ZOTEFOAMS

ADVANCED MATERIALS FOR BATTERY APPLICATIONS

Pioneers in supercritical foams technology

High purity lightweight foams enhance safety, efficiency, and durability across battery applications.

ZOTEFOAMS

INNOVATIVE FOAM TECHNOLOGY FOR MODERN ENERGY STORAGE

About us

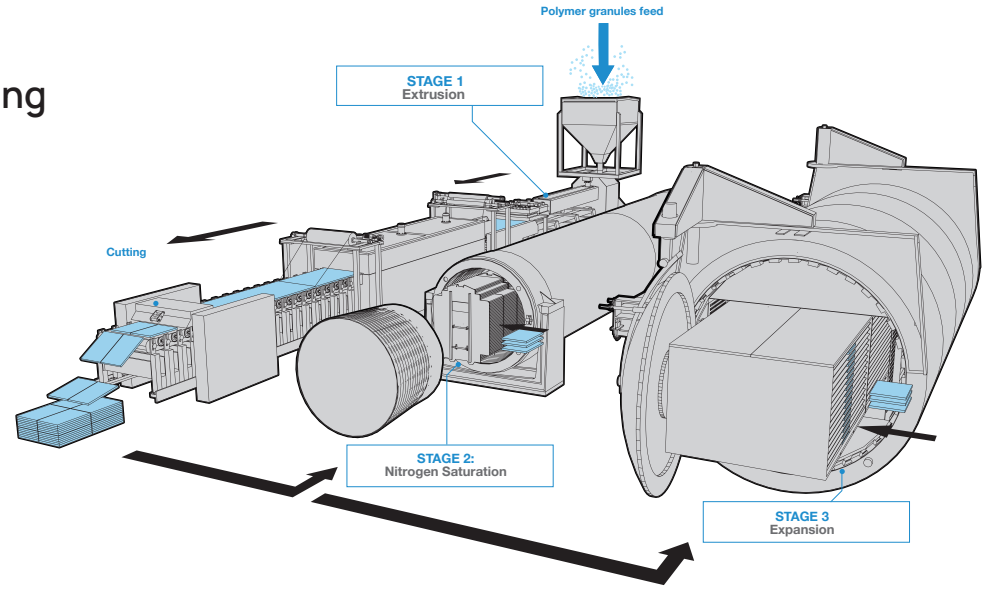
Zotefoams is a global leader in advanced cellular materials, supplying high-performance foam solutions for the world's most demanding applications.

With over 100 years of experience and production facilities across Europe, North America, and Asia, Zotefoams brings unmatched technical expertise and application insight.

Our unique process

Three-stage manufacturing

At the heart of our offering is a proprietary autoclave crosslinking process, which delivers exceptionally pure, uniform, and high-performing foam materials without the use of a chemical blowing agent. **This method ensures consistent quality and performance, setting Zotefoams apart from conventional foam manufacturers.**

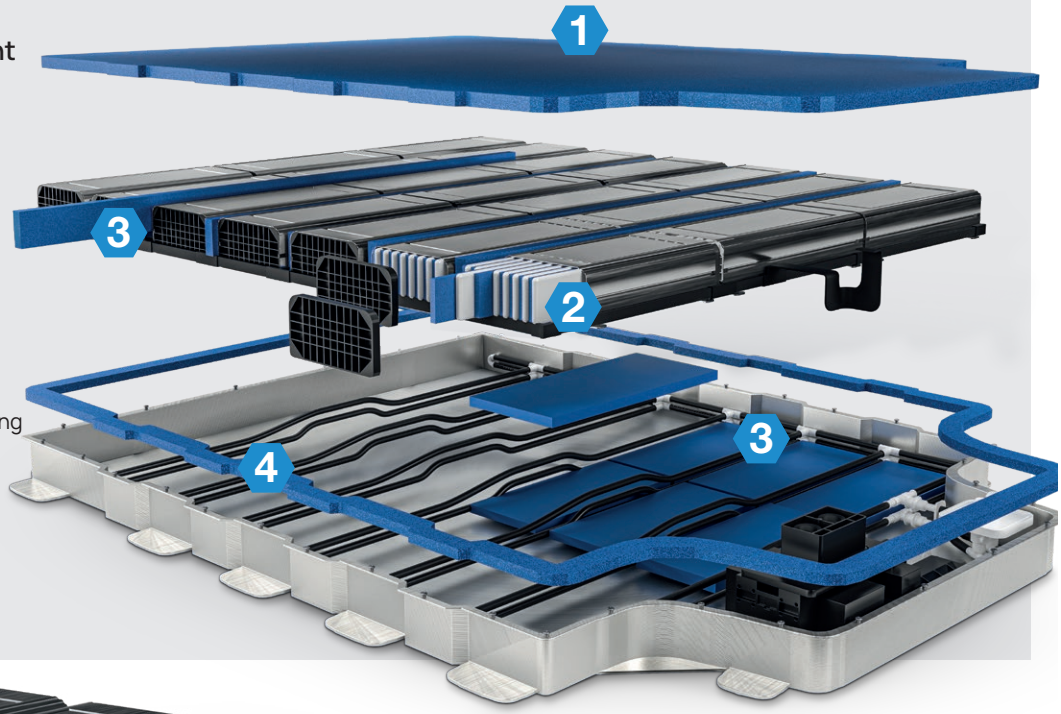


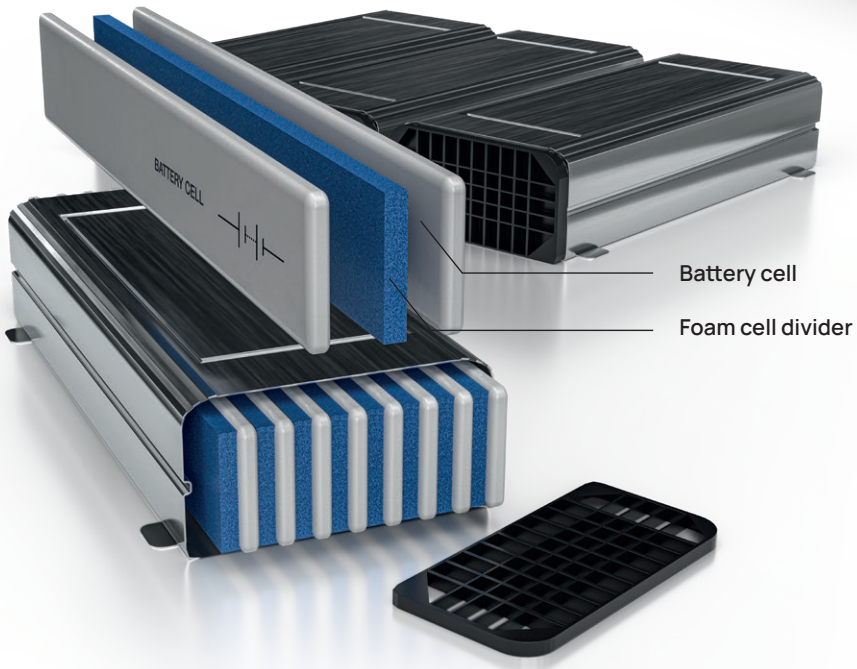
Zotefoams materials are engineered for a wide range of roles within battery packs, from electric vehicles to stationary energy storage systems

- THERMAL MANAGEMENT
- PROTECTION AGAINST IMPACT AND VIBRATION
- HIGH-PURITY AND NO WATER INGRESS
- MAXIMISE BATTERY LIFETIME
- FIRE RETARDANT
- THERMOFORMABLE

ZOTEFOAMS BENEFITS FOR BATTERY PACKS

1. **Thermal management**
   Helps to manage heat and improve safety
2. **Compression pads and cell dividers**
   Protects against vibration and allows cell expansion and contraction
3. **Cushioning**
   Protects against vibration and impact while maintaining structural integrity
4. **Gaskets and sealing**
   Protects against external debris and fluids





Thermal management

Low thermal conductivity foams provide insulation and protection from external temperature fluctuations, while also incorporating fire-retardant properties for enhanced safety.

Foam applications

CUTTING-EDGE MATERIALS FOR RELIABILITY AND EFFICIENCY

Innovation is at the core of what Zotefoams do...

Zotefoams materials are trusted by leading battery system designers for their exceptional reliability across diverse applications. Zotefoams proprietary autoclave crosslinking technology delivers consistent quality and performance across our foam range setting us apart in battery applications.

ZOTEK® T

75 kg/m³
Low compression set
Excellent resilience after multiple compression cycles
FMVSS.302 pass at 6mm
Operating temperature: -50 to +130 °C
Easily thermoformed
λ@10°C = 0.035 W/m.K

Compression Pads
Cell Dividers I Gaskets & Sealing

ECOZOTE® PP

35 to 90 kg/m³
Protects battery from damage during charging and discharging
Exhibits minimal changes in compression stress, between 20 to 60%
Flame retardant: UL94 HF-1
λ@10°C = 0.039 - 0.047 W/m.K

Thermal Management
Compression Pads I Cell Dividers

ZOTEK® F

38 kg/m³
Wide operating temperatures
Chemical resistance
Adheres to UL 94 V-0 (>7mm)
Easily thermoformed
λ@10°C = 0.033 W/m.K

Thermal Management I Compression pads
Cushioning I Cell Dividers I Gaskets & Sealing

AZOTE® X-TRA

Foam-Adhesive-Fabric Construction
Solution designed specifically for E-mobility
Thermal runaway protection
Excellent flammability performance (1000°C for 1 min)
λ_{foam}@10°C = 0.034 W/m.K

Thermal Management I Compression pads
Cushioning I Cell Dividers

PLASTAZOTE®

15-45kg/m³
Lightweight
Fire retardant options
Specialist automotive grades
Easily thermoformed
λ@10°C = 0.034-0.039 W/m.K

Thermal Management
Cushioning I Gaskets & Sealing

Key properties summary

ZOTEFOAMS

APPLICATION	Purpose	Material	
Thermal Insulation and cushioning	Regulate battery pack temperature Prevent thermal runaway Protection from vibration	**AZOTE®** **ZOTEK® F** **ECOZOTE® PP**	AZOTE X-TRA EV PLASTAZOTE MP15FR PLASTAZOTE LD24FR PLASTAZOTE LD30 ZOTEK F41HT ECOZOTE® PP
Compression pads Cell dividers	Prevent thermal runaway Protect EV battery cells from vibration Allows for cell expansion and contraction	**AZOTE®** **ZOTEK® F** **ZOTEK® T** **ECOZOTE® PP**	AZOTE X-TRA EV PLASTAZOTE MP15FR PLASTAZOTE LD24FR ZOTEK F41HT ZOTEK T75 ECOZOTE® PP
Seals and Gaskets	Protection from external debris	**AZOTE®** **ZOTEK® F** **ZOTEK® T**	PLASTAZOTE LD24FR PLASTAZOTE LD30 ZOTEK F41HT ZOTEK T75

PRODUCT	Nominal foam density [kg/m³]	Foam thermal conductivity @10°C [W/m.K]	Maximum operating temperature (foam) [°C]	Flammability performance	Product benefits
AZOTE® X-TRA EV	24	0.034	**90**	Resists 1000°C flame applied to product face for >1 min	Thermal runaway protection Thermal insulation
PLASTAZOTE® MP15FR	15	0.037	**75**	Aviation specified	Low weight, Fire retardance, Thermal insulation, Thermoformable
PLASTAZOTE® LD24FR	24	0.034	**90**	UL94 HF1 (>3mm thick)	Fire retardance, Thermal insulation, Thermoformable
PLASTAZOTE® LD30	30	0.039	**95**	FMVSS.302 Pass at 8mm	Automotive grade, NVH applications, Thermoformable
ZOTEK® F41HT	38	0.033	**155**	UL94 V0 (>7mm thick)	Fire retardance, Thermal insulation, Wide operating temperature, Chemical resistance, Thermoformable
ZOTEK® T75	75	0.035	**130**	FMVSS.302 Pass at 6mm	Low compression set, Excellent rebound, Thermoformable
ECOZOTE® PP90	90	0.047	**110**	HF-2 @5mm	Protects battery from damage during charging and discharging, Low thermal conductivity, Flame retardant
ECOZOTE® PP60	60	0.046		HF-1 @5mm	
ECOZOTE® PP45	45	0.039			
ECOZOTE® PP35	35	0.039			

Critical performance advantages:

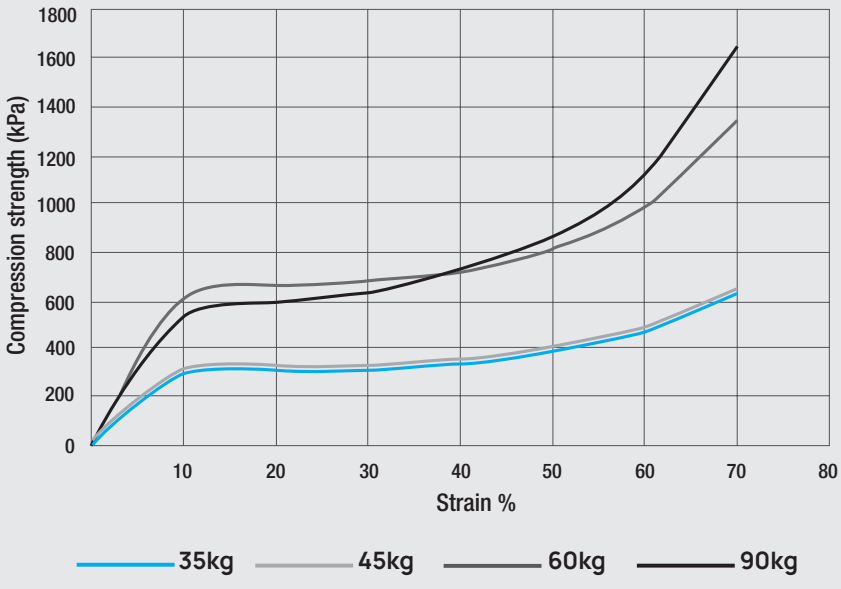
DRIVING INNOVATION IN BATTERY MATERIALS

Across energy storage systems, materials must meet demanding performance requirements to ensure safety, efficiency, and durability. Zotefoams' engineered foam solutions are trusted in critical battery applications because of their ability to deliver consistent, high-performance results under extreme conditions.

HOW ZOTEFOAMS MATERIALS PERFORM UNDER PRESSURE

ECOZOTE® PP foams for compression pads & cell spacing advantages

Zotefoams new **ECOZOTE® PP** foams are engineered for use between cells and modules in EV batteries, offering fire retardance, lightweight gap-filling and consistent compression performance. Ideal for accommodating cell expansion during charge cycles, these foams provide excellent thermal insulation, chemical resistance, and long-term durability, making them a reliable solution for thermal management and protection. **UL94 HF-1 tested.**



Ideal for battery systems that demand safety, reliability, and regulatory compliance

UL94 Tested

High purity

Low VOCs and outgassing for sensitive environments

Closed-cell structure

Moisture-resistant, durable

Superior thermal insulation

Helps maintain safe operating temperatures

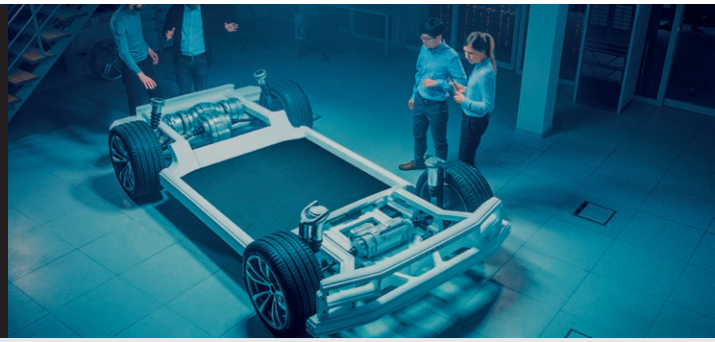
Low density

Reduces weight without compromising strength

Excellent compression recovery

Ensures long-term reliability in high-cycling application

Our unique manufacturing capabilities help us to deliver advanced solutions for tomorrow's battery systems.



SUSTAINABILITY & SAFETY

Safe, Sustainable, and Performance-Driven

Zotefoams is committed to supporting the transition to cleaner energy through sustainable materials engineering. Our unique manufacturing process eliminates harmful chemicals, reduces waste and enables the circular economy.

These properties contribute to safer, greener battery systems.

Lightweighting – Enhances range and efficiency in transport applications

Recyclable foam options through the **ECOZOTE® range**

Fire resistance – Supports compliance with stringent battery safety standards (e.g., UL94)

Manufacturing efficiency – Reduced waste and energy use through unique process technology

ZOTEFOAMS

Contact us today to discuss the right foam solution for your battery applications, or visit **zotefoams.com/battery-applications** for further information.

t +44 (0) 20 8664 1600 **e:** hello@zotefoams.com

ZOTEFOAMS plc

675 Mitcham Road
Croydon, Surrey
CR9 3AL
United Kingdom

t: +44 (0) 20 8664 1600
e: hello@zotefoams.com

ZOTEFOAMS Poland SP z.o.o.

ul. Grzybowska 2/29
00-131 Warszawa
Poland

ZOTEFOAMS inc

55 Precision Drive
Walton, Kentucky
41094
USA

t: +1 859 371 4025
Freephone: (800) 362 8358 US only

Zotefoams plc Management systems are covered by the following:

UK Authorised Economic Operator

Quality
FM 01870
ISO 9001:2015

Safety
OHS 52538
ISO 45001: 2018

Environment
EMS 36270
ISO 14001:2015

For more information, please visit **www.zotefoams.com**