

MILLING MEDIA SOLUTIONS

BEAD SELECTION CRITERIA

The final selection of a bead type will depend on a number of factors:

- Process
- Formulation
- Particle size
- Mill type
- Quality demands
- Maintenance
- Productivity

ZIRPRO SERVICES

Our beginning-to-end customer service can help to provide the optimum media solution:

- Application analysis
Consultation and trials to provide optimum bead selection
- Bead audits
Monitoring of bead life to ensure and control media performance
- Recycling
Reduced media costs with effective media management solutions



THE RIGHT MEDIA FOR YOUR APPLICATION

	ER 120	RIMAX	ZIRMIL Co	ZIRMIL Y
PAINTS				
Automotive	●	●	●	●
Coil Coatings	●	●	●	●
Industrial	●	●	●	●
Architectural	●	●	●	●
Wood Coatings	●	●	●	●
Marine	●	●	●	●
INKS				
Colour Newsprint	●	●	●	●
Flexographic	●	●	●	●
Gravure	●	●	●	●
Packaging	●	●	●	●
Magazine	●	●	●	●
Inkjet Ink	●	●	●	●
PIGMENTS & DYES				
LCD Pigments	●	●	●	●
Textile Dyes	●	●	●	●
Textile Inks	●	●	●	●
Colorants	●	●	●	●
AGROCHEMICALS				
Fungicides	●	●	●	●
Herbicides	●	●	●	●
Pesticides	●	●	●	●
SPECIALITIES				
Cosmetics	●	●	●	●
Pharmaceuticals	●	●	●	●
Food	●	●	●	●
Ceramic Inks	●	●	●	●
Electronics	●	●	●	●
MINERALS & OXIDES				
Titanium Dioxide	●	●	●	●
Calcium Carbonate	●	●	●	●
Iron Oxide	●	●	●	●
Barium Titanates	●	●	●	●
Zirconium Oxide	●	●	●	●
MILL TYPES				
Attritor	●	●	●	●
Vertical Un-pressurized	●	●	●	●
Vertical Pressurized	●	●	●	●
Horizontal Disc	●	●	●	●
Annular Gap	●	●	●	●
Basket Mill	●	●	●	●
Horizontal Peg Re-Circ	●	●	●	●
Rotor/Stator Re-Circ	●	●	●	●
TARGET/CONDITIONS				
Fine Grind	●	●	●	●
Fine Dispersion	●	●	●	●
Low Viscosity	●	●	●	●
Medium Viscosity	●	●	●	●
High Viscosity	●	●	●	●
Abrasive Formula	●	●	●	●
Heat Sensitive	●	●	●	●
Low Contamination	●	●	●	●
Operating Simplicity	●	●	●	●
High Throughput	●	●	●	●
Fast Cleaning	●	●	●	●

● Satisfactory ● Good ● Excellent

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A Worldwide Organisation

ADAPTED TO **YOUR** ORGANISATION



Reliability of supply

Consistency of quality

Respect of confidentiality for each customer

Innovation in conjunction with our customers

Local presence combined with global excellence standards

www.zirpro.com

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ZirPro Ceramic Beads

MILLING MEDIA SOLUTIONS

ZIRMIL® CERAMIC BEADS

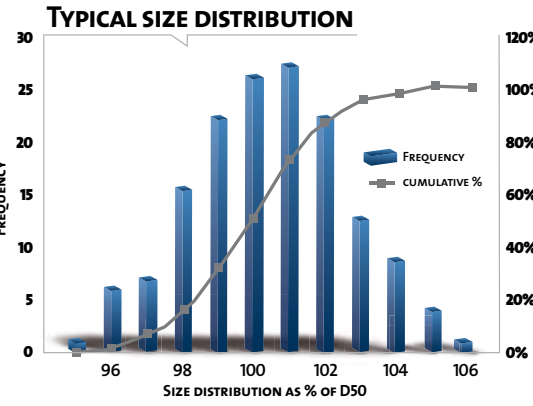
HIGH PERFORMANCE

Two grades of high density ceramic beads are available, Zirmil® Ce and Zirmil® Y. Our Zirmil® family will help you find the best milling media for your process, depending on the characteristics of your equipment, suspension profile, and productivity targets.

Zirmil® Ce		Zirmil® Y	
Non Contaminating Food approved NF EN 1388-1 : 1996 ASTM C 738 - 94			
	Ceria Stabilized Zirconia 98% Tetragonal Phase 95%		Yttria Stabilized Zirconia 98% Tetragonal Phase 95%
Density 6.2 g/cm ³ Bulk Density 3.8 g/cm ³		Density 6.0 g/cm ³ Bulk Density 3.7 g/cm ³	
Vickers Hardness 1180 HV1		Hardness Vickers 1250 HV1	
Available sizes from 0.6/0.8 mm to 2.5/2.8 mm		Available sizes from 0.6 mm to 2.3 mm	
	Large range of sizes for standard milling from 0.6 mm to 2.3 mm		Small sizes for nano-milling technologies from 0.1 mm to 0.5 mm
			Small sizes for nano-milling technologies from 0.1 mm to 0.5 mm

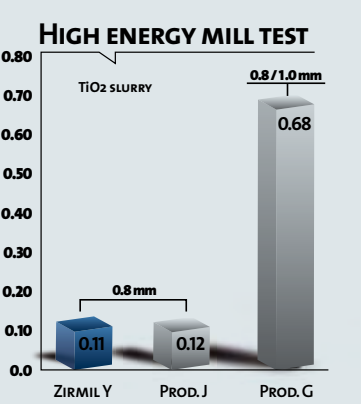
Cost-effective, high density media

Advanced media for high energy milling



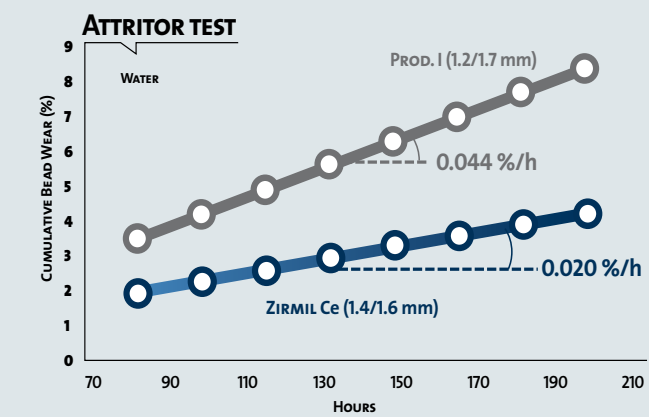
OPTIMISED BEAD SIZE FOR OPTIMISED PRODUCTIVITY

The longevity of yttria or ceria zirconia beads makes it possible to work with a stable bead size distribution in the milling chamber. Narrow size distribution of milling media is a key parameter for setting the separation system of your mill and consequently maximising throughput and productivity.



OUTSTANDING PERFORMANCES

Our ceramic technology is advanced, our quality assured, our cost controlled, our products always provide premier grade performance: the graphs detail comparative bead wear results under aggressive milling conditions.



OUR VALUE PROPOSITION

- Range of products
- Technical support
- Non contaminating media
- Cost-effective solution
- Media life time
- Bead audits

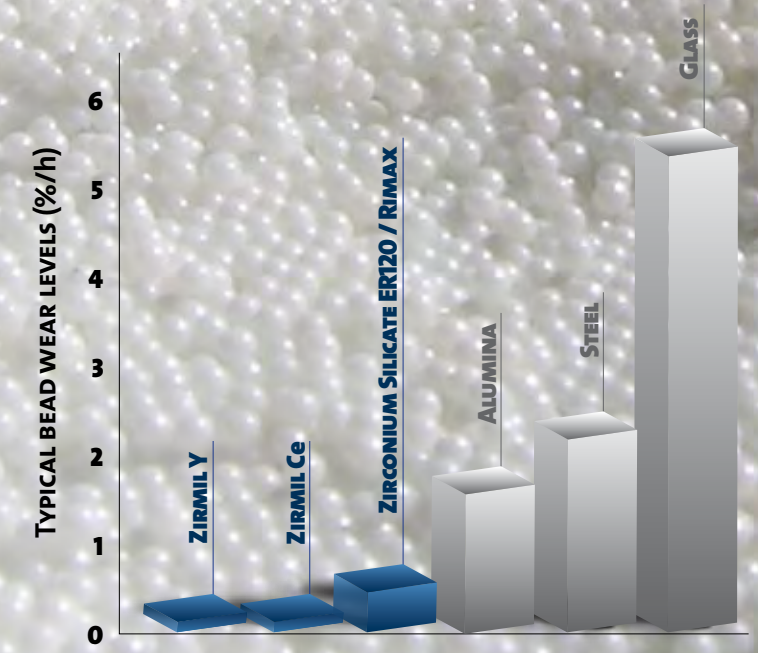
YOUR CONCERNS

- Higher solids concentration
- Colour strength, high gloss
- Cost reduction
- Problem-free operations
- Temperature control
- PSD & reactivity
- Uniform dispersion
- Mill maintenance

MILLING MEDIA SOLUTIONS

A COMPLETE RANGE OF CERAMIC BEADS

For over thirty five years, we have enjoyed close collaboration and co-development with our customers. The result is a range of ceramic grinding media, specifically engineered to meet the requirements of the most demanding milling applications. Based on **Stabilized Zirconia** and **Zirconium Silicate** material platforms, our milling beads provide the best combination of density and size, designed to enhance milling productivity and quality. Our unique ceramic formulations are processed to exacting specifications to ensure consistent performance. ZirPro's tough and durable beads offer problem-free operations over extended periods.



ER120 & RIMAX CERAMIC BEADS

INDUSTRY STANDARD

Zirconium silicate beads often remain the best milling solution. Our electrofusion process yields to large volumes, especially of small beads recognised for their outstanding properties, in applications such as mineral processing. Our sintering process brings narrow size distribution and outstanding breakage resistance.

ER 120	
	Monoclinic Zirconia 68% Vitreous Phases 32%
Density 3.8 g/cm ³ Bulk Density 2.3 g/cm ³	
Hardness Vickers 700 HV1	
Available sizes (standard & narrow) from 0.1/0.2 mm to 2.0/2.5 mm	

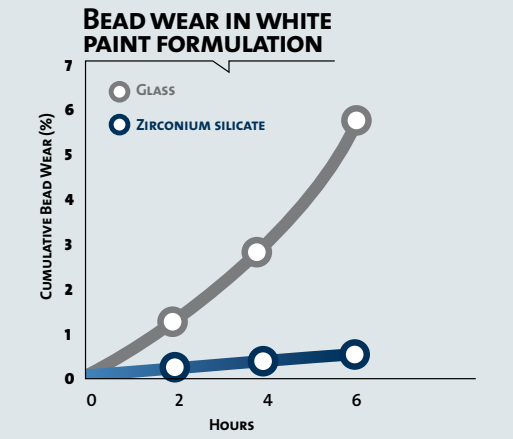
Reduced mill wear

Rimax	
	Zirconium Silicate 88% Others 12%
Density 4.0 g/cm ³ Bulk Density 2.4 g/cm ³	
Hardness Vickers 800 HV1	
Available sizes from 0.8/1.0 mm to 2.8/3.15 mm	

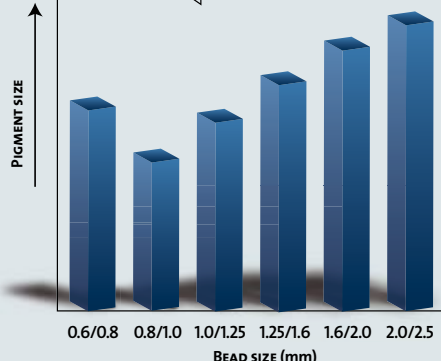
High breakage resistance

COST EFFECTIVENESS

Zirconium silicate beads exhibit much better wear resistance compared to alternative media, for example glass beads or other types of ceramic beads such as alumina. Compared to these media, detailed cost of ownership analysis will always favour ER120 or Rimax beads.



EFFICIENCY VS ER 120 BEAD SIZE



BEAD SIZE EFFECTS

The efficiency of milling depends on the number of beads involved in the process. The use of smaller beads is therefore recommended, as for a given volume, there are many more beads present. There is however a limit, as beads become too small to remain efficient.

