

## SuperBattery

Charged in 60 seconds, bridging the gap between supercapacitors and batteries



SuperBattery is the first non-supercapacitor product for Skeleton, and fills the technology gap in the energy storage market, delivering peak power within seconds while excelling in up to 15 minutes applications.

SuperBattery is based on Skeleton's patented Curved Graphene material and is an innovative technology combining the characteristics of supercapacitors and batteries.

### Li-ion Batteries

Use a chemical reaction to store energy



- Limited power density (0.5 kW/kg)
- High energy density (205 Wh/kg)
- Limited cycle life (<6000)
- Slow charge rate (1.5 C)
- Safety concerns
- Utilizes critical raw materials (Li, Graphite, Co)

### SuperBatteries

Based on supercapacitor technology



- High power density (4 kW/kg for 10 sec)
- Increased energy density (65 Wh/kg)
- Long cycle life (50,000)
- Fast charge rate (20 C continuous)
- High inherent safety
- High recyclability and sustainability
- No Graphite, no Co, <5% Li

Skeleton's products provide high-power energy storage for applications with up to 15-minute cycle durations

Lower cost compared to Li-ion batteries in this application space

Supercapacitors  
<1s to 60s



SuperBatteries



Li-ion batteries



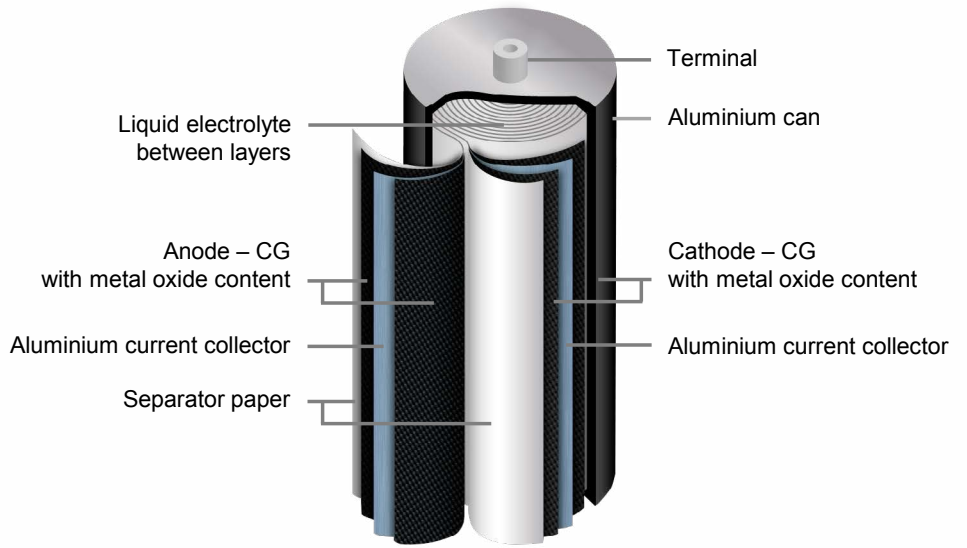
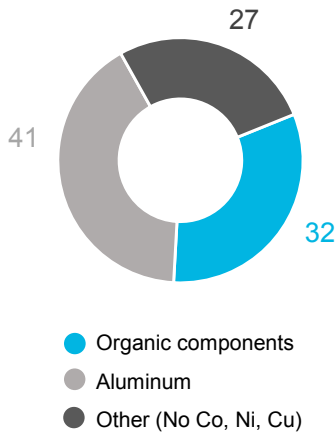
Application time

1 - 15 minutes

>15 minutes

# SuperBattery - Sustainable and Safe

SuperBattery technology has several advantages over Li-Ion batteries from materials to cell design.



- Narrow range of materials & low number of components
- Aqueous coating for both Anode and Cathode
- No cobalt, no copper, no graphite, <5% lithium
- Aqueous processing for recycling possible
- No risk of fire or explosion upon disassembly



## SuperBattery Cells

### Preliminary Specifications

Electrical	Value	Unit
Maximum voltage	3.0	V
Nominal voltage	2.25	V
Minimum voltage	1.0	V
Maximum voltage in voltage hold	2.8	V
Rated capacity	23.0	Ah

Additional Information	Value	Unit
Typical weight	<810	g
Length	138	mm
Diameter	60	mm
Minimal charging time	60	s (10 C)

Energy	Value	Unit
Stored energy (1C)	53	Wh
Specific energy	65	Wh/kg
Energy density	136	Wh/L

Fast charging/discharging	Value	Unit
Continuous cycling C-rate	20	C
Specific power (1C)	59.5	W/kg
50%SOC ESR 1s	0.3	mOhm
10s max. power	4.0	kW

