



Straight tube forms: compare outside diameter, bore and length for the intended installation. Illustrative product view.

## Silicon Carbide Ceramic Tubes

Product reference: silicon-carbide-ceramic-tubes

Material: Silicon Carbide

Product type: Ceramic Tube

Silicon carbide ceramic tubes provide hard, corrosion-resistant passages and protective barriers for chemical processing, heat exchange and thermal equipment.

### Dense SiC Typical Properties

| Property                                                        | SSiC - sintered | SiSiC / RBSiC - reaction bonded | Condition          |
|-----------------------------------------------------------------|-----------------|---------------------------------|--------------------|
| Density (g/cm <sup>3</sup> )                                    | ≥3.12           | ≥3.03                           | -                  |
| Apparent porosity (%)                                           | <0.2            | <0.2                            | -                  |
| Vickers hardness (HV0.5)                                        | 2100            | 2000                            | 0.5 kgf test force |
| Young's modulus (GPa)                                           | 400             | 350                             | -                  |
| Fracture toughness (MPa·m <sup>1/2</sup> )                      | 4-5             | 2.5-3.5                         | -                  |
| Flexural strength (MPa)                                         | ≥400            | ≥350                            | 25°C               |
| Compressive strength (MPa)                                      | ≥2200           | ≥2000                           | 25°C               |
| Thermal conductivity (W/(m·K))                                  | ≥110            | ≥90                             | 25°C               |
| Mean linear thermal expansion coefficient (10 <sup>-6</sup> /K) | 4.0             | 4.0                             | 25-1000°C          |
| Typical maximum material temperature (°C)                       | 1650            | 1300                            | -                  |

## Product Geometry & Configuration

| Product parameter   | Configuration                                               | Function                                                             |
|---------------------|-------------------------------------------------------------|----------------------------------------------------------------------|
| Tube form           | Open-ended passage or closed-end protection tube            | Transfers media or separates a sensor/component from the process     |
| Main dimensions     | Outside diameter, inside diameter and length                | For a concentric straight tube, wall thickness = $(OD - ID) / 2$     |
| End features        | Plain ends, shoulders, flanges or formed connections        | Matches supports, joints and equipment interfaces                    |
| Functional surfaces | Bore, outside surface and end faces                         | Finish and tolerances follow flow, wear, fit or sealing duty         |
| Material route      | Dense sintered or reaction-bonded SiC; other routes by duty | Residual phases and porosity affect chemical and thermal suitability |