Goodfellow

Materials for Scientific and Industrial Research and Manufacturing

ALUMINIUM FOAM - A NEW CONCEPT

Foam structures are both lightweight and durable, with a large surface area:volume ratio. They find uses in structures, as heat exchangers and as substrates for catalytic converters.

A recent development in the area of foam structures is a new, cost-effective aluminium foam with evenly-spaced, open pores. It can be imagined as a 3D honeycomb. The foam is manufactured by sand casting, and as such the exact form of the foam can be determined before its manufacture, and is repeatable in series: each manufactured piece will be identical and will therefore have exactly the same behaviour.

Foam with solid base on three sides

The foam is made up of cells defined as regular tetrakaidecahedrons (polygons with 14 faces – 8 hexagonal and 6 square). Prototyping can be accomplished using standard pieces as stocked by Goodfellow, but for production, the final shape can be moulded, reducing costs and eliminating the need for machining.

Goodfellow has concluded an agreement with the manufacturer of this new foam to offer standard sizes from stock. These are sheets 40mm x 100mm x 172mm with a cell size of 10mm. Sheets are stocked with one surface clad in a solid aluminium sheet to aid good contact in heat exchangers, for example. However, it is of course possible to specify other sizes or foams without a solid cladding on one surface.

CHARACTERISTICS	
Material	Aluminium 99.5% (aluminium alloys on request)
Standard catalogue size	40mm x 100mm x 172mm (other sizes on request)
Standard cladding	Aluminium, one side
Cladding size	4mm x 100mm x 172mm
Standard cell size	10mm
Other available cell sizes	14mm or on request
Foam topology	Kelvin Cells , Open regular pores
Porosity	85%
Nominal Density (unclad foam)	0.41 g/cm^3
Relative surface area	360 m^2/m^3
Maximum service temperature	450°C
Melting point	660°C

Properties shown are typical values, they are not absolute material properties, and should be used for guidance only. It is recommended that materials and components are tested for their suitability for a specific application.

For more information and advice please discuss your application with our sales staff.

→ www.goodfellow.com → info@goodfellow.com

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Goodfellow Cambridge Limited
Ermine Business Park
Huntingdon Cambridgeshire PE29 6WR UK

Tel: 0800 731 4653 (UK) or +44 (0) 1480 424 800
Fax: 0800 328 7689 (UK) or +44 (0) 1480 424 900