HITEX

ALUMINA FIBER

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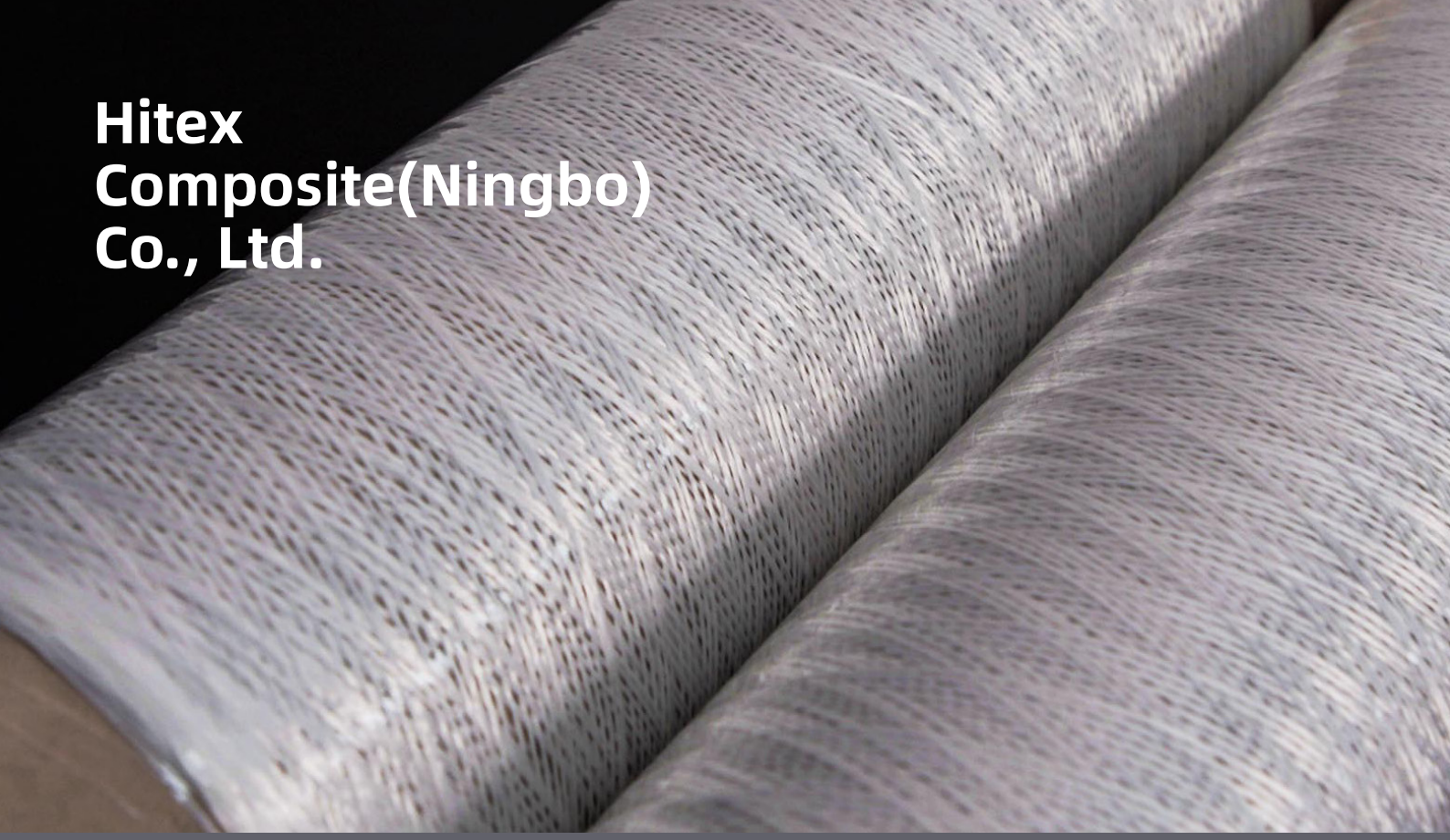
Insulation & Composites



Hitex Composite(Ningbo) Co., Ltd.

ABOUT HITEX

Welcome to Hitex Composites, your premier destination for top-quality composites and exceptional service. Our company has been providing high-quality composites to customers for many years, and we take great pride in our ability to consistently deliver excellence in both product quality and customer service.

At Hitex Composites, we specialize in the design, development, and manufacture of advanced composites for a wide range of industries, including aerospace, automotive, marine, and construction. We take advantage of our location in China to provide our customers with a competitive edge in terms of pricing, quality, and lead times. We have extensive experience in sourcing the highest quality raw materials from trusted suppliers, ensuring that we can offer our products at a competitive price without sacrificing quality.

Moreover, our state-of-the-art manufacturing facilities are equipped with the latest technology and staffed by skilled workers who are dedicated to producing the highest quality composite materials and products. This enables us to deliver products that meet or exceed the expectations of our customers.

In addition to our manufacturing capabilities, we offer fast turnaround times and flexible production schedules to accommodate the needs of our customers. Whether you need a small batch of custom products or a large-scale production run, we can deliver your order quickly and efficiently.

We believe that customer satisfaction is key to our success, and we go above and beyond to ensure that our clients receive the best possible service. Our team of experienced professionals is dedicated to providing personalized solutions tailored to your specific needs, and we work closely with you to ensure that your project is completed on time and within budget.

Whether you are looking for custom composite materials, high-quality composite products, or expert advice on composite design and engineering, Hitex Composites is your trusted partner. We are committed to providing you with the perfect service, high quality, and professionalism you deserve. Contact us today to learn more about our services and how we can help you take your project to the next level.

MAIN APPLICATION AREAS OF ALUMINA FIBER

Here is an introduction to **the characteristics and applications of alumina fiber** products:

High Temperature Resistance

Alumina fiber demonstrates outstanding high-temperature resistance, excelling in extreme heat environments. It can withstand high temperatures of 1200-1300° C (2192° F-2372° F), makes it ideal for use in the aerospace and thermal industries, as well as for insulation and refractory materials.

High Chemical Stability

Alumina fiber possess a high level of chemical inertness, ensuring stability and durability when exposed to various corrosive substances. This characteristic enhances their performance in challenging chemical environments.

High Corrosion Resistance

Alumina fiber boasts exceptional corrosion resistance, making it highly durable in challenging environments where exposure to corrosive substances is a concern. This unique property enhances its suitability for various industrial applications, ensuring long-lasting performance and reliability.

Low Thermal Expansion

The low thermal expansion coefficient of Alumina fiber contributes to their dimensional stability under temperature variations. This property is advantageous in applications where maintaining precise dimensions is critical for optimal performance.

Continuous alumina fibers are categorized into four classes based on their composition:

Alumina continuous fibers are advanced materials capable of enduring long-term usage at temperatures between 1200-1300° C, with individual fibers measuring around 7 to 14μm in diameter and containing no organic components, ensuring safety for human health. These fibers are manufactured into a variety of products such as woven fabrics, tapes, braided ropes, sleeves, sewing threads, and more, finding applications in fireproof and heat-insulating soft pads, as well as in ceramic matrix and metal matrix composites. Exhibiting properties like high-temperature resistance, high strength, low thermal conductivity, oxidation and corrosion resistance, and minimal shrinkage under high temperatures, alumina continuous fibers are integral to fabricating next-generation advanced equipment. Their impressive performance under extreme conditions makes them suitable for use in high-temperature furnace linings, abrasive tools, insulating curtains, sintering gaskets, alloy filtration, glass production, and as insulating materials in semiconductor manufacturing, aerospace, and electrical systems, among other applications, showcasing their versatility and essential role in various high-demand settings.

F-72

ALUMINA CONTENT ≥72%

With 72% alumina content, service temperature more than 1200° C, this fiber has a soft texture conducive to textile manufacturing. Once woven and stitched, it can be fashioned into various shapes of heat-insulating textiles and is also suitable for use in composite reinforcement materials.

P-80

ALUMINA CONTENT ≥80%

Containing 80% alumina, these fibers exhibit good toughness and excellent weaving properties. They can endure long-term use in high-temperature environments, making them ideal for producing heat-resistant fabrics of various shapes, as well as for forming high-temperature resistant composites with resins and ceramics.

C-85

ALUMINA CONTENT ≥85%

With an alumina content of 85%, this fiber can withstand long-term use at 1300° C without losing strength. It is especially suited for ceramic matrix composite applications. Ceramic products made from this material offer the best resistance to high-temperature thermal shock and creep, allowing for long-term use in high-temperature, oxygen-rich environments.

M-99

ALUMINA CONTENT ≥99%

The 99% alumina content makes this fiber suitable for metal matrix composite applications. It has the best room temperature strength, and the high alumina content effectively controls interfacial effects in materials. It combines well with reactive metals, and products made from this fiber using filament winding or lay-up methods are lightweight and high-strength metal matrix composites.

Property	Unit	F-72	P-80	C-85	M-99
Chemical Composition	Wt.%	72%Al_2O_3-28%SiO_2	80Al_2O_3-20SiO_2	85%Al_2O_3-15%SiO_2	>99Al_2O_3
Melting Point	°C	1800	1850	1850	2050
Continuous Use Temperature	°C	1200	1250	1300	1000
Single Filament Diameter	μm	7-10	10-12	10-12	12-14
Tex/Number of Filaments	g/1000m	60-90/400 100/500	115/500	150/500	160/750 140/400
Crystal Phase	/	γ-Al2O3	γ/δ-Al2O3+Mullite	α-Al2O3+Mullite	α-Al2O3
Density	g/cm^3	2.9	3.0	3.1	3.5
Single Filament Tensile Strength (Gauge Length 25.4mm)	GPa	1.9	2.0	2.2	2.6
Single Filament Modulus	GPa	184	215	235	330

Alumina Fiber Braided Rope

Alumina Fiber Braided Ropes are high-performance ropes crafted from alumina fibers using advanced braiding techniques. With exceptional strength, flexibility, and resistance to high temperatures, they find versatile applications across industries. These include thermal insulation in furnaces, fire protection, high-pressure seals, electrical insulation, mechanical reinforcement,expansion joints, and thermal pads for insulation purposes. Alumina fiber ropes offer superior temperature resistance compared to glass fiber and ceramic fiber counterparts, making them ideal for use in demanding environments requiring strength, temperature resistance, and durability.

Code	Diameter (mm)	Weight (g/m)	Length Per Roll (m)
F172-1	1	1.7	50/100
F172-2	2	3.7	
F172-3	3	5.4	

Alumina Fiber Woven Fabric

Alumina fiber woven fabrics, made from high-purity aluminum oxide (Al2O3) fibers, are prized for their exceptional high-temperature resistance (up to 1200° C), thermal stability, low thermal conductivity, and excellent chemical resistance. These characteristics make them ideal for demanding applications requiring superior thermal insulation and durability, such as in furnace linings, thermal barriers, and protective clothing for high-temperature environments. Their ability to maintain performance under extreme conditions makes alumina fiber fabrics indispensable in industries like metallurgy, aerospace, and manufacturing, where they provide energy efficiency, protection, and enhanced safety.

Code	Weave Type	Weight (g/m^2)	Thickness (mm)	Length Per Roll (m)
F175MP-180	Mesh Plain	170	0.15	25/50
F175P/T/S-240	Plain/Twill/Satin	235	0.18	
F175P/T/S-270	Plain/Twill/Satin	265	0.22	
F175P/T/S-320	Plain/Twill/Satin	315	0.30	
F175P/T/S-400	Plain/Twill/Satin	395	0.40	
F175T/S-480	Twill/satin	475	0.48	
F175T/S-560	Twill/satin	550	0.54	
F175T/S-640	Twill/satin	630	0.62	
F175T/S-840	Twill/satin	830	0.75	
C175T/S-340	Twill/satin	325	0.28	
C175T/S-540	Twill/satin	530	0.51	
C175T/S-600	Twill/satin	600	0.62	
C175T/S-810	Twill/satin	810	0.78	

Alumina Fiber Woven Tape

Alumina fiber tape is woven using high-strength alumina fibers, meticulously woven to meet varying customer demands. Tailored with different yarn specifications and weaving techniques suitable for diverse usage temperatures and conditions, it boasts a continuous operating temperature of approximately 1200-1300° C. Notably, it exhibits outstanding resistance to molten metal corrosion. This product finds application in high-temperature environments for thermal insulation, heat preservation, sealing, electrical insulation, sound absorption, and filtration.

Code	Yarn (Tex)	Width (mm)	Yarn Count (ends/cm)		Weaving Type	Thickness (mm)	Weight (g/m)	Length Per Roll (m)
			Warp	Weft				
F176-10	100	25	5	5	Plain/Twill/Satin	0.12-0.16	10	20/50/100
F176-24	100	50	6	6		0.16-0.18	12	
C176-15	100	25	8	8		0.18-0.22	16	
F176-24	150	50	6	6		0.20-0.25	18	
C176-15	150	25	8	8		0.25-0.30	24	
F176-24	150	50	10	10		0.35-0.40	30	

Alumina Fiber Braided Sleeve

Alumina Fiber Braided Sleeve is made using innovative continuous alumina fiber yarns and optimized braiding techniques. It boasts advantages such as lightweight construction, low heat capacity, excellent thermal insulation and heat resistance, as well as superior fire resistance. Additionally, it exhibits stable chemical properties, corrosion resistance, and oxidation resistance. With outstanding features including high-pressure resistance, high-temperature resistance, and electrical insulation, it finds application in thermal protection and sealing for various pipelines. Moreover, it can be combined with other materials to create gasket seals.

Code	Yarn (Tex)	Inner Diameter (mm)	Weight (g/m)	Length Per Roll (m)
F177-1	80	1.4	1.6	25/50/100
F177-4	100	4	16	25/50/100
F177-10	100	10	18	25/50
F177-15	100	15	36	25/50
F177-20	100	20	50	25/50
F177-35	100	35	90	25/50
F177-50	100	50	135	25/50
F177-60	100	60	146	25/50

Alumina Fiber Blanket

Alumina Fiber Blanket, produced from optimized aluminum oxide short fibers using a proprietary needle-punching process. This physical method ensures an organic-free composition, enhancing tensile strength through dual-sided needle-punching. With a temperature resistance up to 1500° C (1600° C maximum), our blanket excels in various atmospheres, maintaining resilience and flexibility without requiring special protection. Key features include outstanding thermal reflectivity, low heat storage, minimal linear expansion, and high tensile strength. It also resists wind erosion, excelling in high-temperature flexibility, heat shock, and chemical stability. Applications span kiln linings, high-temperature filtration, sealing gaskets, catalytic converter substrates, to sound insulation, versatile and robust.

Code		F178
Classification Temperature		1600°C
Long-term Service Temperature		1500°C
Chemical Composition (%)	Al_2O_3	71-73
	SiO_2	27-29
	Al_2O_3+SiO_2	>99
Thermal Conductivity (W/(m·K))	600°C	0.064
	800°C	0.094
	1000°C	0.169
	1300°C	0.217
24-Hour Heat Shrinkage (%)	1300°C	0.4
	1500°C	0.9
Specific Heat (kJ/(kg·K))	1090°C	1.315
Fiber Diameter (μm)		5-7

Thickness / Bulk Density (mm/Kg/m^3)	Weight (g/m^2)	Length (mm) × Width (mm)			
8/96	768	3600×610	7200×610	10000×610	12000×610
8/128	1024	3600×610	7200×610	10000×610	12000×610
10/128	1280	3600×610	7200×610	10000×610	12000×610
10/150	1500	3600×610	7200×610	10000×610	12000×610
12.5/96	1200	3600×610	7200×610	10000×610	12000×610
12.5/128	1600	3600×610	7200×610	10000×610	12000×610
12.5/150	1875	3600×610	7200×610	10000×610	12000×610
25/96	2400	3600×610	7200×610	--	--
25/128	3200	3600×610	7200×610	--	--
50/96	4800	3600×610	7200×610	--	--
50/128	6400	3600×610	7200×610	--	--

Alumina Fiber Mat

Alumina fiber Mat, a non-woven product crafted through spray and electrostatic spinning, yields a lightweight, organic-free material resistant to smoke or ignition at high temperatures. With a remarkable long-term serviceability up to 1500° C (max 1600° C), it retains resilience, strength, and flexibility in various atmospheres. Ranging from 0.2 to 1mm in thickness, the Mat excels in processability, finding significant market potential in high-temperature composite materials. Notable features include exceptional heat stability, minimal linear change, low slag content, superior fire resistance, and excellent thermal and mechanical properties. Its versatile applications span high-temperature tapes, resin/ceramic composites, aerospace thermal protection, fire isolation in battery casings, sound insulation, and high-temperature sealing and filtering materials.

Code		F178M
Classification Temperature		1600°C
Long-term Service Temperature		1500°C
Chemical Composition (%)	Al_2O_3	70-85
	SiO_2	15-30
	Al_2O_3+SiO_2	99.5
Thermal Conductivity (W/(m·K))	600°C	0.16
	800°C	0.20
	1000°C	0.32
	1200°C	0.46
24-Hour Heat Shrinkage (%)	1300°C	0.52
	1500°C	0.98
Fiber Diameter (μm)		5
Thickness (mm)		0.2-1
Weight(g/m^2)		60-200

Alumina Fiber Paper

Alumina fiber paper is crafted from high-purity alumina (Al2O3) fibers, showcasing exceptional thermal insulation capabilities and resistance to high temperatures, often exceeding 1600° C. The production process begins with the synthesis of alumina fibers through the spinning of molten aluminum oxide, which then undergoes a series of treatments to enhance its purity and thermal properties. These fibers are subsequently layered and bonded together using either organic or inorganic binders to form a coherent sheet or roll of paper. This process allows for the fine-tuning of the paper's thickness, density, and flexibility, ensuring it meets specific application requirements. The meticulous crafting of alumina fiber paper results in a material that combines chemical stability, ease of customization, low thermal conductivity, and minimal heat storage. It is extensively employed in applications demanding high-temperature resistance and thermal insulation, such as thermal barriers in aerospace and automotive sectors, fireproofing, creation of high-temperature gaskets and seals, insulation for industrial furnaces and kilns, and as electrical insulation in conditions where maintaining high-temperature tolerance is vital. The detailed manufacturing process contributes to its unparalleled performance in challenging environments, positioning alumina fiber paper as a critical material across various advanced manufacturing and safety domains.

Test Item	Standard	Technic Index
Appearance	--	Smooth, no impurities
Insulating Property	Under condition of 1000V DC, test time 60s	Insulation resistance ≥500MΩ
Fibre ID	--	5.5-7.5μm
Tensile Strength	GBT 17911-2018	≥200kPa
Flame Retardance Property	UL94-V0	Approved
Thermal Conductivity	GB/T 10297-2015	≤0.04w/m·k
ELV	EU ELV Directive 2000/53/EC	Approved

Code	F1710-0.6	F1710-0.8	F1710-1.0	F1710-1.5	F1710-2.0	F1710-2.5	F1710-3.0	F1710-4.0	F1710-5.0
Thickness (mm)	0.60	0.80	1.00	1.50	2.00	2.50	3.00	4.00	5.00
Range of Thickness (mm)	0.50-0.70	0.70-0.90	0.90-1.10	1.35-1.65	1.80-2.20	2.25-2.75	2.70-3.30	3.60-4.40	4.50-5.50
Areal Density (g/m^2)	60	80	100	200	250	300	400	550	700
Range of Areal Density (g/m^2)	50-70	70-90	90-110	180-220	225-275	270-330	360-440	495-605	630-770

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