Grinding Media

All media shown actual size


Steel Shot, Through-Hardened (.25 mm)


Zirconium Silicate


Zirconium Oxide (Y_2O_3 stabilized) .8mm


Nylon Pellets


Alumina


Silicon Nitride


Mullite

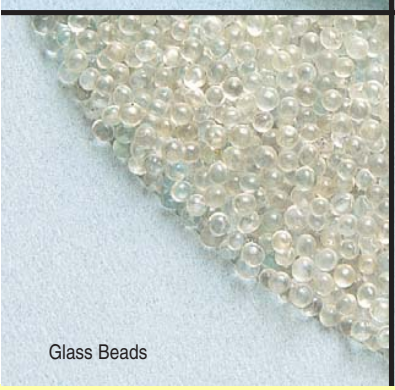

Zirconium Oxide (rare earth-stabilized)

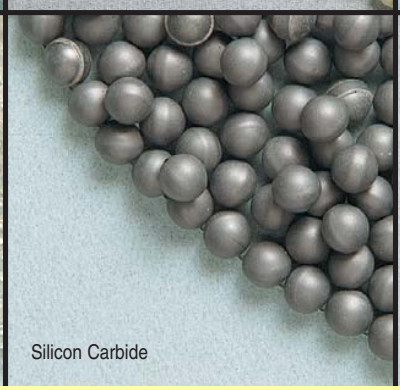

Tungsten Carbide

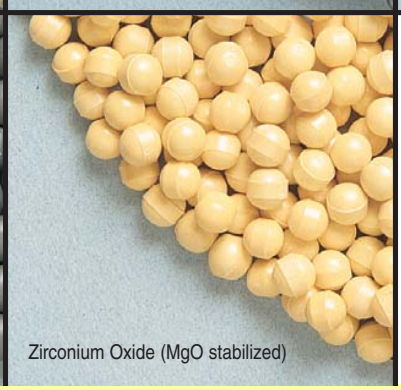

Ceramic (Steatite)


Chrome Steel (SAE 52100)


Zirconium Oxide (Y_2O_3 stabilized)


Glass Beads


Silicon Carbide


Zirconium Oxide (MgO stabilized)

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Consider the Following Factors When Selecting Your Grinding Media

- **Initial feed size** — Smaller media cannot easily break up large particles.
- **Final particle size** — Smaller media are more efficient when ultrafine particles are desired.
- **Specific gravity** — In general, high-density media give better results. The media should be more dense than the material to be ground. Also, highly viscous materials require media with a higher density to prevent floating.
- **Hardness** — The harder the media, the better the grinding efficiency and, consequently, the longer the wear.
- **pH** — Some strong acid or basic slurries may react with certain metallic media.
- **Discoloration** — Certain media result in color development and are, therefore, not suitable in the production of some materials such as white coatings.
- **Contamination** — Material resulting from the wear of the media affect the product and may need to be removed by a magnetic separator, chemicals, or a sintering process.
- **Costs** — Media that may be 2-3 times more expensive may last considerably longer and, therefore, be well worth the extra cost over the long run.

Our skilled technical service representatives are always available for consultation and ready to assist you with the selection of media that best answers your particular needs.

Grinding Media Specifications

SIZES SHOWN IN RED INDICATE MEDIA AVAILABLE THAT IS RECOMMENDED FOR USE IN SMALL MEDIA MILLS

DESCRIPTION	SPECIFIC GRAVITY	HARDNESS	RELATIVE COST	SIZES AVAILABLE
METALLIC				
Carbon Steel Balls (SAE 1013—case-hardened, SAE 1065—through-hardened)	7.8	ROCKWELL C 60 - 62	Low	1/8", 3/16", 1/4", 5/16", 3/8", 1/2"
Chrome Steel Balls (SAE 52100)	7.8	ROCKWELL C 62 - 66	Low to Moderate	1mm, 1.59mm 2mm, 1/8", 5/32", 3/16", 7/32", 1/4", 5/16", 3/8", 1/2", 2mm, 2.38mm, 3.2mm
Stainless Steel Balls (AISI 440-C)	7.7	ROCKWELL C 55 - 64	Moderate	1/8", 5/32", 3/16", 7/32", 1/4", 5/16", 3/8", 1/2", 3/4"
Steel Shot, Through-Hardened	7.8	ROCKWELL C 55 - 60	Low	.25mm, .40mm, .50mm, .60 mm, .71mm, 1.18mm, 1.40mm, 1.70mm, 2mm, 2.36mm, 2.80mm
NON-METALLIC				
Alumina 99.9% — Balls	3.9	Hv 1750 kg/mm^2	High	1mm, 2mm, 3mm, 5mm, 10mm
99.5% — Balls	3.4 - 3.7	Hv 1350 kg/mm^2	Moderate	0.2mm, 0.5mm, 1mm, 2mm, 3mm, 5mm, 8mm, 10mm, 15mm, 20mm
99% — Satellites	3.4 - 3.7	ROCKWELL 45N 78-79	Moderate	3/16", 1/4"
96% — Satellites	3.4 - 3.7	Hv 1400 kg/mm^2	Low to Moderate	1/4", 1/2"
94% — Satellites	3.4 - 3.7	Hv 1200 kg/mm^2	Low to Moderate	0.5mm, 1mm, 2mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm, 13mm, 15mm, 20mm
90% — Satellites	3.4 - 3.7	ROCKWELL 45N 75	Low	3mm, 7/32", 1/4", 3/8", 1/2"
Ceramic (Steatite) Satellites	2.6 - 2.7	ROCKWELL 45N 60 - 65	Low to Moderate	1/8", 1/4", 5/16", 3/8", 1/2"
Glass Beads (Lead Free)	2.5	KNOOP 515 kg/mm^2	Low	0.4-0.6mm, 0.5-0.75mm, 0.6-0.8mm, 0.75-1.0mm, 0.8-1.0mm, 1.0-1.2mm, 1.0-1.25mm, 1.1-1.3mm, 1.2-1.4mm, 1.25-1.55mm, 1.4-1.6mm, 1.55-1.85mm, 1.6-1.8mm, 1.7-2.0mm, 1.8-2.0mm, 2.0-2.3mm, 2.0-2.4mm, 2.3-2.6mm, 2.3-2.7mm, 2.5-2.85mm, 2.8-3.2mm, 2.85-3.3mm, 3.2-3.8mm, 3.3-3.6mm, 3.6-4.1mm, 3.7-4.3mm, 4.2-4.8mm, 4.7-5.3mm, 5.0mm, 5.7-6.3mm, 6.0mm, 6.7-7.3mm, 7.0mm, 7.6-8.4mm, 8.0mm, 8.6-9.4mm, 9.0mm, 9.5-10.5mm, 10mm, 10.5-11.5mm, 12mm, 14mm, 15mm, 16mm
Mullite Beads	2.8	ROCKWELL 45N 70	Low	1/16", 1/8"
Nylon Pellets	0.7 - 1.2		Low to Moderate	1/8"
Silicon Carbide Satellites	3.1	KNOOP 2800 kg/mm^2	Very High	3/16", 1/4"
Silicon Nitride Balls	3.2	Hv 1400 - 1500 kg/mm^2	Very High	0.5mm, 0.8mm, 1mm, 2mm, 3mm, 5mm, 10mm, 15mm, 20mm, 25mm
Tungsten Carbide Satellites	14.4 - 14.8	88 - 89HRA	Moderate to High	3/32", 1/8", 5/32", 3/16", 7/32", 1/4", 9/32", 5/16", 3/8", 7/16", 1/2"
Zirconium Oxide, High-Purity (Y_2O_3 stabilized) 95% — Balls	6.0	Hv 1280 kg/mm^2	High	0.2, 0.3mm, 0.4mm, 0.5mm, 0.65mm, 0.8mm, 1mm, 1.25mm, 1.5mm, 1.75mm, 2mm, 3mm, 5mm, 6mm, 8mm, 10mm, 15mm, 20mm, 25mm
93% — Beads	6.0	Hv 1280 kg/mm^2	Moderate	0.5-0.7mm, 0.7-0.9mm, 0.9-1.1mm, 1.1-1.4mm, 1.3-1.6mm, 1.5-1.9mm
Zirconium Oxide (Y_2O_3 stabilized) 75% — Beads	6.0	Hv 1280 kg/mm^2	Moderate	0.1-0.2mm, 0.2-0.3mm, 0.3-0.4mm, 0.4-0.6mm, 0.6-0.8mm, 0.8-1.0mm, 1.0-1.25mm, 1.25-1.6mm
Zirconium Oxide (CeO_2 rare earth-stabilized) *Sizes up to 3/16" are beads, 3/16" or larger are satellites.*	6.0	Hv 1150 kg/mm^2	Moderate	0.4-0.6mm, 0.6-0.8mm, 0.8-1.0mm, 0.7-1.2mm, 1.0-1.2mm, 1.2-1.4mm, 1.4-1.6mm, 1.7-2.4mm, 2.4-2.8mm, 2.8-3.3mm, 3/16", 1/4", 5/16", 6mm, 8mm, 10mm, 12.5mm, 16mm, 21mm, 26mm, 31mm
Zirconium Oxide (MgO stabilized) *Sizes up to 1/4" are beads, 1/4" or larger are satellites.*	5.4	Hv 900 - 1000kg/mm^2	Moderate	0.6-0.85mm, 0.85-1.18mm, 1.18-1.4mm, 1.4-1.7mm, 1.7-2.3mm, 1/4", 3/8", 1/2", 3/4"
Zirconium Silicate Beads	3.85	MOHS 7.0	Moderate	0.1-0.2mm, 0.2-0.3mm, 0.3-0.4mm, 0.4-0.6mm, 0.6-0.8mm, 0.8mm-1.0mm, 1.0-1.25mm, 1.25mm, 1.25-1.6mm, 1.6-2.0mm, 2.0-2.5mm, 2.5-2.8mm, 2.5-3.15mm

Notes: Satellites have a band around the middle. Beads may not be 100% spherical. Balls are 100% spherical.

Please contact us for more information on our complete range of laboratory and production model Attritors and small media mills.

Information contained herein is accurate and reliable to the best of our knowledge, but our suggestions and recommendations cannot be guaranteed because the conditions of use are beyond our control.

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