

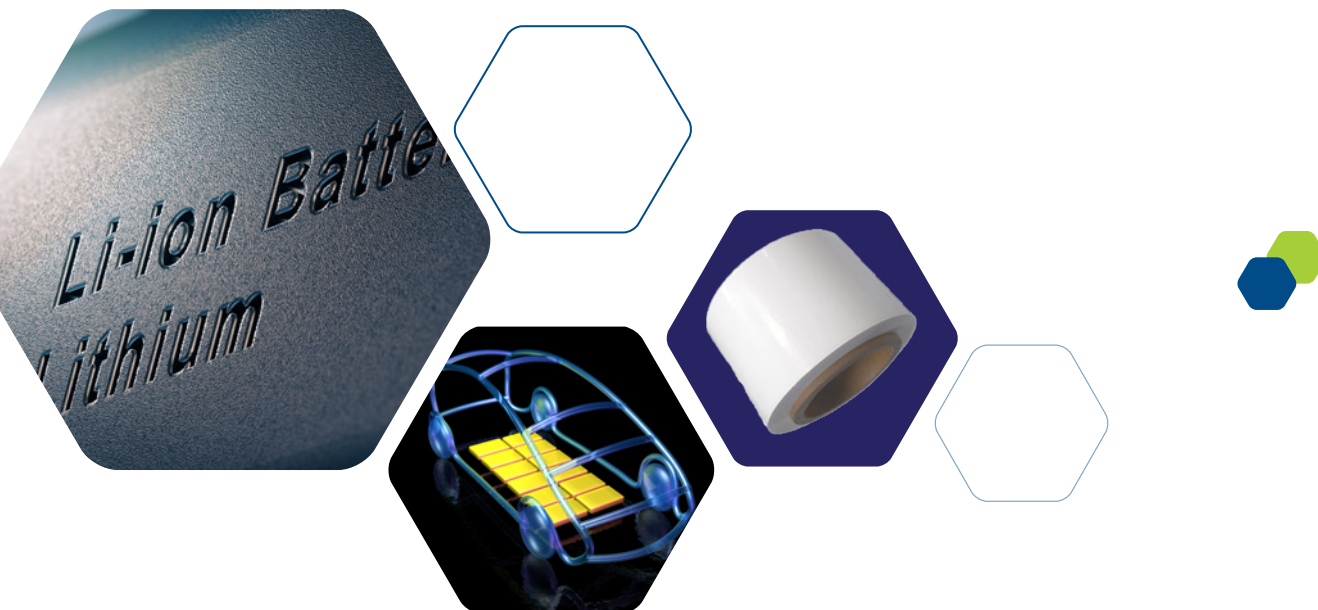


SPECIALTY ALUMINAS FOR

LITHIUM-ION BATTERY SEPARATORS

2022

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The SEPAl range has been developed as a ceramic coating for LIB separators.

Special attention is paid to particle size distribution, moisture level and iron content. SEPAl ceramic coating for LIB separators provides:

- Improved thermal stability (>130-150°C)
- Resistance to metallic dendrite penetration that causes short-circuiting
- Thermal shutdown support
- **The value option for ceramic coating**

Lithium-ion batteries are the best rechargeable energy sources currently available.

Their superior energy density and long cycle life have made them ideal for:

- **Electrical vehicles** (battery EV, hybrid EV, e-buses)
- **Consumer electronics** (smartphones, tablets, laptops)
- **Energy storage systems** (collecting, storing and transmitting electricity)

A SEPAl alumina ceramic coating for separators will improve the safety of Lithium-ion batteries.

- It is easy to process and disperse, so reduces the production cost
- Has >99.9% purity providing more safety to the LIB battery
- It is designed to meet the diversity of separator needs:
 - Low water absorption
 - Ultra-thin coating
 - High-temperature resistance



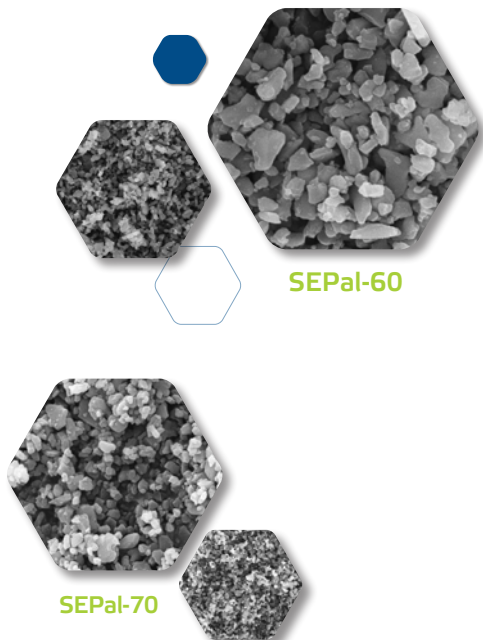


SEPal-60 & SEPal-70 for separator coating provide:

- Very fine crystal size (0.4 - <1µm)
- Strictly controlled:
 - D90 value (close to 1µm)
 - Chemical analysis
 - Contamination management

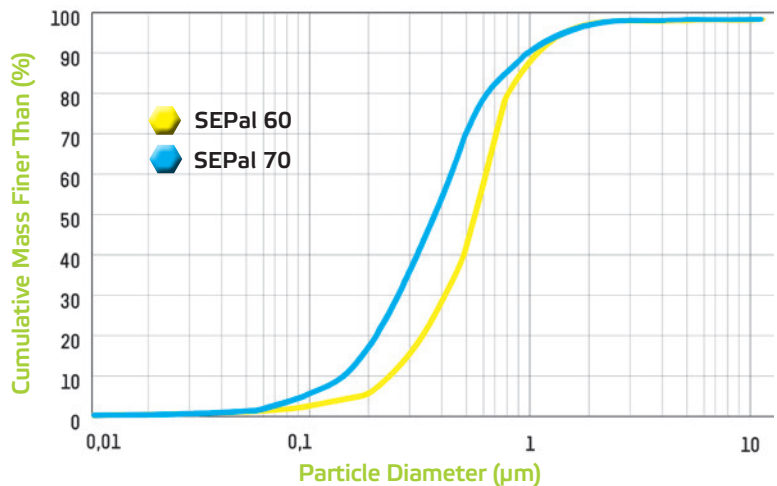
Key benefits

- High quality product
- Expandable production capacity with local facilities
- Cost efficient solutions



	SEPal-60	SEPal-70	
CERAMIC COATING FOR SEPARATOR FILMS			
Physical Properties	Unit		
Particle Size Distribution (Sedigraph)			
D10	µm	0.28	0.18
D50	µm	0.55	0.40
D90	µm	1.10	0.90
D95	µm	1.50	1.40
Specific Surface Area BET	m ² /g	5.5	7.5
Loss on Drying 20-105°C	%	0.10	0.15
Loss on Ignition 20-1000°C	%	0.40	0.50
Chemical Properties			
Al ₂ O ₃ - on dry basis	%	99.9	99.9
Na	ppm	220	300
Ca	ppm	150	150
Si	ppm	165	150
Fe	ppm	125	115
Mg	ppm	15	15
Zn	ppm	<5	<5
Cu	ppm	<5	<5
Cr	ppm	<5	<5
Ni	ppm	<5	<5
Magnetic Fe	ppm	<1	<1
pH	-	9.2	9.7

Typical data



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 application laboratory: 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
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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, 14 offices and more than 35 local warehouses around the world.
- Two development centers in France and China.
- A leading raw material supplier to the following industrial markets: Advanced Ceramics, Performance Refractories, Thermal Management EV-Batteries, Flame retardant, Specialty Glass, Polishing.

Design : Emeline MARTEL - Communication



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