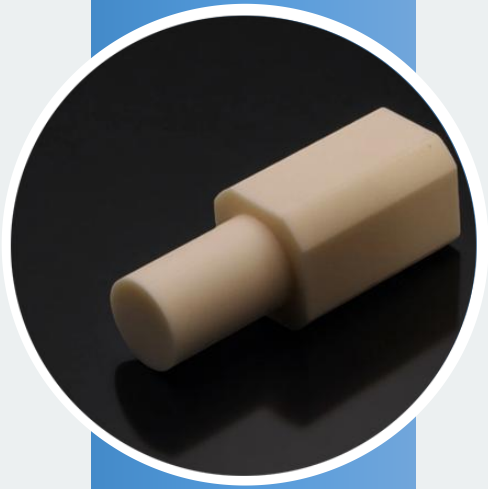
ADCERAX
ADVANCED CERAMICS

Alumina Ceramic Support Shaft



Custom Alumina Ceramic Support Shaft for Kiln & Process Lines

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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 rods, 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 Alumina Ceramic Support Shaft?

Alumina Ceramic Support Shaft is a rigid shaft-shaped ceramic component made mainly from aluminum oxide (Al2O3). It is used to support, position, guide, or carry loads in equipment where wear resistance, electrical insulation, corrosion resistance, and high-temperature stability are important.)

Common Applications:

- kiln and furnace equipment
- rollers and conveying support systems
- pumps, mixers, and mechanical assemblies
- industrial fixtures and wear support parts
- insulating and positioning components in precision equipment

Alumina Ceramic Support Shaft Process

Raw Material Preparation

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

Forming

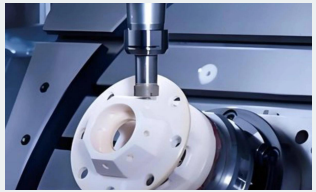
Extrusion: Alumina slurry is extruded through a die into continuous tubular shapes.
Isostatic Pressing: Powder is molded under high pressure to form high-density, uniform tubes.
Slip Casting: Liquid slurry is cast into a mold and solidified.

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.

Alumina Ceramic Support Shaft 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

When a support shaft serves both as a load-bearing part and a locating feature, the design details below often matter more than the material name itself.

Thermal stability for hot-zone duty

The product page rates the support shaft for operation up to 1600°C in kiln, furnace and process equipment assemblies.

Predictable fit at support points

Standard OD/ID tolerance is ±0.1 mm, while custom-ground critical zones can be defined tighter for alignment-sensitive interfaces.

Functional-zone finishing

Ground and polished seat areas help control slip-fit, press-fit and contact behavior without over-machining non-critical areas.

Strength and insulation in one part

High-purity alumina combines compressive strength, wear resistance, chemical stability and excellent electrical insulation.

Material flexibility for real process conditions

Grades from 96% to 99% alumina help balance cost, heat resistance, surface finish requirement and application severity.

Performance Comparison

1. Better wear resistance than conventional metal support shafts.
2. Excellent electrical insulation for equipment requiring non-conductive support.
3. More stable under heat than many polymer support components.
4. Longer service life in demanding industrial environments.

Alumina Ceramic Support Shaft

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-AX-001
Material	Al2O3(Alumina)
Purity Options	96% / 99% / 99.5% / 99.7%
Max. Working Temp.	1450° C (95%) - 1730° C (99.7%)
Diameter Range	Customizable according to shaft design requirements
Tolerance	Up to ±0.05 mm, depending on dimensions and machining requirements
Surface Finish	As-fired, precision ground, or polished
End Features	Chamfered, stepped, grooved, or other custom-machined ends

Industry-Specific Solutions

Furnace Support

Stable support in high-temperature equipment.

Precision Positioning

Consistent geometry for accurate assembly.

Electrical Insulation

Support and insulation in one component.

Custom Machinery

Machined to fit specific equipment needs.

Al2O3 Ceramic Support Shaft Size:

Type1: Al2O3 Ceramic Support Shaft

Item No.	Top diameter (mm)	Top inner diameter(mm)	Bottom diameter (mm)	Bottom inner diameter (mm)	Ring width (mm)	Ring thickness (mm)	Height (mm)	Purity
AT-AX-001	24	14	18	14	8	3	35	96%-99%
AT-AX-002	26	16	20	16	10	3	45	96%-99%
AT-AX-003	28	18	22	18	11	3	50	96%-99%
AT-AX-004	30	18	24	18	13	3	75	96%-99%
AT-AX-005	50	40	45	35	9	2.5	100	96%-99%
AT-AX-006	60	50	53	43	12	3.5	200	96%-99%
AT-AX-007	70	60	61	51	15	4.5	300	96%-99%
AT-AX-008	80	70	73	63	30	3.5	400	96%-99%

*Note: The table above shows only some standard specifications. For more specifications, please refer to the complete product catalogue or contact us for customization.

Al2O3 Ceramic Support Shaft Size:

Type2: Al2O3 Ceramic Support Shaft

Item No.	Top Length (mm)	Top Width（mm）	Bottom diameter (mm)	Height（mm）	Purity
AT-AX-009	8	8	4	20	96%-99%
AT-AX-010	10	10	6	40	96%-99%
AT-AX-011	16	16	12	35	96%-99%
AT-AX-012	20	20	14	70	96%-99%
AT-AX-013	22	22	15	80	96%-99%
AT-AX-014	24	24	18	50	96%-99%
AT-AX-015	28	28	20	65	96%-99%
AT-AX-016	30	30	15	70	96%-99%
AT-AX-017	35	35	22	90	96%-99%
AT-AX-018	38	38	28	100	96%-99%
AT-AX-019	40	40	30	120	96%-99%
AT-AX-020	50	50	35	160	96%-99%

*Note: The table above shows only some standard specifications. For more specifications, please refer to the complete product catalogue or contact us for customization.

Al2O3 Ceramic Support Shaft Size:

Type3: Al2O3 Ceramic Support Shaft

Item No.	Outer diameter (mm)	Inner diameter (mm)	Length（mm)	Purity
AT-AX-021	5	3	10	96%-99%
AT-AX-022	7	3	120	96%-99%
AT-AX-023	10	6	50	96%-99%
AT-AX-024	16	11	70	96%-99%
AT-AX-025	20	14	200	96%-99%
AT-AX-026	35	30	80	96%-99%
AT-AX-027	40	30	120	96%-99%
AT-AX-028	58	48	130	96%-99%
AT-AX-029	60	50	150	96%-99%
AT-AX-030	80	70	200	96%-99%

*Note: The table above shows only some standard specifications. For more specifications, please refer to the complete product catalogue or contact us for customization.

Typical Applications & What Customers Care About Most

Kiln & furnace equipment

Challenge
Metal shafts can deform, oxidize, or wear under continuous heat, leading to misalignment, unstable support, and shorter service life.

Why Alumina Works
Alumina ceramic support shafts offer high hardness, strong heat resistance, and oxidation stability, helping maintain straightness and reliable support in high-temperature equipment.

Observed result
Support becomes more stable, shaft wear is reduced, and furnace operation stays more consistent over long production cycles.

Process pumps, mixers and maintenance assemblies

Challenge
Support components in pumps and mixers may suffer from corrosion, abrasive wear, and dimensional drift, which can affect running stability and maintenance frequency.

Why Alumina Works
Alumina ceramic support shafts provide excellent wear resistance, chemical stability, and dimensional consistency, making them suitable for demanding process equipment.

Observed result
Component life is extended, maintenance intervals are longer, and equipment performance remains more stable during operation.

Industrial fixtures and wear supports

Challenge
Repeated loading, sliding contact, and abrasive environments can quickly damage conventional support parts, causing positioning errors and frequent replacement.

Why Alumina Works
Alumina ceramic support shafts combine high surface hardness, wear resistance, and structural stability, making them effective for precision support and long-term use.

Observed result
Fixture durability improves, positioning remains more reliable, and downtime caused by worn support parts is reduced.

Customize Al2O3 Ceramic Support Shaft

Customers usually need a custom shaft because a standard part cannot protect the real interface, load path or maintenance schedule.

What you can customize

OD/ID/wall design

Straight or stepped shaft, thick-wall or thin-wall sections, single or multi-step diameters.

Overall length & effective bearing length

Single-span or multi-support span, defined functional seat length, and optional segmented fits.

End details

Stepped ends, chamfers, lead-in tapers, shoulders, relief grooves, radius blends at transitions.

Processing type

Concentricity and runout callouts on critical seats, straightness zones along long shafts, and datum references for alignment.

Surface finish by zone

As-fired finish on non-contact areas, ground seats, local polishing of bearing zones, and optional end-face lapping.

Functional features

Flats for anti-rotation, shallow slots or keyways, orientation marks or witness lines for installation direction.

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

Alumina Ceramic Support Shaft Usage Guide

Installation

- Check dimensions, alignment, and contact surfaces before installation.
- Handle the ceramic carefully and avoid force, impact, or local over-clamping.
- Keep proper support and expansion clearance during assembly.

Operation

- Operate within the recommended temperature and load range.
- Avoid thermal shock, uneven heating, and direct local overheating.
- Stop operation and inspect the part if cracks, warping, or discoloration appear.

Storage and Transportation

- Store parts on dry, cushioned, full-length supports.
- Avoid stacking, rolling, collision, or unsupported placement.
- Secure parts well during transport to prevent movement and damage.

Cleaning and Routine Inspection

- Clean with compressed air, a soft brush, or other non-abrasive methods.
- Do not use metal tools, hard scraping, or unsuitable chemicals.
- Inspect regularly for cracks, chips, wear, or abnormal surface changes.

Technical Support

Technical Inquiry: info@adcerax.com

Service Hotline: +86-0731-84428843

Whatsapp: +86-19311583352

Alumina Ceramic Support Shaft FAQ

- **Q: When should I choose an alumina ceramic support shaft instead of a metal shaft?**
  A: Use an alumina ceramic support shaft when support points face high temperature, corrosion, or insulation demands and metal shafts deform, corrode, or drift out of tolerance.

- **Q: What information must be on the drawing for an alumina ceramic support shaft?**
  A: Include OD/ID, overall length, critical seat lengths, tolerances and GD&T on functional zones, surface finish by zone, and any special end features or chamfers.

- **Q: Can an alumina ceramic support shaft directly replace a metal shaft?**
  A: Sometimes yes, but you must re-check contact stress, fit type, and thermal expansion gaps, since ceramics do not yield like metals and are less tolerant of shock.

- **Q: What tolerance level is realistic for an alumina ceramic support shaft?**
  A: Most projects define tighter tolerances only on functional seats, typically in a fine-machined range, and keep non-contact sections more relaxed to balance cost and risk.

- **Q: How should I specify surface finish on an alumina ceramic support shaft?**
  A: Assign a defined roughness range to bearing and seal seats, note any polishing requirements, and allow standard finish on non-contact areas to avoid unnecessary machining.

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 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 in touch with us

We promise to respond to your inquiry within 24 hours.

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

Get A Quote