ADCERAX
ADVANCED CERAMICS

Porous Alumina Ceramic Tube

Customize Porous Alumina Tube for Gas & Liquid Filtration

Contact Information

- Tel: +86-0731-84428843
- Whatsapp: +86-19311583352
- E-mail: info@adcerax.com
- Website: https://adcerax.com
- Address: Building 108, Industrial Park, Liling city Hunan Province, China

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

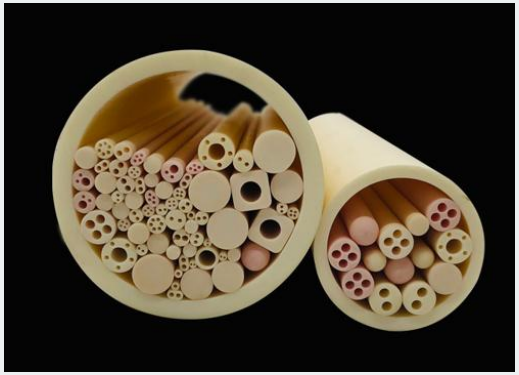
What is Porous Alumina Tube?

A porous alumina tube is a tubular ceramic component made mainly from aluminum oxide (Al2O3) with a controlled network of interconnected pores inside the material.

Unlike dense alumina tubes, it is not fully solid. Its porous structure allows gas or liquid to pass through, or helps the tube perform functions such as filtration, diffusion, insulation, separation, or flow control.

Common Applications:

- Filtration: Used for filtering gases, molten materials, or liquids in industrial systems.
- Gas diffusion and sparging: Used to distribute gas uniformly into liquids or process chambers.
- Membrane support:Can act as a support structure for ceramic membrane systems.
- Laboratory and chemical systems:Used where chemical resistance and dimensional stability are important.



Porous Alumina Tube Process

Raw Material Preparation

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

Forming

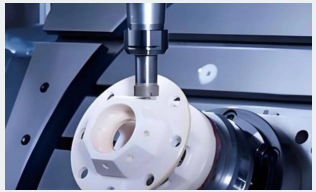
Extrusion: Alumina slurry is extruded through a die into continuous tubular shapes.
Isostatic Pressing: Powder is molded under high pressure to form high-density, uniform tubes.
Slip Casting: Liquid slurry is cast into a mold and solidified.

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 Tube Properties

Property	Unit	99.7% Al2O3	99.5% Al2O3	99% Al2O3	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

High temperature resistance

It can work in elevated-temperature environments where polymer or metal porous parts may fail.

Chemical stability

Alumina resists many corrosive environments and remains stable in many industrial processes.

Controlled porosity

The pore size and porosity level can be adjusted for different filtration or diffusion needs.

Good mechanical rigidity

Compared with many other porous materials, porous alumina offers better structural stability.

Electrical insulation

Because alumina is a ceramic insulator, the tube can also be suitable for applications requiring non-conductive materials.

Engineering Features

1. Stable Permeability

Maintains consistent flow characteristics under high heat and pressure, supporting frequent Clean-In-Place (CIP) cycles.

2. Uniform Diffusion

Fine, interconnected pore structure promotes even gas/liquid delivery across the entire tube surface.

3. Structural Integrity

High mechanical strength prevents structural softening or deformation during prolonged exposure to harsh solvents.

Porous Alumina Tube

Controlled-Porosity Ceramic Membrane Tube

SPECIFICATIONS

Pore Size (μm)	**10–200**
Porosity (%)	**30-50**
Acid Resistance (%)	**99.8**
Alkali Resistance (%)	**96**
Air Flow ($m^3/m^2 \cdot h$)	**2000**

APPLICATIONS

Gas Filtration · Liquid Microfiltration · Gas Diffusion · Sensor Protection

KEY FEATURES

1. Interconnected pore network for precise gas/liquid permeability control
2. Pore sizes 1–100 μm; 1–2 μm grades for hot gas-solid separation
3. Stable permeability under CIP, solvents, and repeated thermal cycles
4. Lifespan 3 months to 2+ years depending on media conditions

🎯 Porous Alumina Tube Size

Type 1 -Microporous Alumina Filter Tube Closed One End

Item No.	Outer Diameter（mm）	Inner Diameter（mm）	Length（mm）	Hole Diameter（μm）	Purity %
AT-FT-1001	35	15	500	0.5-5	90%
AT-FT-1002	38	30	1200	1-5	90%
AT-FT-1003	40	22	150	0.5-5	90%
AT-FT-1004	50	42	300	0.5-5	90%
AT-FT-1005	60	40	200	10-50	90%
AT-FT-1006	60	40	1500	10-50	90%
AT-FT-1007	70	60	430	0.5-5	90%
AT-FT-1008	120	100	300	10-100	90%
AT-FT-1009	20-200	14-180	50-1500	Cutomize	Cutomize

**Note: The table above shows only some standard specifications. contact us for customize more size.*

Porous Alumina Tube Size

Type 2-Microporous Alumina Filter Tube Open Both Ends

Item No.	Outer Diameter（mm）	Inner Diameter（mm）	Length（mm）	Hole Diameter（μm）	Purity %
AT-FT-2001	20	12	200	0.8	90%
AT-FT-2002	30	20	600	0.1-5	90%
AT-FT-2003	50	38	250	0.1-5	90%
AT-FT-2004	50	30	370	0.8	90%
AT-FT-2005	65	53	400	0.1-5	90%
AT-FT-2006	90	75	900	1-200	90%
AT-FT-2007	100	60	1000	1-200	90%
AT-FT-2008	100	70	1000	1-200	90%
AT-FT-2009	120	80	1000	1-200	90%
AT-FT-2010	190	130	1000	1-200	90%
AT-FT-2011	200	140	1000	1-200	90%
AT-FT-2012	250	190	1000	1-200	90%
AT-FT-2013	20-250	12-230	50-2000	Customize	Customize

**Note: The table above shows only some standard specifications. contact us for customize more size.*

Porous Alumina Tube Size

Type 3-Microporous Alumina Filter Tube
Closed One End with Flange

Item No.	Outer Diameter（mm）	Inner Diameter（mm）	Length（mm）	Hole Diameter(μm)	Purity %	Flange Diameter (mm)	Flange Height (mm)
AT-FT-3001	50	20	500	1	90%	65	8
AT-FT-3002	75	45	700	1-5	90%	88	8
AT-FT-3003	100	60	700	1-100	90%	120	10
AT-FT-3004	150	100	1000	1-200	90%	180	15
AT-FT-3005	200	140	1000	1-200	90%	230	15

**Note: The table above shows only some standard specifications. contact us for customize more size.*

Porous Alumina Tube Size

Type 4-Microporous Alumina Filter Tube Open Both Ends with Flange

Item No.	Outer Diameter（mm）	Inner Diameter（mm）	Length（mm）	Hole Diameter（μm）	Purity %	Flange Diameter (mm)	Flange Height (mm)
AT-FT-4001	20	12	200	1-5	90%	35	5
AT-FT-4002	30	20	600	1-5	90%	40	5
AT-FT-4003	50	38	250	1-5	90%	65	8
AT-FT-4004	50	30	370	1-10	90%	70	8
AT-FT-4005	65	53	400	1-10	90%	73	8
AT-FT-4006	90	75	900	1-100	90%	110	9
AT-FT-4007	100	60	1000	1-200	90%	125	10
AT-FT-4008	100	70	1000	1-200	90%	130	10
AT-FT-4009	120	80	1000	1-200	90%	135	10
AT-FT-4010	190	130	1000	20-500	90%	210	15
AT-FT-4011	200	140	1000	20-500	90%	240	15
AT-FT-4012	250	190	1000	20-500	90%	275	15
AT-FT-4013	20-250	12-230	50-2000	Customize	90%	Customize	Customize

Porous Alumina Tube Applications

Water Treatment & Environmental

Membrane Supports

High-flux support for microfiltration and ultrafiltration layers.

Gas Aeration

Fine bubble diffusion for efficient wastewater treatment.

Bioreactors

Oxygen and air diffusion for biological processing.

Chemical & Pharmaceutical

Liquid Clarification

Removal of particulates from aggressive chemical streams.

Catalyst Carriers

Porous structure for high-surface-area catalyst immobilization.

Corrosive Filtration

Handling strong acids and alkalis without degradation.

Thermal & Industrial Furnaces

Gas Distribution

Uniform gas delivery in high-temperature CVD/sintering processes.

Protection Sleeves

Thermocouple protection in corrosive furnace atmospheres.

Heat Exchangers

Components for specialized ceramic heat recovery systems.

Laboratory & Research

Gas Sampling

Precision filtration for analytical instrumentation.

Micro-Reactors

Controlled gas diffusion for small-scale chemical synthesis.

Sterile Filtration

Autoclavable components for life science research.

Customize Porous Alumina Tube

Tailored Engineering Solutions Based on Your Technical Drawings

Precision Dimensions

Custom Outer Diameter (OD) and Inner Diameter (ID) configurations.

Variable lengths tailored to specific module or housing requirements.

Strict wall thickness control with tolerances down to ±0.1mm.

Advanced End Designs

Standard open ends or precision-sealed closed ends.

Counterbore machining for secure O-ring integration.

Grooved or stepped profiles for specialized potting and assembly.

Complex Cross-sections

Standard round profiles for traditional filtration systems.

Optional rectangular, square, or triangular channel geometries.

Multi-channel configurations for compact manifold designs.

Specialized Surface Finishes

As-sintered finish for standard industrial applications.

Precision ground surfaces for tight assembly fits.

Lapped or polished finishes for high-performance bonding and sealing.

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 Tube Usage Guide

Installation

- Support the tube evenly along its full length; avoid point loading.
- Use seal compression or potting adhesives designed for ceramics.

Operation

- Ramp temperature gradually and avoid sudden quenching.
- For diffusion applications, set gas flow/ΔP within the specified permeability band.

Cleaning

- Flush with filtered water to remove loose particulates.Do not use acidic or alkaline s
- For fouling, use recommended alkaline or oxidizing solutions at controlled temperature, followed by thorough rinsing.

Common Mistakes

- Over-tightening clamps → replace with saddle supports to distribute load.
- Thermal shock from cold liquid on hot tubes → allow cooling before cleaning.
- Chemical incompatibility → confirm solution pH and oxidizer concentration with the supplier.

Technical Support

Technical Inquiry: info@adcerax.com

Service Hotline: +86-0731-84428843

Whatsapp: +86-19311583352

Porous Alumina Tube FAQ

- **Q: Can I request a quote for the porous alumina tube price?**
  A: Yes, you can send us the dimensions, pore size, and expected quantity, and we will provide a detailed price quote. We also include lead time options, cost comparison between standard and customized tubes, and packaging details.

- **Q: Do you offer wholesale supply for porous alumina tubes?**
  A: We supply porous alumina tubes in bulk directly from China with reinforced export cartons and wholesale pricing tiers. Wholesalers and distributors can also request customized labeling and bundled shipments for regional distribution..

- **Q: Do you have a porous alumina tube factory?**
  A:Yes, ADCERAX is a China-based porous alumina tube factory with in-house equipment for extrusion, sintering, and precision machining. This allows us to meet diverse requirements from research orders to bulk industrial supply.

- **Q: Can you customize porous alumina tubes for special projects?**
  A: We offer custom specifications for ID/OD, wall thickness, pore size, and end-face design based on customer drawings. Engineers can also request technical consultation and sample runs before scaling to wholesale manufacturing.

- **Q: What pore size is suitable for industrial gas-solid separation?**
  A: Pore sizes of 1μm–2μm are typically used for hot gas filtration in exhaust or flue gas systems.

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 porous alumina tube solutions. Our team is dedicated to serving you with any questions or needs you may have.

Contact Information

+86-0731-84428843
info@adcerax.com
+86-19311583352
adcerax.com
Building 108, Industrial Park, Liling city Hunan Province, China

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 in touch with us

We promise to respond to your inquiry within 24 hours.

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

Get A Quote