



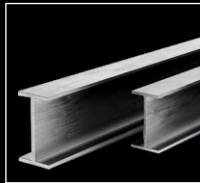
ALUMINA TOUGHENED ZIRCONIA BEADS

High-Quality Ceramic Beads
for Superior Grinding

VERSATILE INDUSTRIAL APPLICATIONS



SHOT PEENING



STEEL INDUSTRY



METAL POLISHING



HIGH PURITY
POWDERS



ALUMINA TOUGHENED ZIRCONIA (ATZ)

Jyaluzir, Alumina Toughened Zirconia (ATZ) beads are composite ceramic material consisting of microfine alumina particles mixed with nano-sized zirconia particles, a composition of 70% ZrO₂ and 25% Al₂O₃. The key feature in the creation of these composites is a homogeneous mixture of the two powders with a dense internal microstructure after sintering.

ADVANTAGES

- Excellent Hardness and tenacity.
- High Bending Strength, Compressive strength, Young's modulus and toughness.
- High resistance to wear and good thermal shock resistance.
- Good Insulating properties.
- Can withstand high operating temperatures.

APPLICATIONS

Jyaluzir, Alumina Toughened Zirconia (ATZ) composite microbeads have wide use in the following applications:

- In Shot Peening to induce strength.
- Grinding of high purity materials.
- Grinding of abrasive concentrates and high viscosity slurries.
- In de-burring and polishing of medical syringe needles, sheet metal parts, cast molded ferrous/ non-ferrous components, precious metal ornaments, and watch parts.
- Impregnation of Jyaluzir beads in metal parts to increase fracture toughness.

JYALUZIR BEADS ARE AVAILABLE IN FOLLOWING FRACTION SIZES ALONG WITH BULK DENSITY

Fraction sizes Dia (mm)	Bulk Density
Ø 0.40 - 0.70 mm	3.25 ± 0.05 kg/ltr
Ø 0.70 - 1.20 mm	3.25 ± 0.05 kg/ltr
Ø 1.20 - 1.70 mm	3.25 ± 0.05 kg/ltr
Ø 1.70 - 2.40 mm	3.30 ± 0.05 kg/ltr
Ø 2.40 - 2.80 mm	3.30 ± 0.05 kg/ltr
Ø 2.80 - 3.30 mm	3.30 ± 0.05 kg/ltr

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

CHEMICAL PROPERTIES

ZrO ₂	: 65 - 70 %
Al ₂ O ₃	: 20 - 25 %
Y ₂ O ₃	: 3 - 4 %
CaO	: 0 - 1 %
Others	: 2 - 3 %

PHYSICAL PROPERTIES

Colour	: White
Surface Finish	: Smooth
Density	: 5.20 ± 0.05 g/cm ³
Bulk Density	: 3.30 ± 0.05 kg/ltr
Porosity	: Nil
Water absorption	: 0 %
Hardness on Mohs scale	: 9+
Hardness on Vickers Scale	: 1350 - 1400 Hv ₅
Flexural Strength 3 P.B. (@ Room Temperature)	: 330 MPa
Compressive Strength (@ Room Temperature)	: 2000 MPa
Young's Modulus	: 220 GPa
Crushing Strength (@ Room Temp. Ø 1.5mm bead)	: 135 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 1.2-1.7 mm)	
After 24 Hrs.	: 0.0121
After 96 Hrs.	: 0.0080
Max Temperature of use (No Load Condition)	: 1550 °C (2822 °F)

CHEMICAL RESISTANCE DATA OF JYALUZIR 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 Jyaluzir beads maintain their integrity.