ADCERAX
ADVANCED CERAMICS

Porous Alumina Rod

Porous Alumina Rods for Filtration and Diffusion

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About ADCERAX

Powered by **HUNAN ATCERA CO.,LTD** – A Trusted Innovator in Advanced Ceramics Since 2010 ,**HUNAN ATCERA CO. Ltd** has been deeply engaged in the field of advanced ceramics for 20 years, and has production experience of more than 2000 precision ceramic products. We focus on the material of alumina ceramics, zirconia ceramics, silicon carbide ceramics, silicon nitride ceramics, aluminum nitride ceramics and quartz, etc., and aim to provide you with advanced ceramics one-stop service.

Adcerax delivering bespoke advanced ceramic solutions for industries where precision and durability matter.And has become a leading global China supplier of alumina ceramic tubes, with products exported to the United States, Germany, Japan, South Korea, and many other countries.

Our Expertise

Engineering Support: Professional product engineers providing timely technical assistance from design to production.

Customization Capability: Accepting small-batch custom orders based on customer drawings or samples.

Rapid Delivery: Quick shipping for custom orders and 24-hour dispatch for in-stock standard products.

Supply Chain Integration: One-stop customization and procurement services leveraging China's supply chain advantages.

ADCERAX Promise

Your ROI Starts from Day One

- ↑ 37% Lifespan: Industry Standards Verified by SGS Third-Party Testing in Extreme Thermal Shock Environments
- ↓ 22% Downtime: Reduce unplanned downtime with ceramic component life enhancement
- ⚡15 days fast response: From drawing confirmation to functional prototype delivery
- 🛡 12 months warranty: Unconditional return of quality problems to factory for remanufacturing + process optimization report

Our Certifications

CNAS ISO 水圆认证 CQM CERTIFICATION RoHS COMPLIANT

What are porous alumina rods?

A porous alumina rod is a ceramic component made from high-purity aluminum oxide (Al_2O_3) that has a controlled, interconnected pore structure. Unlike solid alumina rods, these pores allow liquids and gases to pass through.

Typical Applications:

- Filtration: They are widely used to filter particles from liquids and gases, especially in high-temperature or corrosive environments like in the metallurgical and chemical industries.
- Diffusion and Aeration: The controlled pore structure is ideal for diffusing gases into liquids (a process called sparging or bubbling) or for creating fine bubbles (nano bubbles)
- Wicking and Liquid Separation: They can absorb and transport liquids, acting as a wick. With special treatment, they can be used to separate oil from water.
- High-Tech and Specialized Fields: Applications include use in the aerospace, electronics, and medical fields, as well as for sensors that measure soil moisture in agriculture.

Porous Alumina Ceramic Rod Process

Raw Material Preparation

Alumina powder is selected and mixed with binders and plasticizers to form a uniform slurry or paste.

Forming

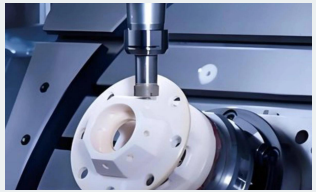
Extrusion: Alumina slurry is extruded through a die into continuous tubular shapes.
Isostatic Pressing: Powder is molded under high pressure to form high-density, uniform tubes.
Slip Casting: Liquid slurry is cast into a mold and solidified.

Drying

The formed tubes are dried slowly to remove moisture and prevent cracking or deformation.

Sintering

The dried tubes are fired in a high-temperature kiln (typically 1600–1700°C) to achieve full densification and develop the final ceramic properties.



Machining

After sintering, the tubes may be ground or machined to achieve precise dimensions, surface finish, or special features such as chamfered ends or holes.

Porous Alumina Rod Properties:

Property	Unit	99.7% Al2O3	99.5% Al2O3	99% Al2O3	90%-96% Al2O3
Color		Ivory White	Ivory White	Ivory White	Ivory White
Density	g/cm³	3.94	3.9	3.83	3.6-3.75
Water Absorption	%	0	0	0	0
Hardness	Mohs Hardness	9.1	9	9	8.8
Flexural Strength (20°C)	Mpa	330	320	300	260
Compressive Strength (20°C)	Mpa	2300	2300	2210	1910
Maximum Operating Temperature	°C	1730	1700	1680	1450
Thermal Expansion Coefficient (25°C to 800°C)	10^{-6}/°C	7.6	7.6	7.6	7.6
Thermal Conductivity (25°C)	W/(m·K)	29	27	24	22
Dielectric Strength (5mm thickness)	AC-kv/mm	22	21	19	15
Dielectric Loss at 25°C@1MHz	---	< 0.0001	< 0.0001	0.0003	0.0004
Dielectric Constant at 25°C@1MHz	---	9.8	9.7	9.5	9.2
Volume Resistivity (20°C)	Ω·cm³	$>10^{14}$	$>10^{14}$	$>10^{14}$	$>10^{14}$
Volume Resistivity (300°C)	Ω·cm³	$2*10^{12}$	$2*10^{12}$	$4*10^{11}$	$2*10^{11}$

Technical Advantages

Engineered Porosity Control

Uniform pore sizes from 0.1 µm to 50 µm enable precise filtration, diffusion, and controlled flow in chemical systems.

High Surface Area for Reactions

Specific surface area up to 10–50 m^2/g promotes efficient catalytic support and adsorption applications.

Optimized Flow and Diffusion

Open-pore network allows stable gas/liquid passage with minimal pressure drop, reducing energy consumption.

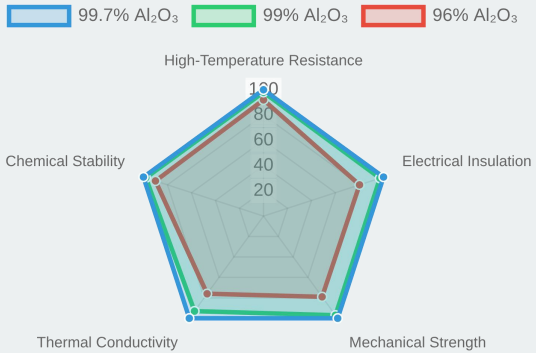
Thermal and Mechanical Stability

Maintains structural integrity while preserving porosity at temperatures up to 1600 ° C.

Versatile Functional Applications

Adaptable as diffusion elements, wick materials, filter supports, and thermal insulators.

Performance Comparison of Alumina Ceramics with Different Purity



Porous Alumina Ceramic Rod Specifications

ADCERAX is an alumina porous ceramic mandrel factory that ensures standard and customized designs to meet different project requirements around the world. What You Can Specify:

Specification Parameter	Details
Product No.	AT-FT-7001
Material	Al2O3(Alumina)
Purity Options	96% / 99% / 99.5% / 99.7%
Max. Working Temp.	1450° C (95%) - 1730° C (99.7%)
Tolerance	±0.05mm to ±5mm (depending on dimensions)
Surface Finish	Raw, Polished, or Glazed
End Types	Round, oval, hexagonal (optional projects)
Pore Size Range	0.1 – 50 μm
Standard Length	≤1000mm

Industry-Specific Solutions

Chemical Processing

Corrosion-resistant diffusers with uniform gas distribution

Laboratory Research

Precision-dimensioned filtration elements

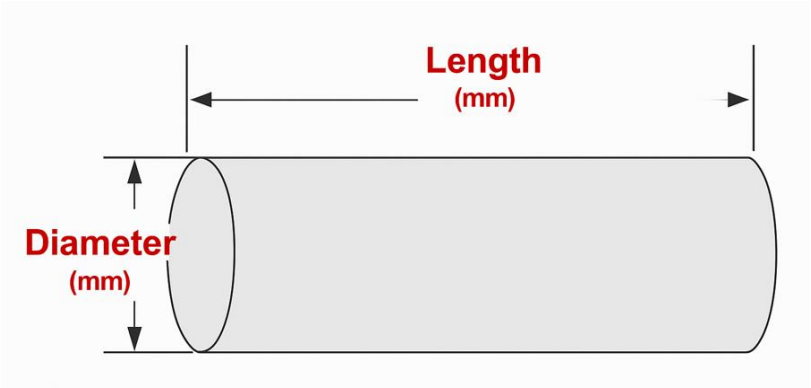
Industrial Heating

Thermal-stable diffuser elements

Water Treatment

Fine filtration with sterilization capability

Porous Alumina Rod Size:



Item No.	Diameter (mm)	Length (mm)	Bore Dia (mm)	Purity	MOQ
AT-FT-7001	20	10	0.8	98	10
AT-FT-7002	25	15	0.8	98	11
AT-FT-7003	360	15	0.8	98	12
AT-FT-7004	30	48	0.8	98	13
AT-FT-7005	35	10	1	98	14
AT-FT-7006	40	20	0.8	98	15
AT-FT-7007	60	35	0.8	98	16
AT-FT-7008	80	48	0.8	98	17

Porous Alumina Ceramic Rod Applications

Precision Filtration & Separation

Porous alumina rods are used for precision filtration and separation in pharmaceuticals, food & beverage, and fine chemicals. Their uniform, controllable pores efficiently remove contaminants from liquids and gases.

Pain Point: Traditional filters often lack chemical resistance, mechanical strength, or consistent pore sizes, compromising filtration efficiency and product quality, and requiring frequent replacement.

Solution: Our porous alumina rods offer superior chemical resistance, thermal stability, and mechanical integrity. Their precise pore distribution ensures high retention and consistent filtrate quality, while durability allows for repeated cleaning, reducing costs and ensuring product integrity.

Chemical Processing

Porous alumina rods provide uniform gas distribution and corrosion resistance in chemical reactors and diffusers, ensuring efficient and stable operations.

Pain Point: Inconsistent gas distribution (±18% maldistribution) and frequent cleaning in chlorination off-gas reactors.

Solution: Implementation of 5 µm pore alumina diffusion rods reduced gas distribution deviation to 6% and extended maintenance intervals from 4 to 12 weeks, resulting in 30% spare-part cost reduction.

Laboratory Research & Analysis

Our porous alumina rods offer precise filtration and consistent throughput for sensitive laboratory applications, ensuring reliable experimental results.

Pain Point: Variable filtrate volumes and protein loss in LC-MS sample preparation, leading to unreliable data.

Solution: Using 5 µm porous alumina rods reduced RSD from 11.8% to 3.4%, improved protein recovery from 87% to 96%, and cut filtration time by 37%.

Customized Porous Alumina Rod

ADCERAX offers comprehensive customization services based on your technical drawings or specifications to meet your specific needs.These rods are available in standard sizes or can be customized in terms of diameter and others.

Customizable Parameters

Dimensional Accuracy
diameter：5-50mm (±1-3mm tolerance)
contact us for other sizes.

Length
Up to 1000mm

Pore size
0.2 μm and 15 μm

Cross-Sectional Shapes
Round

Special Processing Options

- Cutting
- Custom Shapes
- Drilling

Customization Process

1. **Inquiry & Design** — Submit your **detailed** requirements
2. **Mold & Samples** — Proceed with mold/sample creation
3. **Confirmation** — Confirm specifications and contract
4. **Delivery** — Safe and efficient shipping

Fast Response Commitment

From drawing confirmation to functional prototype delivery

15 Days

Porous Alumina Rod Usage Guide:

Install

- Install according to the equipment design and alignment.
- Match pore orientation with gas or liquid flow direction.

Cleaning & Maintenance

- Use ultrasonic cleaning or mild chemical solutions.
- Avoid harsh acids outside specification and mechanical abrasion.
- Regular cleaning keeps pores unblocked and performance stable.

Storage

- Keep the packaging sealed until use.
- For long-term storage, use desiccators or vacuum-sealed bags.
- Store in a dry, clean, dust-free environment.

Important Note

- Clear blockages by back-flushing with clean air or solvents.
- For severe clogging, soak in suitable cleaning agents, then use ultrasonic cleaning.
- Ensure rods are fully dried before reuse in high-temperature systems.

Do's

- Inspect for cracks before use
- Clean with alcohol or acetone
- Heat/cool gradually (3-5° C/min)
- Store in dry environment

Don'ts

- Drop or impact
- Expose to thermal shock
- Apply uneven pressure
- Use with incompatible materials

Technical Support

Technical Inquiry: info@adcerax.com
Service Hotline: +86-0731-84428843
Whatsapp: +86-19311583352

Porous Alumina Ceramic rod FAQ:

- **Q: How does Alumina Porous Ceramic perform in corrosive environments?**
  A: It provides excellent resistance to a wide range of acids and chemicals, making it suitable for use in corrosive conditions.
- **Q: What pore size range can porous alumina rods achieve?**
  A:Pore sizes can be customized from 0.1 μm to 15 μm, making them suitable for both precision filtration and gas diffusion.
- **Q: Are porous alumina ceramic rods resistant to strong chemicals?**
  A: Yes, they perform reliably in strong acid and alkali environments without degradation.
- **Q: Can I order custom sizes of alumina porous ceramic core rods?**
  A: Absolutely, we manufacture according to drawings or samples, with tolerances up to ±1 mm
- **Q: How do alumina porous ceramic core rods differ from dense alumina rods?**
  A: Porous rods have controlled pore networks for flow, diffusion, and adsorption, while dense rods are used mainly for structural and insulation purposes.
- **Q: Where can I get reliable pricing for alumina porous ceramic core rods quotes?**
  A: We provide transparent quotations and quick responses, helping you evaluate costs accurately before bulk orders.

Service Support

ADCERAX is committed to providing comprehensive service support to customers, from product selection to after-sales maintenance.

Pre-Sales Support

- Expert technical team provides custom design advice
- Sample testing and performance verification
- Technical parameter consultation

Sales Support

- Order tracking and production progress updates
- Professional packaging and logistics solutions

After-Sales Service

- Product quality assurance and problem resolution
- Technical consultation and application support
- 24-hour response commitment

Quality Assurance

- Strict quality control system
- Product performance testing and verification

Contact Our Specialist Team

Customer Service: info@adcerax.com

Service Hotline: +86-0731-84428843

Online Support: adcerax.com/support

Contact Us

ADCERAX looks forward to cooperating with you and providing high-quality porous alumina rod solutions. Our team is dedicated to serving you with any questions or needs you may have.

Contact Information

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Inquiry Process

1. **Submit Inquiry**
   Submit your requirements via email, phone, or website form.
2. **Technical Evaluation**
   Our expert team evaluates your needs and provides solutions.
3. **Quotation Confirmation**
   Provide detailed quotation and delivery time based on your requirements.
4. **Order Confirmation**
   Confirm order and arrange production and delivery.

Get a Quote Now

We promise to respond to your inquiry within 24 hours.

Ready to enhance your product performance with porous alumina rod? Contact our team for personalized consultation, technical support, and competitive quotations.

Get A Quote