

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 FINEFLEX BIO™ is up to 1300°C. FINEFLEX 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).

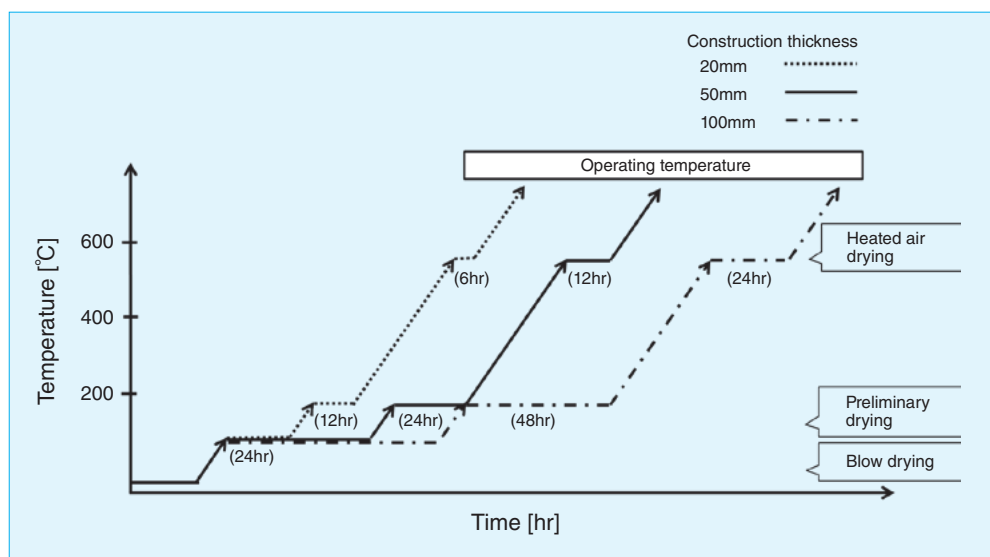
※The following equipment is recommended as standard.

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.