POROUS ANODE TAPE

42421

High Temperature YSZ-Cermet Tape for use in SOFC and other Fuel Cells

The porous anode cermet is a blend of nickel oxide and yttria stabilized zirconia (YSZ) in tape form. It provides the catalytic activity required to promote the reaction necessary to produce fuel ions, such as hydrogen or CO. It is porous so that fuel gas can reach the three-phase boundary present near the electrolyte. In SOFC anode-supported cells, thick anode layers are required to provide mechanical strength for the cell. 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: nominal 180 μm

GREEN TAPE DENSITY: nominal 3.2 g/cm³, depending on solids loading

GREEN TAPE COLOR: dark green – gray (typical)

TYPICAL SINTERING CYCLE:
0.7°C/minute ramp to 650°C
2-1/2°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: 21% Z: 21%

FIRED DENSITY:
(1450 °C for 120 minutes) < 85 % of theoretical
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 vapors 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.

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