Crown Battery Manufacturing's team of research and development engineers welcome the opportunity to discuss your technical requirements during the application design and specification stage. To access this technical assistance, please contact:

Crown Battery Manufacturing’s Product Support Department
+1.419.334.7181 | sales@crownbattery.com | Fax +1.419.334.7124

**APPLICATION RECOMMENDATIONS:**

### Specific Gravity
- Full charge battery specific gravity (100% state-of-charge) is 1.275
- Full discharge battery specific gravity (100% depth-of-discharge) is 1.125

### Operating Temperature Range
- -40°F to 120°F (-40°C to 49°C). Flooded lead acid battery capacities are temperature sensitive; refer to the temperature / capacity projection chart on Page 2 to identify available capacity at the application operating temperature.

**Application Note:** Maintain a state of charge greater than 60 percent when operating flooded lead acid batteries at temperatures below 32°F (0°C).

### Self Discharge
- Fully charged batteries that are stored at a temperature of 80°F (27°C) will self-discharge at a rate of 3.5% per week.

### Terminal Torque Specifications
- 95-105 in-lbs / 10.7-11.9 N-m

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**AVAILABLE TERMINAL STYLE:**

**VENT CAP OPTIONS:**

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**PHYSICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Model Description</th>
<th>Nominal Voltage</th>
<th>Length</th>
<th>Width</th>
<th>Container Height</th>
<th>Terminal Height</th>
<th>Weight</th>
<th>Container Material</th>
<th>Case to Cover Seal Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>2CRP1400</td>
<td></td>
<td>2</td>
<td>7.5</td>
<td>192</td>
<td>6.56</td>
<td>167</td>
<td>21.50</td>
<td>546</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Solid Steel Container with Polypropylene Insert &amp; Cover</td>
<td>Heat Seal</td>
</tr>
</tbody>
</table>

**ELECTRICAL SPECIFICATIONS:**

<table>
<thead>
<tr>
<th>Ampere Hour Capacity (Ah)</th>
<th>Reserve Capacity Minutes</th>
<th>KWH (kWh)</th>
<th>Internal Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 Hr</td>
<td>100 A</td>
<td>72 Hr</td>
<td>75A</td>
</tr>
<tr>
<td></td>
<td>20 Hr</td>
<td>80% DOD Cycles</td>
<td>1600</td>
</tr>
<tr>
<td></td>
<td>5 Hr</td>
<td>70% DOD Cycles</td>
<td>1800</td>
</tr>
<tr>
<td></td>
<td>2 Hr</td>
<td>50% DOD Cycles</td>
<td>2800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40% DOD Cycles</td>
<td>1.94 VPC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30% DOD Cycles</td>
<td>2.02 VPC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20% DOD Cycles</td>
<td>5000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10% DOD Cycles</td>
<td>2.05 VPC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>End-Cycle Voltage</td>
<td>5400</td>
</tr>
</tbody>
</table>

**TYPICAL BATTERY CYCLE LIFE / DEPTH OF DISCHARGE:**

1400 1.75 VPC 1600 1.82 VPC 1800 1.86 VPC

The battery life references presented above are estimations based upon stationary life cycle testing conducted at Crown Battery Manufacturing’s Test Center in Fremont, Ohio, USA. The data references are nominal and should not be construed as maximum or minimum values for specifications or for final design. Data for this product type may vary from that shown herein, and Crown Battery makes no warranties – expressed or implied – based upon the data shown above.

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**APPLICATION NOTE:** Lead acid batteries contain corrosive battery electrolyte and generate highly flammable hydrogen gas. When working near batteries or battery electrolyte wear personal protective equipment and always work in a well-ventilated area. Do not over-torque terminals. Over-torque can result in terminal damage, breakage, terminal meltdown or fire.

**RENEWABLE POWER BATTERY CHARGING: Best Practices & System Setup Recommendations**

Proper charging of renewable power batteries is essential to optimize the performance and life of the batteries. To ensure dependability and life batteries should be fully charged after each discharge period. Regular monitoring of individual battery voltage and specific gravity conditions are recommended to verify system recharging performance. Many RE charge controllers have adjustable equalization settings that ensure batteries are regularly restored to full capacity. Batteries used in RE systems should be equalized every thirty days – with more frequent equalization occurring for battery systems that are regularly discharged below 50% of the battery’s rated capacity. Refer to the following table for additional charge control setting information:

<table>
<thead>
<tr>
<th>Voltage Setting</th>
<th>VPC</th>
<th>System Voltage</th>
</tr>
</thead>
</table>
|                       |     | 12 Volts  | 24 Volts  | 48 Volts 
| Daily Charge (Absorption) | 2.42 | 14.5 | 29.0 | 58.1 |
| Equalize              | 2.58 | 15.5 | 31.0 | 61.9 |
| Float                 | 2.25 | 13.5 | 27.0 | 54.0 |

**Effect of Battery Temperature on Battery Life:**

Typical battery life is based upon a baseline operating temperature of 80°F / 27°C. Temperature increases of 15°F / 10°C over the baseline will cause the battery’s rate of internal chemical reactions to double – something that will reduce battery life due to the accelerated deterioration of internal components. Please contact Crown Battery to discuss any minimal requirements for battery life when operating batteries in temperatures greater than 80°F / 27°C.

**GENERAL CALCULATION FOR DETERMINING DURATION OF DAILY CHARGE** (Charge Absorption)

**Generalized Charge Absorption Time Calculation:**

\[
\text{Time (hours)} = 0.46 \times (C ÷ I) \times CF
\]

Where:  
- \( C \) = 20 Hr Battery Capacity Rating  
- \( I \) = Charging Current  
  - For 25% D.O.D. - use 0.45 for CF  
  - For 50% D.O.D. - use 0.70 for CF  
  - For 80% D.O.D. - use 1.10 for CF

**Example of How to Calculate Charge Absorption Time:**

When the RE Batteries are rated at:  
- 48 Volt Bank of Crown 2CRP1400 Batteries  
  (48 Volts, 1000 Ah @ 20 Hour Rate)

When the RE System is rated at:  
- RE System Rated at 5,500 Watts

When the RE System D.O.D. is set to:  
- System D.O.D. Set to 50% (CF) = 0.70

**Nominal Charge Current:**  
Ohm’s Law: \( \text{Amperes} = \text{Watts} ÷ \text{Volts} \)  
- \( 114.6 \text{ Amperes} = 5,500 \text{ Watts} ÷ 48 \text{ Volts} \)  
- \( 114.6 \text{ Amperes} \) Charge Current

**Charge Absorption Time Calculation:**  
\( 0.46 \times (1000 \text{ Ah} ÷ 114.6) \) \times 0.70 = 2.81 Hours  
\( \text{Time (hours)} = 2.81 \text{ Hours} \)