



Uniceram Advanced Materials, Inc.

.....A provider of quality ceramic products.....





Uniceram Advanced Materials, Inc.

Company Introduction

Allow us to introduce our company, Uniceram Advanced Materials, Inc. a provider of quality ceramic products.

We have a wide array of products that serve a broad spectrum of industrial applications. Our products, typically, may be classified to four categories on basis of their end use:

- Insulators
- Wear Resistant Parts
- Porous Filters
- Refractory Products

Our core ability is the ability to customize and innovate. With the backing of the solid experience of our product development team, we are in a position to manufacture products as per our customer's pricing and technical requirements. For us, component geometry is not a restriction. As we say, if you can draw it, we CAN make it.

Uniceram Advanced Materials has dedicated manufacturing units at two locations around the world. Both these locations are ISO 9001 certified. Our expertise in supply chain management enables us to have the optimum quality at the optimum price.

We have been in this field for more than 25 years and have developed the technology indigenously, so have total mastery over managing the efficiency of the applications. We believe in adding competitive advantage to the client by enhancing the operational effectiveness of their processes.

Uniceram Advanced Materials is a quality conscious organization: All our vendors are ISO9001 Certified for their quality assurance in design, development, production and delivery. This shows our commitment to quality. We believe in setting very high standards to exceed the expectations of our customers.

If you have any queries about our products or need more information, feel free to contact us.

We look forward to having a long and a mutually beneficial business relationship with you. Count on us to deliver the best, always!

Thanks,

The Uniceram Team

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Our Product Range:

+ **Wear Resistant Parts-**

- Textile and Wire Drawing guides
- Mechanical and Chemical Seals
- Alumina Grinding Media
- Yttria Stabilized Zirconia Microgrinding Media and Structural Ceramics
- Ceramic Coatings

+ **Insulators-**

- Resistor Casing
- Fuse Bodies
- Ignitors
- Heat Resistant Interlocking Beads

+ **Porous Filters-**

- Honey Comb Filters
- Acid Filters
- Vaporization wicks

+ **Refractory Materials-**

- Crucibles
- Ferrules
- Thermocouple Sheaths and other labware.
- Coil Supports
- Infra-Red Heaters
- Assay Testing Ceramics
- Ceramic Rollers for Tile Industry
- Refractory products for Steel, Iron, Glass and Cement Industry
- Water Ground Mica



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What are the characteristics of Alumina Grinding Media?

Uniceram Advanced Materials's Alumina Grinding Media and Bricks are manufactured from Corundum (Aluminium Oxide). It contains 92% α -Alumina crystals with Silica being the major ingredient in the residual.

These products are extremely hard (9 on Mohs scale, with Diamond being 10). It is highly wear resistant, ensuring high purity grinding and reduced grinding time. It is resistant to most acids and alkalis, except HF. They have a smooth surface finish and are impervious. Nonporous characteristics permit fast color composition changes with easy clean up.

Indeed, Uniceram Advanced Materials' Alumina Grinding Media and Bricks represent the state-of-the-art in industry today.

Advantages of using Uniceram Advanced Materials' Alumina Grinding Media and Bricks:

- ✧ It is extremely hard and highly wear resistant. This ensures faster grinding with higher efficiency and a better quality of the output.
- ✧ It has a longer life, resulting in a longer Mean Time Between Failures (MTBF).
- ✧ Due to its high wear resistance, it is non-contaminating.
- ✧ It is impervious, permitting fast color composition changes without the fear of contamination.
- ✧ Being isostatically pressed, the product is very dense ($\rho = 3.6 \text{ gm/cm}^3$)



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Typical Characteristics of our Alumina Grinding Media:

Item	92% Al ₂ O ₃	75% Al ₂ O ₃	65% Al ₂ O ₃	63% Al ₂ O ₃
Al ₂ O ₃ (%)	91.82	78.24	64.28	63.17
SiO ₂ (%)	4.64	13.81	28.53	28.67
Fe ₂ O ₃ (%)	0.05	0.06	0.41	1.52
TiO ₂ (%)	0.04	0.62	1.71	2.94
Bulk Density: (g/cm ³)	3.60	3.26	2.90	2.85
Compression Strength (Mpa)	>1700	>1200	>1000	>1000
Water Absorption: (%)	0	0	0	0
Wear Loss*(%)	<0.02	<0.025	<0.05	<0.055
Hardness: (Mohs)	9	8	7-8	7-8
Color	White	White	Yellow White	Brown
Application	<i>High Purity Dry and Wet Grinding Applications</i>	<i>Dry and Wet Grinding Applications</i>	<i>Low Purity Dry and Wet Grinding Applications</i>	<i>Low Purity Dry and Wet Grinding Applications</i>

Ball Size: 0.8-60mm Diameter

Alumina Brick Size: length 152mm—width 50mm—height 40/60/70mm



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Factors to be considered while selecting the Grinding Media:

- ❖ *Feed size*-Smaller media cannot easily break up large particles.
- ❖ *Final particle size*-Smaller media are more efficient when ultrafine particles are desired.
- ❖ *Hardness*-Harder the media, better the grinding efficiency and consequently, longer the media life.
- ❖ *Specific gravity*-Generally speaking, high-density media gives better results. The media should be denser than the material to be ground.
- ❖ *Acidity or Alkalinity of the slurry* -Some strong acid or basic slurries may react with certain metallic media.
- ❖ *Contamination*-Material contamination resulting from the wear of the media affects the product and may need to be removed by a magnetic separator, chemicals or by employing a sintering process.
- ❖ *Discoloration*-Use of certain media results in color development and is therefore not suitable in the production of some products such as white colors etc.

Selection of the size of Milling media:

Media selection should be decided by analyzing the average raw material size for the starting batch, the void size between the spheres and the desired final particle size. Typically, the grinding media should be four times larger than the largest particles to be reduced. A mixture of media sizes is usually recommended-a 50% media charge by mill volume and mixture of three sizes- 25% of the largest and smallest sizes, and 50% of the medium-sized media. We also recommend removing very small media from time to time as it no longer contributes to grinding efficiency.

For full technical details on usage of the media and the bricks, please contact our technical department at info@uniceramusa.com



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Wear Rate Analysis for Alumina Balls

Grinding System:

Balls Size – 60mm Φ

Ball Mill Size – 3' x 3'

Ball Mill R.P.M. – 48 R.P.M

Ball Mill Lining – Uniceram's Alumina 92% Standard Lining

Grinding Balls – Uniceram's 92% Alumina Standard Grinding Media

Ball Mill Charge:

Porcelain composition 150 kilos consisting of:

- China Clay lumps
- Feldspar: Avg. Size – 150 to 200 mesh
- Silica: Avg. Size – 150 to 200 mesh

Water - 150 Liters

Grinding Balls- 150 kilos

Procedure:

After every 24 hours of running time, a fresh batch of porcelain composition and water was loaded in the mill. The grinding media was **not** changed.

After every 216 hours of total running time, the mill was stopped and the loss in weight of the grinding balls was measured.

Results:

The result is tabulated as under:

Sr.No.	No.of Hrs	Initial Weight (Kilos)	Final Weight (Kilos)	Cumulative Weight Loss (Kilos)
1	216 Hrs.	150	149.2	0.80
2	432 Hrs	149.2	148.7	1.30
3	648 Hrs	148.7	148.0	2.00
4	864 Hrs	148.0	144.7	5.30

From the above data, after 864 hours of running time, the weight loss per hour is **6.1 grams/hour***

If there are any queries on this testing, please feel free to contact us at info@uniceramusa.com

*Please note that this is a typical test result and should be only used for guidance. Individual results may vary depending on various application factors.