

## DATA SHEET

# Hilox™ 991

## Alumina

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### Description

A high purity, high quality alumina ceramic with an Al<sub>2</sub>O<sub>3</sub> content in excess of 99%. An alumina grade developed for abrasive resistance and mechanical strength in chemically aggressive environments.

### Prime Features

- Excellent resistance to corrosion and chemical attack
- Exceptionally hard-wearing and abrasion resistant
- Dense, non-porous and vacuum tight
- Excellent dimensional stability across wide temperature range

### Typical Applications

- Wear resistant components for rotary and reciprocating pumps handling chemically aggressive media: shafts, bearings, thrust washers, plungers, counterface seats, etc.

### MTC Production Capabilities

- Complex components to close tolerances.
- Exacting flatness and surface finishes for low friction valve operation and accurate flow control.
- Prototype, batch and volume production

### Specifications

Quality Assurance to ISO 9002

### Physical Properties

Colour	Ivory
Density (fired), g/cm <sup>3</sup>	3.92
Porosity (apparent), % nominal	0 (fully dense)
Rockwell hardness (R45N)	84
Fracture Toughness, MPa.m <sup>1/2</sup>	4.0
Flexural Strength (3-point), MPa @ 20 °C	335
Grain Size, µm	10
Young's Modulus E, GPa @ 20 °C	370
Shear Modulus G, GPa @ 20 °C	152
Poisson's Ratio ν	0.24

### Thermal Properties

Thermal Conductivity, W/m.K @ 20C	24
Thermal Expansion Coefficient 10 <sup>-6</sup> @ 20-1000 °C	9
Thermal Shock Resistance (R <sub>1</sub> ) ΔT/C	75
Thermal Shock Resistance (R <sub>2</sub> ) W/m	1770
Specific Heat J/kg.K	880

### Electrical Properties

Permittivity, 20C 1MHz	9.7
20C 10 GHz	9.6
Dielectric Loss @ 1MHz, tan δ 10 <sup>-4</sup>	5.5
@ 10 GHz, tan δ 10 <sup>-4</sup>	2.5
Dielectric Strength, kV/mm	---
Volume Resistivity, ohm.cm @ 20°C	---
300°C	---
600°C	---

Please note that all values quoted are based on test pieces and may vary according to component design. These values are not guaranteed in anyway whatsoever and should only be treated as indicative and for guidance only. 12.12.2012