

Sepulchre Minerals

Zr X Beads

Fused Zirconium Silicate Beads

Description: Zr X beads are produced by a new fusion process. The Zirconium feed has a very fine crystalline structure, which in fusion forms perfect and unique grinding beads that are suitable for both wet and dry milling.

Application: Coatings, inks, pigments, dyestuffs, fillers, cosmetics, minerals, magnetics, pesticides.

SPECIFICATIONS:

Chemical analysis

ZrO ₂	68.5 %
SiO ₂	31.5 %
Bulk specific weight	2.30
Real specific weight	3.80
Strength	710N
Moh's scale	7.2
Melting point	2120 to 2820 C
Wear rate	0.062 % *

(* = after 5 hours in carborundum grinding vibration mill)

Bead size ranges (mm)

0.20 – 0.40
0.40 – 0.60
0.60 – 0.80
0.80 – 1.00
1.0 – 1.25
1.20 – 1.40
1.60 - 2.50

* Other sizes available upon request

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For all your milling needs

BENEFITS OF Zr X BEADS

- Outstanding grinding and dispersing efficiency due to higher density and kinetic energy of fused beads in contrast to conventional grinding media.
- Increased mill outlet rate, shortened grinding time and reduced circulation cycles.
- High density and impact resistance, offering greater durability.
- Superior wear resistance in comparison to glass beads and to regular ceramic beads produced by the conventional sintering process.
- Greater crushing strength.
- Chemical and corrosion resistance in both acidic and alkaline environments.
- Reduced mill wear.
- Increased productivity without sacrifice to desired particle size of finished product..
- Smooth surface for easy cleaning.

RECOMMENDED BEAD CHARGE:

Chamber vol. (L)	Closed mill (Kg) Horizontal	Open mill (Kg)	
		Vertical	Vertical
8	15-16	13-15	11-13
15	28-29	24-28	21-24
30	55-59	48-55	41-48
45	83-88	72-83	62-72
60	110-117	97-110	83-97
115	212-225	185-212	159-185
225	414-440	362-414	310-362

Remarks:

- a) Closed mills should not be overloaded as this would lead to high media and mill wear.
- b) Open mills should be started with optimal bead charge. If necessary, the bead charge should be gradually reduced.
- c) The volume of the bead charge should be approximately 70-80 %, 80-85 % and 60-70 % of the chamber volume for closed, horizontal and open vertical mills respectively.

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SELECTION OF BEAD SIZE:

Bead size selection depends on the following factors:

1. Nature of solid ingredients of mill base
2. Viscosity of mill base
3. Particle size of pigments to be ground or dispersed and the desired particle size of the finished product.
4. Specifications of the separator screen or rotating gap separator – generally the size of the smallest beads should be at least twice that of the separator screen or rotating gap.
5. The distance between the outer edge of the agitator disc and the grinding chamber should be four times the diameter of the largest beads.

OPERATING INSTRUCTIONS:

1. Clean mill chamber before charging with beads.
2. Select appropriate size of beads according to volume of grinding chamber, mill base, viscosity and let out clearance.
3. Test mill base viscosity as well as outlet clearance and mill rotation speed.
4. Recommended “break in” for first time usage: pump fluid mix (resin & solvent) of certain viscosity through mill for 30 minutes. NB: not required for beads marked “run in”. When low viscosity solvent is used for break in period, reduce rotation speed and limit “break in” period to 15 minutes.
5. For low viscosity mill base, upper limit for peripheral speed of agitator disc is 14 m/s.
6. Due to high kinetic energy of beads, it is not necessary to work at high rotation speed to disperse high solid content and high viscosity products.
7. For grinding of paint, it is suggested to use resins to clean beads. Should solvents be used for that purpose, reduce rotation speed and clear within 10 minutes.

ADDING BEADS:

A very small number of beads may be expected to break after long term grinding at high speed. Check bead loading at regular intervals. Sieve out and weigh broken beads, add fresh ones equivalent to same weight. Additional beads should be loaded for prolonged grinding time if desired particles of finished product remain unchanged.

Should finished product fail to meet required particle size within prescribed time frame, load additional beads.