



## Bubble Alumina

### General Information

ZIRCAR Ceramics' Bubble Alumina is a rigid, low-density, insulating refractory comprised of ZIRCAR Ceramics' Alumina Bubble Types IB-100A and IB-100B bonded in high-purity Alumina Cement Type AL-CEM. While Bubble Alumina exhibits a bulk density twice that of a premium-grade alumina fiber insulator, Bubble Alumina's structure consists primarily of closed air-filled thin-walled cells which combine to give it exceptional hot strength and low thermal conductivity. This makes Bubble Alumina an effective high-temperature thermal insulator in structural applications where insulating capabilities cannot be sacrificed, and appropriate for use at temperatures as high as 1825°C. It is pre-fired, contains no organics and exhibits high microwave and RF transparency. Its high alumina content makes it compatible with many extreme chemical environments. ZIRCAR Ceramics' Bubble Alumina is manufactured on a custom basis and can be supplied in many complex shapes.



### Characteristics & Properties

Color	White
Composition, %	
Al <sub>2</sub> O <sub>3</sub>	99+
Bulk Density, g/cc (pcf)	0.96 (60)
Cold Crush Strength, MPa (psi)	11 (1600)
Shrinkage‡, % Average of Length and width	
4 hr. at 1750°C (3092°F)	0.19
4 hr. at 1800°C (3272°F)	1.77
SAG/Distortion, 150mm x 25,4mm x 25.4mm (6in.x 1in. x 1in.), 25.4mm (5in.) Span, mm (in.) after 4 hrs. at 1750°C (3182°F)	0.46 (0.018) 1.8
SAG/Distortion, 150mm x 25,4mm x 25.4mm (6in.x 1in. x 1in.), 25.4mm (5in.) Span, mm (in.) % after 4 hrs. at 1800°C (3182°F)	1.19 (0.047) 4.7
Specific Heat, Btu/lb °F (J/kg°K)	0.27 (1047)
Thermal Conductivity**, W/m°K (BTu/hr.°F ft <sup>2</sup> /in)	
Mean Temperature: 206°C (402°F)	0.37 (2.53)
996°C (1824°F)	0.57 (3.97)

The data presented herein is intended to help the user to determine the appropriateness of this material for their application.

This data is a nominal representation of this product's properties and characteristics and therefore should not be used in preparing specifications.

\*Maximum use temperature is dependent on variables such as stresses, both thermal and mechanical, and the chemical environment that the material experiences. \*\*Properties expressed parallel to thickness. ‡ Properties expressed perpendicular to thickness.

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Technical Data Bulletin

Bubble Alumina

[www.zircarceramics.com](http://www.zircarceramics.com)

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## Suggested Applications

Structural hot face refractory in high-temperature furnaces and thermal process systems with temperatures to 1825°C  
Backup insulation in crystal growth furnaces with temperatures in excess of 2000°C  
Low-mass kiln furniture.  
High-temperature load-bearing insulation.

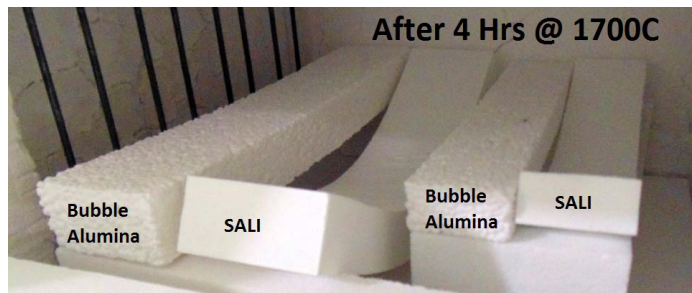
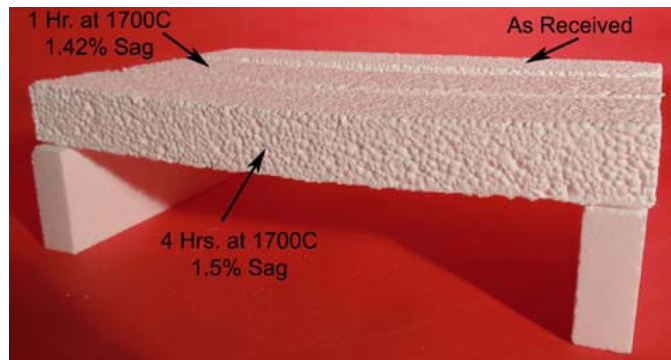
## Availability

Bubble Alumina is offered as a custom product made to specification. Please contact ZIRCAR Ceramics' Sales Office with your requirement.



## Superior Hot Strength

ZIRCAR Ceramics' Bubble Alumina exhibits superior hot strength, as demonstrated in the image to the right. In isothermal sag tests, 4hrs at 1700°C, Bubble Alumina sags just 1.5%. In the same conditions a premium-grade alumina fiber product will sag beyond useful limits, as shown below. Bubble Alumina can therefore be used in more structural, high-temperature applications.



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