

## LTCC Tape

### AHT98-029

### Low Temperature Co-firing Ceramic Tape

#### Description

Heratape® AHT98-029 is a Ferritic Low Temperature Co-firing Ceramic (LTCC) Tape supplied at following thicknesses and usable width:

	Thickness		Width	
AHT98-029		135 µm		125 mm

Other thicknesses are available on request. AHT98-029 can also be provided as single sheets.

AHT98-029 is recommended for free sintering. It can be used as a stand-alone system but is compatible with Heraeus base LTCC tape CT707. AHT98-029 contains < 0.05 wt.-% Pb.

#### Typical Properties of Green Tape

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

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

#### Recommended Process Guidelines

AHT98-029 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)	8.0*10 <sup>-6</sup> /K
(25 °C – T <sub>g</sub> )	8.5*10 <sup>-6</sup> /K
Tape Shrinkage x,y	% ± 0.5
z (laminated to fired)	% ± 4.0
Fired Density*	4.56 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	150

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

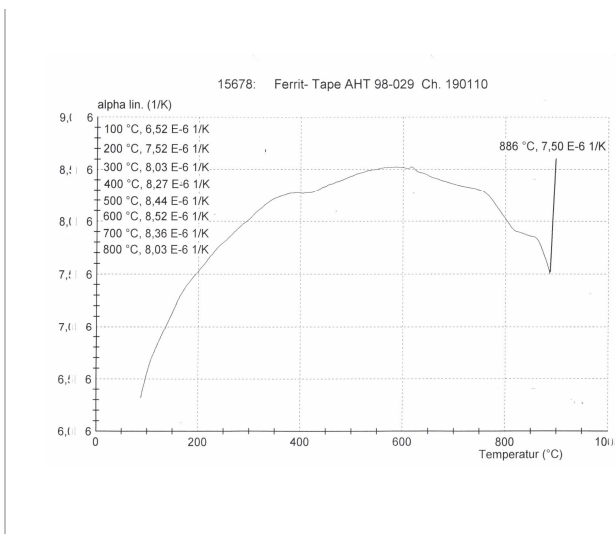
Note: Testing is performed on 20-layer tape substrate. All other physical testing is performed on 6-layer tape substrates (tape thickness: 150 µm) with no metallization, and processed according to Heraeus' recommended processing guidelines

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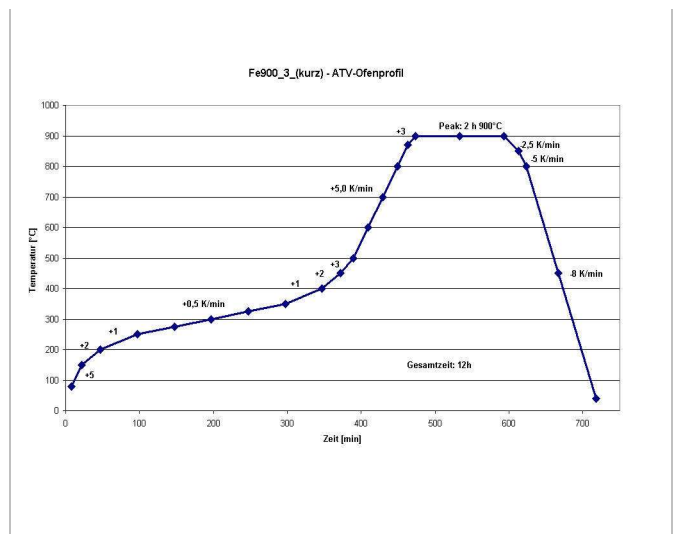
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#### Appendix

##### Typical Thermal Properties



##### Firing Profile



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.

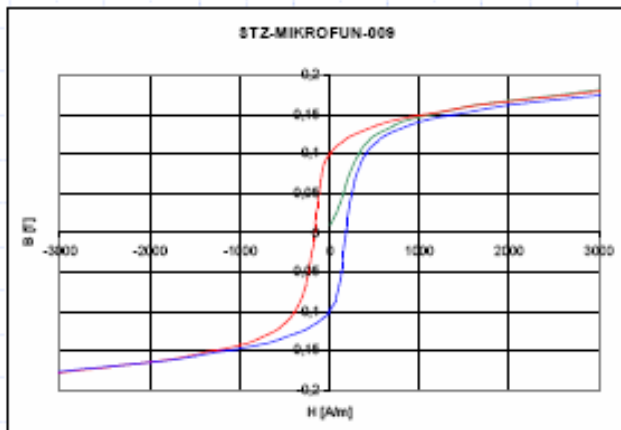
##### Magnetic Properties

Measurements: Steinbeis Transferzentrum Mechatronik Ilmenau, Funded Project MIKROFUN 2006

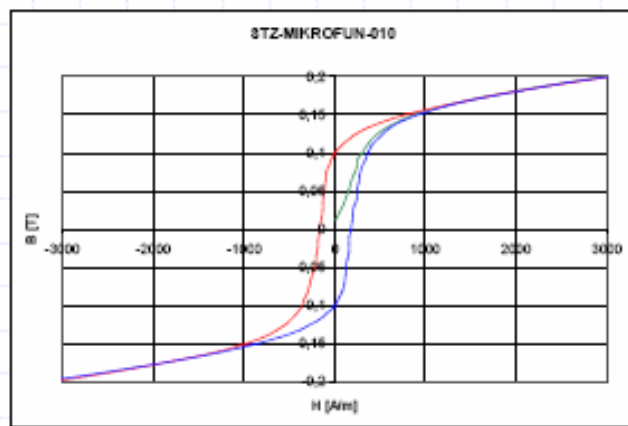
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### Low Temperature Co-firing Ceramic Tape

Tapecharge 0405061, Substrat 1  
Ferrittape AHT 98-029



2 Ringe



1 Ring auf Messingring

Ergebnisse nahezu identisch

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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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