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SHANDONG MINYE REFRACTORY FIBRE CO., LTD.

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Global Reputation For High Quality Insulation Material





MINYE


Introduction

Shandong Minye Refractory Fibre., LTD, started from 2002, is a joint stock enterprise engaged in ceramic fiber, polycrystalline fiber, bio soluble fiber etc insulation materials. Shandong Minye is composed of Inner Mongolia Minye New Material CO., LTD, Shandong Jingte New Material CO., LTD, Minye Fireproof Technology (Shandong) CO., LTD, Shandong Minye Refractory Fibre Shanghai Branch etc. After twenty years development, Shandong Minye has been one major ceramic fiber production base in Asia-Pacific, including manufacturing, sales, researching, designing and engineering.

From product customization, production, package, transportation to site construction, after sales service etc, Shandong Minye cover from basic products to deep processing products all segments. Shandong Minye product cover temperature range from 800°C to 1900°C, annual capacity over 200,000 tons. Shandong Minye product is widely used in industrial furnace lining, fireproof insulation, high temperature insulation etc, they are exported to Europe, North and South America, Middleeast, Southeast Asia, Taiwan etc countries and regions.

As national high technology enterprise, Shandong Minye keep strengthen intensitty of innovation, cooperate with many well known universities on industrial leading advanced projects. Shandong Minye often participate in state industrial standards making, and establish stable strategic partnership with petrochemical, steel, metallurgy, power generation industries.

With unity, practice, innovation enterprise sprite, Shandong Minye continue to offer customers superior service, offer employees broad develop space. Shandong Minye sincerely welcome all friends cooperation to together create better tomorrow.



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Ceramic Fiber Series

Ceramic Fiber Bulk

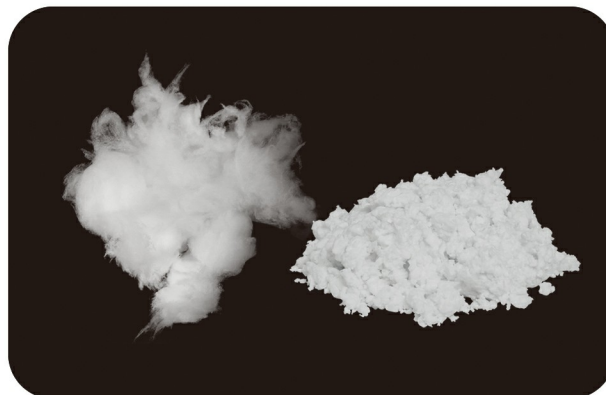
Product Grade and Code

Normal Kaolin Spun Ceramic Fiber Bulk	MYTX-1050-21
Standard Purity Spun Ceramic Fiber Bulk	MYTX-1260-21
Standard Purity Blown Ceramic Fiber Bulk	MYTX-1260-11
High Purity Spun Ceramic Fiber Bulk	MYTX-1260A-21
High Alumina Blown Ceramic Fiber Bulk	MYTX-1350-11
Low Zirconium Spun Ceramic Fiber Bulk	MYTX-1400-21
Zirconium Spun Ceramic Fiber Bulk	MYTX-1430-21
Zirconium Blown Ceramic Fiber Bulk	MYTX-1430-11

Product Description

Ceramic fiber bulk is produced by melting high purity raw materials in resistance furnace, then adopt blown/spinning process, the bulk is loose fiber without secondary processing and heat treatment.

Ceramic fiber textile bulk is special processed spun fiber bulk, fiber diameter is uniform, has higher yarn rate, is ideal raw material of ceramic fiber textiles.



Typical Features

- Low heat capacity, low thermal conductivity
- Excellent thermal stability
- Excellent chemical stability
- Binder free and corrosion free

Typical Application

- High temp gaskets sealing
- Feed material for high temp textiles
- Feed material for board, paper, vacuum forming shapes etc wet processing products

Typical Properties

Product Code	Classification Temp (°C)	Fiber Diameter (μm)	Shot Content (Φ≥0.212mm)(%)	Chemical Composition(%)			
				Al ₂ O ₃	ZrO ₂	Al ₂ O ₃ +SiO ₂	Al ₂ O ₃ +SiO ₂ +ZrO ₂
MYTX-1050-21	1050	3-5	≤20	≥40	-	≥95	-
MYTX-1260-21	1260	3-5	≤20	≥43	-	≥97	-
MYTX-1260-11	1260	2-4	≤20	≥43	-	≥97	-
MYTX-1260A-21	1260	3-5	≤20	≥44	-	≥97.5	-
MYTX-1350-11	1350	2-4	≤20	≥52	-	≥98.5	-
MYTX-1400-21	1400	2-4	≤20	-	≥5	-	≥99
MYTX-1430-21	1430	2-4	≤20	-	≥15	-	≥99
MYTX-1430-11	1430	2-4	≤20	-	≥15	-	≥99

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.

Ceramic Fiber Series

Ceramic Fiber Blanket

Product Grade and Code

Normal Kaolin Ceramic fiber blanket	MYTX-1050-22
Standard Purity Ceramic fiber Blanket	MYTX-1260-22
High Purity Ceramic fiber Blanket	MYTX-1260A-22
Standard Purity Ceramic fiber Blanket	MYTX-1260H-22
High Purity Ceramic fiber Blanket	MYTX-1260HP-22
High Alumina Blown Fiber Blanket	MYTX-1350-12
Low Zirconium Ceramic fiber Blanket	MYTX-1400-22
Standard Zirconium Ceramic fiber Blanket	MYTX-1430-22



Product Description

Ceramic fiber blanket production start from resistance furnace melting raw material, spun into fiber, then needled into blanket, the product is inorganic material with no any binders. Ceramic fiber blanket has good tensile strength, precise dimension, easy construction, good chemical erosion resistance, it has good mechanical strength and performance in medium and oxidation atmosphere. Ceramic fiber blanket is available in different density and size, is high efficient insulation and energy saving product.

Typical Features

- Excellent insulation
- Excellent chemical stability
- Low thermal conductivity and low heat Capacity
- Excellent tensile strength, easy construction
- Excellent thermal stability

Typical Application

- Backup lining of industrial furnace
- High temp pipe wrapping
- Heavy duty refractory expansion joints
- Feed materials for module
- Fireproof wrapping rolls core material

Typical Properties

Product Code	MYTX-1050-22	MYTX-1260-22	MYTX-1260A-22	MYTX-1260H-22	MYTX-1260HP-22	MYTX-1350-12	MYTX-1400-22	MYTX-1430-22
Classification Temp (°C)	1050	1260	1260	1260	1260	1350	1400	1430
Density (Kg/m ³)	80-160 (Per customers' demand)							
Al ₂ O ₃	≥40	≥43	≥44	≥44	≥45	≥52	≥35	≥41
Al ₂ O ₃ +SiO ₂	≥95	≥97	≥97.5	≥98	≥98.5	≥98.5	-	-
ZrO ₂	-	-	-	-	-	-	≥5	≥15
Al ₂ O ₃ +SiO ₂ +ZrO ₂	-	-	-	-	-	-	≥99	≥99
Shot Content(Φ≥0.212mm)(%)	≤20	≤20	≤20	≤20	≤20	≤20	≤20	≤20
Tensile Strength (thickness25mm)(kPa)	≥40	≥40	≥40	≥40	≥40	≥21	≥40	≥40
Thermal Conductivity (Mean Temp 500 °C)W/(m.k)	≤0.153	≤0.153	≤0.153	≤0.153	≤0.153	≤0.153	≤0.153	≤0.153
Permanent Linear Thrinkage (%)	950°C×24h≤4	1000°C×24h≤4	1000°C×24h≤4	1050°C×24h≤4	1100°C×24h≤4	1200°C×24h≤4	1200°C×24h≤4	1350°C×24h≤4
Long term working temp (°C)	≤800	≤1000	≤1050	≤1050	≤1100	≤1200	≤1200	≤1250
Availability (Standard Product)	Length (3600/4500/5000/7200)×Width (610/1200) ×Thickness (6~60) mm (Customized size acceptable)							

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.

Ceramic Fiber Series

Ceramic Fiber Board

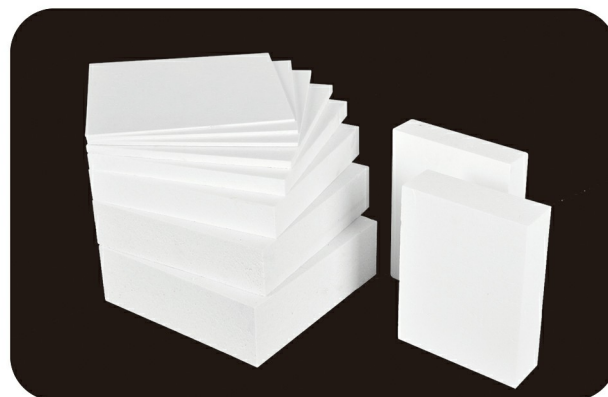
Product Grade and Code

Normal Kaolin Ceramic Fiber Board	MYTX-1050-43
Standard Purity Ceramic Fiber Board	MYTX-1260-43
Standard Purity Polished Ceramic Fiber Board	MYTX-1260-43M
High Purity Ceramic Fiber Board	MYTX-1260A-43
High Alumina Ceramic Fiber Board	MYTX-1350-43
Standard Zirconium Ceramic Fiber Board	MYTX-1430-43
High Alumina Fireproof Ceramic Fiber Board	MYTX-1350-43D

Product Description

Ceramic fiber board raw material is bulk fiber adding specific binder, adopt full automatic continuous wet processing and heating technology. Compared with traditional vacuum forming board, Minye low density board has obvious advantage in precise size and anti-bending strength. The board has high temperature resistance, high mechanical strength, good thermal shock resistance, is ideal insulation and refractory material for various industrial furnaces.

Ceramic fiber fireproof board has better mechanical strength, better supporting and better anti-wind erosion performance, could bear flame and scour impingement, is ideal furnace fireproof and insulation material.



Typical Application

- **Metallurgical:** backup insulation, mold insulation
- **Non-Ferrous:** tundish and electric tank back up lining
- **Ceramics:** furnace hot face lining, fireproof plate
- **Glass:** bath back up lining
- **Petrochemical:** furnace hot face lining

Typical Features

- Low heat capacity, low thermal conductivity, Precise size, good flatness
- Excellent thermal stability and thermal shock resistance
- Good bending strength, high rigidity, easy to process and install

Typical Properties

Product Code	MYTX-1050-43	MYTX-1260-43	MYTX-1260-43M	MYTX-1260A-43	MYTX-1350-43	MYTX-1430-43	MYTX-1350-43D
Classification Temp (°C)	1050	1260	1260	1260	1350	1430	1350
Density (Kg/m ³)	220-400	220-400	250-400	220-400	220-400	220-400	350-400
Anti-bending strength (MPa)	≥0.20 (Density 300kg/m ³)						
Thermal Conductivity (Mean 500°C)W/(m.k)	≤0.153						
Permanent Linear Shrinkage (%)	950°C×24h≤4	1000°C×24h≤4	1000°C×24h≤4	1050°C×24h≤4	1200°C×24h≤4	1350°C×24h≤4	1250°C×24h≤4
Loss on ignition (%)	≤10						
Water content (%)	≤2						
Availability Standard (mm)	600×400×20~50/900×600×10~50/1000×600×10~50 (Customized size acceptable)						

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.

Ceramic Fiber Series

Ceramic Fiber Module

Product Grade and Code

Normal Kaolin Ceramic Fiber Module	MYTX-1050-35
Standard Purity Ceramic Fiber Module	MYTX-1260-35
High Purity Ceramic Fiber Module	MYTX-1260A-35
Low Zirconium Ceramic Fiber Module	MYTX-1400-35
Standard Zirconium Ceramic Fiber Module	MYTX-1430-35

- 1.Wing anchor
- 2.Angle anchor
- 3.T type anchor

Product Description

Ceramic fiber module is made from ceramic fiber blanket, process include folding/stacking, compressing, strap belt, side trimming. Different anchors could be applied for fixing and module installing. Due to self compressive rate, after installing, ceramic fiber module get different direction expansion and no leaking insulation surface. It has light weight, low heat capacity, easy installing, nice insulating effect etc advantages, is ideal insulation material for industrial furnace.

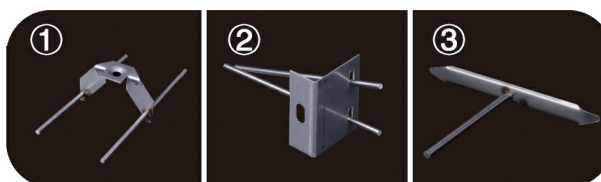
Typical Application

- **Petrochemical:** Ethylene cracking furnace, Reforming furnace, Hydrogenation furnace, homogenizing furnace, and process heater etc.
- **Iron & Steel:** Continuous heat treat furnace, walking beam heating furnace, annular furnace, pusher type heating furnace.
- **Environment Protection industry:** Regenerative Thermal Oxidizer/RTO, Desulfurization and denitrication industry
- **Industrial furnace:** Whole ceramic fiber insulation lining.

Typical Properties

Product Code	MYTX-1050-35	MYTX-1260-35	MYTX-1260A-35	MYTX-1400-35	MYTX-1430-35
Classification Temp (°C)	1050	1260	1260	1350	1430
Density (kg/m ³)	160~240				
Anchor Type	①Wing anchor ② Angle anchor ③T type anchor				
Anchor classification Temp (°C)	201/304/310/316 etc material				
Permanent Linear Shrinkage (%)	950°C×24h≤3	1000°C×24h≤4	1050°C×24h≤4	1200°C×24h≤4	1350°C×24h≤4
Availability Standard (mm)	(Customized size acceptable) 300×300×Insulation thickness				

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Features

- Fast and easy installation
- Fast and easy repair
- Low thermal conductivity, good energy-saving effect
- Low installation and repair costs
- No need heating and maintainance, fast using after installation
- Anchoring system away from hot face, working under low temp

Ceramic Fiber Series

Ceramic Fiber Paper

Product Grade and Code

Standard Purity Ceramic Fiber Paper	MYTX-1260HP-54
High Alumina Ceramic Fiber Paper	MYTX-1350-54
Standard Zirconium Ceramic Fiber Paper	MYTX-1430-54

Product Description

Ceramic fiber paper take blown fiber bulk as raw material, adding specific ratio binder and produced in wet processing technology. Paper is flexible and tough, has excellent tensile strength, and the hardness could be adjusted, is ideal high performance high temp sealing insulation material.

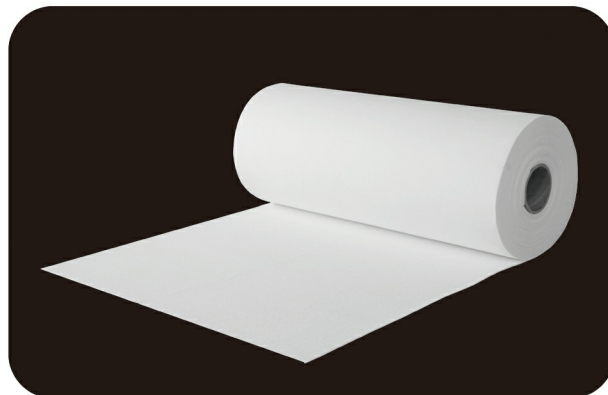
Typical Features

- Excellent electrical insulation
- Excellent mechanical processing
- High tear resistance
- High flexibility, precise thickness
- Low shot content
- Low heat capacity, low thermal conductivity

Typical Properties

Product Code	YTX-1260HP-54	MYTX-1350-54	MYTX-1430-54
Classification Temp (°C)	1260	1350	1430
Density (kg/m ³)	180-210		
Permanent Linear Shrinkage (%)	1100°C×24h≤4	1200°C×24h≤4	1350°C×24h≤4
Tensile Strength (MPa)	0.15		
Loss on Ignition (%)	≤10		
Water Content (%)	≤2		
Availability (mm)	Length and width per regular size, thickness 0.8-10mm		

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Applications

- Industrial insulation, sealing, anticorrosion
- Electrical heating device insulation
- Instrument equipment insulation
- Insulation for expansion joints
- Industrial insulation materials
- Molten metal gasket
- Fireproof
- Insulation in automobile

Ceramic Fiber Series

Ceramic Fiber Vacuum Forming Shapes

Product Grade and Code

Standard Purity Ceramic Fiber VF Shape	MYTX-1260-46
High Purity Ceramic Fiber Shapes	MYTX-1260A-46
High Alumina Ceramic Fiber Shapes	MYTX-1350-46
Standard Zirconium Ceramic Fiber Shapes	MYTX-1430-46
Polycrystalline Ceramic Fiber Shapes	MYTX-1600-46

Product Description

Ceramic fiber vacuum forming shape is manufactured in vacuum forming processing with bulk fiber. It is special shape product designed to satisfy special demand in some industrial specific sector. Each shapes product need same size and shape mould. Per different quality demand, different binders and additives are used. Vacuum forming shape has low thermal conductivity, good insulation effect, light weight and high shock resistance etc features.

Typical Features

- Low heat capacity, low thermal conductivity
- Excellent chemical stability
- Excellent thermal stability and thermal shock resistance
- Excellent anti-wind erosion

Typical Properties

Product Code	MYTX-1260-46	MYTX-1260A-46	MYTX-1350-46	MYTX-1430-46	MYTX-1600-46
Permanent Linear Shrinkage (%)	$1000^{\circ}\text{C} \times 24\text{h} \leq 3$	$1050^{\circ}\text{C} \times 24\text{h} \leq 3$	$1200^{\circ}\text{C} \times 24\text{h} \leq 3$	$1350^{\circ}\text{C} \times 24\text{h} \leq 3$	$1500^{\circ}\text{C} \times 24\text{h} \leq 3$
Availability (Standard Product)	Customizable per customer's drawing				

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Applications

- Industrial furnace door, burner brick, peep hole, thermometer hole
- Aluminium collecting tank and launder
- Special metallurgy tundish, crucible furnace, casting mouth furnace, insulation casting head, ceramic fiber crucible
- Thermal radiation Insulation in civil and industrial heater
- Various special burning chamber, lab electrical furnace

Ceramic Fiber Series

Coating Product

Product Grade and Code

High Temp Coating 1600 MYTX-TL1600

High Temp Coating 1700 MYTX-TL1700

Product Description

High temp coating take alumina fiber as raw material, adding specific inorganic binder, and blended processed fiber product with specific viscosity and mobility.

Typical Features

- Under high temp transform into hard ceramic or shell shape, has excellent scour resistance, max 80m/s scour
- Excellent anti cracking under high temp;
- Excellent high temp resistance, max 1400°C;
- Excellent ablation resistance, excellent atmosphere erosion resistance ;
- Excellent low thermal shrinkage;

Typical Properties

Product Code	MYTX-TL1600	MYTX-TL1700
Classification Temp (°C)	1600	1700
Permanent Linear Shrinkage (%)	1400°C×24h≤-1	1500°C×24h≤-1
Density (kg/m ³)	Wet state1200/Dry state600	Wet state1200/Dry state600
Scour resistance	30-80m/s	30-80m/s
Density(Mean 600°C)W/(m.k)	0.14	0.14
Colour	Blue	Red
Al ₂ O ₃	≥65-70%	≥75-80%
Al ₂ O ₃ +SiO ₂	≥99%	≥99%
Others	≤1%	≤1%
Coating	5-8mm No cracking	5-8mm No cracking

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Applications

- For petrochemical, metallurgy, ceramic etc high temp furnace, fast and no disassembly repairing in bricks, castable, ceramic fiber module cracks or falling off.
- Refractory brick, castable, ceramic fiber modules etc protection in high scour or reducing atmosphere new furnace.

Ceramic Fiber Series

Adhesive/Rigidizer

Product Grade and Code

Medium Temp Adhesive	MYTX-NJ1300
High Temp Adhesive	MYTX-NJ1600
High Temp Rigidizer	MYTX-GH1300

Product Description

Adhesive is uniform viscous colloid product, it is made with many refractory product and special binders. Adhesive has good bonding strength after drying. Widely used for bonding between ceramic fiber products, between ceramic fiber and other refractory materials.

Rigidizer is a gluey product containing Al-Si. It is used to treat the surface of ceramic fiber or other refractory materials, increase the surface scour resistance, extend service life of applied refractory material.

Typical Applications

- **Adhesive typical applications:** High temp binding between various fiber materials, various refractory materials, increasing fiber/refractory product surface hardness.
- **Rigidizer typical application:** Surface coating of ceramic fiber blanket under high velocity scours, ceramic fiber module surface treatment, vacuum forming fiber products surface treatment to increase surface hardness.

Typical Properties

Adhesive typical features

Product Code	MYTX-NJ1300	MYTX-NJ1600
Classification Temp (°C)	1300	1500
State	Liquid	Liquid
Drying Linear Shrinkage (%)	2~3	2~3
Bond strength (kgf/m ²) after binding	40(Room Temperature)	40(Room Temperature)
Bond strength (kgf/m ²) after calcining	400 (900°C)	400 (900°C)
Chemical Composition (Al ₂ O ₃ +SiO ₂)	≥90	≥93
Expiration Date	6 months	6 months
Package(kg/barrel)	25kg or customized	25kg or customized
Package Outer dimension(Φ×h) (cm)	32×40	32×40



Typical Features

Adhesive typical features:

- Easy installation
- Low shrinkage in drying and heating
- High temp resistance
- High strength
- Excellent chemical stability under high temp
- Excellent chemical erosion resistance

Rigidizer typical features:

- Easy installation
- Increase the durability and surface erosion resistance of blanket and board
- Increase the surface scour resistance to wind
- Flexible spraying or brushing construction choice in site

Rigidizer typical features

Product Code	MYTX-GH1300
Classification Temp (°C)	1300
State	Liquid
Density (kg/m ³)	1200~1300
Dosage (kg/m ²)	1.5~2.5
PH	ALKALESNT
Color	BLUE
Expiration Date	12months
Package(kg/barrel)	25kg
Package Outer dimension(a×c×b) (cm)	26×28×40

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.

Ceramic Fiber Series

Ceramic Fiber Textile

Product Grade and Code

Ceramic Fiber Rope	MYTX-1260-67
Ceramic Fiber Cloth	MYTX-1260-68
Ceramic Fiber Tape	MYTX-1260-68D
Ceramic Fiber Yarn	MYTX-1260-67S

Product Description

Ceramic fiber textile include yarn, cloth, tape, twisted rope, square rope etc, it is manufactured in special process with Ceramic fiber bulk, glass fiber or stainless steel. Besides above product, we can supply customized high temp textiles per working temp and condition.

Typical Features

- Excellent high temp resistance
- Asbestos free
- Low density
- Low thermal conductivity, good thermal shock resistance
- Chemical erosion resistance, easy installing



Typical Application

- Furnace and chimney insulation and sealing
- High temp pipes insulation and sealing
- Fireproof and high temp binds
- Flexible expansion Joint
- High temp valve and pump sealing
- Heat exchanger and kiln car sealing
- High temp resistant electrical wire, cable insulation and wrapping

Typical Properties

Product Code	MYTX-1260-67	MYTX-1260-68	MYTX-1260-68D	MYTX-1260-67S
Classification Temp (°C)	1260	1260	1260	1260
Density (kg/m ³)	500-650	500-650	500-650	500-650
Fiber Diameter(μm)	2-5	2-5	2-5	2-5
Thermal Conductivity 580°C.8pcf	0.130w/m.k	0.130w/m.k	0.130w/m.k	0.130w/m.k
Reinforced material	304 Stainless Steel /Glass fiber	304 Stainless Steel /Glass fiber	304 Stainless Steel /Glass fiber	304 Stainless Steel /Glass fiber
Ignition	≤15%	≤15%	≤15%	≤15%

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.

Ceramic Fiber Series

Engineering Ceramic Fiber Bulk

Product Grade and Code

High Purity Blown Fiber Bulk	MYTX-1260HP-11
1260 Engineering Fiber Bulk	MYTX-1260HP-11R
1350 Engineering Fiber Bulk	MYTX-1350-11R
Blown Chopped Fiber Bulk	MYTX-1260HP-11P1
Spun Chopped Fiber Bulk	MYTX-1260HP-11P2
Washed Shot Removal Fiber Bulk	MYTX-1260HP-11X

Product Description

Engineering fiber bulk include blown fiber bulk, chopped fiber bulk, washed fiber bulk, they take Alumina powder, Silica sand as raw material and produced through special blown tech or spun tech, the fiber diameter and shot particle size is more uniform. Could achieve different fiber length and sedimentation value from chopping process, or could further reduce shot content from washing process. Engineering bulk fiber index is higher, is ideal raw material for advanced wet processed ceramic fiber products.

Typical Features

- Low shot content, uniform fiber diameter
- High fiber index
- Excellent wet processed dispersivity
- High production efficiency
- Excellent high temp resistance
- Chemical corrosion resistance

Typical Properties

Product Code	MYTX-1260HP-11	MYTX-1260HP-11R	MYTX-1350-11R	MYTX-1260HP-11P1	MYTX-1260HP-11P2	MYTX-1260HP-11X
Classification Temp	1260°C	1260°C	1350°C	1260°C	1260°C	1260°C
Al ₂ O ₃	45-49	45-49	52-53	45-49	45-49	45-49
Al ₂ O ₃ +SiO ₂	≥98	≥98	≥98.5	≥98	≥98	≥98
Settling Height(ml)						

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Application

- Feed material for precise vacuum forming shapes
- Feed material for ceramic fiber filter tube
- Feed material for automobile lining plate
- Mortar additive
- High temp coating additive

Polycrystalline Fiber

Alumina Fiber Products

Product Grade and Code

Polycrystalline Fiber Bulk	MYTX-1600-01
Alumina Fiber Bulk	MYTX-1600-01L
Alumina Fiber Board	MYTX-1600-43
Polycrystalline Fiber Blanket	MYTX-1600-02
Polycrystalline Fiber Cut Blanket	MYTX-1600-35TK
Alumina Fiber Paper	MYTX-1600-54

Product Description

Alumina fiber take mullite ($3\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$) as main crystallizing phase, alumina fiber blanket is processed by chemical "Sol-Gel" into spinning solution containing aluminum oxide silicon, then special processed into precursor fiber bulk, after carding, flattening, needling, high temp annealing. Shandong Minye alumina fiber blanket has uniform weight, uniform thickness, and excellent colloidal performance, is complete inorganic fiber blanket with no any additive, high toughness and high tensile strength, the long term working temp is under 1500-1600°C. Alumina fiber blanket chemical stability is excellent, acid-alkaline erosion resistance is higher than alumina silicate blanket.

Typical Features

- Special microcrystalline structure, super low impurity content, Max working temp 1600°C
- Low thermal conductivity
- Low heat capacity, Excellent thermal shock resistance, Low shrinkage under high temp
- Excellent chemical stability and erosion resistance.
- Uniform fiber diameter, no shot content

Typical Properties

Product Code	MYTX-1600-01L	MYTX-1600-43	MYTX-1600-02
Classification Temp (°C)	1600	1600	1600
Fiber Diameter (μm)	3-8	-	-
Shot content ($\Phi \geq 0.212\text{mm}$) (%)	$\leq 1\%$	-	$\leq 1\%$
Al_2O_3	71-73%	71-73%	71-73%
SiO_2	27-29%	27-29%	27-29%
Tensile Strength	-	-	$\geq 80\text{KPa}$
Permanent Linear Shrinkage (1500°C × 24h)	-	$\leq 2\%$	$\leq 2.5\%$
Density (kg/m ³)	-	300-600	96-130
Unti-Bending strength	-	$\geq 0.2\text{Mpa}$	-
Thermal Conductivity (w/m.k)	-	Hot surface 1000°C 0.14; Hot surface 1200°C 0.16; Hot surface 1400°C 0.18;	Hot surface 600°C 0.06; Hot surface 1000°C 0.12; Hot surface 1200°C 0.15;

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Applications

- Lining thermal insulation in various high temp lab electric furnaces
- Thermal insulation, electrical insulation and high temp sealing gasket in furnace door, furnace structure, heating device etc
- Metallurgy industry: pusher type heating furnace, walking beam heating furnace, annular furnace, bell furnace, non-oxidizing heating in cold galvanizing line.
- CSP Continue casting direct rolling/CCDR heating furnace, high temp forge furnace
- Ceramic furnace, photovoltaic ingot
- Automobile tail gas treatment, high temp gas filter

Ceramic Fiber Series

Ceramic Fiber Felt

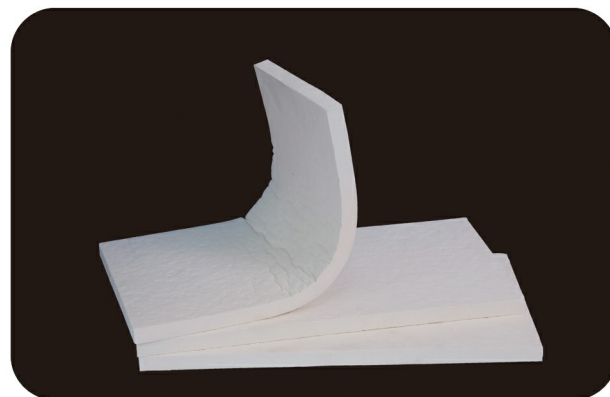
Product Grade and Code

Ceramic Fiber Felt MYTX-1260-54F

Product Description

Ceramic fiber felt take bulk fiber as raw material, adding specific ratio bingers and additives, it is deep processed product by wet processing tech. The thickness range is 15-25mm, it keeps good flexibility and tensile strength in 220kg/m³-250kg/m³ density.

Ceramic fiber blanket has good flexibility but low density, ceramic fiber board has high density but low flexibility, and ceramic fiber felt perfectly solve the contradiction of density/hardness and flexibility, so it is high performance flexible high temp insulation material.



Typical Application

- Industrial equipment insulation
- Special curved parts insulation
- Expansion joints insulation

Typical Features

- High density, excellent insulation performance
- High flexibility, free bending
- Excellent mechanical properties, easy construction
- Low heat capacity, low thermal conductivity

Typical Properties

Product code	MYTX-1260-54F
Density (kg/m ³)	220-250
Thickness Range	15-25mm
Al ₂ O ₃	43-47 %
Thermal Conductivity (Mean Temp 500 °C)W/(m.k)	≤0.153%
Loss on ignition	≤8%
Regular size	1000*600/1000*600 Customizable size accptable

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.

Ceramic Fiber Series

Special Type Ceramic Fiber Board

Product Grade and Code

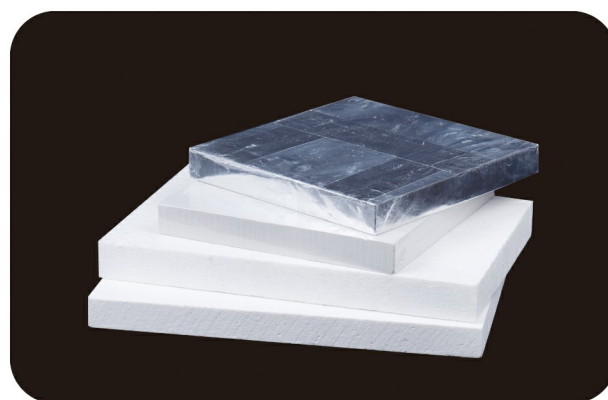
High Density Ceramic Fiber Board	MYTX-1260-43H
Inorganic Ceramic Fiber Board	MYTX-1260-43W
Microporous Board	MYTX-NM-03

Product Description

High density ceramic fiber board adopt special wet processing tech, max density reach 900kg/m^3 , has super low thermal conductivity and excellent bending and fracture strength, is ideal insulation material for furnace bottom and electric tank.

Inorganic ceramic fiber board adopt fiber bulk as raw material, adding inorganic binder and wet processed, or it could be cure treatment, firing processed on traditional board basis. Inorganic board has no smell, no smoke, no color changing under high temp.

Microporous board take nanoscale SiO_2 and $\text{Ti}_2\text{Si}_2\text{O}_5$ as main raw material, wrapped with niu foil or PE film, has extreme low thermal conductivity, good bending strength, thin insulating thickness, low volume etc advantages.



Typical Applications

- **High density board:** furnace bottom insulating, electric tank insulating, other machines or furnace pressure part insulating.
- **Inorganic ceramic fiber board:** glass tempering furnace perforated bricks, home appliance insulating, furnace insulating, smoke free and smell free applications.
- **Microporous board:** Steel, glass, ceramics, cement, power generation, metallurgy etc industries furnace backup lining and insulation.

Typical Properties

Product Code	MYTX-1260-43H	MYTX-1260-43W	MYTX-NM-03
Classification Temp (°C)	1260	1260	1000
Density (kg/m^3)	600-900	320-400	300~350
Tensile Strength (MPa)	≤ 3	0.2	0.7
Thermal Conductivity (Mean 500°C)W/(m.k)	≤ 0.153	≤ 0.153	≤ 0.027
Loss on Ignition (%)	≤ 5	≤ 1	-

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.

Bio Soluble Fiber

Bio Soluble Fiber

Product Grade and Code

Bio Soluble Fiber Bulk	MYTX-AES-21
Bio Soluble Fiber Blanket	MYTX-AES-22
Bio Soluble Fiber Paper	MYTX-AES-54
Bio Soluble Fiber Board	MYTX-AES-43
Bio Soluble Fiber Module	MYTX-AES-35
Bio Soluble Fiber Rope	MYTX-AES-67

Product Description

Bio Soluble Fiber takes CaO, MgO as main chemical composition, is new type material produced with latest technology. Bio soluble fiber is soluble in human body fluid, no any harm to human health, is pollution free, harm free, green, environment-friendly refractory and insulation material.

Typical Features

- Non-Combustible, good sound absorption
- Excellent thermal shock resistance
- Good chemical stability, long working life
- Low thermal conductivity, excellent insulation performance

Typical Properties

Product Code	MYTX-AES-21	MYTX-AES-22	MYTX-AES-54	MYTX-AES-43	MYTX-AES-35	MYTX-AES-67
Classification Temp (°C)	1100					
Density (kg/m ³)	-	64-160	180-200	250-350	180-240	500
Thermal Conductivity (Mean 500°C)W/(m.k)	≤0.153					
Permanent Linear Shrinkage (%)	-	1000°C×24h≤4	1000°C×24h≤4	1000°C×24h≤4	1000°C×24h≤4	-
Loss on Ignition (%)	-	-	≤10	≤5	-	≤15
Shot content(Φ≥0.212mm)(%)	≤20	≤20	-	-	-	-
Chemical composition (%)	CaO	28-32				
	MgO	3-6				
	SiO ₂	60-66				
	Al ₂ O ₃	≤1				

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Applications

- Power Generation/Petrochemical pipes insulation
- High Temp furnace lining
- Petrochemical furnace lining
- High Temp sealing gasket
- Furnace door sealing
- High Temp Filter Media
- Fireproof Roller Blinds
- Module raw material

Composite Insulation Material

High Temp Composite Module

Product Grade and Code

Chromium Ceramic Fiber Module	MYTX-1500-35
Chromium Composite Ceramic Fiber Module	MYTX-1500-35F
Polycrystalline Composite Fiber Module	MYTX-1600-35F
Polycrystalline Composite Flexible Module	MYTX-1600-35D

Product Description

Chromium Composite Module take zirconium fiber blanket and chromium fiber blanket as raw material, process include interactive folding, compressing, anchoring, packaging. Hot face is chromium fiber, cold face is zirconium fiber, could be applied in 1300°C, has excellent high temp resistance.

Polycrystalline Composite Flexible Module take alumina fiber blanket as hot face, take zirconium blanket as cold face, use special structure composition, compressing and packaging. The alumina fiber insulation thickness could be customized per application. The blanket is widely used in 1350°C-1450°C hot applications, has best quality price ratio and excellent insulation effect.

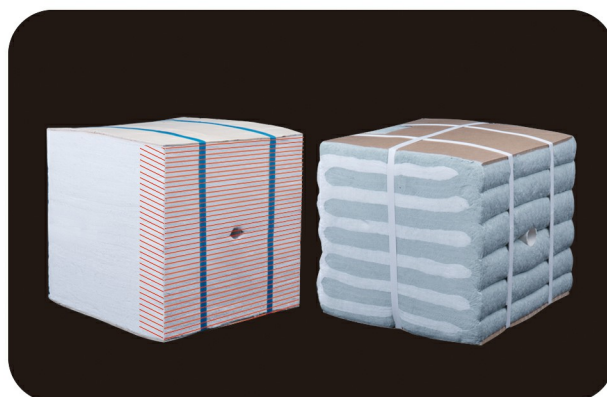
Typical Features

Applied in whole fiber structure furnaces with max temp 1550°C and long term working temp 1350°C-1450°C, high price and quality ratio, high energy saving performance.

Typical Properties

Product Code	MYTX-1500-35	MYTX-1500-35F	MYTX-1600-35F	MYTX-1600-35D
Classification Temp (°C)	1500	1500	1600	1600
Density (kg/m ³)	200-240	200-240	200-240	200-240
Long term working temp (°C)	1350	1300	1400	1350-1450

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Applications

- **Metallurgy industry:** pusher type heating furnace, walking beam heating furnace, annular furnace, bell furnace, CSP CCDR heating furnace.
- **Non-oxidizing heating in cold galvanizing line.**
- **High Temp forging industry**
- **Ceramics industry**

Ceramic Fiber Series

Ceramic Fiber Monolithic Module

Product Grade and Code

Ceramic Fiber Monolithic Module

Product Description

Ceramic Fiber monolithic module is a unique creative solution for furnace insulation lining, it is a whole monolithic module without compressing. Monolithic module is made with high purity alumina, silicon and zirconium sand etc, whole full-automatic process include electric furnace melting, spinning, fiber collecting, needling and CNC cutting etc. Minye monolithic module is available in 1260°C and 1430 °C Temp, it is ideal fast installation furnace lining in various industries.

Typical Features

- High Density
- High Temp Chalking Resistance
- Excellent high temp resistance
- Low thermal conductivity
- Easy cutting in site
- Excellent thermal shock resistance and scour resistance
- Easy and fast installing

Typical Properties

Product Code	Ceramic Fiber Monolithic Module
Classification Temp(°C)	1260
Density(kg/m ³)	192~240
Permanent Linear Shrinkage (%)	1100°C×24h≤3
Resilience (%)	≥80
Anchor Material	304S
Anchor type	Side Anchor/Wing Anchor
Avaliability	300×300×Insulation thickness
Package	Carton with moisture plastic bag

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Applications

- **Petrochemical:** Ethylene cracking furnace, Reforming furnace, Hydrogenation furnace, homogenizing furnace, and process heater etc.
- **Iron & Steel:** Continuous heat treat furnace, blast furnace, forging furnace, hot gas pipe and flue pipes etc.
- **Carbon Industry:** Carbon baking furnace, Unicom fire path backup insulation.

Fireproof Material

Flexible Fireproof Wrap Blanket

Product Grade and Code

Flexible Fireproof Wrap Blanket

Product Description

Flexible Fireproof Wrap Blanket Core material is Minye refractory inorganic fiber blanket, it is alumina silicate, or alkaline earth silicate magnesium fiber needled into blanket, wrapped square glass fiber reinforced composited aluminum foil. Aluminum foil glass fiber composited wrapping, pure aluminum foil wrapping, free wrapping blanket roll all could be customized.

Flexible Fireproof Wrap Blanket refractory grade reach 1100°C, has very low thermal conductivity, excellent refractory performance and insulation performance, the aluminum foil glass fiber composited wrapping offer extra strength and excellent moisture proof performance.

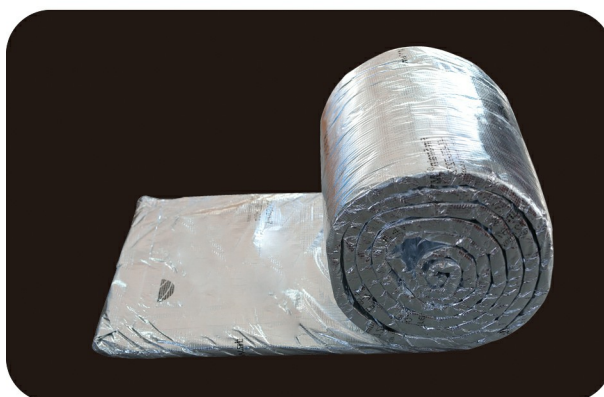
Typical Features

- The lightest ventilation wrapping material.
- Flexible material work well in narrow space and complicated pipe layout
- Easy and fast installing, labor saving
- Easy cutting
- 120 minutes fire resistance
- Wrapping thickness min 40mm
- Excellent insulation and vibration absorption performance

Typical Properties

Product name	Flexible Fireproof Wrap Blanket
Working Temp (°C)	500-1100
Density (kg/m ³)	96
Tensile Strength	48kPa
Thermal conductivity	0.07 W/m·K@ 280°C 0.2 W/m.K@ 800°C
Permanent Linear Shrinkage	1.8% @1050°C
Combustibility Grade	A2
Smoke Toxicity	ZA1
Regular size	610*5200mm/1220*5200mm40mmSingle layer system 610*3600mm/1220*3600mm 60mmSingle layer system

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Applications

- Building ventilation insulation
- Light weight fire resistant and insulation for deck, bulkhead etc important device in ship, speedboat, military warship, offshore platform, FPSO etc.

Light-Weight Mullite Bricks

Light-Weight Mullite Bricks

Product Grade and Code

Light-Weight Mullite Bricks

Product Description

Light-Weight Mullite Bricks contains high porosity, effectively save heat loss and fuel cost. Light weight means less heat capacity, and less time in furnace heating and cooling. The applied temp range is 900 °C to 1600 °C.

Light-Weight Mullite Bricks is mainly used as backup lining in up to 1700 °C furnaces in ceramics, petrochemical, metallurgy and machinery industries.

Typical Features

- Low thermal conductivity, low heat capacity, low impurity content
- High strength, excellent thermal shock resistance and erosion resistance
- Precise dimension



Typical Applications

- **Ceramic industry:** standard brick, roller passage hole brick, hanger bricks, plate brick in roller kiln and shuttle kiln.
- **Metallurgy industry:** hot blast furnace, foundry inner lining.
- **Power industry:** power generation, fluidizedbed devices .
- **Electrolytic Aluminium industry:** furnace lining

Typical Properties

Product code		MYJM-32
Classification Temperature(°C)		1600
Density(g/cm ³)		1100
Permanent Linear Shrinkage(°C×8h)		0.6(1600)
Cold Compressive Strength(Mpa)		3
Modulus of Rupture (Mpa)		1.8
Thermal Conductivity350°C(W/m.k)		0.43
chemical content (%)	Al ₂ O ₃	80
	Fe ₂ O ₃	0.5

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.

Castable

Light Weight Castable

Product Grade and Code

Light Weight Castable

Product Description

Light weight refractory, insulation castable is produced with light-weight aggregate, powder, admixture and binder. The density ranges from 0.6 to 1.7g/cm³ and the service temperature ranges from 800°C to 1650 °C.

Light weight castable has refractory castable and insulation castable two series.

Typical Features

- Low density, low thermal conductivity, excellent insulation performance.
- Lightweight refractory castable could touch flame directly, adapted in all atmospheres.
- Excellent lining integration, long service life, easy installation, and high moldable.

Typical Properties

Product code		MYLC-165
Classification Temp (°C)		1650
Density (kg/m ³)		1.5
Cold Compressive Strength (Mpa)	110°C×24h	7.5
	1300°C×3h	20
Permanent Linear Shrinkage (°C×3h) (%)		0.4(1650)
Thermal Conductivity(W/m.k)	400°C	0.42

※Note: Test data shown are average results of tests conducted under standard procedures and are subjects to variation. If need further product details, pls contact technical dept of Shandong Minye.



Typical Application

- Metallurgy industrial furnace, heat treatment furnace .
- Chemical and building industrial furnace.
- Waste incinerator, circulating fluidized bed boiler.

MINYE 民烨

工业窑炉材料系统定制专家

21.22



Research Center

研发中心



Tensile strength testing device



Compression strength testing device



High temp firing testing furnace



Permanent linear shrinkage testing device



Thermal conductivity testing device



Thermogravimetric Analyzer

Technical Information

技术信息

Conversion sheet for thermal conductivity

W/(m.k)	Kcal/m·k·°C	cal/cm·s·OF	B.T.U.in/ft ² ·h·f
1	8.60000×10^{-4}	2.3898×10^{-5}	1.76145×10^{-1}
1.16279	1	2.77800×10^{-5}	2.04820×10^{-1}
4.18571×10^{-4}	3.60000×10^{-4}	1	7.37290×10^{-3}
5.67715	4.88274	1.35630×10^{-4}	1

Minye ceramic fiber blanket thermal conductivity experienced formula

The experienced formula of kaolin raw material ceramic fiber blanket:

$$\lambda t = 0.035 + 0.203 \times (t_{\text{均}}/1000)^2 \text{ kcal/m} \cdot \text{h} \cdot ^\circ\text{C}$$

The experienced formula of high purity raw material ceramic fiber blanket:

$$\lambda t = 0.054 + 0.272 \times (t_{\text{均}}/1000)^2 \text{ W/m} \cdot \text{k}$$

Conversion sheet between British unit and Metric Unit

Area Measurement

$$\text{in}^2 \times 6.45 = \text{cm}^2$$

$$\text{ft}^2 \times 0.093 = \text{m}^2$$

Density

$$\text{lb/ft}^3 \times 16.02 = \text{kg/m}^3$$

$$\text{lb/in}^3 \times 27.68 = \text{g/cm}^3$$

Heat Storage

$$\text{Btu/ft}^2 \times 2.71 = \text{Kcal/m}^2$$

Length

$$(\text{''}) \text{ in} \times 2.54 = \text{cm}$$

$$(\text{''}) \text{ in} \times 25.4 = \text{mm}$$

$$(\text{'}) \text{ ft} \times 0.3048 = \text{m}$$

Pressure

$$\text{lb/ft}^3 \times 16.02 = \text{kg/cm}^3$$

$$\text{lb/in}^3 \times 27.68 = \text{g/cm}^3$$

$$\text{lb/in}^2 \times 0.0703 = \text{kg/cm}^2$$

$$\text{lb/ft}^2 \times 4.88 = \text{g/cm}^3$$

Temperature

$$^\circ\text{C} = 5/9 (\text{oF} - 32)$$

$$^\circ\text{F} = 9/5 ^\circ\text{C} + 32$$

$$^\circ\text{K} = ^\circ\text{C} + 273.15$$

$$^\circ\text{R} = \text{oF} + 459.67$$

Thermal Conductivity

$$\text{Btuin/hrft}^2 \times 0.1442 = \text{W/m}^\circ\text{C}$$

$$\text{Btuin/hrft}^2 \times 0.124 = \text{Kcal/hrm}^\circ\text{C}$$

$$\text{Btuin/hrft}^2 \times 1.73 = \text{W/m}^\circ\text{C}$$

Volume

$$\text{in}^3 \times 16.39 = \text{m}^3$$

$$\text{ft}^3 \times 0.0283 = \text{m}^3$$

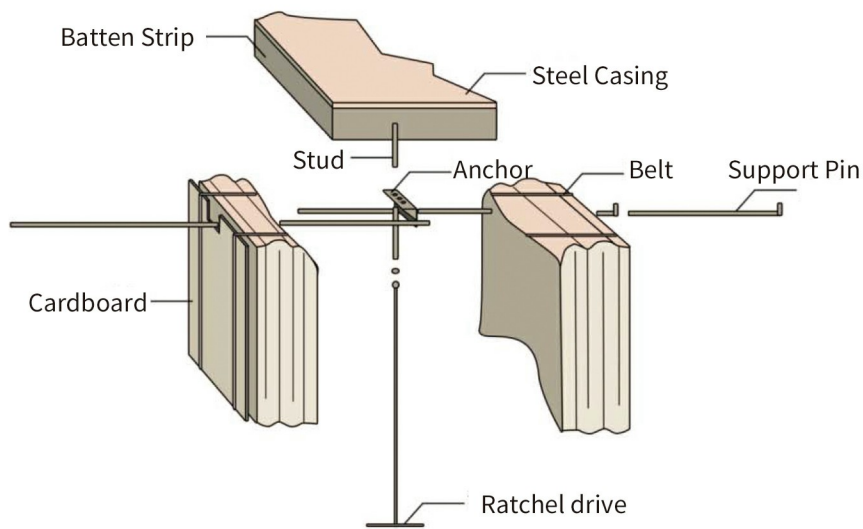
Weight

$$\text{lbs} \times 454 = \text{g}$$

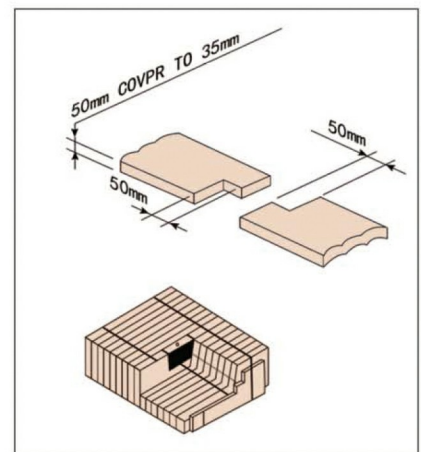
$$\text{lbs} \times 0.454 = \text{kg}$$

Installation Icon

模块安装图示

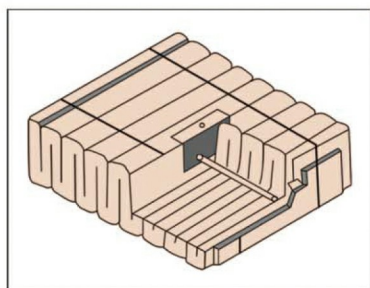
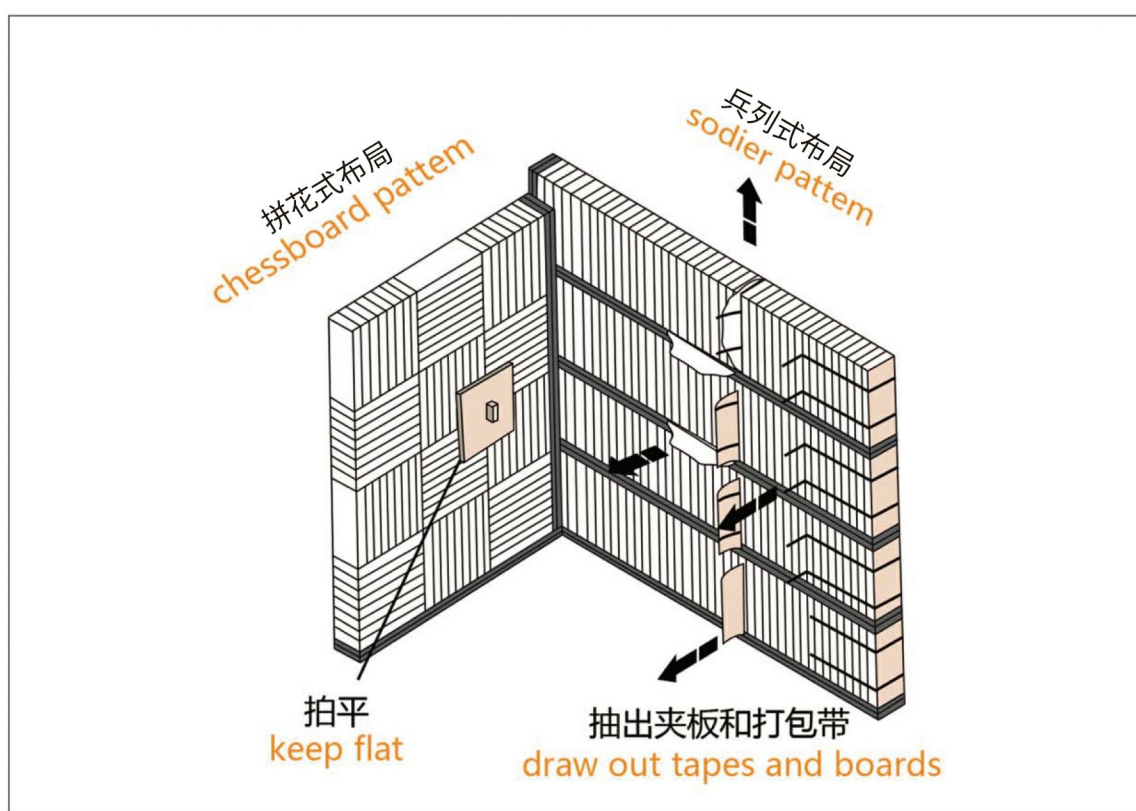


Anchoring Fixing

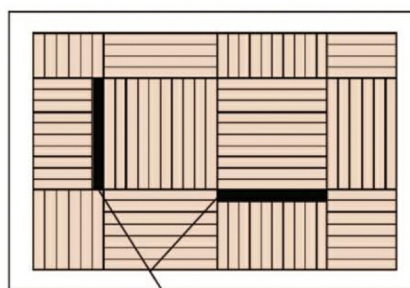
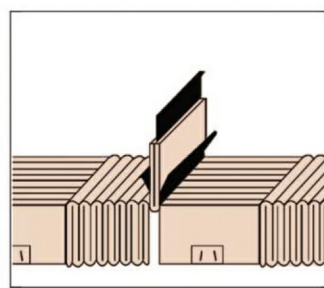


Btten Strip Joints

Module lining might be installed in Parquet Pattern(chessboard pattern) or in Unidirectional Pattern(soldier pattern). After we install the modules individual by the sequence and finishing the installation according to the requirement, and plastic tubes are pumped out from the center of modules and the hot faces are protected well, then blocking the holes one by hone. Batten strip will be used in Unidirectional Patten. The important word of component installation is to assure that the inner lining are compacting, smooth, the air gaps and cavities are not allowed. Careful inspection again, catching the holes dealing with them immediately as the end of of installation, and then initiation into service.



Anchoring Fixing

Batten Strip
Insert Batten Strip

Insert Batten Strip

Product Application

产品应用

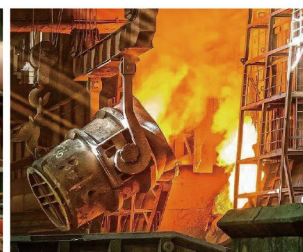
01 Petrochemical Industry

Atmospheric furnace, Decompression Furnace, Hydrogen production furnace, Cracking furnace, Hydrogenation furnace, Reforming furnace, Styrene furnace, Delayed coking oven, Methanol reformer, Ammonia converter.



02 Iron & Steel Industry

Annual furnace, Bell type furnace, Bogie furnace, Tempering furnace, Hardening furnace, Forging furnace, CSP line, Roller Hearth furnace



03 Power Generation Industry

Power plant boiler, Steam turbine, Heat transmission pipeline, utility boiler, Steam Turbine, Water turbine, Alternator, Voltage transformer



04 Ceramics and glass industry

Roller kiln, tunnel kiln, shuttle kiln



05 Cement industry

Rotary Kiln, Wet-process kiln, Dry cement kiln, Hollow kiln



06 Non-ferrous industry

Brazing furnace, Titanium alloy annealing furnace, Aluminium alloy aging solidification furnace, Aluminium melting furnace, Electrolytic copper



07 Environmental protection industry

Refuse incinerator, RTO, Desulfurization and denitration sintering furnace, RCO Regenerative catalytic furnace, CTO Catalytic oxidation furnace, TO Direct fired oxidation furnace



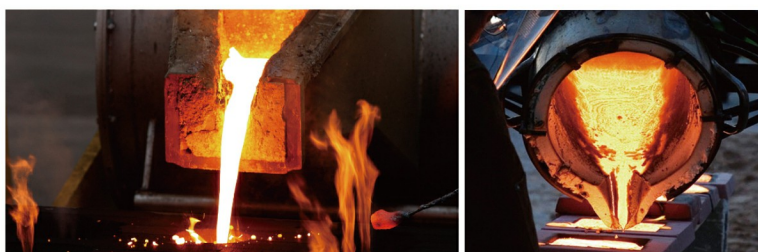
08 Carbon Industry

Carbon baking furnace, Graphitization kiln, Unicom fire path



09 Superalloy industry

Crucible, Double roller thin belt foundry tip, Drain Channel, Riser casing



10 Vessel fireproof industry

Oceanic oil and gas pipeline fireproof, pipeline insulation, tunnel and shipbuilding industry fireproof



11 Transportation Industry

Bullet train roof insulation, New energy vehicle, Lithium battery insulation, Cold chain logistics insulation



12 Other industries

Photovoltaic industry, Lime industry, Rare metal smelting industry, Building insulation industry.





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