

## LTCC Tape AHT03-003

### Low Temperature Co-firing Ceramic Tape/DPIS\*

\* Development Product Information Sheet

#### **Description**

HeraTape® AHT03-003 is a Ferritic Low Temperature Co-firing Ceramic (LTCC) Tape supplied at following thicknesses and usable width:

	Thickness		Width	
AHT03-003		150 µm	140 mm	

Other thicknesses are available on request. AHT03-003 can also be provided as single sheets. AHT03-003 is recommended for free sintering. It can be used in stand-alone LTCC systems but it is also compatible with Heraeus base LTCC tape CT707. AHT03-003 contains < 0.05 wt.%Pb.

#### **Typical Properties of Green Tape**

Color	Brown
Green Density	2.89 g/cm <sup>3</sup>
Laminated Density	3.16 g/cm <sup>3</sup>
Compressibility	11.39 %
Weight Loss	7.84 %

Note: All measurements were performed on 6 layer tape laminates (tape thickness: 150 µm) due to Heraeus' recommended process guidelines.

#### **Recommended Process Guidelines**

AHT03-003 can be processed with typical LTCC process parameters. Recommended process guidelines are:

##### **Storage and Pre-treatment**

Storage	Kept in sealed bags at 25 °C.
Pre-Treatment	Not necessary.

##### **Lamination**

Equipment	Isostatic press
Pressure	210 bar (21 N/mm <sup>2</sup> )
Temperature	70 °C
Pre-heating	3 min
Total Time (incl. Pre-heating)	10 min

Tape must be kept in a sealed, evacuated bag during lamination in order to prevent moistening by isostatic press media.

##### **Firing\***

	Fe900_3_(kurz)
Ramp Rate (25 °C to 400 °C)	0.5 K/min
(400 °C to Peak Temp.)	5 K/min
Peak	120 min at 900 °C
Cooling	8 K/min
Total Time	12 hours
Setter	alumina

\*Firing profile: see also below

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#### Properties

##### Typical Fired Physical and Chemical Properties

Color	Brown
Thermal Coefficient of Expansion (25 – 300 °C)	9.2*10 <sup>-6</sup> /K
(25 °C – T <sub>g</sub> )	9.8*10 <sup>-6</sup> /K
Tape Shrinkage	
x,y	17.5 % ± 0.5
z (unlaminated to fired)	29.7 % ± 4.0
Fired Density*	5.26 g/cm <sup>3</sup>
Flexural Strength	
4 point bended	t.b.d.
Thermal Conductivity	t.b.d.
Pb	< 0.05 wt.-%
Chemical Stability	t.b.d.

##### Typical Fired Electrical and Magnetic Properties

Dielectric Constant	
(20 GHz)	t.b.d.
(100 GHz)	
Dissipation Factor	
(20 GHz)	t.b.d.
(100 GHz)	
Bulk Resistivity	t.b.d.
Break Down Voltage	t.b.d.
Permeability	100

Note: All electrical testing is performed on parts manufactured according to Heraeus' recommended process guidelines with silver-based conductor systems.

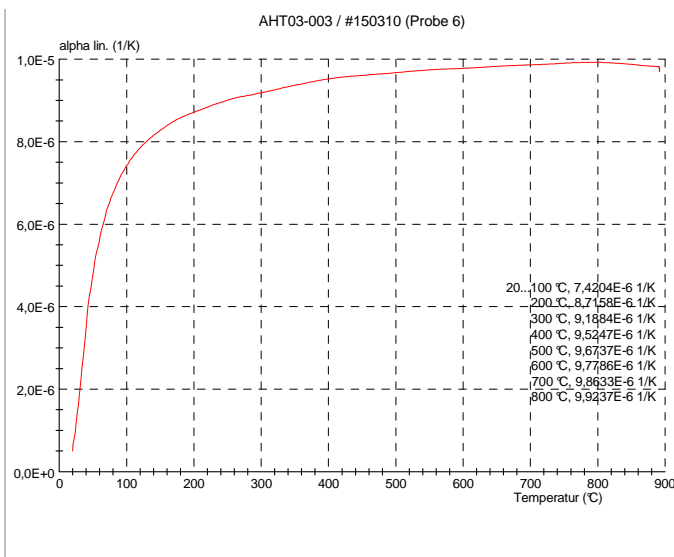
Note: \*Testing is performed on a 20-layer tape substrate. All other physical testing is performed on 6-layer tape substrates (tape thickness: 150 µm) with no metallization, and processed according to Heraeus' recommended processing guidelines

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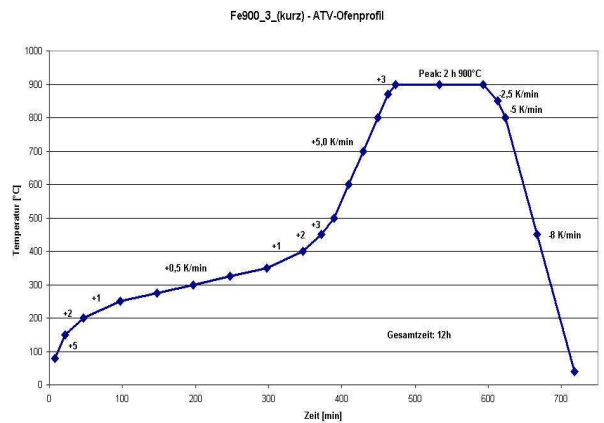
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#### Appendix

##### Typical Thermal Properties



##### Firing Profile Fe900\_3\_(kurz)



Note: Thermal analysis was performed on fired 16 layer substrates.

##### Typical HF-Data

Not available.

Not available.

Note: HF measurements were performed on test circuits made of fired substrates by means of a vector network analyzer.

