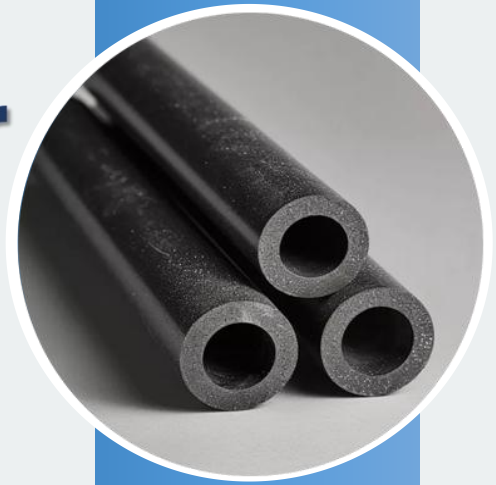
ADCERAX
ADVANCED CERAMICS

Silicon Carbide Kiln Roller



——Stable transport, straighter spans, and longer firing campaigns for continuous roller-hearth kilns.

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 silicon carbide tube, 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 Silicon Carbide Kiln Roller?

Silicon Carbide Kiln Roller is a high-temperature ceramic roller made from silicon carbide, used in roller kilns to carry and move ceramic products through firing zones. It is selected for its high bending strength, excellent thermal shock resistance, good oxidation resistance, and stable performance under continuous high-temperature service.

Typical Applications of Silicon Carbide Kiln Rollers

- Roller kilns for ceramic tile firing
- Sanitary ware firing lines
- Tableware and porcelain production
- Technical ceramic sintering processes

Silicon Carbide Kiln Roller Process

Raw Material Preparation

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

Forming

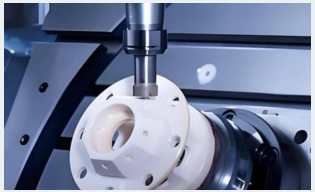
Extrusion: Alumina slurry is extruded through a die into continuous tubular shapes.
Isostatic Pressing: Powder is molded under high pressure to form high-density, uniform tubes.
Slip Casting: Liquid slurry is cast into a mold and solidified.

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.

Silicon Carbide Kiln Roller Properties

Item	Unit	RBSiC (SiSiC)	SSiC	NBSiC
Full Name	—	Reaction Bonded Silicon Carbide	Sintered Silicon Carbide	Nitride Bonded Silicon Carbide
SiC Content	W%	80	99	80
Free Si	W%	20	0	0
Si_3N_4 Content	W%	0	0	20
Max. Service Temperature	°C	≤1380	≤1600	≤1550
Density	g/cm³	3.02	3.1	2.8
Apparent Porosity	%	<0.1	<0.1	12
Flexural Strength (20°C)	MPa	250	380	160
Flexural Strength (1200°C)	MPa	280	400	180
Elastic Modulus	GPa	330	420	220
Thermal Conductivity (1000°C)	W/m·K	45	74	15
Thermal Expansion Coefficient	$K^{-1} \times 10^{-6}$	4.5	4.1	5
Hardness	kg/mm²	2600	2800	2600

Technical Advantages

The value of a kiln roller is not just temperature resistance - it is stability over long, loaded, repetitive firing cycles.

Long-span rigidity

Flexural strength above 200-250 MPa and elastic modulus above 300 GPa help reduce sagging, misalignment, and vibration in long roller-hearth kilns.

6–8 MPa·m½ fracture toughness

Thermal conductivity of 35-45 W/m·K supports faster heat transfer and more uniform temperature distribution along the transport path.

Continuous high-temperature use

Reaction-bonded SiC supports continuous operation at 1,350-1,380 °C and remains stable through repeated firing cycles.

Resistance to aggressive kiln atmospheres

Low open porosity and stable behavior in alkali-rich, oxidizing, and CO/CO2 kiln atmospheres help protect the surface and slow corrosion.

Thermal shock and creep control

Stable after rapid temperature changes above 250 °C, with low creep at 1,200-1,350 °C for better straightness retention over time.

Global OEM Supply

Factory-direct pricing, 24h dispatch for standard sizes

Silicon Carbide Kiln Roller

Straight conveying with stable rotation in continuous kiln duty

SPECIFICATIONS

Material	**RBSiC (Reaction-Bonded Silicon Carbide) / NSiC (Nitride-Bonded Silicon Carbide)**
Typical Use	**Continuous kiln conveying**
Max Temperature	**Up to 1350–1380°C**
Density	**Approx. 2.8–3.02 g/cm³**
Customization	**Custom diameter, length, end finish, and straightness available**

APPLICATIONS

Roller Hearth Kilns · Tunnel Kilns · Battery Material Firing · Technical Ceramics · Powder Processing · Continuous Sintering Lines · High-Temperature Conveying

KEY FEATURES

1. Supports stable, continuous conveying in roller-hearth and tunnel kiln systems.
2. High strength and rigidity help reduce bending and roller deformation during service.
3. Good thermal shock resistance supports repeated heating and cooling cycles.
4. Helps improve firing uniformity and reduce downtime in continuous production lines.

Silicon Carbide Kiln Roller size:

Model No.	Size （mm）	OD （mm）	ID （mm）	Thickness(mm）	Length(mm)
AT-THG-KB001	OD20XID12	20	12	4	50-4500mm
AT-THG-KB002	OD20XID10	20	10	5	
AT-THG-KB003	OD25XID15	25	15	5	
AT-THG-KB004	OD28XID20	28	20	4	
AT-THG-KB005	OD25XID13	25	13	6	
AT-THG-KB006	OD25.3XID17.3	25	17.3	4	
AT-THG-KB007	OD25.3XID18.3	25	18.3	3.5	
AT-THG-KB008	OD28XID18	28	18	5	
AT-THG-KB009	OD30XID22	30	22	4	
AT-THG-KB010	OD30XID18	30	18	6	
AT-THG-KB011	OD30.3XID21.3	30	21.3	4.5	
AT-THG-KB012	OD32XID24	32	24	4	
AT-THG-KB013	OD32XID22	32	22	5	
AT-THG-KB014	OD32XID20	32	20	6	
AT-THG-KB015	OD33.5XID25.5	33	25.5	4	
AT-THG-KB016	OD33.5XID23.5	33	23.5	5	
AT-THG-KB017	OD33.5XID21.5	33	21.5	6	

Silicon Carbide Kiln Roller size:

Model No.	Size（mm）	OD (mm)	ID (mm)	Thickness (mm)	Length (mm)
AT-THG-KB018	OD35XID27	35	27	4	50-4500mm
AT-THG-KB019	OD35XID25	35	25	5	
AT-THG-KB020	OD35XID23	35	23	6	
AT-THG-KB021	OD35.5XID27.5	35	27.5	4	
AT-THG-KB022	OD35.5XID25.5	35	25.5	5	
AT-THG-KB023	OD35.5XID23.5	35	23.5	6	
AT-THG-KB024	OD38XID30	38	30	4	
AT-THG-KB025	OD38XID28	38	28	5	
AT-THG-KB026	OD38XID26	38	26	6	
AT-THG-KB027	OD40XID30	40	30	5	
AT-THG-KB028	OD40XID29	40	29	5.5	
AT-THG-KB029	OD40XID28	40	28	6	
AT-THG-KB030	OD42XID32	42	32	5	
AT-THG-KB031	OD42XID30	42	30	6	
AT-THG-KB032	OD45XID35	45	35	5	

Model No.	Size（mm）	OD (mm)	ID (mm)	Thickness (mm)	Length (mm)
AT-THG-KB033	OD45XID33	45	33	6	50-4500mm
AT-THG-KB034	OD45XID31	45	31	7	
AT-THG-KB035	OD48XID38	48	38	5	
AT-THG-KB036	OD48XID36	48	36	6	
AT-THG-KB037	OD48XID34	48	34	7	
AT-THG-KB038	OD50XID40	50	40	5	
AT-THG-KB039	OD50XID38	50	38	6	
AT-THG-KB040	OD50XID36	50	36	7	
AT-THG-KB041	OD55XID43	55	43	6	
AT-THG-KB042	OD55XID39	55	39	8	
AT-THG-KB043	OD58XID46	58	46	6	
AT-THG-KB044	OD58XID44	58	44	7	
AT-THG-KB045	OD58XID42	58	42	8	
AT-THG-KB046	OD60XID48	60	48	6	
AT-THG-KB047	OD60XID46	60	46	7	

🎯 Silicon Carbide Kiln Roller size:

Model No.	Size（mm）	OD (mm)	ID (mm)	Thickness (mm)	Length (mm)
AT-THG-KB048	OD60XID44	60	44	8	50-4500mm
AT-THG-KB049	OD65XID51	65	51	7	
AT-THG-KB050	OD65XID53	65	53	6	
AT-THG-KB051	OD70XID58	70	58	6	
AT-THG-KB052	OD70XID56	70	56	7	
AT-THG-KB053	OD70XID54	70	54	8	
AT-THG-KB054	OD75XID63	75	63	6	
AT-THG-KB055	OD75XID61	75	61	7	
AT-THG-KB056	OD75XID59	75	59	8	
AT-THG-KB057	OD89XID75	89	75	7	
AT-THG-KB058	OD99XID79	99	79	10	

Customization Silicon Carbide Kiln Roller Fits the Kiln

Every kiln line is different. Your kiln roller should be engineered to match the required load, span, temperature profile, and drive system from the start.

Customizable Parameters

Roller Geometry & Structure

- Outer Diameter and Wall Thickness are selected to balance load capacity, thermal response, and service life.
- Length and Effective Span are matched to kiln width and support spacing to reduce sagging risk.
- Solid or Hollow Structure is chosen according to roller weight, bending performance, and operating conditions.

End Design & Installation Compatibility

- End Journal Design is customized to fit the drive system, bearing arrangement, and installation method.
- End Machining Details are finished for stable rotation, accurate positioning, and reliable running.
- Interface Dimensions are adapted to existing kiln layouts so replacement and integration are easier.

Thermal & Operating Adaptation

- Working Temperature Range is considered to match the firing cycle and thermal load of the kiln.
- Load and Product Distribution are evaluated to support stable conveying under continuous operation.
- Tolerance and Straightness Control are specified to help maintain smooth transport and consistent kiln performance.

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

Silicon Carbide Kiln Roller Applications

Lithium cathode calcination

Challenge

Rollers face continuous heat and thermal cycling, which can cause bending, cracking, or unstable running.

Why SiC works

SiC kiln rollers provide high hot-strength, oxidation resistance, and stable support during long firing cycles.

Observed result

Transport stays steadier, roller replacement is reduced, and production runs more smoothly.

Technical ceramic substrates

Challenge

Roller instability can cause uneven transport, non-uniform heating, and substrate warpage.

Why SiC works

SiC kiln rollers offer high stiffness, good thermal conductivity, and stable high-temperature performance.

Observed result

Conveying becomes more consistent, heat distribution improves, and defect risk is reduced.

Powder metallurgy / magnetic materials

Challenge

Long firing cycles and sustained loads can lead to sagging, oxidation damage, and short roller life.

Why SiC works

SiC kiln rollers resist thermal stress and oxidation while maintaining structural stability in continuous service.

Observed result

Service life is extended, downtime is reduced, and kiln operation stays more stable.

Silicon Carbide Kiln Roller Usage Guide

Pre-Installation Checks

- Safe Unpacking : Support rollers evenly during lifting to avoid bending or surface damage.
- Before Installation: Check for cracks, chips, marks, and straightness before assembly.
- Gentle Preheating: Use gradual heating to reduce thermal stress and improve stability.

Kiln Installation and Alignment

- Proper Seating: Keep supports clean and level to ensure even roller contact.
- Stable Positioning: Set axial limits correctly to prevent side movement during operation.
- Rotation Check: Turn each roller by hand before startup to confirm smooth rotation.

High-Temperature Operation

- Controlled Temperature Changes : Avoid rapid heating or cooling to reduce thermal stress.
- Balanced Loading: Distribute load evenly to minimize bending during transport.
- Routine Monitoring: Watch for noise, vibration, or tracking changes during production.

Maintenance and Replacement

- Regular Cleaning: Remove deposits carefully to keep the surface clean and stable.Clean Surface Deposits
- Support Inspection: Check bearings and supports regularly to maintain smooth rotation.
- Planned Replacement :Track runtime and condition to schedule replacement in advance.

Technical Support

Technical Inquiry: info@adcerax.com

Service Hotline: +86-0731-84428843

Whatsapp: +86-19311583352

Silicon Carbide Kiln Roller FAQ

How does Silicon Carbide Kiln Roller stay straight in long firing cycles?

Its elastic modulus above 300 GPa helps reduce mid-span deflection under heavy loads. It also keeps low creep at 1,200–1,380°C, so sagging is minimized during long production runs.

Why is Silicon Carbide Kiln Roller more resistant to alkali vapors?

Its dense RBSiC structure offers strong resistance to alkali-rich atmospheres. This helps reduce corrosion, surface roughening, contamination risk, and kiln downtime.

Q: How does Silicon Carbide Kiln Roller improve temperature uniformity?

A: Its thermal conductivity of about 35–45 W/m·K supports faster, more even heat transfer. This helps reduce temperature gradients and improves firing consistency.

Q: Why is Silicon Carbide Kiln Roller suitable for heavy loads?

A: With flexural strength of 200–250 MPa, it can carry heavy ceramic loads with less bending. Its high surface hardness also helps reduce wear during continuous use.

Q: How does Silicon Carbide Kiln Roller reduce rejection rates?

A: High stiffness and stable thermal conductivity help reduce distortion, uneven heating, and microcracking. This supports better flatness, dimensional accuracy, and lower rejection rates.

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 silicon carbide 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 silicon carbide tube? Contact our team for personalized consultation, technical support, and competitive quotations.

Get A Quote