



## ESL ELECTROSCIENCE

CERAMIC TAPES &  
THICK-FILM MATERIALS

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### ANODE TAPE

### 42420

### RoHS Compliant\* High Temperature YSZ-Cermet Tape for use in SOFC and other Fuel Cells.

This anode cermet is a blend of nickel oxide and yttria stabilized zirconia (YSZ) in tape form, designed to sinter to near full density as part of the composite structure used in SOFC and other fuel cells. Its purpose is to insure thermal coefficient of expansion (TCE) match between adjacent electrolyte and porous anode layers in the composite assembly, and thus it is chemically compatible with these materials. It is prepared by tape casting a slurry containing the YSZ powder, a thermoplastic binder and surfactant. The slurry is cast on a polyester carrier film which is coated with a release agent.

**LAMINATING:** 21 MPa @ 70°C

**GREEN TAPE THICKNESS:** 15 ± 5 µm

**GREEN TAPE DENSITY:** nominal 3.04 g/cm<sup>3</sup>, depending on solids loading

**GREEN TAPE COLOR:** dark green (typical)

**TYPICAL SINTERING CYCLE:** 0.7°C/minute ramp to 650°C  
2.5°C/minute ramp to 1450 to 1550°C  
2-hour soak at peak temperature to achieve full density

**FIRED SHRINKAGE:**  
(3 layers using lamination parameters of 3 kpsi – 70°C – 20 minutes) nominal X, Y: 25%  
Z: 25%

**FIRED DENSITY:**  
(1450°C for 120 minutes) > 90% of theoretical

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See Caution and Disclaimer on other side.

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**\*None of the six substances referred to in the RoHS Directive (2002/95/EC) are used in the formulation of this product.**

**CAUTION:** Proper industrial safety precautions should be exercised in using these products. Use with adequate ventilation. Avoid prolonged contact with skin or inhalation of any vapours emitted during use or heating of these compositions. The use of safety eye goggles, gloves or hand protection creams is recommended. Wash hands or skin thoroughly with soap and water after using these products. Do not eat or smoke in areas where these materials are used. Refer to appropriate MSDS sheet.

**DISCLAIMER:** The product information and recommendations contained herein are based on data obtained by tests we believe to be accurate, but the accuracy and completeness thereof is not guaranteed. No warranty is expressed or implied regarding the accuracy of these data, the results obtained from the use hereof, or that any such use will not infringe any patent. ElectroScience assumes no liability for any injury, loss, or damage, direct or consequential, arising out of its use by others. This information is furnished upon the condition that the person receiving it shall make his own tests to determine the suitability thereof for his particular use, before using it. User assumes all risk and liability whatsoever in connection with his intended use. ElectroScience's only obligation shall be to replace such quantity of the product proved defective.

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