

FINEFLEX BIO™ Bulk

FINEFLEX BIO™ Bulk is made by forming silica-magnesia-calcia-based alkaline earth silicate (AES) wool into a cotton-like material. It has excellent flexibility and thermal shock resistance.

► Applications

- Filler material for insulating ceilings and walls of various types of kilns
- Expansion joint filling material for ceilings and walls of various type of kilns
- Packing material for expansion joints of various types of kilns



► Quality Characteristics

Item		TOMBO™ No. 5605
Feature	Excellent flexibility and thermal shock resistance	
Color	White	
Max. heatproof temp. (°C)	1300	
Average fiber diameter (μm)	4	
Chemical composition (wt%)	SiO ₂	76
	CaO+MgO	22
	Other	2

* The above figures are actual measurements made by Nichias and not standard values.

► Packaging/Packing

Quantity
10kg/Polyethylene bags

FINEFLEX BIO™ Blanket

FINEFLEX BIO™ Blanket is made by continuously laminating silica-magnesia-calcia based alkaline earth silicate (AES) wool, molding it into a blanket, and needle-punch processing it.

Applications

- General insulating material
- Lining material and backup material for insulating the ceilings and walls of kilns
- Expansion joint filling material for interior parts of kilns



Quality Characteristics

Item		TOMBO™ No. 5615
Color		White
Max. heatproof temp. (°C)		1300
Average fiber diameter (μm)		4
Chemical composition (wt%)	SiO ₂	76
	CaO+MgO	22
	Other	2
Coefficient of thermal contraction (%)	1100°C × 8hr	1.1
	1200°C × 8hr	1.7
	1300°C × 8hr	2.0

* The above figures are actual measurements made by Nichias and not standard values.

* Max. heatproof temp. is the temperature at which contraction is 4% or less after 8 hours of heating.

Standard Dimensions

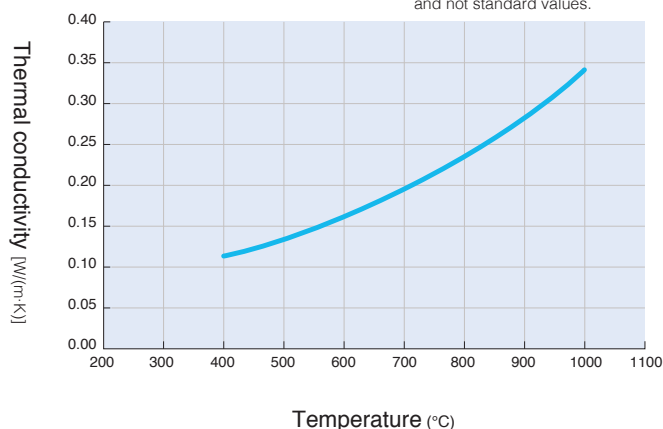
Note 1: 50mm products have a length of up to 6000mm.

TOMBO™ No.	Type	Thickness (mm)	Width × length (mm)
5615	#100	12.5	600 × 1200
	#130	25	600 × 3600
	#160	50	600 × 6000
			600 × 7200 ^{Note 1}

* Please contact us for inquiries about other sizes.

Thermal conductivity

* The following figures are actual measurements made by Nichias and not standard values.



Thermal conductivity of FINEFLEX BIO™ Blanket (130kg/m³)

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* TM indicates a trademark of Nichias Corporation.



NICHIAS Corporation

<http://www.nichias.co.jp/>

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FINEFLEX BIO™ Board

FINEFLEX BIO™ Board is a product made by adding organic and inorganic binders to FINEFLEX BIO™ Bulk and molding it into a board shape.

TOMBO™ No.5625-M is a low odor type to which small amounts of organic binder are added. TOMBO™ No.5625-A is a general-purpose type with excellent workability.

► Features

- Exhibits an excellent thermal insulating effect due to its light weight and low thermal conductivity.
- Production of processed goods is possible.

► Applications

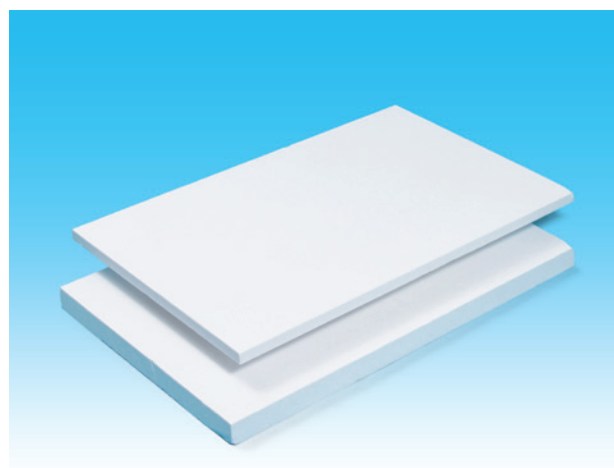
- Standard high-temperature insulating material
- Lining material and backup material for insulating ceilings and walls of kilns
- Expansion joint filling material for interior parts of kilns
- Gas seal material

► Quality Characteristics

Item		TOMBO™ No.	
		5625-M	5625-A
Features		Low odor type	Excellent workability
Color		White	
Density (kg/m³)		250	
Max. heatproof temp. (°C)		1300	
Normal usage temperature (°C)		1000	
Bending strength (MPa)	Normal state	0.2	0.5
Coefficient of thermal contraction (%)	1000°C	1.2	0.9
	1200°C	1.7	2.8
Ignition loss (%)		0.7	4.0
Chemical composition		SiO ₂ , CaO, MgO, Other	

* The above figures are actual measurements made by Nichias and not standard values.

* Depending on usage environment, deformation or cracking may occur at temperatures over 1100°C.
Please inform us of your usage conditions when ordering.



► Standard Dimensions

Thickness (mm)	Width × length (mm)
25	600 × 900
50	

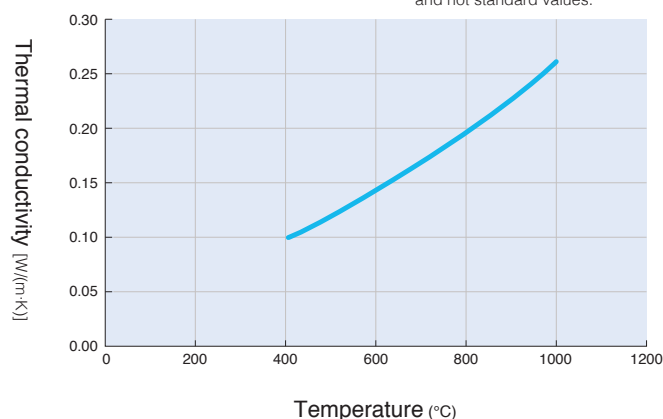
* Please contact us for inquiries about other sizes.

► Packaging/Quantities

TOMBO™ No.	Carton dimensions (mm)	Quantity	
		Thickness 25mm	Thickness 50mm
5625-M	110 × 620 × 920	4	2
5625-A			

► Thermal conductivity

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Thermal conductivity of TOMBO No.5625-A/M

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FINEFLEX BIO™ Paper

FINEFLEX BIO™ Paper A is comprised of FINEFLEX BIO™ Bulk to which organic binder has been added, while FINEFLEX BIO™ Paper R and M are comprised of FINEFLEX BIO™ Bulk and amorphous inorganic fiber to which organic binder has been added, each type being made into paper form by a paper making machine.

► Features

- **FINEFLEX BIO™ Paper A**
A general-purpose product that can withstand high temperatures
- **FINEFLEX BIO™ Paper R**
A product that has excellent tensile strength, flexibility, and sealing properties
- **FINEFLEX BIO™ Paper M**
A product that emits few odors during baking

► Applications

- General-purpose insulating material
- Lining material and backup material for insulating ceilings and walls of kilns
- Expansion joint filling material for interior parts of kilns
- Sealing material for gas powered hot water heaters
- Sealing material for combustion equipment

► Quality Characteristics

Item	TOMBO™ No.		
	5635-A	5635-R	5635-M
Features	High heat-resistance type	Excellent sealing efficiency	Low odor type
Color	White	White – light brown	
Density (kg/m³)	250		240
Max. heatproof temp. (°C)	1300	800	1000
Tensile strength (N/25mm)	1.0mm:23 2.0mm:39 3.0mm:58 4.0mm:78	1.0mm: 34 2.0mm: 66 3.0mm:100 4.0mm:135	1.0mm:17 2.0mm:37 3.0mm:49 4.0mm:74
Ignition loss (%)	4	7	2

* The above figures are actual measurements made by Nichias and not standard values.

* Binders may dissipate after heating, reducing the shape retention of the product.



► Standard Dimensions

Thickness (mm)	Width × length (mm)
1.0	600 × 1200
2.0	
3.0	
4.0	

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FINEFLEX BIO™ Mold

FINEFLEX BIO™ Mold is a product made by adding organic and inorganic binders to FINEFLEX BIO™ Bulk and molding it into various shapes by suction molding.

TOMBO™ No.5645-M is a low odor type to which small amounts of organic binder are added. TOMBO™ No.5645-A is a general-purpose type with excellent workability.

► Features

- Exhibits an excellent thermal insulating effect due to its light weight and low thermal conductivity.
- Can be vacuum molded into a variety of shapes and thickness.
- Easy to process by grinding, cutting, etc.

► Applications

- Standard high-temperature insulating material
- Internal insulation for compact electric furnaces
- Aluminum tap holes and stopper covers
- Other thermal insulation materials and backup materials

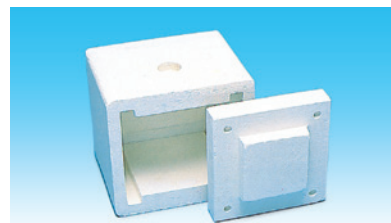
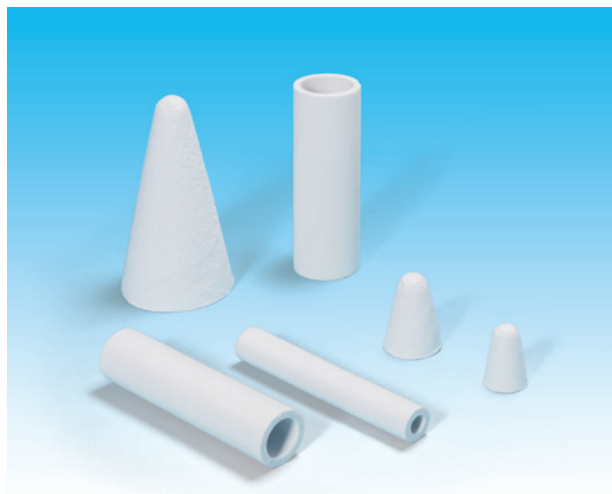
► Quality Characteristics

Item	TOMBO™ No.	
	5645 -M	5645 -A
Features	Low odor type	Excellent workability
Color	White	
Density (kg/m ³)	250	
Max. heatproof temp. (°C)	1300	
Normal usage temperature (°C)	1000	
Ignition loss (%)	0.7	4.0
Chemical composition	SiO ₂ , CaO, MgO, Other	

* The above figures are actual measurements made by Nichias and not standard values.

* Please ask us about shapes.

* Depending on usage environment, deformation or cracking may occur at temperatures over 1100°C.
Please inform us of your usage conditions when ordering.



Internal insulation for compact electric furnaces

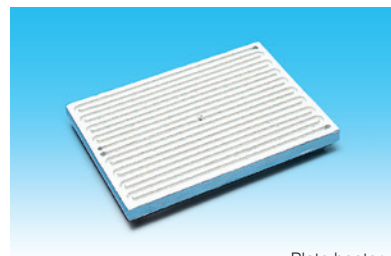
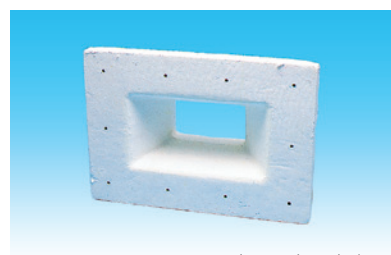


Plate heater



Inspection window

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FINE BLOCK™ is a product produced by molding FINEFLEX BIO™ blankets or alumina fiber blankets into a block.

Types

TOMBO™ No.5655-B FINE BLOCK-B

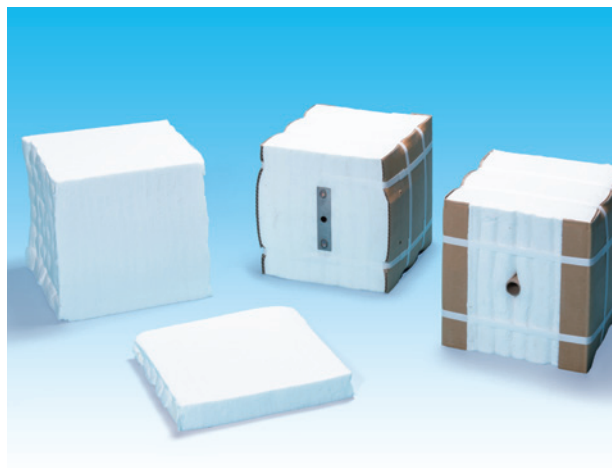
A block product sewn by tuck pins after cutting and laminating blankets

TOMBO™ No.5655-S FINE BLOCK -S

A block product made by compression molding blankets that have been cut and laminated, and inserting dedicated support fittings

TOMBO™ No.5655-W FINE BLOCK -W

A block product made by compression molding blankets that have been folded, and inserting dedicated support fittings



Applications

- Lining material for industrial furnaces and uses related to iron and steel
- Veneering material

Quality Characteristics

Item	TOMBO™ No.							
	5655-B		5655-S			5655-W		
	5655-B16	5655-BR	5655-S13	5655-S17	5655-SR	5655-W13	5655-W17	5655-WR
Raw cotton	FINEFLEX BIO™ Blanket	Alumina fiber blanket	FINEFLEX BIO™ Blanket		Alumina fiber blanket	FINEFLEX BIO™ Blanket		Alumina fiber blanket
Density (kg/m ³)	160	130	130	170	130	130	170	130
Max. heatproof temp. (°C)	1300	1600	1300		1600	1300		1600

* The above figures are actual measurements made by Nichias and not standard values.

Standard Dimensions

Thickness (mm)	Width × length (mm)
300	300 × 300

* Please contact us for inquiries about other sizes.

FINE BLOCK™ Support Fittings

Fixing method		
Internal fastening type	External fastening type	Single operation type
Fastening by screws and nuts		Single operation type by spring fastening

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FINEFLEX BIO™ Cast

FINEFLEX BIO™ Cast is a unshaped monolithic refractory material in paste form, wet blended from FINEFLEX BIO™ Bulk, inorganic binders, etc. Because it is a soft kneaded material, it is a repairing material that can be worked into special shapes and easily used in complicated locations.

Types

TOMBO™ No.5675-400

Standard type general-purpose product

TOMBO™ No.5675-700

High-density type general-purpose product

TOMBO™ No.5675-400P

Applied to pump infusion and spray methods

Applications

- Skit pipe host parts for steel heating furnaces
- Burner tiles and roller tiles
- Ceilings and side walls of heating furnaces for casting
- Repair of existing fireproof materials
- External wall sealing for glass tank kiln regenerators

Quality Characteristics

Item		TOMBO™ No.		
		5675-400	5675-700	5675-400P
Applications		General-purpose product (standard type)	General-purpose product (high-density type)	For pump construction
Color		White – light color		
Density (kg/m³)	Normal state (before drying)	1160	1320	1160
	105 °C (after drying)	450	750	480
Max. heatproof temp. (°C)		1300		
Bending strength (MPa)	105 °C (after drying)	0.5	0.9	0.8
	1200 °C ×24h	0.4	0.8	0.4
Coefficient of thermal contraction (%)	1200 °C ×24h	2.0		
Thermal conductivity [w/(m·K)]	600 °C	0.19	0.20	0.22

* The above figures are actual measurements made by Nichias and not standard values.

* Thermal conductivity varies according to the state of construction.



Packaging/Packing

TOMBO™ No.	Packaging/Packing	
5675-400	2kg per can	15kg per can
5675-700	2kg per can	20kg per can
5675-400P	15kg per can 330cc per cartridge	300cc per polyethylene bag 1000cc per polyethylene bag

* FINEFLEX BIO™ Cast is packed into polyethylene bags and inserted into cans.

* The shelf life is six months in an unopened state within an internal cold and dark room at 4°C or more.



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FINEFLEX BIO™ Textile Products

[Cloth/Tape/Cord/Twisted Rope/Braided Rope]

Applications

- Heating zone separators and curtains for furnaces
- Combustion surfaces of infrared heating zones
- Insulation of grooves and gaps
- Cushioning material for high temperature parts
- Expansion joint filling material for the interior of kilns

TOMBO™ No. **5685-A**

FINEFLEX BIO™ Cloth

A product of alkaline earth silicate wool woven into a thick cloth.

Thickness (mm)	Width (mm)	Length (m)
2	1000	30

TOMBO™ No. **5685-B**

FINEFLEX BIO™ Tape

A product of alkaline earth silicate wool woven into a thick tape.

Thickness (mm)	Width (mm)	Length (m)
2	25, 38, 50, 65, 75, 100	30

TOMBO™ No. **5685-C**

FINEFLEX BIO™ Cord

A product of multiple alkaline earth silicate wool yarns tightly twisted together.

Thickness (mm)	3.2	4.8
Packaging/Packing	1kg/Polyethylene bags	

TOMBO™ No. **5685-D**

FINEFLEX BIO™ Twisted Rope

A product of multiple alkaline earth silicate wool yarns twisted together into a coarse thread, strands of which are then further twisted together into rope form.

Thickness (mm)	6.4	9.6	12.7	15.9	19.1	22.2	25.4
Length (m)	30						

TOMBO™ No. **5685-E**

FINEFLEX BIO™ Braided Rope

A product with alkaline earth silicate wool bulk fiber at its center and a surface of coating material, roughly braided into rope form.

Thickness (mm)	15	20	25	30	35	40	50	60	80	100	120
Length (m)	30							20	10	5	

Quality Characteristics

Item	TOMBO™ No.						
	5685 - A		5685 - B	5685 - C	5685 - D	5685 - E	
	5685-A-F	5685-A-S				5685-E-S	5685-E-G
Reinforcing wire/coating material	Iron-chromium wire	SUS wire	SUS wire	Iron-chromium wire	Glass yarn	SUS wire	Glass yarn
Max. heatproof temp. of reinforcing wire/coating material (°C) Note 1	1100	800	800	1100	550	800	550
Mass (kg/m²)	1.07	1.15	Depending on width and thickness				
Tensile strength (N/25mm)	Vertical	719	—	—	—	—	—
	Horizontal	461					
Ignition loss (%)	12	14	11	11	14	—	—

* The above figures are actual measurements made by Nichias and not standard values.

Note 1: Usable at higher temperatures than above in applications where handling ability and shape retention after heating are not required.

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