ADCERAX
ADVANCED CERAMICS

ZIRCONIA TUBES

—— YSZ Tube with One End Closed

Closed-End YSZ Ceramic Tube for Harsh Thermal and Corrosive Environments

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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 zirconia 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 CQM CERTIFICATION RoHS COMPLIANT

What is YSZ Tube with One End Closed?

A YSZ tube with one end closed is a tubular ceramic component made from yttria-stabilized zirconia, with one sealed end and one open end. It is used when the application needs a heat-resistant, chemically stable, and mechanically reliable ceramic barrier rather than a through-passage tube.

YSZ tube with one end closed 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 with One End Closed Process

Raw Material Preparation

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

Forming

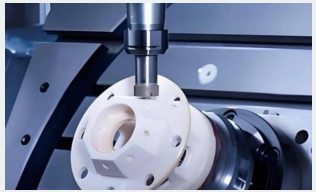
Extrusion: Alumina slurry is extruded through a die into continuous tubular shapes.
Isostatic Pressing: Powder is molded under high pressure to form high-density, uniform tubes.
Slip Casting: Liquid slurry is cast into a mold and solidified.

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/cm³
Flexural Strength	>800 MPa
Fracture Toughness	8–10 MPa·m½
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

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

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.

Technical Advantages

What makes this closed-end YSZ tube a better risk-control component

≥1000 °C
Stable service temperature for continuous thermal duty

480–1000 MPa
Bending strength for improved structural reliability

1600–2300 MPa
Compressive strength to resist deformation under load

6–8 MPa·m½
Fracture toughness that helps resist crack propagation

Value to the Customer

- Lower thermal conductivity helps reduce thermal shunting and supports more stable measurement conditions.
- Closed-end structure forms a dependable barrier that protects probes, thermocouples, or internal media from process contamination.
- Good toughness compared with many conventional ceramics helps reduce sudden breakage during ramp-up, cooldown, and handling.
- Chemical inertness supports longer service life in corrosive and high-purity process environments.

Yttria Stabilized Zirconia Ceramic Tube with One End Closed

High-Temperature Closed-End Yttria Stabilized Zirconia Tube

SPECIFICATIONS

Material	**Yttria Stabilized Zirconia (YSZ)**
Typical Purity	**ZrO_2 + Y_2O_3 stabilized**
Max Temperature	**Up to 2200°C**
Density	**5.65-6.05 g/cm³**
Customization	**Custom OD, ID, length, and wall thickness available**

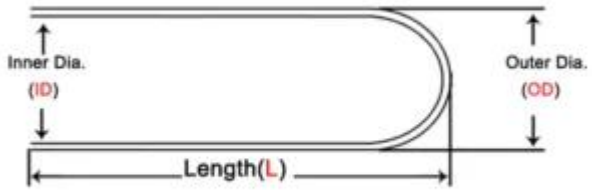
APPLICATIONS

Thermocouple Protection · Molten Metal Sensing · Furnace Temperature Measurement · Sensor Isolation · Laboratory Furnaces · Industrial Heat Treatment

KEY FEATURES

1. Closed-end design protects thermocouples and sensors from direct contact with heat, gases, or molten media
2. YSZ provides excellent high-temperature stability for demanding furnace and thermal processing conditions
3. Low thermal conductivity helps improve thermal insulation and reduce heat transfer to sensitive elements
4. Good thermal shock resistance and dimensional stability support reliable performance during repeated heating cycles

Yttria Stabilized Zirconia Ceramic Tube with One End Closed size:



Model	Outer Diameter (mm)	Inner Diameter (mm)	Length (mm)
AT-YHG-G1001	2.0	1.00	≤100
AT-YHG-G1002	3.0	3.00	
AT-YHG-G1003	4.0	2.50	
AT-YHG-G1004	5.0	3.00	
AT-YHG-G1005	6.0	3.50	
AT-YHG-G1006	6.35	3.96	
AT-YHG-G1007	7.95	4.78	
AT-YHG-G1008	8.0	5.50	≤300
AT-YHG-G1009	9.53	6.35	
AT-YHG-G1010	10.0	6.00	≤500
AT-YHG-G1011	10.0	7.00	
AT-YHG-G1012	11.13	7.95	
AT-YHG-G1013	12.0	8.00	
AT-YHG-G1014	12.7	8.90	
AT-YHG-G1015	14.0	10.00	≤600

YSZ Tube with One End Closed Applications

High-temperature sensor systems

Challenge

Direct exposure to hot gas, flame, or reactive furnace atmosphere can damage sensitive probes and shorten service life.

Value

The closed-end structure creates a protective barrier, while YSZ offers high temperature stability, crack resistance, and low thermal conductivity.

Result

Better protection for internal sensors or probe ends, helping reduce premature failure, improve measurement stability, and extend service intervals.

Molten metal and high-temperature sampling

Challenge

Sampling or temporary immersion in molten or high-temperature media requires a tube that resists thermal shock, contamination, and structural failure.

Value

YSZ combines good toughness, heat resistance, and chemical stability, while the one-end-closed design helps isolate the internal space from direct media contact.

Result

More reliable short-term exposure in demanding thermal processes, with lower contamination risk and better consistency during sampling or shielding applications.

Insulation and shielding in compact assemblies

Challenge

Compact heating, sensing, or electrical assemblies often need end protection and insulation in limited installation space.

Value

The closed-end tube helps cover and isolate critical ends or terminals, and YSZ provides strong dielectric behavior, wear resistance, and dimensional stability.

Result

Improved end protection in confined high-temperature systems, supporting safer operation, better insulation reliability, and longer component life.

Customization for YSZ Tube with One End Closed

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

End-Closure Engineering

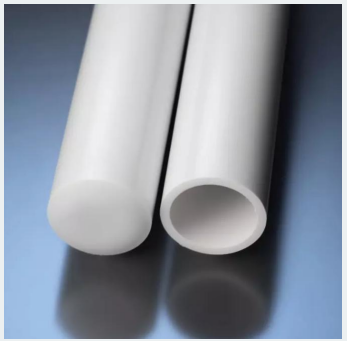
- Closure Shape — designed to enhance thermocouple protection efficiency.
- Wall Density — optimized to ensure uniform strength at closed ends.
- Seal Integrity — reinforced to prevent leakage in corrosive atmospheres.

Dimensional Adaptation

- Inner Profile — adjusted to optimize fit in sensor housings.
- Outer Profile — refined for compatibility with surrounding structures.
- Tube Length — matched for alignment in complex equipment layouts.

Surface and Finish Options

- Polished ends: Prepared for secure sealing and accurate alignment.
- Smooth bore: Facilitates reduced friction and clean flow passage
- Protective coat: Enhances durability against corrosive environments.



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

YSZ Tube with One End Closed Usage Guide

Handling and Storage Guidelines

- Always handle tubes with clean gloves to avoid surface contamination.
- Store in a dry, dust-free area to prevent moisture absorption and surface damage.
- Keep away from sudden mechanical impacts that may cause microcracks.

Installation Recommendations

- Gradually preheat tubes before reaching working temperatures above 1000 ° C.
- Ensure proper alignment when integrating with thermocouples or reactor systems.
- Avoid overtightening clamps that may induce stress fractures.

Operational Best Practices

- Maintain steady temperature ramps to reduce thermal shock during cycling.
- Use the closed-end design for applications requiring containment of gases or liquids.
- Avoid contact with hydrofluoric acid to preserve chemical stability.

Maintenance and Service Life Extension

- Clean gently with non-abrasive tools to preserve surface finish.
- Record operational hours and conditions to track performance history.
- Conduct periodic inspections under magnification to detect early-stage cracking.

Technical Support

Technical Inquiry: info@adcerax.com

Service Hotline: +86-0731-84428843

Whatsapp: +86-19311583352

YSZ Tube with One End Closed FAQ

- **Q: What makes the YSZ tube with one end closed suitable for continuous furnace operation?**
  A: It can work at temperatures above 1000° C while maintaining dimensional stability. Its low thermal conductivity also helps reduce thermal interference and support accurate readings.
- **Q: Can the Yttria Stabilized YSZ tube with one end closed prevent gas leakage in high-temperature probes?**
  A: Yes. Its closed-end design helps block hot gases or process media from reaching sensitive thermocouple junctions, improving data stability and sensor life.
- **Q: How effective is the YSZ tube with one end closed in corrosive chemical environments?**
  A:It offers good resistance to many acids and alkalis, except hydrofluoric acid. This helps support longer service life in demanding chemical environments.
- **Q: Why is density important in the YSZ tube with one end closed?**
  A: High density helps resist molten metal penetration and reduces contamination risk. It also supports more reliable testing results.
- **Q: What is the advantage of thermal expansion compatibility in the YSZ tube with one end closed?**
  A: Its thermal expansion behavior is closer to some metal assemblies, helping reduce sealing failure and fit-up problems during temperature changes.

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.

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 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