



## Recommended Charging:

The following charging methods are recommended to ensure a long battery life: (Always use a voltage regulated charger with voltage limits set as described below.)

### Model: D51 and D51R

These batteries are designed for starting and deep cycle applications and for use in vehicles with large accessory loads.

## Recommended Charging Information:

<b>Alternator:</b>	13.65 to 15.0 volts
<b>Battery Charger (Constant Voltage):</b>	13.8 to 15.0 volts; 10 amps maximum; 6-12 hours approximate
<b>Float Charge:</b>	13.2 to 13.8 volts; 1 amp maximum; (indefinite time at lower voltages)
<b>Rapid Recharge: (Constant voltage charger)</b>	Maximum voltage 15.6 volts. No current limit as long as battery temperature remains below 125°F (51.7°C). Charge until current drops below 1 amp.
<b>Cyclic or Series String Applications:</b>	14.7 volts. No current limit as long as battery temperature remains below 125°F (51.7°C). When current falls below 1 amp, finish with 2 amp constant current for 1 hour.

**All limits must be strictly adhered to.**

**Recharge Time:** (example assuming 100% discharge – 10.5 volts)

Current	Approximate time to 90% charge
100 amps	25 minutes
50 amps	65 minutes
25 amps	130 minutes

Recharge time will vary according to temperature and charger characteristics. When using Constant Voltage chargers, amperage will taper down as the battery becomes recharged. When amperage drops below 1 amp, the battery will be close to a full state of charge.

(All charge recommendations assume an average room temperature of 77°F (25°C).

Always wear safety glasses when working with batteries.

Always use a voltage regulated battery charger with limits set to the above ratings. Overcharging can cause the safety valves to open and battery gases to escape, causing premature end of life. These gases are flammable! You cannot replace water in sealed batteries that have been overcharged. Any battery that becomes very hot while charging should be disconnected immediately.

Not fully charging a battery can result in poor performance and a reduction in capacity.

### **Shipping and Transportation Information:**

OPTIMA batteries can be shipped by AIR. The battery is nonspillable and is tested according to ICAO Technical Instructions DOC. 9284-AN/905 to meet the requirements of Packing Instructions No. 806 and is classified as non-regulated by IATA Special Provision A-48 and A-67 for UN2800. Terminals must be protected from short circuit.

### **Manufacturing Location:**

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BCI = Battery Council International

OPTIMA Batteries  
Product Specifications: Model D51 and d51R  
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