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Specifications of Ceramic Tube Sleeves with Inserts

Overview

Ceramic Pins & Sleeves: Types, Grades, and SpecificationsTell us what you need — the type of part, your application's demands, and the dimensions or drawin.

Key Takeaways

Ceramic tube sleeves with inserts are high-performance components designed for extreme temperature, chemical, and mechanical resistance, available in a wide range of materials, sizes, and tolerances.Materials

Ceramic tube sleeves are commonly fabricated from:

• Alumina (Al_2O_3): Offers excellent mechanical strength, thermal resistance, and electrical insulation, suitable for kilns, thermocouples, and chemical processing .

• Zirconia (ZrO_2: TTZ, YTZP, ZDY): Provides superior toughness and thermal stability, ideal for high-temperature sensors, metal refining, and aerospace components .

• Silicon Nitride (Si_3N_4) and Silicon Carbide (SiC): High wear resistance and thermal stability for demanding industrial applications .

• Fused Silica (SiO_2) and Cordierite: Transparent, chemically inert, and thermally stable, suitable for semiconductor manufacturing, UV lamps, and catalytic converters .

Dimensions and Tolerances

• Inner Diameter (ID): 0.5–145 mm (customizable up to 260 mm)

• Outer Diameter (OD): 1–150 mm

• Length: 3–550 mm (customizable up to 600 mm)

• Dimensional Accuracy: Up to 0.001 mm

• Concentricity: Up to 0.003 mm

• Inner Hole Tolerance: 0.005 mm

• Minimum Wall Thickness: 0.02 mm

• Minimum Aperture: 0.07 mm

• Screw Thread Capability: Minimum M2

Mechanical and Thermal Properties

• Wear and Corrosion Resistance: Excellent for fluid pipelines, electroplating, and chemical baths .

• High Temperature Resistance: Continuous operation above 1,500°C for alumina and zirconia; some fiber-based sleeves withstand up to 2,000–3,000°F .

• Electrical Insulation: Alumina and zirconia provide high dielectric strength, suitable for insulating rods and components .

• Flexibility (for fiber-based sleeves): High-strength ceramic fiber sleeves (e.g., Thermeez 391, 399) offer abrasion resistance, dimensional stability, and thermal insulation for hoses, gaskets, and duct joints .

Applications

• Industrial: Kilns, furnaces, thermocouple protection, metal refining, chemical processing, and high-temperature sensors .

• Fluid Handling: Wear-resistant liners for pipelines, electroplating, anodizing, and coating baths .

• Filtration: Cross-flow and dead-end filtration for liquids and gases, including water treatment, food, beverage, and pharmaceutical purification .

• Electrical and Thermal Insulation: Insulating rods, bushings, sleeves, and protective covers for cables and hoses .

Customization and Delivery

• Lead Time: 2–25 working days depending on quantity

• Minimum Order Quantity (MOQ): 1 piece

• Custom Sizes and Shapes: Shafts, plungers, cylinders, rings, washers, liners, bushings, and heaters . Ceramic tube sleeves with inserts combine high thermal stability, chemical resistance, and precise dimensional control, making them essential for demanding industrial, scientific, and manufacturing applications. Their versatility allows for both rigid and flexible configurations, depending on operational requirements.

Article Content

Ceramic Fibre Sleeves 1,500 °C

Ceramic Fibre Sleeves 1,500 °C Ceramic Fibre Sleeves, heat-resistant up to 1,500 °C Final Advanced Materials proposes a ceramic

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