

# WHAT IS UNIQUE ABOUT THE LEAD CRYSTAL BATTERY TECHNOLOGY AS A PRODUCT?

The lead crystal battery technology consists of lead plates, and an acidic solution of  $\text{SiO}_2$  as electrolyte. During the initial charge and discharge cycles the electrolyte solidifies and forms a non toxic white crystalline substance. This eventually results in a safe, fluid-less high performance, environmentally friendly battery.

The lead crystal battery's performance is superior to conventional lead acid batteries. With the following functional advantages:

- **Battery life** – Lead crystal batteries have a float life of 18-20 years at 20°C. Having a battery cycle life of 3 100 (charge discharge) cycles depending on the Depth of Discharge (DOD).
- **Shelf life** – Lead crystal batteries can be stored for 2 years without additional charging. This impacts significantly on rotational charge and logistics.
- **High-rate discharge** – Lead crystal batteries have a discharge rate of up to 10V, without significantly impacting on the battery life.
- **Excellent charge performance** – The lead crystal battery has a charge time, 3-5 times faster than conventional batteries, when charged by conventional means, a generator or solar.
- **Depth of discharge** – The lead crystal battery can be discharged to 0 Volt (100% DOD) and then restored to full rated capacity.

- **Temperature resistance** – Lead crystal batteries operating temperature ranges from -40°C to +65°C. Due to the low internal resistance, the internal temperature remains low when charged and discharged. Tested and cycled at +41°C ambient temperature resulted in only 23% loss of battery life, which is rated between 7 to 10 years. The battery delivers more than 85% of its rated capacity at -40°C.
- **A greener option** – Lead crystal batteries emit no mist or harmful, gaseous emission, as the basic electrolyte is neutral and non-corrosive. Lead crystal batteries will not cause pollution – in line with ever increasing environmental protection requirements (ISO 14001 certification).
- **Safe to transport** – Lead crystal batteries are classified as non-hazardous devices and are safe to transport by land, sea or air.

## PRODUCTS

The product range consists of the following:

- 2 Volt, from 100 Ahr to 3 000 Ahr
- 6 Volt, from 4 Ahr to 12 Ahr
- 12 Volt, from 2.3 Ahr to 200 Ahr

## BASIC COMPARISON BETWEEN BATTERY TECHNOLOGIES:

ITEM	LEAD ACID	GEL	LEAD CRYSTAL	LITHIUM	SUPERIOR PRODUCT
Range of working temperature	-18°C to +45°C	-18°C to +50°C	-40°C to +65°C	-20°C to +65°C	Lead crystal
Life usage	2-3 years	3-4 years	7-10 years	5-8 years	Lead crystal
Environment	Not friendly	Not friendly	Friendly	Friendly	Lead crystal lithium
Safety transportation	No good	Normal	Good	Good	Lead crystal lithium
Discharge cycle at 80%	450	500	3 100	1 000	Lead crystal lithium
Discharge ability at high current	No good	No good	Good	Normal	Lead crystal
Work ability as a battery pack	OK	OK	Good	Normal	Lead crystal
Cost – value for money	Lower	Low	Slightly more than gel midrange	Much more than gel	Lead crystal