



A FERRO COMPANY

# TECHNICAL DATA SHEET "K"-2800 X7R dielectric "LF-262"

LF-262 is a low fire X7R dielectric formulated from high purity sub-micron barium titanate. LF-262 has a dielectric constant of  $2900 \pm 400$ . This dielectric is compatible with 75% Ag / 25% Pd electrode systems.

## Key Features

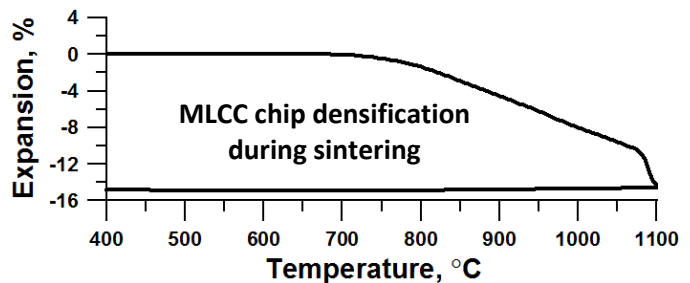
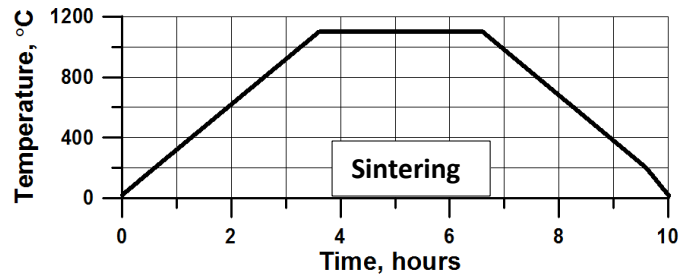
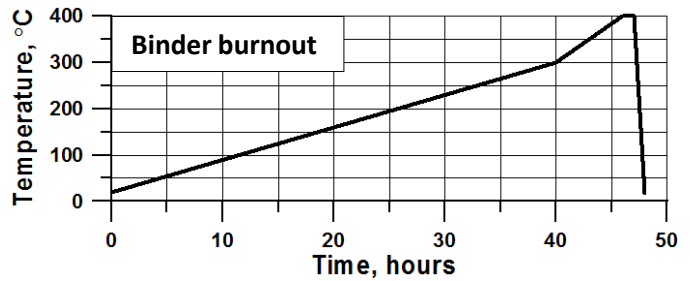
- ❖ User friendly
- ❖ Wide firing range of 1080 – 1120°C
- ❖ Very stable X7R TCC
- ❖ Compatible with up to 75% Ag / 25% Pd electrode systems

### Typical powder properties

- Powder density, g/cm<sup>3</sup>  $\geq 5.80$
- Surface area, m<sup>2</sup>/g  $2.50 \pm 0.50$
- Particle size,  $\mu\text{m}$ 
  - D<sub>90</sub>  $\leq 2.00$
  - D<sub>50</sub>  $0.600 \pm 0.200$
  - D<sub>10</sub>  $0.375 \pm 0.125$
- LOI (650°C, 6 hours), %  $\leq 0.30$

### Sintering conditions

- Binder burnout up to 400°C in air
- Sintering 1100°C  $\pm 20^\circ\text{C}$ /3 hours in air
- Heating rate 5°C/min
- Open ZrO<sub>2</sub> setter
- Fired density  $\geq 5.7 \text{ g/cm}^3$



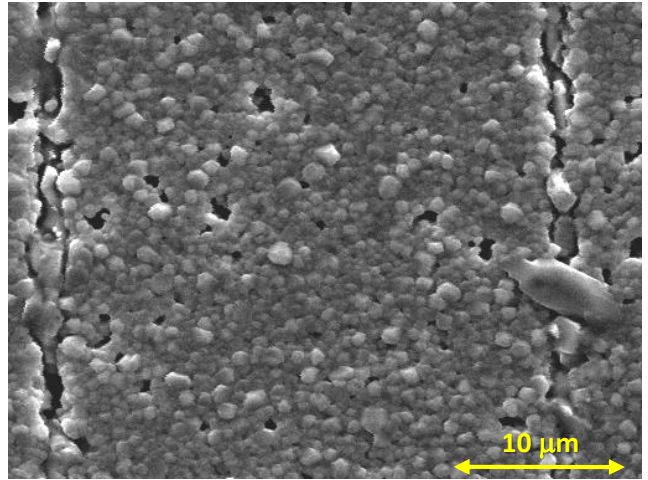
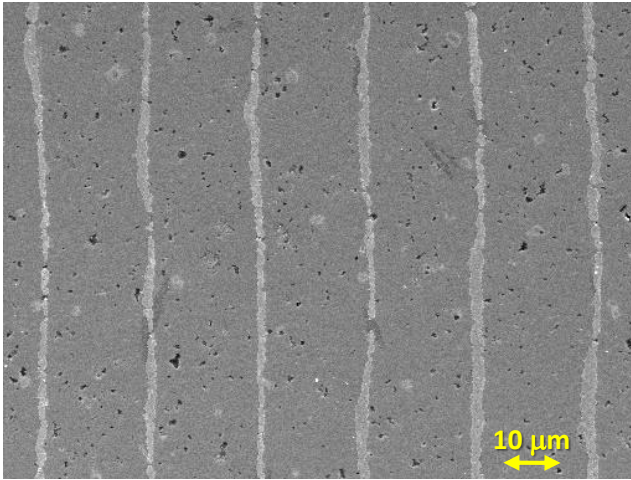
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multi-layer ceramic device technology.

ISO 9001:2015

BUREAU VERITAS  
Certification



## Typical cross-sectional microstructure of sintered MLCC chip



### Mechanical properties of the dielectric

▪ Coefficient of thermal expansion  
from 200°C to 600°C,  $\mu\text{m}/\text{m}\cdot\text{K}$  **11.5**

### Typical MLCC characteristics

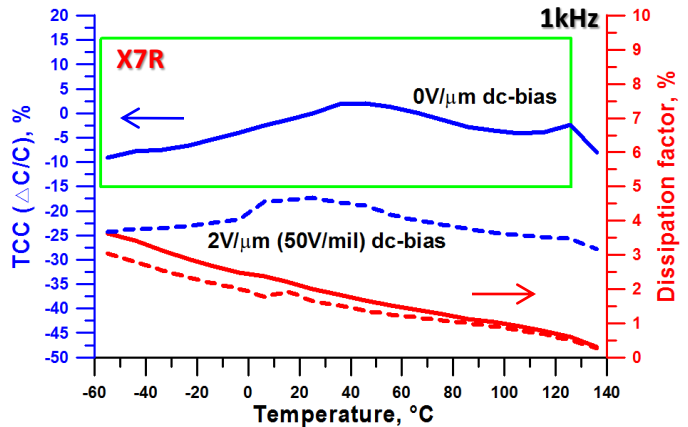
▪ Chip size **0805**  
 ▪ Active layers **10**  
 ▪ Electrode: **70% Ag / 30% Pd**  
 ▪ Dielectric thickness,  $\mu\text{m}$  **~20**  
 ▪ Dielectric constant **2900 ± 400**  
 ▪ Dissipation factor, % **≤ 2.0 @**  
**1kHz, 1Vrms**

▪ Insulation resistance at 400V  
and 180°C,  $\Omega$  **> 10<sup>10</sup>**

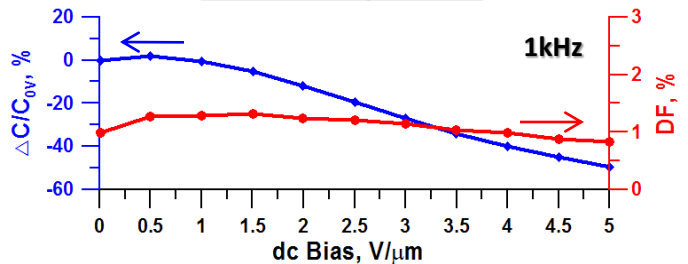
▪ Dielectric withstanding  
voltage,  $\text{V}/\mu\text{m}$  **≥ 40**

**TCC X7R (±15% from -55°C to +125°C)**

### Temperature and voltage variation of capacitance (50V rated MLCC chips)



### Voltage variation of capacitance at room temperature



*The data presented is based on our research and is considered to be fair representation of this product.  
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