

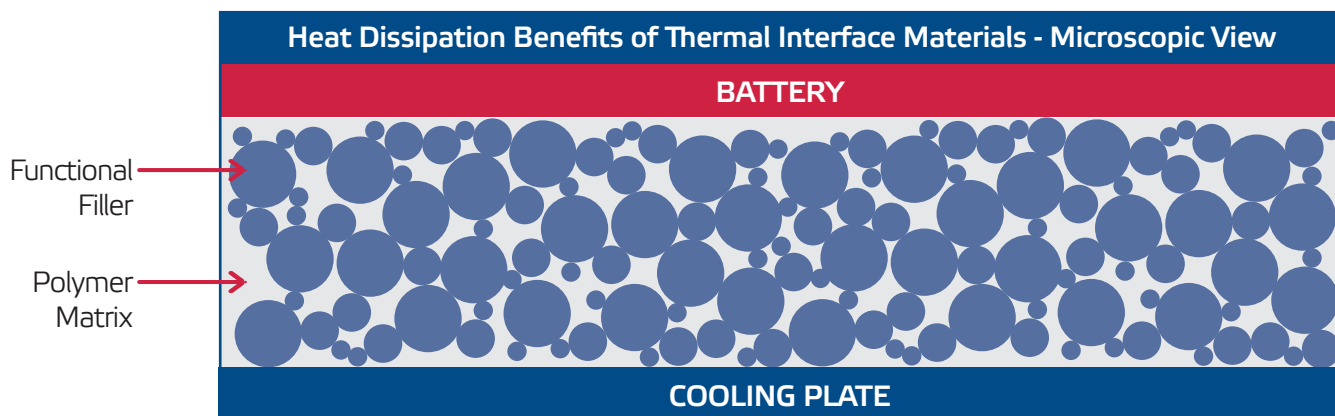
## SPECIALTY ATH & ALUMINAS FOR **THERMAL MANAGEMENT**

2024

# ALTEO'S ATH & ALUMINAS

## TAKING THE HEAT

Rapid and effective **heat dissipation** is an increasingly important requirement for today's ever more powerful **electronic components**. With the rising market for Lithium-ion and Sodium-ion batteries, particularly in electric vehicles (EV) and energy storage systems (ESS), managing heat generated by both electronics and battery cells is crucial. Our advanced thermal solutions, based on ATH (Aluminium trihydroxide), calcined and white fused alumina, efficiently dissipate heat, ensuring optimal performance, safety, and the longevity of your systems in these high-demand applications.



The main forms of thermal interface materials are

- **adhesives** – for bonding and sealing in battery packs and modules
- **gap fillers** – to fill in the gaps between two components
- **potting materials** – to encapsulate or fix electronic or electrical parts
- **thermal pads** – flexible material with good compression ratio used for uneven surfaces, reducing vibration and shock-dampening
- **greases and gels** – when improved conformability and easier dismantling are required

The TIMal range provides particularly suitable fillers for **silicone, polyurethane, epoxy and acrylic** resins.

It can also add heat dissipation properties to

- CCL (copper-clad laminates)
- ceramic **alumina substrates**

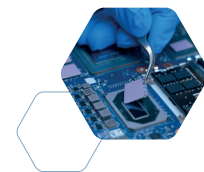
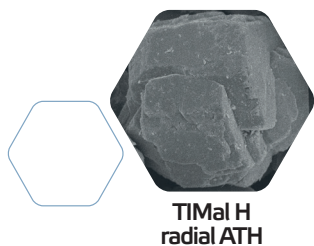
For all these materials TIMal will ensure critical characteristics such as

- **isotropic thermal conductivity**
- **lowest viscosity with maximum filling**
- **electrical insulation**

This is achieved through strictly controlled

- **particle size distribution**
- **chemistry**

which enables Alteo to offer an extensive range of filler options as indicated in the tables below. Our technical team can help you find the ideal products to meet your material needs.



ATH RANGE - TIMal	Unit	H	H4	H3	H2	H1	M3	HM66	HM33
<b>Physical Properties</b>		<b>Monomodal</b>					<b>Multimodal</b>		
Particle Size Distribution (Laser)	-								
D10	μm	35	6	4.9	2.5	2.2	5.0	2.0	1.0
<b>D50</b>	<b>μm</b>	<b>95</b>	<b>21</b>	<b>13.0</b>	<b>11.0</b>	<b>8.5</b>	<b>25.0</b>	<b>20.0</b>	<b>8.0</b>
D90	μm	160	60	27.0	26.0	22.0	110.0	60.0	26.0
Residue wet screen >45μm	%	-	-	1.00	0.25	0.15	-	-	-
Specific Surface Area (BET)	m <sup>2</sup> /g	0.1	0.6	1.1	3.0	4.0	0.7	2.0	3.4
Oil Absorption (oleic acid)	ml/100g	20	20	25	21	23	20	15	19
Relative Humidity (20-105°C)	%	0.05	0.05	0.15	0.30	0.40	0.05	0.10	0.20
Loss on ignition (20-1000°C)	%	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6
<b>Chemical Properties</b>									
Al(OH) <sub>3</sub> - on dry basis	%	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8
Al <sub>2</sub> O <sub>3</sub> - on dry basis	%	65	65	65	65	65	65	65	65
Na <sub>2</sub> O soluble	ppm	100	100	100	100	100	100	100	200
<b>Additional data</b>									
pH	-	9.0	9.3	9.3	9.3	9.3	8.6	9.0	9.3
Electrical conductivity	μS/cm	35	60	60	60	60	23	25	89

*These are typical values and are not guaranteed limits.*

ALUMINA RANGE - TIMal	Unit	80	30	J5	J2	G5	G4	12	66	16	17	M1
<b>Type</b>		<b>White Fused Alumina</b>		<b>Calcined Alumina</b>								
<b>Physical Properties</b>		<b>Monomodal</b>										<b>Multimodal</b>
Particle Size Distribution (Laser)	-											
D10	μm	50	5	2.3	1.9	2.0	1.6	1.0	0.8	0.2	0.17	0.4
<b>D50</b>	<b>μm</b>	<b>80</b>	<b>30</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	<b>4.1</b>	<b>2.3</b>	<b>1.8</b>	<b>0.55</b>	<b>0.4</b>	<b>2.3</b>
D90	μm	120	60	10	12	13	10	5.5	4.0	1.3	1.1	4.0
Residue wet screen >45μm	%	-	-	0.01	0.5	1.5	0.1	0.2	0.05	0.1	0.1	0.2
Specific Surface Area (BET)	m <sup>2</sup> /g	0.26	0.33	0.75	1.0	0.8	1.0	1.8	2.5	5.5	8.0	2.5
Oil Absorption (oleic acid)	ml/100g	20	13	18	22	21	18	15	15	17	17	18
Relative Humidity (20-105°C)	%	0.02	0.04	0.10	0.05	0.05	0.10	0.05	0.10	0.20	0.30	0.15
<b>Chemical Properties</b>												
Al <sub>2</sub> O <sub>3</sub> - on dry basis	%	99.8	99.8	99.8	99.85	99.6	99.6	99.8	99.8	99.85	99.85	99.8
Na <sub>2</sub> O soluble	ppm	50	100	700	150	700	700	150	150	400	400	150
<b>Additional data</b>												
pH	-	6.9	7.8	9.0	8.8	9.0	9.0	8.8	9.3	9.2	9.7	9.0
Electrical conductivity	μS/cm	29	45	90	50	80	80	45	95	140	160	100

*These are typical values and are not guaranteed limits.*

All our calcined and white fused alumina grades are based on alpha alumina crystalline structure to ensure optimal heat dissipation – intrinsic bulk thermal conductivity of α-alumina : 30 W/(m.K).

All TIMal products can be **surface treated** upon request : hydrophobic, amino, epoxy, methacryl, vinyl to improve affinity at the polymer matrix-filler interface.

## ALTEO R&D

For Alteo, innovation and application R&D are major parts of its growth strategy.

Alteo enhances its R&D capabilities through its **Innovation and Technical Excellence Center**: the installation of state-of-the-art equipment, the recruitment of technical experts and collaborations with key partners and university laboratories.

Alteo has the know-how and equipment to analyze and evaluate raw materials and finished parts, as well as being able to simulate production processes.

Contact our R&D team now at  
[TIMal.request@alteo-alumina.com](mailto:TIMal.request@alteo-alumina.com)

Or our sales team at  
[www.alteo-alumina.com/contact](http://www.alteo-alumina.com/contact)



## CUSTOMER CARE COMMITMENT

To meet your highest expectations, our Customer Care team will always strive to ensure a **first class** service. Our commitment is to provide **full support** from your first call to the delivery of our products; with technical assistance, packing solutions and short lead times.

## ALTEO AT A GLANCE

- A leading integrated supplier of specialty products with the largest production capacity worldwide for calcined, pure and fine alumina.
- A global sales network with 4 regional hubs, 16 offices and more than 35 local warehouses around the world.
- A leading raw material supplier to the following industrial markets: Advanced Ceramics, Thermal Management, Lithium-ion and Sodium-ion batteries, Flame retardants, Polishing, Performance Refractories, Glass.

Design : Emeline MARTEL - Communication



[www.alteo-alumina.com](http://www.alteo-alumina.com)

