly (RoHS compliant)
- ❖ Dielectric constant of 75 to 95
- ❖ Compatible with up to 75% Ag / 25% Pd electrode systems
- ❖ Excellent lot to lot uniformity

### Typical powder properties

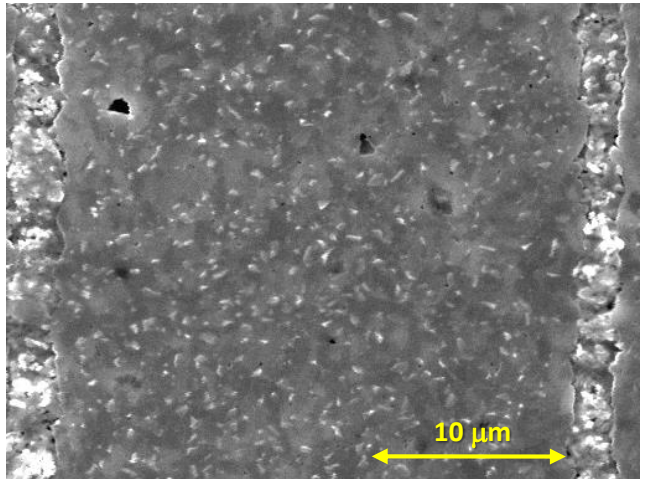
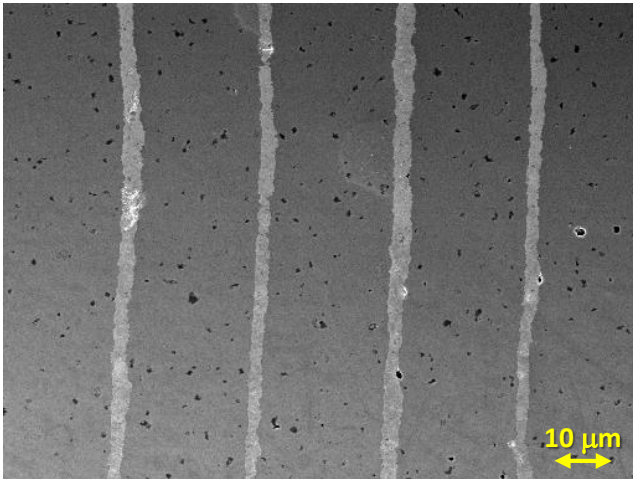
- Powder density, g/cm<sup>3</sup> ≥ 5.25
- Surface area, m<sup>2</sup>/g 2.40 ± 1.00
- Particle size, μm
  - D<sub>90</sub> ≤ 4.00
  - D<sub>50</sub> 0.70 ± 0.25
  - D<sub>10</sub> 0.35 ± 0.10
- LOI (650°C, 6 hours), % ≤ 0.70

### Sintering conditions

- Binder burnout up to 400°C in air
- Sintering 1100°C ± 20°C/3 hours in air
- Heating rate 5°C/min
- Open ZrO<sub>2</sub> setter
- Fired density ≥ 5.40 g/cm<sup>3</sup>



## Typical cross-sectional microstructure of sintered MLCC chip



### Mechanical properties of the dielectric

- Coefficient of thermal expansion from 200°C to 600°C,  $\mu\text{m}/\text{m}^*\text{K}$  **8.9**

### Typical MLCC characteristics

- Chip size **0805**
- Active layers **10.5**
- Electrode: **75% Ag / 25% Pd**
- Dielectric thickness,  $\mu\text{m}$  **~20**
- Dielectric constant  **$85 \pm 10$**
- Dissipation factor, %  **$\leq 0.02$  @ 1kHz, 1Vrms**  
 **$\leq 0.10$  @ 1MHz, 1Vrms**
- Insulation resistance at 300V and 125°C,  $\Omega$   **$> 10^{11}$**
- Dielectric withstanding voltage, V/ $\mu\text{m}$   **$\geq 60$**

### Temperature variation of capacitance

TCC COG ( $\pm 30\text{ppm}/^\circ\text{C}$  from  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$ )

*The data presented is based on our research and is considered to be fair representation of this product. MRA makes no warranties, expressed or implied, as to its accuracy and assumes no liability out of its use by others.*