

ZIRCONIA TUBES


— Yttria Stabilized Zirconia Tube Open Both Ends


Precision Yttria-Stabilized Zirconia Tubes for High-Performance Applications




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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



What is YSZ Tube Open Both Ends?

A YSZ Tube Open Both Ends is a tubular ceramic component made from yttria-stabilized zirconia, with a hollow passage running through the full length and both ends left open.

YSZ open-ended tubes are commonly used in:

- ◆ thermal and furnace systems
- ◆ sensor and probe protection
- ◆ insulating sleeves
- ◆ high-temperature guide tubes
- ◆ wear-resistant passages for powder, gas, or small components



YSZ Tube Open Both Ends 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.

YSZ Ceramic Tube Open Both Ends Properties

Property	Specification
Density	~5.7 g/cm ³
Flexural Strength	>800 MPa
Fracture Toughness	8–10 MPa·m ^{1/2}
Thermal Expansion Coefficient	Thermal Expansion Coefficient
Maximum Operating Temperature	>1000 °C continuous
Hardness (Vickers HV1)	~12 GPa
Corrosion Resistance	<2% weight loss, 48h H ₂ SO ₄ exposure

Selection checklist

- Confirm continuous service temperature and thermal cycling severity.
- Match ID to sensor, gas flow, or media passage requirement.
- Check wall thickness versus compressive load and assembly method.
- Define end finish, tolerance, and surface condition before quotation.

Size range overview

OD 0.7–100 mm

ID 0.3–90 mm

Length up to 600 mm depending on model

Micro 0.7–1.5 mm OD ≤100 mm

Small 2–10 mm OD ≤500 mm

Medium 12–16 mm OD ≤600 mm

Large 18–100 mm OD ≤600 mm

Technical Advantages

The value is not just “zirconia.” It is the combination of toughness, compressive strength, and dimensional stability that helps the tube survive demanding thermal and mechanical duty.



Up to 1000 °C service temperature

Supports long-term operation in heating systems where thermal stability is mandatory.



6–8 MPa·m^½ fracture toughness

Helps resist crack initiation and propagation during repeated heat-cool cycling.



1600–2300 MPa compressive strength

Improves resistance to clamping load, packing load, and structural compression.



480–1000 MPa bending strength

Provides a stronger margin against handling and installation stress.



1200–1450 HV1 hardness + corrosion resistance

Reduces wear, surface damage, and contamination risk in hostile media.



Global OEM Supply

Factory-direct pricing, 24h dispatch for standard sizes

Yttria Stabilized Zirconia Tube Open Both Ends

High-Temperature Yttria Stabilized Zirconia Tube

SPECIFICATIONS

Material	Yttria Stabilized Zirconia (YSZ)
Typical Purity	ZrO ₂ + Y ₂ O ₃ stabilized
Max Temperature	Up to 2200°C
Density	5.65-6.05 g/cm ³
Customization	Custom OD, ID, length, and wall thickness available

APPLICATIONS

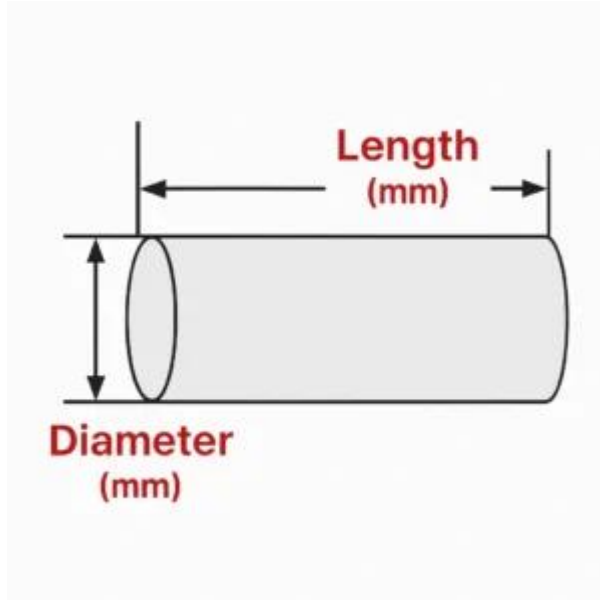
Thermocouple Protection · Furnace Insulation · Powder Transfer · Gas Flow Handling · High-Temperature Testing · Laboratory Furnaces · Industrial Heat Treatment



KEY FEATURES

- 1 Open-both-ends design allows easy gas passage, probe insertion, and system integration
- 2 Yttria stabilized zirconia offers excellent thermal stability for demanding high-temperature environments
- 3 Low thermal conductivity helps improve insulation efficiency and reduce heat loss
- 4 Good thermal shock resistance and dimensional stability support longer service life in repeated heating cycles

Yttria Stabilized Zirconia Tube Open Both Ends size:



Model	Outer Diameter (mm)	Inner Diameter (mm)	Length (mm)
AT-YHG-G001	0.7	0.3	≤100
AT-YHG-G002	0.8	0.4	
AT-YHG-G003	0.9	0.4	
AT-YHG-G004	1	0.5	≤300
AT-YHG-G005	1.1	0.6	
AT-YHG-G006	1.2	0.6	
AT-YHG-G007	1.3	0.7	
AT-YHG-G008	1.4	0.8	
AT-YHG-G009	1.5	0.8	
AT-YHG-G010	2.0	1.0	≤500
AT-YHG-G011	3.0	1.5	
AT-YHG-G012	3.0	2.0	
AT-YHG-G013	4.0	2.0	
AT-YHG-G014	4.0	3.0	
AT-YHG-G015	5.0	3.0	
AT-YHG-G016	5.0	3.5	

🌀 Yttria Stabilized Zirconia Tube Open Both Ends size:

Model	Outer Diameter (mm)	Inner Diameter (mm)	Length (mm)
AT-YHG-G017	6.0	4.0	≤500
AT-YHG-G018	7.0	4.5	
AT-YHG-G019	8.0	4.0	
AT-YHG-G020	8.0	5.0	
AT-YHG-G021	9.0	6.0	
AT-YHG-G022	10.0	4.0	
AT-YHG-G023	10.0	6.0	
AT-YHG-G024	10.0	7.0	
AT-YHG-G025	12.0	4.0	
AT-YHG-G026	12.0	8.0	
AT-YHG-G027	14.0	4.0	≤600
AT-YHG-G028	14	10	
AT-YHG-G029	15	11	
AT-YHG-G030	16	12	
AT-YHG-G031	18	14	
AT-YHG-G032	17.5	11.1	

Model	Outer Diameter (mm)	Inner Diameter (mm)	Length (mm)
AT-YHG-G032	17.5	11.1	≤600
AT-YHG-G033	20	15	
AT-YHG-G034	25	19	
AT-YHG-G035	30	25	
AT-YHG-G036	40	30	
AT-YHG-G037	44	38	
AT-YHG-G038	50	40	
AT-YHG-G039	60	50	
AT-YHG-G040	70	60	
AT-YHG-G041	80	70	
AT-YHG-G042	90	80	
AT-YHG-G043	100	90	

YSZ Tube Open Both End Applications

High-temperature furnace systems



Challenge

heat-cool cycling can trigger cracking, stoppages, and consumable waste.

Value

fracture toughness, flexural strength, and lower thermal conductivity help the tube survive cycling more reliably.

Result

Improved tube reliability in repeated heat-cool cycles, with lower cracking risk, fewer shutdown interruptions, and more stable long-term furnace operation.

Chemical reactor protection



Challenge

aggressive media can attack lower-performing tubes and introduce contamination risk.

Value

corrosion resistance and high compressive strength support longer service in acidic or alkaline systems.

Result

Better resistance to corrosive media and contamination, helping maintain process stability, protect internal components, and support longer service life.

Precision thermocouple sheaths



Challenge

Industrial furnace manufacturer needed multiple heating element protection in compact space with superior electrical insulation.

Value

hardness, compressive strength, and stable expansion behavior improve sensor protection and reading stability.

Result

More stable thermocouple protection in compact high-temperature setups, supporting consistent insulation performance, accurate signal transmission, and longer service intervals.

Customization Services for YSZ Ceramic Tube

When a standard tube does not match the equipment, ADCERAX offers application-driven customization rather than forcing compromises in bore size, wall thickness, or end finish.

Customizable Parameters

Dimensional adaptation

- Outer profile aligned to fixture or housing constraints.
- Inner bore sized for flow passage or sensor accommodation.
- Overall length configured to match equipment depth.

Material engineering

- Stabilizing mix selected for a balance of toughness and hardness.
- Crystal density optimized for aggressive service conditions.
- Thermal traits tuned for more stable cycle behavior.

Surface treatment

- Polished ends for sealing and alignment quality.
- Smooth bore to reduce friction and support cleaner flow.
- Optional protective surface approach for corrosive exposure.



Customization Process



Fast Response Commitment

From drawing confirmation to functional prototype delivery

15 Days

YSZ Ceramic Tube Open Both End Usage Guide

--- Proper Handling Practices

- ✓ Always handle tubes with protective gloves to avoid micro-cracks from accidental slips.
- ✓ Use padded clamps or fixtures to prevent localized stress during installation.
- ✓ Avoid sudden impacts or dropping, as fracture toughness has limits under shock loads.

--- Installation Guidelines

- ✓ Align the tube carefully with furnace or reactor components to reduce stress points.
- ✓ Do not overtighten mechanical fittings; allow slight tolerance for thermal expansion.
- ✓ Ensure secure seating for thermocouple sheaths to maintain accurate sensor readings.

--- Storage and Maintenance Tips

- ✓ Store tubes in a clean, dry environment free of corrosive gases and direct sunlight.
- ✓ Use protective sleeves or boxes to separate tubes and avoid surface abrasion.
- ✓ Perform periodic cleaning with neutral solutions; avoid hydrofluoric acid exposure.

--- Safety and Performance Notes

- ✓ Operate below the maximum service temperature of 1000°C for extended durability.
- ✓ Avoid rapid temperature gradients that exceed recommended thermal shock resistance.
- ✓ Monitor for discoloration or surface wear as early signs of material stress.



Technical Support

✉ Technical Inquiry: info@adcerax.com

📞 Service Hotline: +86-0731-84428843

💬 Whatsapp: +86-19311583352

YSZ Ceramic Tube Open Both End FAQ

✓ **Q: How does it perform under rapid thermal cycling?**

A: It offers high fracture toughness and resists cracking during repeated heating and cooling, making it reliable for cyclic high-temperature service.

✓ **Q: Why is it better than alumina tubes in reactor environments?**

A: It provides better toughness and strong chemical stability, helping reduce breakage risk and extend service life in harsh reactor conditions.

✓ **Q: Can it protect thermocouples from mechanical stress?**

A: Yes. Its high hardness and compressive strength help protect thermocouples from vibration, abrasion, and mechanical damage.

✓ **Q: Why is it suitable for high-pressure operations?**

A: Its dense structure and high compressive strength help prevent cracking or collapse under demanding operating conditions.

✓ **Q: How does it handle wear and abrasion?**

A: Its high hardness improves resistance to abrasive media and helps maintain stable performance over longer service cycles.



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

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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 in touch with us

We promise to respond to your inquiry within 24 hours.

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

[Get A Quote](#)