

Thermal Insulation Materials excellent in non-wettability and durability



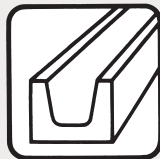
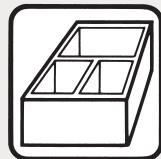
Thermal Insulation Materials For Molten Aluminum



NICHIAS

NICHIAS Thermal Insulation Materials

Manufacturing process of aluminum products and examples of how NICHIAS

Manufacturing Process		Aluminum ingot	Melting	Transfer	Holding
					
Name of equipment	Manufacturers of aluminum rolling	Large-sized aluminum melting furnaces		Launders Ladles Transfer pipes Troughs	Holding furnaces
	Manufacturers of Aluminum casting and die-casting	Aluminum melting furnaces Reverberating furnaces Skull crucible furnaces			Holding furnaces
Product name and applications	TOMBO™ No. 4720 LUMIBOARD™			Launders	Baths
	TOMBO™ No. 4723 LUMISUL™			Launders, Ladles, Transfer pipes, Troughs	Baths
	TOMBO™ No. 4722-A LUMICAST™ A			Launders, Ladles	

Aluminum is formed and processed into various shapes by processes of melting, transfer, holding to casting, etc. Insulation products manufactured by NICHIAS for molten aluminum are excellent in non-wetting and low erosion performance, and durability. They are used as machined or cast components that come directly into contact with molten aluminum in every stage of processing. They contribute to improvement of product quality and yield, efficiency of casting work, and energy savings by reducing fuel consumption.

- TOMBO No. 4720 LUMIBOARD Calcium silicate boards
- TOMBO No. 4723 LUMISUL Formed products
- TOMBO No. 4722-A LUMICAST A Fibrous castables

Most suitable products can be selected from the products of different forms and advantages according to the application and the purpose.

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⚠ Cautions for product selection

1. The information and recommendations in this catalog do not assure that the products can be used in contact with all aluminum alloys.
2. The products listed in this catalog are not suitable for use in contact with flux.
3. Please pay attention to the use of molten aluminum alloys that generally consist of activated metals such as Magnesium, Strontium and Sodium (1% by weight and over). In this case, please consult us prior to use.

Precautions for handling products

⚠ CAUTION

Please observe the following cautions in order to maintain the intrinsic functions of the products and also to ensure that these products are used safely.

- Do not use a product for any other purpose than the ones described in the catalog and specification.
- Store products indoor at ordinary temperature and humidity, and strictly avoid to get wet.
- Check the precautions for occupational health with the SDS.
- For disposal, follow local regulations.

GE2012F_E

For Molten Aluminum

*TOMBO is a registered trademark or a trademark of NICHIAS Corporation.
 *Names with a TM symbol are registered trademark or trademark of NICHIAS Corporation.

thermal insulation materials are used.



Launders, Distributors	Hot top casting Float casting	Building materials (sash, etc.) Food containers (cans, foils)
	Die casting Gravity casting Low-pressure casting	Automotive parts (engine parts, wheels, etc.) Electric appliances (various parts) Office equipment (various cases) Cameras, measuring instrument (frames, etc.)
Launders	Hot top ring headers Float spouts	
Launders	Ladles, Pouring gates Inner sleeves	
Distributors, Launders	Ladles	

Products, Physical Properties, and Applications

Products	TOMBO No. 4720 LUMIBOARD	TOMBO No. 4723 LUMISUL	TOMBO No. 4722-A LUMICAST A
Properties			
Form	Board	Formed shapes in single piece	Putty
Advantages	Lightweight, high mechanical strength, excellent in thermal insulation and machinability	Seamless, formed and sintered shapes in single piece. High mechanical strength Suitable for complicated and large-sized shapes	Castable material Lightweight, Excellent in thermal insulation, Suitable for on-site application of the inner lining material of the vessel in irregular shapes
Erosion resistance	◎	◎	○
Non-wettability	◎	◎	○
Thermal insulation property	◎	○	◎
Machinability	◎	○	n/a
Formability	n/a	◎	○
Mechanical strength	○	○	n/a
Installation method	• Machining, bonding, and screwing	• Installation of formed shapes	• Inner lining by troweling or applying lumps. Needs drying by heating
Applications	• Inner lining material of the bath for holding furnaces • Floats, spouts • Hot top ring headers • Hunter tips • Other machined shapes	• Launders • Bath for holding furnaces • Transfer pipes • Inner sleeves • Troughs • Other formed shapes	• Ladles • Distributors • Launders • Vessels • Other lined applications

Note: ◎: Excellent ○: Good

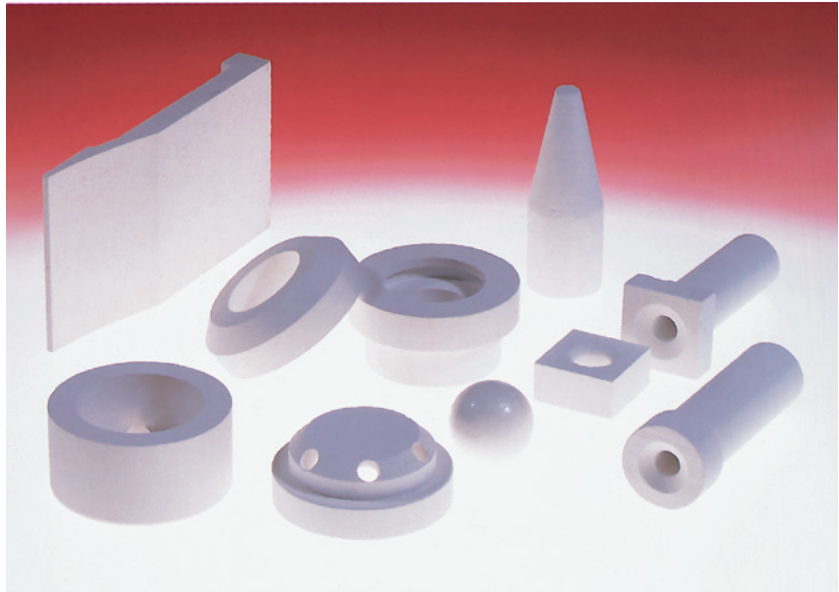
Non wettable thermal insulation boards

TOMBO™ No. 4720

LUMIBOARD™

LUMIBOARD is a xonotlite-based calcium silicate board with excellent heat resistance. It is excellent in machinability and is most suitable as thermal insulation material for transfer, casting, and holding processes where the insulation material is in direct contact with molten aluminum alloy such as launders, spouts, floats, hot top ring headers, and holding furnaces for die-casting.

There are two products, L-14Z is for standard applications and L-100 is reinforced with special fiber for use in casting parts such as hot top ring headers, etc.



Advantages

● **Low thermal conductivity, Low heat capacity**

Molten aluminum can be transferred with minimal reduction in temperature when LUMIBOARD is used in the launders between the melting and holding furnace and the die-cast machine. When LUMIBOARD is used for the lining of the holding furnace, energy savings can be achieved by raising temperature in a shorter time than conventional castables.

● **Excellent machinability**

LUMIBOARD can be machined in a variety of shapes such as floats, spouts, hot top ring headers, etc. due to its excellent machinability.

● **Easy to remove solidified metal**

LUMIBOARD is non wettable with molten aluminum so it is easy to remove solidified metal.

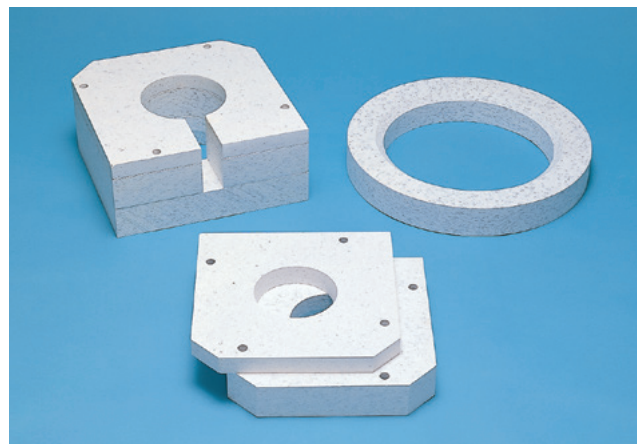
Applications

● **L-14Z**

Launders, Baths for holding furnaces, Floats, Spouts, etc.

● **L-100**

Hot top ring headers, Floats, Spouts, etc.



Standard dimensions

Description	Products		L-14Z										L-100					
	1275	2550	12.7	19.1	25.4	28.5	31.8	38.1	44.5	50.8	63.5	76.2	101.6	12.7	19.1	25.4	28.5	
Thickness																		
Width × Length (mm)			1260 × 1275										1260 × 2550					
Unit weight (kg/ea)	1275	2550	17.1	25.7	34.1	38.3	42.7	51.2	59.8	68.2	85.4	102.4	136.6	15.9	23.8	31.7	35.6	
			34.3	51.5	68.6	76.9	85.8	102.8	120.1	137.1	171.4	205.7	274.2	31.8	47.9	63.7	71.4	
Surface finish			Sanded on both faces										Not sanded		Sanded on both faces			

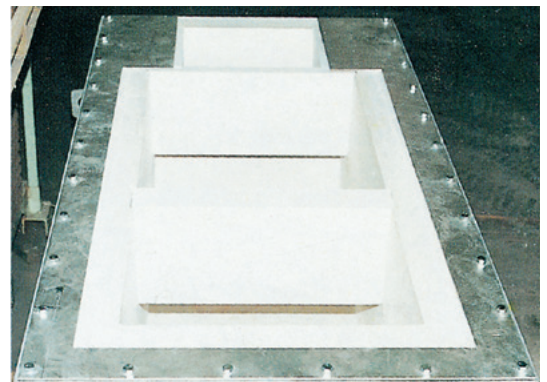
Physical properties

Properties		Products			
		L-14Z	L-100		
Bulk density	(kg/m ³)	840	800		
Hardness (Durometer D scale)		64	64		
Screw grip ⁽¹⁾	(N)	1000	1100		
Bending strength (MPa)	In normal ambient temperatures	8.8	9.3		
	After heating at 750°C× 24hrs	6.8	6.1		
	After heating at 1000°C× 24hrs	1.7	1.0		
Compressive stress (MPa)	At 0.5% compaction	0.7	0.9		
	At 1.0% compaction	2.3	2.7		
Linear heat shrinkage (%)		Length	Thickness	Length	Thickness
	After heating at 750°C× 24hrs	0.4	1.1	0.4	1.1
	After heating at 1000°C× 24hrs	0.9	4.6	0.6	2.0
Weight loss on ignition (%)	After heating at 650°C× 3hrs	1.9	3.2		
	After heating at 850°C× 3hrs	3.9	5.8		
	After heating at 1000°C× 3hrs	4.1	6.2		
Thermal expansion (1/°C)	Initial heating	5.1×10 ⁻⁶	4.4×10 ⁻⁶		
	From second heating onward	6.6×10 ⁻⁶	6.5×10 ⁻⁶		
Thermal conductivity (W/(m·K))	at 300°C	0.20	0.19		
	at 500°C	0.20	0.20		
	at 700°C	0.20	0.20		

* The above figures are actual values measured by NICHIAS and not specification values.

Note: (1) Screw : JIS B 1122 Self-tapping screw of 4mm diameter
Pilot hole: 3.2mm diameter (penetrated through the thickness)
Penetration depth: 22mm

Example of application for holding furnace



Cautions for drying and preheating

- As products are shipped from the factory in dry condition, moisture absorption during storage and water absorption from the joint filling sealant during installation could cause cracks when LUMIBOARD is in contact with molten aluminum. Please dry LUMIBOARD with an electric furnace, heater, or by putting the LUMIBOARD in the furnace prior to use.
- Please dry LUMIBOARD L-100 at a temperature under 250°C to prevent the reinforcing fiber from burning away.
- Please dry formed products for the bath of the holding furnace at approximately 150°C prior to raising temperature. Please raise temperature at a speed of 25°C per hour as a guideline and keep the temperature at each of the following points (200°C, 400°C and 600°C) for 6 to 12 hours.

31.8	38.1	44.5	50.8	63.5	76.2	101.6
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39.7	47.6	55.5	63.4	79.2	95.4	126.8
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79.7	95.5	111.5	127.3	159.1	191.0	254.6
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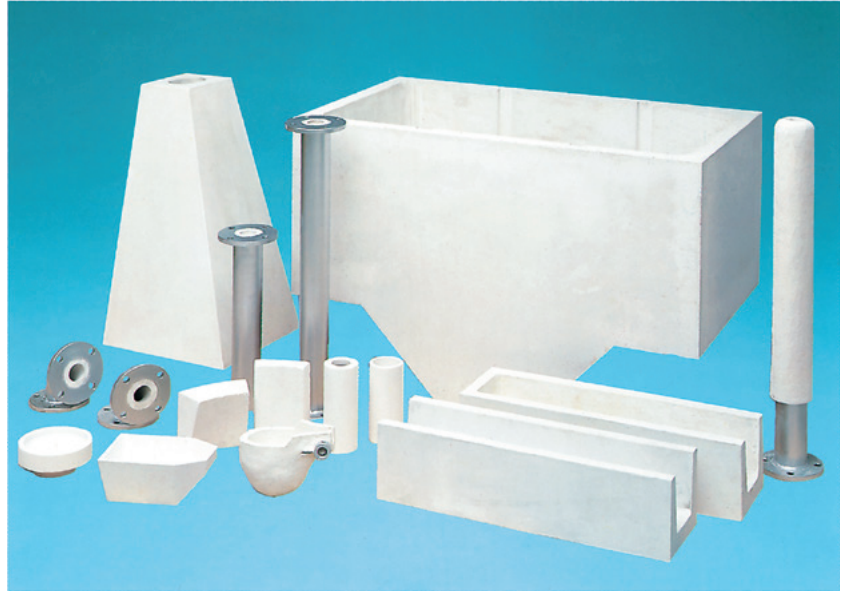
Sanded on both faces			Not sanded			
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Molded shapes for molten aluminum vessel

TOMBO™ No. 4723

LUMISUL™

LUMISUL is molded and sintered shapes for use in the inner lining of the molten aluminum vessel where LUMISUL is in direct contact with molten aluminum. LUMISUL is excellent in non wettability, mechanical strength, thermal insulation and machinability. We have a proprietary molding technology that allows us to respond to requests for various shapes.

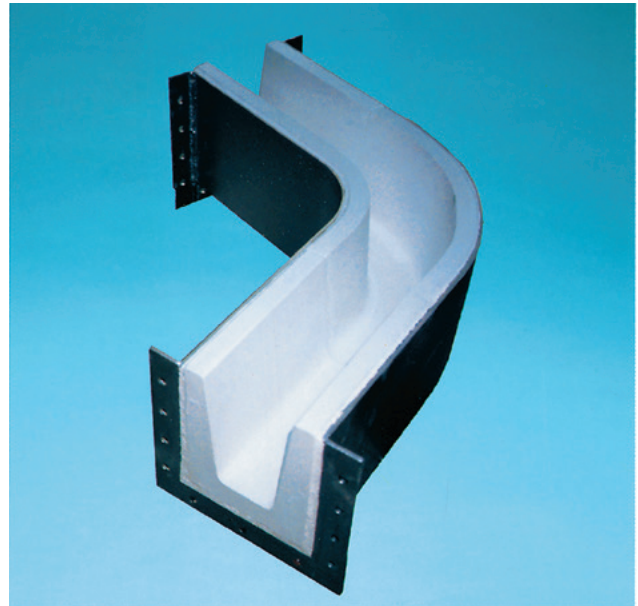


Advantages

- **Excellent in non wettability and inertness to erosion (erosion resistance)**
LUMISUL is excellent in non wettability and inertness to erosion (erosion resistance) to molten aluminum.
- **Excellent in thermal insulation**
Since LUMISUL is lighter in weight and lower in thermal conductivity than conventional refractory products, temperature drop during the transfer of molten aluminum can be reduced.
- **Sintered product**
Since LUMISUL is thoroughly factory-sintered, it contains almost no moisture, which is harmful to molten aluminum, and is excellent in thermostability.
- **Ease of handling**
Machining is not needed and product is easy to handle since LUMISUL is a formed product.
- **Ease of machining**
Machining is easy if needed.

Applications

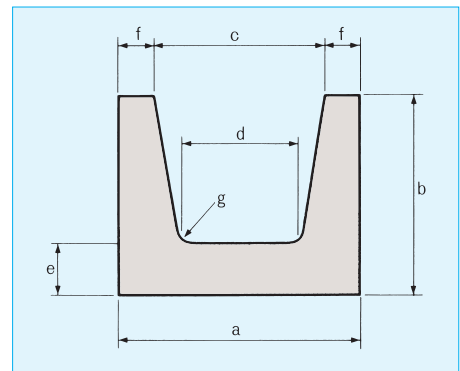
- Launders, Baths for holding furnace, Inner sleeves, Transfer pipes, Troughs, Pouring gates, Ladles, Stokes and various molded shapes



Laundry

Standard dimensions (Launders)

Product type	Standard dimensions (mm)							Length	Unit weight (kg)
	a	b	c	d	e	f	g		
LS-4	194	233	134	90	40	30	R15	800	26
LS-5	220	200	150	120	50	35	R20		26
LS-6	280	150	180	150	50	50	R15		28
LS-7	175	105	115	95	35	30	R15		12
LS-8	104	101	64	54	26	20	R15		7
LS-11	280	240	200	160	50	40	R30		37
LS-13	320	300	240	210	60	40	R40		47



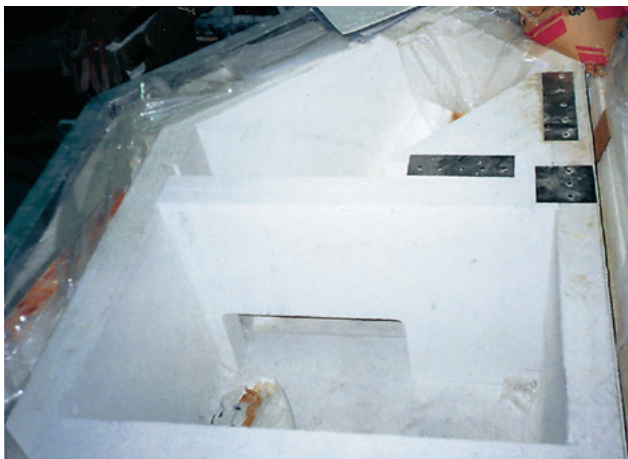
Physical properties

Products	LD	A41	FS-6	AK	AD	AC
Properties	General-type			High density-type		
	Standard	Standard	Thermal shock resistance	Standard	Heat storage	Non-wettability
Main raw material	Wollastonite	Wollastonite Amorphous silica	Amorphous silica	Chamotte	Silica carbide	Zircon
Maximum service temperature (°C)	1000	1000	1000	1550	1200	1600
Bulk density (g/cm ³)	1.35	1.35	1.80	2.35	2.60	3.00
Bending strength (MPa)	4	3	7.5	14	14	17
Compressive strength (MPa)	10	6	35	60	63	100
Coefficient of thermal expansion (×10 ⁻⁶ /°C)	7	4	1	5	3	5
Thermal conductivity (W/(m·K))	0.34 (700°C)	0.36 (700°C)	0.84 (700°C)	1.9 (500°C)	11.0 (500°C)	2.7 (500°C)

* The above figures are actual values measured by NICHIAS and not specification values.

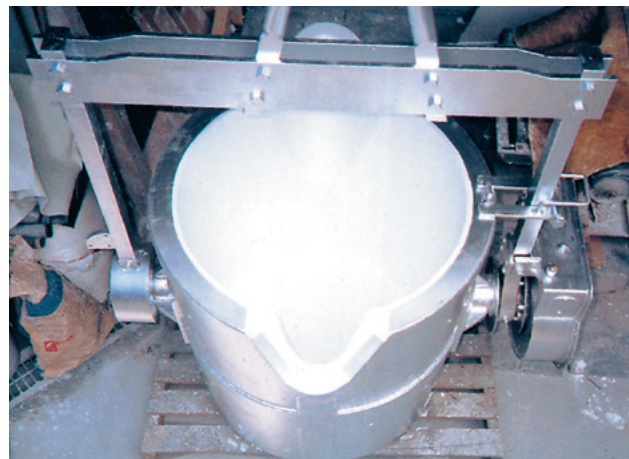
Baths for holding furnace

Various molded shapes of LUMISUL that can contain up to 2 metric tons of molten aluminum are available.



Bath

Ladle



Ladle

Cautions for handing the products

- The minimum thickness of LUMISUL is 20mm.
- Please dry and preheat because there is a possibility of moisture absorption during storage.
[Standard pre-heating conditions] Rate of temperature increase: 25°C per hour
Keep the temperature: 700°C for 5hours
- Please do not use in direct contact with flux.

Alkaline earth silicate (AES) wool based

TOMBO™ No. 4722-A

LUMICAST™ A

LUMICAST A is an alkaline earth silicate (AES) wool based fibrous castable used as a lining for casting vessels and launders, etc. where LUMICAST A is in direct contact with molten aluminum alloys. Non-wettability is enhanced by our original production method. Application to various shapes is easy. LUMICAST A forms an even and seamless lining with excellent thermal insulation and erosion resistance properties.



Advantages

● Non-wettability, erosion resistance

With AES wool as the main component, non-wettability is specifically enhanced. LUMICAST A performs well in erosion resistance.

● Low thermal conductivity, low thermal capacity

Since LUMICAST A is a fibrous putty, it is lightweight and excellent in thermal insulation. The temperature drop of molten aluminum is drastically reduced when LUMICAST A is applied to various casting vessels and launders, etc.

● Flexible putty form

LUMICAST A can allow seamless construction without formwork to fit vessels such as ladles and launders since it is fibrous insulation material in putty form.

● High thermal shock resistance

LUMICAST A linings minimize the potential for cracks in the lining during use due to its high thermal shock resistance and minute expansibility (or residual expansibility) after drying. It is useful in preventing the leakage of molten aluminum and suitable for use as a back-up insulation material.

● Improvement in work environment

LUMICAST A does not release dust during the application due to its putty form and does not adversely affect the work environment.

Alkaline earth silicate(AES) wools consist of amorphous fibers, which are produced by melting a combination of CaO-, MgO-, and SiO₂. AES wool of NICHIAS is called FINEFLEX BIO. The Max. heatproof temperature of FINFLEX BIO is up to 1300°C. FINFLEX BIO is exonerated from carcinogen classification because of low pulmonary biopersistence under criteria listed in Note Q of REGULATION(EC) No.1272/2008 (CLP regulation).

Applications

- Ladles, distributors, casting vessels, launders, feeder head, linings for various vessels, back-up insulation material and repairing material.

Packaging

- Packed in plastic bag and in can
- Net weight: 15kg/can

Physical properties

Properties	Description	
Color	Pale yellowish-white	
Form	Fibrous putty	
Bulk density (kg/m ³)	Putty form	1400
	After drying at 110°C	830
Bending strength (MPa)	After drying at 110°C	1.1
	After Sintering at 700°C	1.4
Liner heat change (%)	After Sintering at 700°C	+0.2 (residual expansibility)
	Coefficient of thermal expansion (1/°C)	5.6 × 10 ⁻⁶
Thermal conductivity (W/(m·K))	at 300°C	0.17
	at 500°C	0.19
	at 700°C	0.20
Maximum service temperature (°C)	1000	
Coverage (kg/m ³)	1400	
Chemical composition (%)	Al ₂ O ₃	50
	SiO ₂	39
	CaO+MgO	4

* The above figures are actual values measured by NICHIAS and not specification values.

* Please do not use in direct contact with flux.

* If water and LUMICAST A separate after mixing please mix again.

Construction method

[Application procedures]

- Apply LUMICAST A by compression to the surface taking care not to make any air spaces or voids. Finish the surface evenly with a metal trowel.
- Apply LUMICAST A to steel vessels like ladles directly, V-anchor or chain-links shall be welded if necessary.
- To evaporate water, preliminary drying and heating are necessary before use.
Acute drying and heating may cause cracks on the surface or blisters.
- Use tough refractory products such as bricks on the surfaces that contact molten aluminum.
- If water and LUMICAST A separate after mixing, please mix again.

[Drying conditions]

● Standard drying conditions

	Conditions	Thickness		
		20mm	50mm	100mm
Preliminary drying	1) Blow drying	24hr		
	2) Drying at 100 to 110°C	24hrs	48hrs	72hrs
	3) Drying at 150 to 200°C	12hrs	24hrs	48hrs
Heated air drying	Drying at 500~600°C	6hrs	12hrs	24hrs

* Please conduct the preliminary drying in the order of above 1),2) and 3).

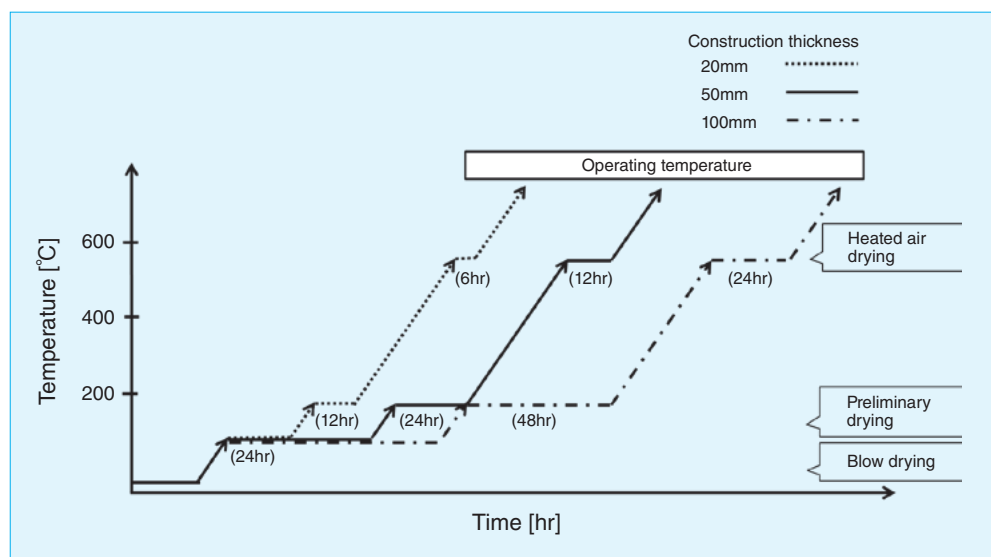
* The following equipment is recommended as standard.

Blow drying: Electric fan (Item No.1 in the above table)

Preliminary drying: Over charcoal fire or warm air (in the above table 2) and 3))

Heated air drying: kerosene or gas burner

● Heating Process



The conditions described above are for example only, and the construction environment may affect the required heating. Preliminary tests are recommended.

TOMBO™ No. 5615
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 specification values.

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

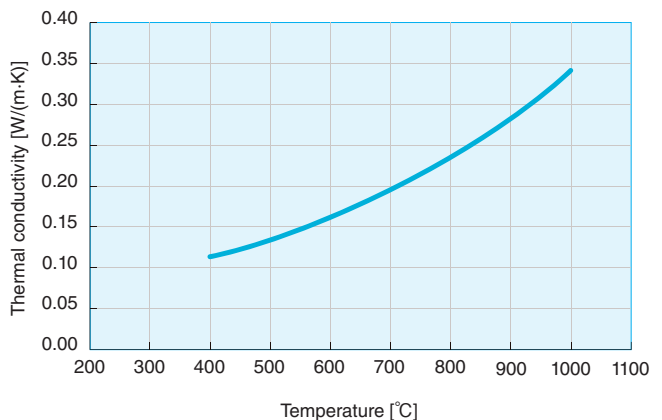
Standard Dimensions

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

* Please contact us for inquiries about other sizes.

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

Thermal conductivity



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

* The following figures are actual measurements made by NICHIAS and not specification values.

TOMBO™ No. 5635-A/5635-R/5635-M
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



Standard Dimensions

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

* Please contact us for inquiries about other sizes.

Quality Characteristics

Item	TOMBO No. 5635-A	TOMBO No. 5635-R	TOMBO No. 5635-M
Features	High heat-resistance type	Excellent sealing efficiency	Low odor type
Color	White	White-light brown	
Density (kg/m ³)	250		240
Max. heatproof temp. (°C)	1300	800	1000
Tensile strength (N/25mm)	1.0mm: 23	1.0mm: 34	1.0mm: 17
	2.0mm: 39	2.0mm: 66	2.0mm: 37
	3.0mm: 58	3.0mm: 100	3.0mm: 49
	4.0mm: 78	4.0mm: 135	4.0mm: 74
Ignition loss (%)	4	7	2

* The above figures are actual measurements made by NICHIAS and not specification values.

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

TOMBO™ No. 5645
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

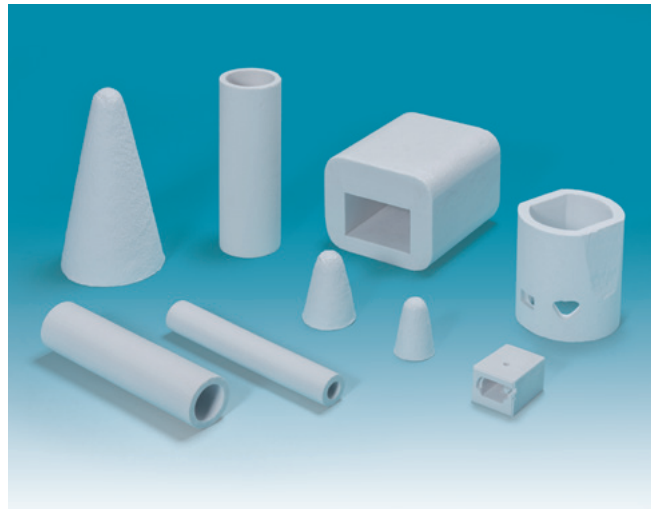
Item	TOMBO No. 5645-M	TOMBO No. 5645-A
Features	Low odor type	Excellent workability
Color	White	
Density (kg/m ³)	250	
Max. heatproof temp. (°C)	1300	
Normal usage temperature (°C)	1000	
Ignition loss (%)	0.7	4.0
Chemical composition	SiO ₂ , CaO, MgO, Other	

* The above figures are actual measurements made by NICHIAS and not specification 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.



Dimensions of the cup, tap out cones for the molten aluminum tap hole and plug covers

Cup No.	Inner diameter × height × thickness (mm)	Internal radius of top
37-111	φ37 × 70 ^H × 8 ^t	11
40-032	40 × 70 × 10	15
40-125	40 × 85 × 7	6
42-047	42 × 62 × 7	17
42-094	42 × 89 × 8	11
46-076	46 × 69 × 8	13
53-090	53 × 88.5 × 7	13.5
61-133	61 × 116 × 6	15
80-029	80 × 90 × 7	17
85-005	85 × 88 × 5	19

* Please contact us for shapes and dimensions other than the above.

Alkaline earth silicate (AES) wool

Product name	Maximum service temperature (°C)	Bulk density (kg/m ³)	Description	Standard content or dimensions
TOMBO No. 5605 FINEFLEX BIO Bulk	1300	—	Silica-magnesia-calcia-based alkaline earth silicate (AES) wool gathered like cotton-wool. It is excellent in flexibility and thermal shock resistance.	10kg net content
TOMBO No. 5625 FINEFLEX BIO Board		250	Product made by adding organic and inorganic binders to FINEFLEX BIO Bulk and molding it into board shape.	25, 50mm × 600mm × 900mm

* Please refer to FINEFLEX BIO catalog for details.

TOMBO™ No. 6760-A VERMOFLEX™ -A

VERMOFLEX-A is a heat-expandable and fire-resistant sheet made of a mixture of Alkaline earth silicate (AES) wool and heat-expandable and inorganic material with a small amount of both organic and inorganic binders through a paper making process. VERMOFLEX expands approximately 3 times in thickness when heated.
(Heated in non load-bearing condition)

Physical properties

Properties (Unit)	Unit	VERMOFLEX
Maximum Service Temperature	°C	800
Bulk Density		
Room temperature	kg/m ³	500
850°C×30min		100
Expansion ratio		Approximately 3 times
850°C×30min		
Temperature at which expansion starts	°C	400
Temperature at which outstanding expansion occurs	°C	540
Ignition Loss	%	16
850°C×30min		
Thermal Conductivity	W/(m·K)	25°C (before expansion) 0.05 800°C (after expansion) 0.15

* The above figures are actual values measured by NICHIAS and not specification values.



Before expansion



After expansion

Advantages

- Stable expandability
- Excellent in handling
- Easy to cut with hand tools
- Excellent in thermal insulation
- High thermal shock resistance

Applications

- Heat-sealing material
- Heat-resistant buffer material

TOMBO™ No. 9820 LUMIBOND™

LUMIBOND is a sodium silicate based adhesive with high heat resistant aggregates evenly distributed. It is excellent in heat resistance (800°C) and in permeation resistance against molten aluminum.

Physical properties

Properties	Description
Appearance	Yellowish White putty
Maximum service temperature (°C)	800
Bulk density (Putty)	2.1
Nonvolatile matter (%)	70
Required amount of LUMIBOND (kg/m ³)	1~2

* The above figures are actual values measured by NICHIAS and not specification values.

- Standard packaging 25kg, 5kg

Surface treatment materials

Product name	Advantages	Standard content
ZIRCOAT BN-A	ZIRCOAT BN-A is a ceramic and erosion resistant coating to protect various refractories and metal dies that are in direct contact with molten aluminum from erosion.	2kg



Applications

- Bonding LUMIBOARD to LUMIBOARD or LUMISUL to LUMISUL.
- Bonding LUMIBOARD or LUMISUL to thermal insulation materials such as SUPERTEMP Board, etc.
- Bonding LUMIBOARD to steel plates.

TOMBO™ No. 4350-GH
ROSLIM™ Board GH

ROSLIM Board GH is a revolutionary product with extremely low thermal conductivity properties and reduced brittleness and dust emission characteristics. With its greatly improved strength, it can be processed into complicated shapes that were previously unattainable. Its handling characteristics and attachment workability have also been greatly improved, making it easy to work with.

Advantages

- Excellent thermal insulation property that surpasses that of still air
- Excellent handling property
- Excellent processing property that eliminates the need for special tools

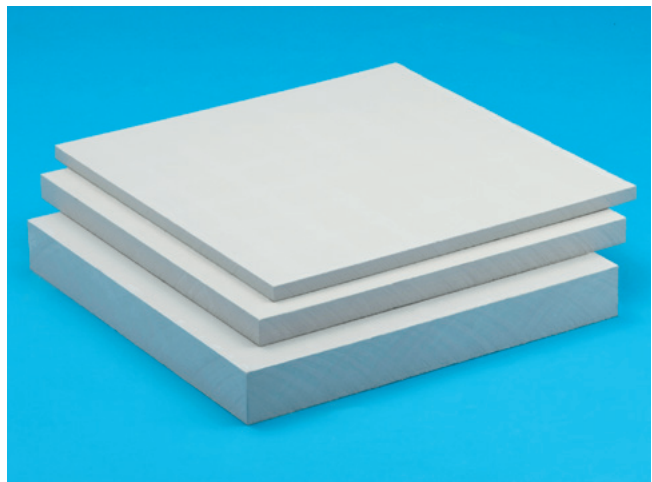
Applications

- Insulating material for industrial furnaces (backup material)
- Insulating material for combustion equipment
- Insulating material for melting and holding furnaces

Physical properties

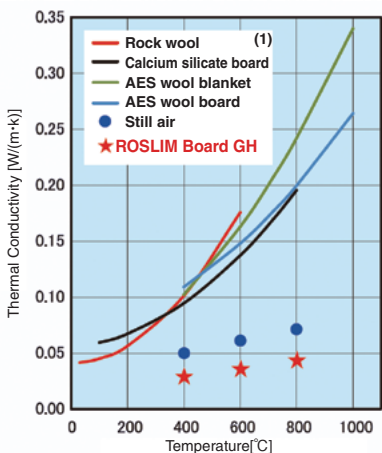
Bulk Density	(kg/m ³)	250
Thermal Conductivity (W/(m·K))	at 400°C	0.030
	at 600°C	0.036
	at 800°C	0.044
Compressive Strength (at 10% compaction)	(MPa)	1.02
Heat Shrinkage (%)	at 800°C×24hr	0.6
	at 1000°C×24hr	2.5
Maximum Service Temperature	(°C)	1000

* The above figures are actual values measured by NICHIAS and not specification values.



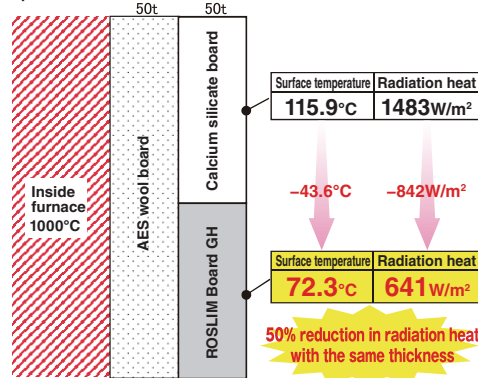
We accept orders for processing into a variety of shapes.

Thermal Insulation Characteristics



Thermal conductivity comparison of various types of insulation materials

<Example of thermal insulation calculation>



* Calculation conditions: External temperature: 25°C; Emissivity: 0.9; Wind speed: 0 m/s
* These figures are calculated values and do not guarantee performance.

Note: (1) The above figures are actual values measured by NICHIAS and not specification values. The figures of calcium silicate board and still air are theoretical values.

Cautions for handling the product

- Store ROSLIM in a well-ventilated indoor area away from rain. Be careful not to get wet. If it comes into contact with water, it will lose its shape and its performance will significantly decrease.



Head Office

6-1, Hatchobori 1-chome, Chuo-ku, Tokyo 104-8555, Japan
International Marketing and Sales Group
 Phone: 81-3-4413-1132 Fax: 81-3-3552-6108
 Web Site: <https://www.nichias.co.jp/>

Overseas Sales Companies

Indonesia

PT. NICHIAS SUNIJAYA

Panin Life Center, 2nd Floor, Room 205, Jl. Letnan Jenderal S. Parman
 Kav. 91, Jakarta 11420, Indonesia
 Phone: +62-21-56956207 Fax: +62-21-56956208/56956209

Malaysia

NICHIAS SOUTHEAST ASIA SDN. BHD.

Suite A1102, 11th Floor, West Wing, Wisma Consplant 2,
 No. 7, Jalan SS 16/1, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia.
 Phone: +60-3-5636-4067 Fax: +60-3-5636-4078

Singapore

NICHIAS SINGAPORE PTE. LTD.

25 International Business Park, #01-15/17 German Centre,
 Singapore 609916
 Phone: +65-6571-0830/0838 Fax: +65-6265-7681

Vietnam

NICHIAS VIETNAM CO., LTD

Room 12-K, 12Floor, Center Building,
 Hapulico Complex No1 Nguyen Huy Tuong,
 Thanh Xuan Trung, Thanh Xuan, Hanoi, Vietnam
 Phone: + 84-4-3791-7194 Fax: + 84-4-3791-6203

Thailand

NICHIAS (THAILAND) CO., LTD.

85 Moo 1, Wellgrow Industrial Estate T. Homsin, A. Bangpakong
 Chachoengsao 24180, Thailand
 Phone: +66-38-570-600 Fax: +66-38-570-601

THAI NICHIAS INTERNATIONAL CO., LTD.

Unit 1107, 11th Floor, AIA Capital Center
 89 Ratchadaphisek Road, Dindaeng, Dindaeng, Bangkok 10400 Thailand
 Phone: +66-2-001-2060 Fax: +66-2-001-2062

China

NICHIAS (SHANGHAI) TRADING CO., LTD.

霓佳斯（上海）贸易有限公司
 Room 1701, THE PLACE, Tower A, No. 100 Zun Yi Road,
 Changning District, Shanghai, P.R.China Postcode 200051
 中国上海市长宁区遵义路100号虹桥南丰城A栋1701室 邮编200051
 Phone: +86-21-6236-1783 Fax: +86-21-6236-1781

NICHIAS (SHANGHAI) TRADING CO., LTD. Guangzhou Branch

霓佳斯（上海）贸易有限公司 广州分公司
 17F-G, Gold Sun Building, No.109 Tiyu West Road, Guangzhou,
 Guang Dong Province, 510620, P.R.China
 中国广东省广州市天河区体育西路109号高盛大厦17楼G室 邮编 510620
 Phone: +86-20-3879-1640 Fax: +86-20-3879-1647

NICHIAS (SHANGHAI) AUTOPARTS TRADING CO., LTD.

霓佳斯（上海）汽车零部件 贸易有限公司
 Room 1702, THE PLACE, Tower A, No. 100 Zun Yi Road,
 Changning District, Shanghai, P.R.China Postcode 200051
 中国上海市长宁区遵义路100号虹桥南丰城A栋1702室 邮编200051
 Phone: +86-21-6236-2668 Fax: +86-21-6236-2667

Germany

NICHIAS AUTOPARTS EUROPE GmbH

Prinzenallee 7, 40549 Düsseldorf, Germany
 Phone: +49 (0)211-52391-058 Fax: +49 (0)211-52391-200

Overseas Construction Companies

Malaysia

NICHIAS SOUTHEAST ASIA SDN. BHD.

Suite A1102, 11th Floor, West Wing, Wisma Consplant 2,
 No. 7, Jalan SS 16/1, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia.
 Phone: +60-3-5636-4067 Fax: +60-3-5636-4078

Thailand

THAI-NICHIAS ENGINEERING CO., LTD.

45 Huaypong-Nongbon Road, Huaypong, Muang Rayong,
 Rayong Province 21150, Thailand
 Phone: +66-38-682-242 Fax: +66-38-691-156

Overseas Factories

Indonesia

PT. NICHIAS ROCKWOOL INDONESIA

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Czech

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