TECHNICAL DATA SHEET: High-Temperature Ceramic Fiber Rope

Product Series: AdTech-CFR Series

Material Type: Aluminosilicate Refractory Fiber

Classification Temperature: 1260°C (2300°F)

Manufacturer: AdTech Metallurgical Materials Co., Ltd.

Website: https://www.c-adtech.com

1. Product Description

AdTech **Ceramic Fiber Rope** is manufactured from high-quality alumina-silica ceramic fiber and mechanically braided to form a resilient, high-performance thermal seal. It is a superior, asbestos-free alternative for industrial applications requiring extreme heat resistance, low thermal conductivity, and high tensile strength.

To enhance mechanical performance, our ropes are reinforced with either **Stainless Steel (SS) Wire** (for maximum strength) or **Fiberglass Filament** (for electrical insulation applications).

2. Technical Specifications

Physical & Chemical Properties	**Standard Value**
Classification Temperature	1260°C (Standard) / 1430°C (High-Zirconia)
Continuous Working Temperature	1050°C (SS Wire) / 650°C (Fiberglass)
Chemical Composition	Al_2O_3: 45-48%
Linear Shrinkage (1100°C, 24h)	≤ 3%
Density	400 - 600 kg/m³

Physical & Chemical Properties	Standard Value
Fiber Diameter	2 - 5 microns
Organic Content (Loss on Ignition)	< 15%
Chemical Resistance	Excellent (except Hydrofluoric/Phosphoric acids)

3. Classification & Structure

We offer three distinct braiding styles to meet various sealing requirements:

- **Twisted Rope:** Formed by twisting multiple strands of ceramic fiber yarn. It is the most flexible and economical choice for low-pressure packing.
- **Round Braided Rope:** A high-density, "core-and-cover" construction. It is highly resistant to mechanical wear and ideal for heavy-duty gaskets.
- **Square Braided Rope:** Braided into a square cross-section to provide maximum surface contact. This is the industry standard for furnace door seals and expansion joints.

4. Key Features & Benefits

- **Exceptional Thermal Stability:** Maintains flexibility and structural integrity at temperatures up to 1260°C.
- **Low Thermal Conductivity:** Significantly reduces heat loss, improving energy efficiency in kilns and boilers.
- **High Tensile Strength:** Reinforced strands prevent stretching and tearing during installation and high-pressure sealing.
- **Chemical Inertness:** Resists most corrosive agents and oxidation; non-wetting to molten aluminum.
- **Safety & Compliance:** 100% Asbestos-free, non-toxic, and compliant with modern HSE (Health, Safety, and Environment) standards.

5. Typical Applications

Foundry & Metallurgy: Sealing for furnace doors, launder covers, and ladle lids; expansion joint packing.

Power Generation: Insulation for boiler doors, steam pipe valves, and heat exchangers.

Petrochemical: High-temperature gaskets for radiant section seals and crackers.

Ceramics & Glass: Kiln car seals and glass tank crown insulation.

Automotive: Flexible exhaust pipe insulation and thermal shields.

6. Installation & Handling Guidelines

Installation Tips:

Measurement: Ensure the rope diameter is slightly larger than the groove width to ensure a compression seal.

Fastening: Use high-temperature adhesives or mechanical clips to secure the rope in vertical door tracks.

The "Burn-out": During the initial heating cycle, a small amount of organic binder may smoke and produce a slight odor. This is normal and will dissipate once the operating temperature is reached.

Safety Precautions:

PPE: Ceramic fibers can cause minor skin and eye irritation. Wear gloves, safety glasses, and a long-sleeved shirt during handling.

Dust Control: Minimize airborne dust by cutting the rope with sharp tools rather than tearing. Use a dust mask if working in confined spaces.

Contact Us for a Custom Quote

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