

## LTCC Materials

### CT 703



## Low Temperature Cofireable Heratape (DPIS\*)

### \* Development Product Information Sheet

#### Description:

Heraeus low temperature cofireable tape called HERATAPE® CT 703 is designed to offer an alternative to producing complex multilayer circuits using gold or silver conductors.

Heratape CT 703 is available on reel:

Length: 50 – 150 m  
 Width: 320 mm (12.6 inch)  
 Thickness: 130 µm, 200 µm, 300 µm  
 (5.1 mil, 8 mil, 12 mil).

(Other tape thickness on inquiry)

#### Compatibility:

##### Cofireable

|                          | Gold System | Silver System |
|--------------------------|-------------|---------------|
| Inner Layer              | TC 7102     | TC 7303       |
| Via Fill                 | TC 7101     | TC 7301       |
|                          |             | TC 7304       |
| Large Area Ground Planes | TC 7103     | TC 7303       |

##### Postfireable

|           |           |
|-----------|-----------|
| Ag-Pd     | TC 7404   |
| Ag        | C 1075 SD |
| Ag-Pt     | C1076 SD  |
| Au        | C 5756    |
| Resistor  | R 8900 T  |
| Overglaze | TO 7003   |

(Postfireable pastes see also separate overview)

#### Lamination Conditions:

Stack each printed and dried layer in a confined lamination die, with the dull side up. In order to assist homogeneity, rotate 90 °.

#### Cofiring Process:

Pressure: 24 – 27 N / mm<sup>2</sup>  
 (3500 psi - 3900 psi)  
 Temperature: 60 – 80 °C  
 Time: 5 – 10 minutes

#### Firing Conditions:

Burnout and firing in a programmable box oven with controlled air flow.

Heating rate: 2 – 4 K/min.  
 Dwell time at peak temperature: 20 – 30 min.  
 Peak temperature: 850 °C – 865 °C  
 Cooling rate: approx. 3 – 6 K/min

#### Burnout and firing in a belt furnace:

Firing cycle including Burnout: 6 – 8 hrs  
 Dwell time at peak temperature: 20 – 30 min  
 Peak temperature: 850 – 865 °C

Setter for Laminated parts: Al<sub>2</sub>O<sub>3</sub> 96%

#### Unfired Properties

Sheet Density, unfired:

#### (Typical Data)

1.75 g/cm<sup>3</sup>

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#### Fired Physical Properties <sup>1</sup>:

|   | (Typical Data)                                   |
|---|--|
| Shrinkage:  | x, y – axis 14.9 %<br>z – axis 15.2 %            |
| Fired Density:<br>(Weight - Dimension -<br>Measurement) | > 96 % theoretical<br>(3.2 g / cm <sup>3</sup> ) |
| Water Absorption:<br>(1 hr water boil)                  | < 0.05 % weight increase                         |
| Thermal Coefficient of<br>Expansion (25 - 300 °C):      | 7.3 ppm / K                                      |
| Flexural Strength:                                      | 135 MPa  |

#### Fired Electrical Properties <sup>1</sup>:

|   | (Typical Data)                |
|---|-------------------------------|
| Dielectric Constant:                              | 7.5– 7.9<br>(1 kHz, 25 °C)    |
| Dissipation Factor:<br>(tanδ x 10 <sup>-3</sup> ) | 3<br>(1 kHz, 25 °C)           |
| Thermal Conductivity:                             | 4.3 W / m K                   |
| Insulation Resistance:                            | >10 <sup>13</sup> Ωcm (25 °C) |

<sup>1</sup> Cofiring Process,  
Lamination pressure: 21 N / mm<sup>2</sup> (3045 psi)  
Firing in a box oven: peak temperature 865 °C,  
dwell time 30 min

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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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