



92 & 99.7 %
HIGH PURITY
HIGH DENSITY
ALUMINA CERAMIC

Chemically Inert
Smooth Tough
Sapphire Hard



VERSATILE INDUSTRIAL APPLICATIONS



SHOT PEENING



**WEAR RESISTING
COATING**



METAL POLISHING



**SINTERING
OF DENTAL
FRAMEWORKS**



**GRINDING OF HIGH
PURITY ALUMINA**



92% PURITY HIGH ALUMINA CERAMIC

Duralox 92W spherical microbeads are produced from a proprietary formulation of high alumina ceramic composite containing 92 - 92.5 % alpha alumina crystals having a low percentage of silica in their composition. Alumina (Al₂O₃) is a common workhorse material in the world of technical ceramics and is utilized in an extensive variety of industries and applications.

ADVANTAGES

Duralox 92W, a 92% purity alumina ceramic offers several advantages over lower purity aluminas such as :

- High toughness and hardness.
- Chemically inert, non-porous, non-toxic, gas tight, and free of voids.
- Non-magnetic, non-radioactive.
- High density and high resistance to wear & corrosion.
- Can withstand high operating temperatures.

APPLICATIONS

Duralox 92W alumina ceramic offers improved performance over lower purity alumina ceramics in demanding operating conditions while remaining an economical alternative. Duralox 92W is currently utilized in a variety of demanding applications :

- An ideal selection for shot peening to increase surface hardness.
- In de-burring and polishing of sheet metal blanks, cast molded ferrous, non-ferrous components, precious metal ornaments.
- Duralox 92W beads when mixed with an epoxy matrix form a tough, durable, abrasion-resistant coating that can be applied on complex surfaces such as scrapper blades, piping, chutes, material charging hoppers, material conveyors. Such coatings have high potential in ship building, chemical, food and beverage industries as they form tough, chemically inert, non-slippery, wear, and corrosion-resistant flooring.
- Outstanding service in the lightweight and abrasion-resistant lining.
- Due to their abrasive nature, Duralox 92W microbeads are generally not recommended for any bead milling dispersion applications.

DURALOX 92W BEADS ARE AVAILABLE IN FOLLOWING FRACTION SIZES ALONG WITH BULK DENSITY

Fraction sizes Dia (mm)	Bulk Density
Ø 0.40 - 0.70 mm	2.18 ± 0.05 kg/ltr
Ø 0.70 - 1.20 mm	2.18 ± 0.05 kg/ltr
Ø 1.20 - 1.70 mm	2.18 ± 0.05 kg/ltr
Ø 1.70 - 2.40 mm	2.20 ± 0.05 kg/ltr
Ø 2.40 - 2.80 mm	2.20 ± 0.05 kg/ltr
Ø 2.80 - 3.30 mm	2.20 ± 0.05 kg/ltr

* We also offer to customize fraction size beads, as per the feasibility of production and lot size.

CHEMICAL PROPERTIES

Al ₂ O ₃	: ≥ 92 %
SiO ₂	: 2 - 4 %
MgO	: 2 - 4 %
CaO	: 0 - 3 %
Others	: 0 - 1 %

PHYSICAL PROPERTIES

Colour	: White
Surface Finish	: Smooth
Density	: 3.67 ± 0.05 g/cm ³
Bulk Density	: 2.20 ± 0.05 kg/ltr
Porosity	: Nil
Water absorption	: 0 %
Hardness on Mohs scale	: 9+
Hardness on Vickers Scale	: 1250 Hv ₅
Flexural Strength 3 P.B. (@ Room Temperature)	: 400 MPa
Compressive Strength (@ Room Temperature)	: 2000 MPa
Young's Modulus	: 280 GPa
Crushing Strength (@ Room Temp. : Ø 1.5mm bead)	: 70 kgf
Bead Sphericity 90%	: ≥0.95
Max Temperature of use (No Load Condition)	: 1400 °C (2552 °F)

CHEMICAL RESISTANCE DATA OF DURALOX 92W BEADS AT 25°C TEST TIME 24 HRS.

Chemical Medium	Concentration	% Weight Loss per hour
Acetic Acid (CH ₃ COOH)	50%	0.00
Chromic Acid (H ₂ CrO ₄)	25%	0.00
Formic Acid (CH ₂ O ₂)	25%	0.00
Hydrochloric Acid (HCl)	18%	0.00
Hydrofluoric Acid (HF)	24%	0.07
Nitric Acid (HNO ₃)	35%	0.00
Perchloric Acid (HClO ₄)	25%	0.00
Phosphoric Acid (H ₃ PO ₄)	25%	0.00
Sulphuric Acid (H ₂ SO ₄)	50%	0.00
Saturated Sodium Hydroxide Acid (NaOH)	50%	0.00

* With the exception of Hydrofluoric acid Duralox 92W beads maintain their integrity.

99.7% PURITY HIGH ALUMINA CERAMIC

Duralox stands for durable Aluminium Oxide, Duralox 997 spherical microbeads are produced from a proprietary formulation of high purity alumina ceramic composite containing 99.7% alpha alumina crystals having an extremely low percentage of silica in its composition. The high purity alumina beads show impressive material properties & have versatile industrial applications.

ADVANTAGES

Duralox 997, a 99.7% purity high alumina ceramic offers several advantages over lower purity aluminas such as :

- High Toughness and Sapphire Equivalent Hardness.
- High density & dense homogeneous internal microstructure.
- Chemically inert and non-radioactive.
- High resistance to abrasive wear and corrosion.
- Improved thermal shock resistance.
- Can withstand high operating temperatures.
- Improved surface finish due to micro fine particle size.

APPLICATIONS

Duralox 997 is currently utilized in a variety of demanding applications :

- Widely used for grinding of high purity alumina oxide material.
- An ideal choice for sintering Zirconia ceramic dental restoratives on a bed of beads in a sagger. These beads adapt smoothly to the shape of Zirconia restorative and allow the unit to shrink without any deformation.

DURALOX 997 BEADS ARE AVAILABLE IN FOLLOWING FRACTION SIZES ALONG WITH BULK DENSITY

Fraction sizes Dia (mm)	Bulk Density
Ø 0.40 - 0.70 mm	2.30 ± 0.05 kg/ltr
Ø 0.70 - 1.20 mm	2.30 ± 0.05 kg/ltr
Ø 1.20 - 1.70 mm	2.30 ± 0.05 kg/ltr
Ø 1.70 - 2.40 mm	2.35 ± 0.05 kg/ltr
Ø 2.40 - 2.80 mm	2.35 ± 0.05 kg/ltr
Ø 2.80 - 3.30 mm	2.35 ± 0.05 kg/ltr

* We also offer to customize fraction size beads, as per the feasibility of production and lot size.

CHEMICAL PROPERTIES

Al ₂ O ₃	: 99.70%
Others	: 0.30%

PHYSICAL PROPERTIES

Colour	: Light Cream
Surface Finish	: Smooth
Density	: 3.95 ± 0.05 g/cm ³
Bulk Density	: 2.35 ± 0.05 kg/ltr
Porosity	: Nil
Water absorption	: 0 %
Hardness on Mohs scale	: 9+
Hardness on Vickers Scale	: 1650 Hv ₅
Flexural Strength 3 P.B. (@ Room Temperature)	: 380 MPa
Compressive Strength (@ Room Temperature)	: 2500 MPa
Young's Modulus	: 380 GPa
Crushing Strength (@ Room Temp. : Ø 1.5mm bead)	: 80 kgf
Bead Sphericity 90%	: ≥0.95
% Cumulative Weight Loss / Hr (Wear test conducted in high-speed Bead mill @ 3000 rpm with water. Bead size Ø 1.2-1.7mm)	
After 24 Hrs.	: 0.25
Max Temperature of use (No Load Condition)	: 1750 °C (3182 °F)

CHEMICAL RESISTANCE DATA OF DURALOX 997 BEADS AT 25°C TEST TIME 24 HRS.

Chemical Medium	Concentration	% Weight Loss per hour
Acetic Acid (CH ₃ COOH)	50%	0.00
Chromic Acid (H ₂ CrO ₄)	25%	0.00
Formic Acid (CH ₂ O ₂)	25%	0.00
Hydrochloric Acid (HCl)	18%	0.00
Hydrofluoric Acid (HF)	24%	0.03
Nitric Acid (HNO ₃)	35%	0.00
Perchloric Acid (HClO ₄)	25%	0.00
Phosphoric Acid (H ₃ PO ₄)	25%	0.00
Sulphuric Acid (H ₂ SO ₄)	50%	0.00
Saturated Sodium Hydroxide Acid (NaOH)	50%	0.00

* With the exception of Hydrofluoric acid Duralox 997 beads maintain their integrity.



JYOTI CERAMIC INDUSTRIES PVT. LTD.

Head Office : C-21, N.I.C.E, Satpur, Nashik - 422 007, Maharashtra, India.
Tel.: +91 (0) 253 6918111, 2350120 / 338 / 729, 2351251 • E-mail: info@jyoticeramic.com

Europe : Jyoti Ceramic GmbH, Frankenstr. 12, 90762 Fürth, Germany.
Tel.: +49 (0) 911 78 71 20 83 / 84 / 85 • Fax : +49 (0) 911 78 71 20 82 • E-mail : sales@jyoticeramic.com

U.S.A. : Techno Ceramic Inc., P.O. Box 333, New Hampton, NY 10958, USA.
Tel.: +1 (0) 845 547 2219 / 1 845 547 2220 • Fax: +1 (0) 845 547 2221 • Email: jcw@tci-jyoti.com

Jyoti Ceramic CZ s.r.o., Na Okrouhliku 1781, 530 03 Pardubice, Czech Republic
Tel.: +420 777324227 • Email: lea.tomasova@jyoticeramic.cz

Klausen Pty Ltd, PO Box 4013, Warrimoo, NSW 2774, Australia
Tel: +61 409816679 • Email: klausen@klausen.com.au



Disclaimer : Information contained herein is true and accurate to the best of our knowledge and is based upon measurements made in our R & D laboratory. Recommendations, suggestions and data are practical guidelines and not guarantees. Actual results may vary with conditions of use and with variations in the methods of manufacture, size and shape of the ceramic. We disclaim any liability that may be incurred in connection with use of suggestions or data. This publication is not to be taken as license to operate under or infringe upon any patents. Observation of all legal regulations and patents is the responsibility of the user.