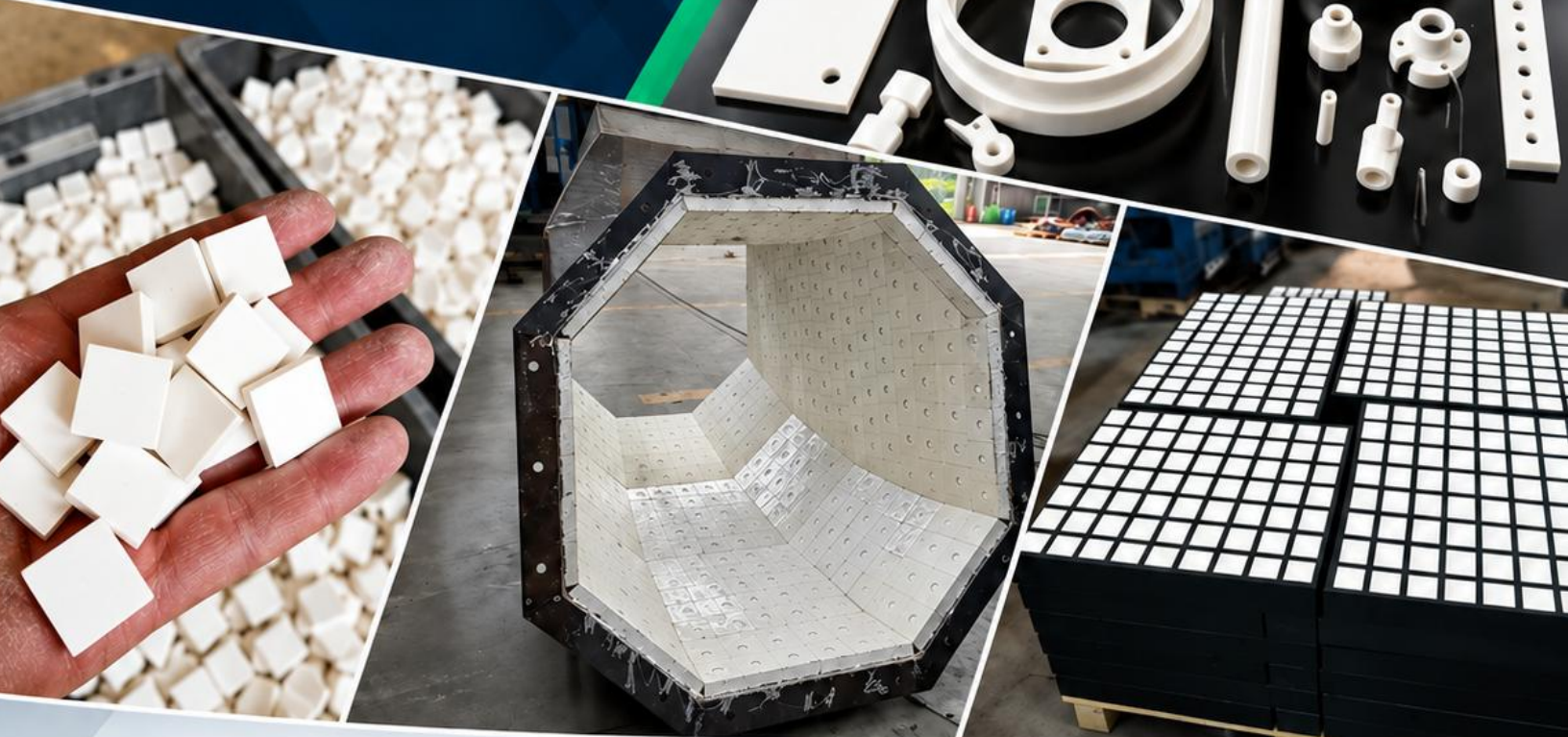


INDUSTRIAL CERAMIC MATERIALS

Advanced Ceramic Solutions
for Demanding Applications



Wear
Resistance



Thermal
Stability



Chemical
Resistance



Electrical
Insulation

IntegriMat Inc.

ENGINEERED MATERIALS. INTEGRATED SOLUTIONS.

www.IntegriMatEng.com

ADVANCED CERAMIC PORTFOLIO

Engineered Materials for Demanding Industrial Environments

We supply advanced ceramic materials and engineered ceramic components for applications requiring exceptional wear resistance, thermal stability, chemical resistance, electrical insulation, and dimensional reliability.



OXIDE CERAMICS



- Alumina (Al_2O_3)
- Zirconia (ZrO_2)
- Zirconia-Toughened Alumina (ZTA)
- Magnesia (MgO)
- Aluminum Titanate (Al_2TiO_5)

NON-OXIDE CERAMICS



- Silicon Carbide (SiC)
- Silicon Nitride (Si_3N_4)
- Boron Carbide (B_4C)
- Boron Nitride (BN)
- Aluminum Nitride (AlN)

SPECIALTY CERAMICS



- Quartz
- Machinable Glass Ceramics
- Metallized Ceramic Components
- Transparent Ceramics

COMPONENT FORMS

A WIDE RANGE OF STANDARD AND CUSTOM CERAMIC COMPONENTS



PLATES & BLOCKS



TUBES & SLEEVES



RODS & SHAFTS



RINGS & SEALS



BEARINGS & BALLS



CRUCIBLES & TRAYS



NOZZLES & VALVES



CUSTOM
COMPONENTS

WHY ADVANCED CERAMICS?



High
Hardness



Wear
Resistance



Thermal
Stability



Chemical
Resistance



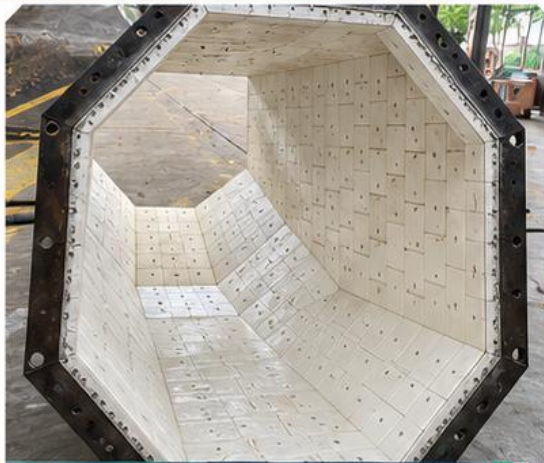
Electrical
Insulation



ALUMINA CERAMICS (Al_2O_3)

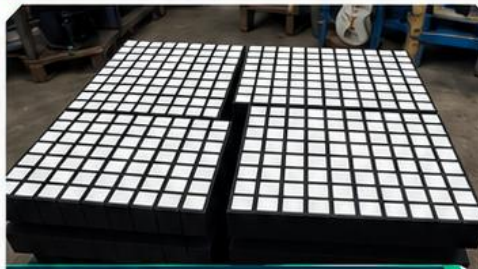
Reliable Wear Protection for Demanding Industrial Service

Alumina is one of the most widely used technical ceramics, combining high hardness, excellent wear resistance, electrical insulation, chemical stability, and cost-effective performance for demanding industrial applications.



INDUSTRIAL APPLICATION

Ceramic-lined chutes, hoppers and equipment for severe wear environments.



WEAR PANELS

High-alumina tiles for impact and abrasive wear applications.



ENGINEERED COMPONENTS

Ceramic and metal assemblies for demanding industrial service.



PRECISION COMPONENTS

Custom-machined alumina parts



PLATES AND SHAPED PARTS

Standard and custom geometries

KEY CHARACTERISTICS



High Hardness

Excellent resistance to abrasive and sliding wear.



Wear Resistance

Suitable for components exposed to continuous material flow and abrasion.



Electrical Insulation

Excellent dielectric properties.



Chemical Resistance

Good resistance to many corrosive environments.



High Compressive Strength

Well suited to high compressive loading.



Thermal Stability

Maintains useful properties across a broad temperature range.

COMMON GRADES

95% Alumina



- Cost-effective general-purpose grade
- Good wear resistance
- Suitable for many industrial and electrical applications

99% Alumina



- High-purity grade
- Enhanced electrical, thermal and chemical performance
- Suitable for more demanding applications

AVAILABLE FORMS



Tiles



Plates



Blocks



Tubes



Sleeves



Rings

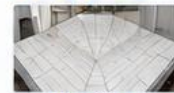


Rods



Custom Parts

TYPICAL APPLICATIONS



Wear Liners



Chute & Hopper Linings



Pipes & Elbows



Pump Components



Valve Components



Electrical Insulators



Seals & Sliding Parts

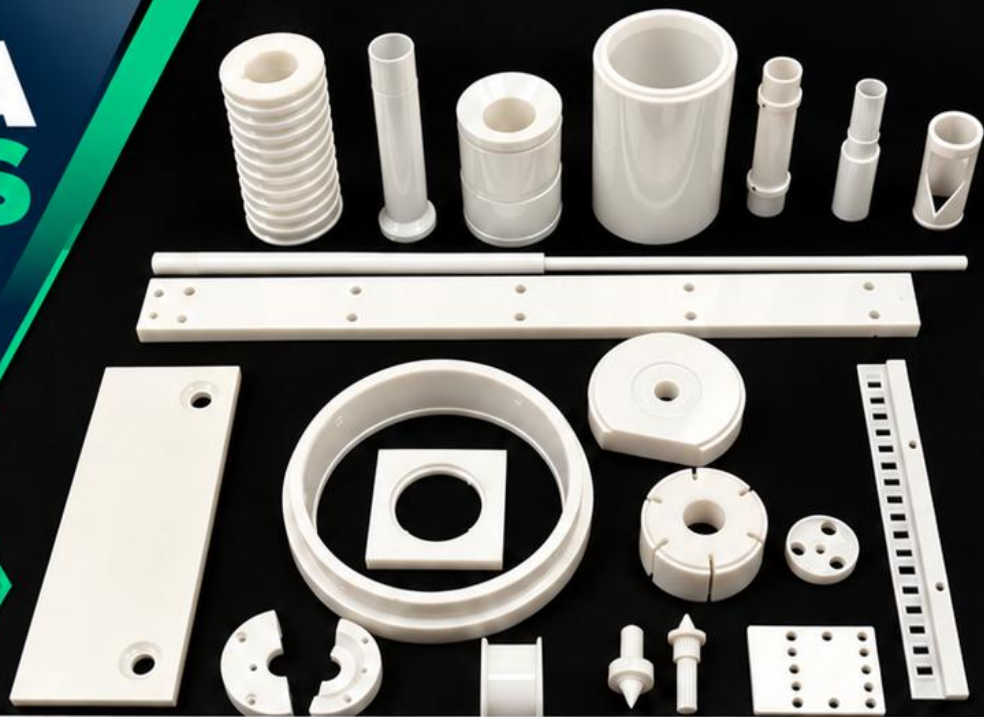


Custom Wear Components

ZIRCONIA CERAMICS (ZrO₂)

High Toughness and Wear Performance for Demanding Applications

Zirconia is a high-performance technical ceramic known for its exceptional fracture toughness, high strength, excellent wear resistance, and chemical stability, making it ideal for severe wear, impact, and corrosive environments.



KEY CHARACTERISTICS



High Fracture Toughness

Greater resistance to crack propagation compared to many other ceramics.



Excellent Wear Resistance

Performs well under abrasive and sliding wear conditions.



High Mechanical Strength

Maintains strength in demanding mechanical and impact environments.



Chemical Stability

Good resistance to many corrosive environments.



Low Thermal Conductivity

Provides good thermal insulation properties.



Electrical Insulation

Suitable for electrical and electronic applications.

COMMON GRADES

Y-TZP

Yttria-Stabilized
Tetragonal Zirconia Polycrystal



- High fracture toughness
- Excellent wear resistance
- High mechanical strength
- Good thermal and chemical stability
- Suitable for severe mechanical and abrasive environments.

Mg-PSZ

Magnesia-Partially
Stabilized Zirconia



- Good fracture toughness
- High strength
- Good resistance to thermal shock
- Excellent wear resistance
- Suitable for demanding mechanical and wear applications.

TYPICAL APPLICATIONS



Bearings & Rolling Elements
For high wear and high-speed applications



Pump Components
Impellers, shafts, and wear parts



Valve Components
Wear-resistant seats, plungers, and sleeves



Seals & Sliding Components
For high wear and corrosive environments



Nozzles & Guides
Wear-resistant flow components



Custom Components
Complex geometries for demanding service

AVAILABLE FORMS



Plates & Blocks



Tubes & Sleeves



Rods & Shafts



Rings & Seals



Discs & Inserts



Custom Geometries

SILICON NITRIDE CERAMICS (Si_3N_4)

**High Strength. Low Density.
Exceptional Thermal Shock
Resistance.**

Silicon nitride is a high-performance structural ceramic combining high mechanical strength, low density, excellent thermal shock resistance, and outstanding fatigue and wear performance. These properties make it particularly suitable for high-speed, high-temperature, and mechanically demanding applications.



KEY CHARACTERISTICS

-  **High Mechanical Strength**
Maintains excellent strength under demanding mechanical conditions.
-  **Excellent Thermal Shock Resistance**
Withstands rapid temperature changes better than many conventional ceramics.
-  **Low Density**
Provides high specific strength for lightweight components.
-  **High Fracture Toughness**
Offers improved resistance to crack propagation compared with many structural ceramics.
-  **Excellent Wear Resistance**
Performs well under rolling, sliding, and abrasive contact.
-  **Fatigue Resistance**
Well suited to components exposed to repeated mechanical loading.

TYPICAL GRADES

Reaction-Bonded Silicon Nitride (RBSN)



- Good mechanical strength
- Good wear resistance
- Good thermal shock resistance
- Suitable for many structural and wear applications

Hot Isostatically Pressed (HIP) Silicon Nitride (Si_3N_4)

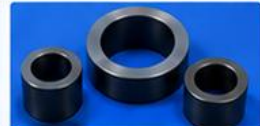


- Higher strength and toughness
- Improved reliability and consistency
- Excellent thermal shock resistance
- Suitable for high-speed, high-temperature and high-performance applications

TYPICAL APPLICATIONS



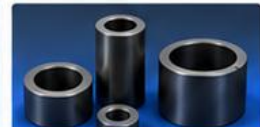
Bearings & Rolling Elements
For high-speed, high-load and high-temperature applications



Rotors & Precision Components
For high-speed and demanding mechanical environments



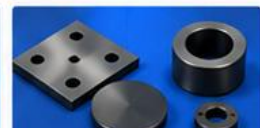
Pump Components
Impellers, shafts, seals and wear parts



Valve Components
Wear-resistant seats, plungers and sleeves



Nozzles & Guides
For high wear and high-temperature environments



Cutting & Tooling Components
Wear-resistant and high-strength applications

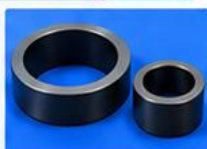
AVAILABLE FORMS



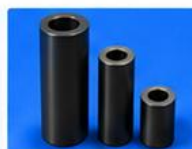
Balls



Rollers



Rings



Tubes & Sleeves



Rods & Shafts



Plates & Discs



Custom Components

CUSTOM CERAMIC COMPONENTS

Engineered Around Your Application

IntegriMat supports custom ceramic components based on customer drawings, operating conditions, and application-specific performance requirements—from material selection to finished precision components.



ENGINEERING SUPPORT



Material Selection

Selection based on wear, temperature, chemical exposure, electrical requirements, and mechanical loading.



Design Review

Support for geometry, tolerances, surface finish, and application-specific requirements.



Custom Components

Standard and complex geometries supplied according to customer drawings and specifications.



Application Support

Material and design recommendations for demanding wear, thermal, chemical, and mechanical environments.

CUSTOM CAPABILITIES



Plates & Blocks



Tubes & Sleeves



Rings & Seals



Rods & Shafts



Nozzles & Guides



Precision Components



Wear Assemblies



Custom Geometries

MATERIALS AVAILABLE



Alumina
(Al_2O_3)



Zirconia
(ZrO_2)



Silicon Nitride
(Si_3N_4)



Silicon Carbide
(SiC)



ZTA
($\text{ZrO}_2\text{-Al}_2\text{O}_3$)



Boron Carbide
(B_4C)



Boron Nitride
(BN)



Aluminum Nitride
(AlN)

REQUEST A QUOTATION

Tell Us About Your Application

To help us identify the appropriate ceramic solution, please provide the following information:

- 01 Technical drawing — STEP, DWG or PDF
- 02 Material requirement, if specified
- 03 Dimensions and tolerances
- 04 Surface-finish requirements

- 05 Operating temperature and environment
- 06 Wear, load, and chemical exposure conditions
- 07 Required quantity

Have a challenging wear, thermal, or precision application?
Let's engineer the right ceramic solution.