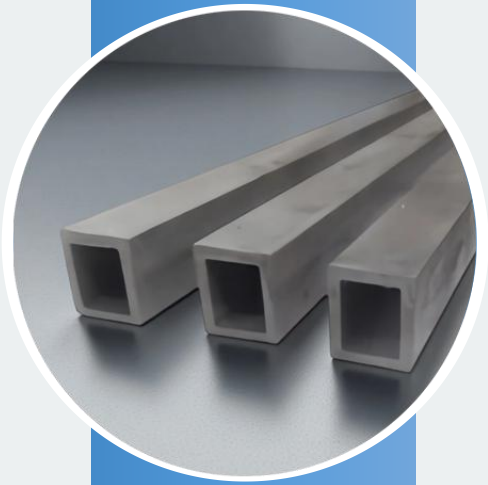
ADCERAX
ADVANCED CERAMICS

Silicon Carbide Square Beam



—— Engineered Load Support for High-Temperature Kilns

Contact Information

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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 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

CNAS ISO 水圆认证 CQM CERTIFICATION RoHS COMPLIANT

What is SiC Square Beam?

A SiC Square Beam is a high-performance structural component made from silicon carbide (SiC), designed to support heavy ceramic loads in high-temperature kiln systems.

Typical applications

- Sanitaryware firing (toilets, basins)
- Tableware and porcelain production
- Technical ceramic sintering
- Heavy-load kiln furniture systems

SiC Square Beam Process

Raw Material Preparation

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

Forming

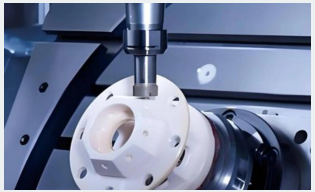
Extrusion: Alumina slurry is extruded through a die into continuous tubular shapes.
Isostatic Pressing: Powder is molded under high pressure to form high-density, uniform tubes.
Slip Casting: Liquid slurry is cast into a mold and solidified.

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.

SiC Square Beam 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

Why SiC Square Beam Outperforms Conventional Kiln Supports?

The value is not one property alone—it is the way heat, load, and oxidation stability work together in the kiln.

1380°C

Continuous operation

Supports long firing cycles at elevated temperature without relying only on room-temperature strength values.

45–55 MPa

Flexural strength at 1300–1380°C

Supports long firing cycles at elevated temperature without relying only on room-temperature strength values.

25–35 W/m·K

Thermal conductivity

Supports long firing cycles at elevated temperature without relying only on room-temperature strength values.

4.0–4.5 ×10⁻⁶/K

Low expansion + >250 GPa modulus

Combines thermal-shock resistance with high stiffness, so beam deflection stays better controlled under load.

Where buyers usually need it

Heavy kiln car structures, wide-span tunnel and roller kilns, sanitaryware and technical ceramics firing, and high-load batch or continuous kilns where beam deflection and dimensional consistency directly affect product quality.

What it protects against

Beam sag under sustained load, thermal shock from rapid cycle changes, oxidation-driven surface degradation, dimensional drift that misaligns kiln car decks, and uneven heat distribution caused by warped or failing support structures.

Why buyers move away from conventional options

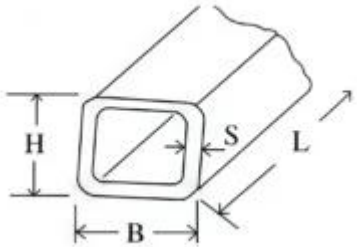
In high-temperature, heavy-load kilns, conventional cordierite or mullite beams can creep, sag, and fracture prematurely—leading to unstable car decks, product losses, and unplanned downtime. SiC Square Beam is chosen when dimensional stability, long campaign life, and total cost of ownership matter more than the lowest unit price.

🎯 Dimensions of Silicon Carbide SiC Square Beam:

Size of Section (mm)		Wall Thickness (mm)	Concentrated Loading (Kg)		Uniformly Distributed Loading (Kg)	
B side	H side		B side	H side	B side	H side
30	30	5	74	74	147	147
30	40	5	117	95	235	190
40	40	5	149	149	298	298
50	50	6	283	283	567	567
50	60	6	374	331	748	662
50	70	6	473	379	946	757
60	60	7	481	481	962	962
80	80	7	935	935	1869	1869
100	100	8	1708	1708	3416	3416
110	110	10	2498	2498	4997	4997

Silicon Carbide Square Beam size:

Type1- SiC Square Beam



Item No.	H (mm)	B (mm)	S (mm)	L(mm)
AT-THG-FL001	20	20	4	50-4500mm
AT-THG-FL002	20	20	5	50-4500mm
AT-THG-FL003	20	30	4	50-4500mm
AT-THG-FL004	20	30	5	50-4500mm
AT-THG-FL005	20	40	5	50-4500mm
AT-THG-FL006	25	30	5	50-4500mm
AT-THG-FL007	30	30	4	50-4500mm
AT-THG-FL008	30	30	5	50-4500mm
AT-THG-FL009	30	40	4	50-4500mm
AT-THG-FL010	30	40	5	50-4500mm
AT-THG-FL011	30	40	6	50-4500mm
AT-THG-FL012	30	50	4	50-4500mm
AT-THG-FL013	30	50	5	50-4500mm
AT-THG-FL014	30	50	6	50-4500mm
AT-THG-FL015	30	60	5	50-4500mm
AT-THG-FL016	30	60	6	50-4500mm
AT-THG-FL017	45	50	4	50-4500mm

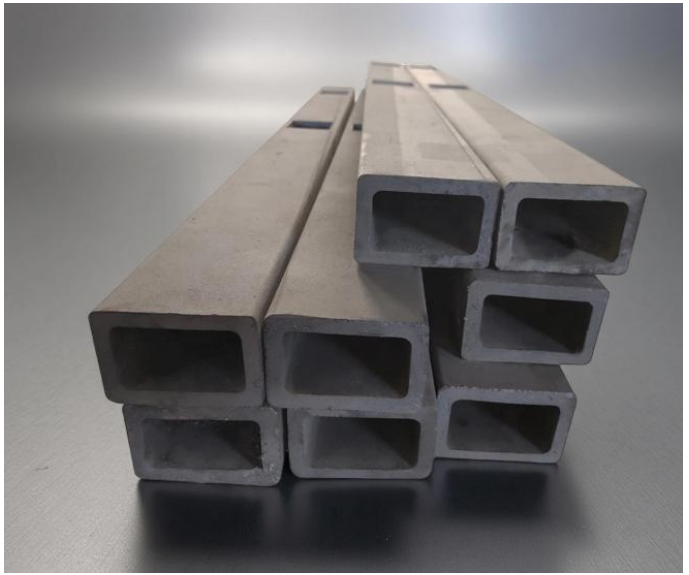
Silicon Carbide Square Beam size:

Item No.	H (mm)	B (mm)	S (mm)	L(mm)
AT-THG-FL018	45	50	5	50-4500mm
AT-THG-FL019	45	50	6	50-4500mm
AT-THG-FL020	40	40	5	50-4500mm
AT-THG-FL021	40	40	6	50-4500mm
AT-THG-FL022	40	40	7	50-4500mm
AT-THG-FL023	40	50	6	50-4500mm
AT-THG-FL024	40	50	7	50-4500mm
AT-THG-FL025	40	60	5	50-4500mm
AT-THG-FL026	40	60	6	50-4500mm
AT-THG-FL027	40	60	7	50-4500mm
AT-THG-FL028	45	45	5	50-4500mm
AT-THG-FL029	45	45	6	50-4500mm
AT-THG-FL030	45	45	7	50-4500mm
AT-THG-FL031	50	50	5	50-4500mm
AT-THG-FL032	50	50	6	50-4500mm

Item No.	H (mm)	B (mm)	S (mm)	L(mm)
AT-THG-FL033	50	50	7	50-4500mm
AT-THG-FL034	50	60	6	50-4500mm
AT-THG-FL035	50	60	7	50-4500mm
AT-THG-FL036	50	60	8	50-4500mm
AT-THG-FL037	50	70	6	50-4500mm
AT-THG-FL038	50	70	7	50-4500mm
AT-THG-FL039	50	70	8	50-4500mm
AT-THG-FL040	60	60	6	50-4500mm
AT-THG-FL041	60	60	7	50-4500mm
AT-THG-FL042	60	60	8	50-4500mm
AT-THG-FL043	60	60	9	50-4500mm
AT-THG-FL044	60	70	7	50-4500mm
AT-THG-FL045	60	70	8	50-4500mm
AT-THG-FL046	60	70	9	50-4500mm
AT-THG-FL047	60	80	7	50-4500mm
AT-THG-FL048	60	80	8	50-4500mm

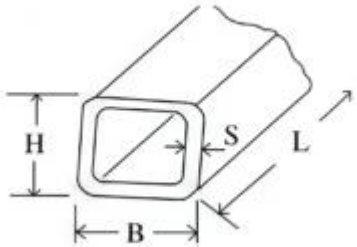
🎯 Silicon Carbide Square Beam size:

Item No.	H (mm)	B (mm)	S (mm)	L(mm)
AT-THG-FL049	60	80	9	50-4500mm
AT-THG-FL050	60	90	7	50-4500mm
AT-THG-FL051	60	90	8	50-4500mm
AT-THG-FL052	60	90	9	50-4500mm
AT-THG-FL053	70	70	7	50-4500mm
AT-THG-FL054	70	70	8	50-4500mm
AT-THG-FL055	70	70	9	50-4500mm



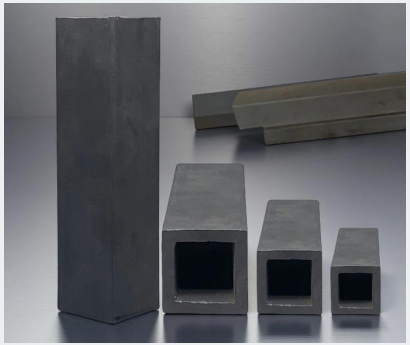
Silicon Carbide Square Beam size:

Type2- Silicon Carbide Square Beam with Closed One End



Item No.	H (mm)	B (mm)	S (mm)	L(mm)
AT-THG-FL056	50	20	5	50-4500mm
AT-THG-FL057	50	20	6	50-4500mm
AT-THG-FL058	50	20	7	50-4500mm
AT-THG-FL059	50	20	8	50-4500mm
AT-THG-FL060	60	25	6	50-4500mm
AT-THG-FL061	60	25	7	50-4500mm
AT-THG-FL062	60	25	8	50-4500mm
AT-THG-FL063	60	25	9	50-4500mm
AT-THG-FL064	70	30	7	50-4500mm
AT-THG-FL065	70	30	8	50-4500mm
AT-THG-FL066	70	30	9	50-4500mm

Customization SIC Square Beam Fits the Kiln



Your kiln is unique. Your beam should be too—engineered to your exact load, span, and installation from day one.

Customizable Parameters

Beam Geometry & Structure

- Section Profile — Adapted to match specific structural framing and kiln car alignment
- Hollow or Solid Form — Selected based on weight-to-strength objectives and thermal balance
- End-Connection Style — Configured for stable seating and support post interface during firing cycles

Interface & Assembly Compatibility

- Support-Seat Design — Shaped for accurate beam placement and consistent contact under thermal load
- Mounting Interaction — Refined for reliable mechanical engagement and stress-free thermal expansion
- System Coordination — Adapted for use with posts and plates to maintain uniform load distribution

Structural & Thermal Adaptation

- Span Configuration — Sized to load path and chamber width for controlled deflection
- Cross-Section Dimensions — Matched to load-bearing requirements across kiln car systems
- Surface & Tolerance Zones — Finished to assembly requirements for precise fit within firing structures

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

SIC Square Beam Applications

Heavy-load tunnel kiln car structures

Challenge

Cordierite or mullite beams under sustained load at 1300–1380°C tend to creep and sag, making kiln car decks uneven and product stacking unstable.

Why SiC works

With 45–55 MPa flexural strength at operating temperature, SiC Square Beam resists creep and deflection across wide spans throughout the full firing cycle.

Observed result

Longer beam campaigns, fewer mid-cycle replacements, and more consistent deck levelness compared to conventional alternatives.

Wide-span roller and shuttle kilns

Challenge

Wide chamber spans amplify beam deflection, creating temperature imbalance and increasing the risk of product tipping or breakage.

Why SiC works

High thermal conductivity (25–35 W/m·K) and low thermal expansion (4.0–4.5 $\times 10^{-6}$/K) allow even heat distribution and resistance to differential expansion-induced warping.

Observed result

More uniform temperature across the car width and reduced product rejection rates linked to beam instability.

Oxidizing atmosphere and long-campaign kilns

Challenge

In oxidizing atmospheres, conventional beams degrade through surface oxidation and erosion, shortening service life and increasing replacement frequency.

Why SiC works

SiC forms a stable protective layer under oxidizing conditions, maintaining structural integrity and surface quality across extended campaigns.

Observed result

Replacement cycles extended from weeks to multi-month campaigns, reducing downtime and total cost per firing cycle.

SiC Square Beam Usage Guide

Installation and Alignment for SiC Square Beam

- Ensure Level Support Support surfaces should remain level within ±1 mm to reduce bending stress.
- Maintain Expansion Gaps Leave enough thermal clearance to accommodate expansion at 1200–1380°C.
- Secure Without Over-Tightening The beam should be fixed firmly but not too tightly to avoid stress during heating.

Loading and Weight Distribution

- Distribute Load Evenly Loads should be spread evenly, and single-point loading should be avoided.
- Avoid Point Contact Use flat support or load-spreading surfaces to reduce local stress.
- Check Load Changes When product weight changes, review beam loading to prevent deflection problems.

Kiln Atmosphere and Thermal Control

- Keep Atmosphere Stable Stable kiln atmosphere ensures consistent high-temperature performance.
- Control Heating and Cooling Smooth heating and cooling reduce thermal shock and improve firing stability.
- Limit Temperature Gradients Reducing cross-kiln temperature differences helps lower beam stress and improve yield.

Maintenance, Inspection, and Handling

- Inspect Regularly Check beam straightness and surface condition during routine maintenance.
- Clean Surface Deposits Remove glaze or debris buildup to avoid local overheating.
- Store with Protection Use cushioned spacing during storage to prevent edge damage and impact marks.

Technical Support

Technical Inquiry: info@adcerax.com

Service Hotline: +86-0731-84428843

Whatsapp: +86-19311583352

SiC Square Beam FAQ

- **Q: How does the SiC Square Beam maintain stability during long firing cycles?**
  A: The SiC Square Beam stays stable because its RBSiC/SSiC structure keeps high flexural strength at 1300–1380° C. This helps resist creep and bending, reduces deformation, and keeps firing performance consistent under heavy kiln loads.
- **Q: Why does the SiC Square Beam improve temperature uniformity in tunnel kilns?**
  A: Its thermal conductivity of 25–35 W/m·K helps heat spread quickly and evenly across the kiln. This reduces temperature differences, lowers the risk of warpage or glaze defects, and supports more stable firing results.
- **Q: How does the SiC Square Beam resist thermal shock in rapid-fire kilns?**
  A: Its low thermal expansion coefficient of 4.0–4.5×10^{-6}/K helps it handle fast heating and cooling with less cracking risk. This improves reliability during repeated thermal cycling.
- **Q: What gives the SiC Square Beam its long service life compared to cordierite beams?**
  A: Its Si–SiC structure keeps mechanical strength of 45–55 MPa at 1300°C, which is much higher than cordierite. This allows longer service life, lower deformation, and more stable kiln operation.
- **Q: How does the SiC Square Beam perform under concentrated loads from large sanitaryware pieces?**
  A: With an elastic modulus above 250 GPa, the beam resists bending under heavy concentrated loads. It helps maintain alignment, reduces dimensional drift, and supports stable firing of large ceramic products.

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

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

Get A Quote