

Properties of Ceramics

Description

A porous alumina ceramic of **99.7% Al₂O₃** content, used extensively for long-life laser reflectors. This material is sintered at high temperatures to achieve a controlled porosity.

Prime features

- Surfaces can be sealed and coated with a solarization-resistant glaze to give high bulk reflectivity
- 97.8% reflectance efficiency at 1000nm
- Reflectance efficiency exceeds 96% across the wavelength range 500-2000nm (*see curve*)
- Controlled porosity
- Good thermal conductivity
- High electrical resistivity

Typical applications

- Pumping chambers for Nd:YAG lasers — low to high power, single or multiple lamp designs. Pumping chamber reflectors of this material are virtually indestructible, and prove a highly cost effective alternative to metal coated types.

Specifications

- Quality Assurance to BS EN 9001:2000

Production capabilities

- Components up to 250mm long and 80mm wide/diameter manufactured as standard

- Larger components manufactured to development contracts
- One-piece or split-cavity designs
- Prototype, batch and volume production.

Physical properties*

Color	White
Bulk density (fired), Mg/m ³	3.2
Porosity (apparent), % nominal	20
Flexural strength (ASTM C1161, 3-point), MPa	150
Thermal expansion coefficient	
200-500C, 10 ⁻⁶ /C	7.9
200-1000C, 10 ⁻⁶ /C	9.0

(* Please note that all values quoted are based on test pieces and may vary according to component design. These values are not guaranteed in any way and should only be treated as indicative values. They should be used for guidance only and for no other purpose whatsoever.)

Reflectance curve

(Efficiency : Wavelength)

