

# Firefly Energy AGM Batteries: The very best for Partial State of Charge Operation



## Firefly Carbon Foam Technology Offers:

- **Unparalleled Resistance to Sulfation** –Sulfation is what usually kills AGM batteries. The Oasis Carbon-Foam AGM can operate or be stored at a partial state of charge for long periods of time without a loss in capacity
- **Depth Of Discharge (DOD) to 80-100%** of rated capacity without any permanent loss of capacity
- **Superior Life Cycle** - capable of 3X the number of deep discharge cycles than that of other lead acid batteries
- **Strong Performance in Extreme Cold and Heat**- performance range is -20° C to 50° C
- **Fast Bulk Charging** - and topping up is seldom required
- **Greater Usable Capacity**- replace your existing bank with a smaller Firefly bank due to the superior deep discharge capability

Model #	Nominal V	Charge/Dis-charge Ratings	Capacity @ 20Hr	Operating temp	Cycle Life	Dimensions	Price
 <b>Oasis G31</b>	<b>12V</b>	<b>Max Charge I/V</b> 250A@25°/ 14.4V <b>CCA</b> 625A <b>MCA</b> 800A	<b>110Ah</b>	-20°C to 50°C (-4°F to 104°F)	50% DOD ~3600 cycles  80% DOD ~1000 cycles	13.5" x 6.7" x 9.4" 75lbs	<b>\$512</b>
 <b>L15+</b>	<b>4V</b>	<b>Max Charge I/V</b> 450A @25°C/ 4.8V	<b>450Ah</b>	-20°C to 50°C (-4°F to 104°F)	50% DOD ~4900 cycles  80% DOD ~1500 cycles	10.5" x 6.85" x 17.2" 94lbs	<b>\$742</b>
	<b>2V</b>		<b>900Ah</b>				

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## Why Firefly Oasis...

### **Why don't my batteries last as long as they should?**

Internal irreversible sulfation is what usually kills marine Pb batteries (AGM, gel, and flooded are all Pb/lead batteries), often long before their rated "cycle life" is reached. You may have already experienced a disappointing lifespan from your boat's batteries, which was nowhere near the claimed lifetime cycles on the advertised specifications.

### **What causes sulfation on Pb (AGM, gel, and flooded) batteries?**

Permanent, irreversible sulfation is a result of chronic undercharging, and/or using the batteries in a partial state of charge (PSOC) for long periods. A long, slow top-up charge is a Pb battery's best friend, helping to keep the internal lead plates free of damaging sulfate crystals. Periodic "equalization" can boil off some of the sulfate crystals; however some become stuck or break off taking some of the lead plate with them. Thus equalization itself can shorten battery life. For the lucky cruisers that can meet all of their energy needs with renewable power (solar, hydro, and/or wind power) then their batteries may very well be getting the frequent topping up they need.

### **Why can't I quickly recharge with my engine alternator?**

Unfortunately, the reality of marine battery use is that frequent charging to 100% SOC (State Of Charge) is impractical if diesel fuel is the primary energy source. This is because the charge acceptance rate (CAR) of all Pb batteries is very slow for final 15-20% of the charging cycle, so that long engine or generator run times under low charging loads are required. This is bad for diesel engines, not to mention very inefficient fuel-wise. If you only needed to charge to about 80% SOC then recharging with diesel would be faster and more efficient. From approximately 20% to 80% SOC is the Pb battery charging "sweet spot".

### **So, what is different about the Firefly Oasis AGM battery?**

The Oasis uses a patented microcellular carbon foam grid imbedded onto the internal negative plates. This grid prevents large sulfate crystals from forming, thus the sulfate will easily dissolve back into the electrolyte with a full charge. For a full capacity recovery, no "equalization" is required with Oasis. Only do a full recharge as needed to "open up" the full capacity once again. There is no permanent damage or capacity loss from extended PSOC operation, or from deep discharging to a low SOC.