



Energy Evolved.

Lead Crystal Energy Solutions

Next-generation lead crystal battery systems for a sustainable future. High-performance, high-safety, and 99% recyclable.

**LEAD
CRYSTAL[®]**
BATTERIES

LEAD CRYSTAL[®] BATTERIES

POWERED BY

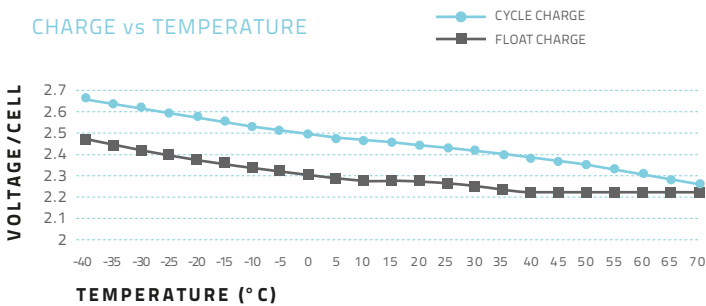
Betta Batteries



DISCHARGE CURRENT AND END VOLTAGE

| Discharge current (A) | End voltage (V) |
|--|-----------------|
| 0.05C or below or Intermittent discharge | 1.9 |
| 0.05C of current close to it | 1.85 |
| 0.1C of current close to it | 1.8 |
| 0.2C of current close to it | 1.75 |
| From 0.2C to 0.5C | 1.7 |
| From 0.5C to 1C | 1.6 |
| From 1C to 3C | 1.5 |
| Current in excess of 3C | 1.3 |

CHARGE vs TEMPERATURE



CHARGE vs TEMPERATURE CHART

| temperature | -40 | -35 | -30 | -25 | -20 | -15 | -10 | -5 | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Cycle Charge | 2.66 | 2.64 | 2.62 | 2.60 | 2.58 | 2.56 | 2.54 | 2.52 | 2.50 | 2.48 | 2.47 | 2.47 | 2.45 | 2.45 | 2.43 | 2.41 | 2.39 | 2.37 | 2.35 | 2.33 | 2.31 | 2.29 | 2.27 |
| Float Charge | 2.46 | 2.44 | 2.42 | 2.40 | 2.38 | 2.36 | 2.34 | 2.32 | 2.31 | 2.30 | 2.29 | 2.29 | 2.29 | 2.27 | 2.26 | 2.24 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 | 2.23 |

CONSTANT CURRENT DISCHARGE CHARACTERISTICS: UNITS AMPERES (25°C)

| End Voltage per cell | 5min | 15min | 30min | 45min | 1h | 2h | 3h | 4h | 5h | 6h | 8h | 10h | 12h | 20h | 24h |
|----------------------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|
| 1.60V | 270.24 | 172.40 | 113.60 | 85.50 | 69.90 | 41.70 | 30.30 | 23.55 | 20.00 | 17.20 | 13.00 | 10.50 | 8.85 | 5.53 | 4.63 |
| 1.67V | 232.60 | 156.30 | 105.30 | 81.00 | 67.70 | 39.80 | 28.80 | 23.30 | 19.00 | 17.00 | 12.80 | 10.30 | 8.85 | 5.53 | 4.63 |
| 1.70V | 222.20 | 151.50 | 102.00 | 80.00 | 65.40 | 39.20 | 28.20 | 23.10 | 18.90 | 16.90 | 12.70 | 10.20 | 8.85 | 5.52 | 4.62 |
| 1.75V | 202.00 | 141.80 | 98.00 | 76.90 | 63.30 | 37.70 | 27.40 | 22.50 | 18.30 | 16.50 | 12.50 | 10.10 | 8.77 | 5.52 | 4.61 |
| 1.80V | 178.60 | 129.90 | 94.30 | 74.10 | 60.60 | 36.40 | 27.00 | 22.10 | 17.90 | 16.10 | 12.20 | 10.00 | 8.58 | 5.50 | 4.59 |
| 1.83V | 155.90 | 118.70 | 87.10 | 68.87 | 57.30 | 34.80 | 26.00 | 21.20 | 17.10 | 15.50 | 11.80 | 9.70 | 8.35 | 5.48 | 4.46 |
| 1.85V | 133.30 | 107.50 | 80.00 | 63.70 | 54.10 | 33.30 | 25.00 | 20.40 | 16.40 | 15.00 | 11.40 | 9.43 | 8.11 | 5.47 | 4.33 |

DISCHARGE DATA WITH CONSTANT POWER UNITS: WATTS PER CELL (25°C)

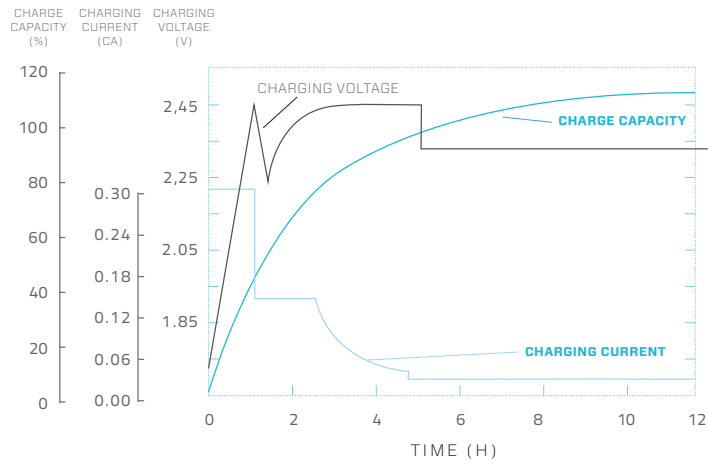
| End Voltage per cell | 5min | 15min | 30min | 45min | 1h | 2h | 3h | 4h | 5h | 6h | 8h | 10h | 12h | 20h | 24h |
|----------------------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| 1.60V | 448.10 | 301.70 | 206.50 | 206.50 | 130.40 | 79.60 | 58.00 | 45.10 | 38.40 | 33.70 | 25.50 | 20.78 | 17.40 | 10.80 | 9.06 |
| 1.67V | 400.30 | 281.30 | 193.30 | 193.30 | 127.00 | 77.12 | 56.60 | 44.90 | 37.20 | 33.30 | 25.00 | 20.30 | 17.40 | 10.80 | 9.06 |
| 1.70V | 387.39 | 274.00 | 188.00 | 188.00 | 123.40 | 75.10 | 54.30 | 44.60 | 36.50 | 33.10 | 24.91 | 20.10 | 17.40 | 10.80 | 9.05 |
| 1.75V | 357.60 | 257.60 | 181.80 | 181.80 | 120.00 | 72.60 | 53.00 | 43.90 | 35.60 | 32.60 | 24.40 | 19.90 | 17.40 | 10.80 | 9.04 |
| 1.80V | 324.20 | 237.40 | 175.60 | 175.60 | 115.50 | 70.20 | 52.40 | 43.10 | 34.70 | 32.10 | 24.00 | 19.70 | 16.90 | 10.70 | 9.02 |
| 1.83V | 286.30 | 219.80 | 164.00 | 164.00 | 109.70 | 67.60 | 50.60 | 41.70 | 33.50 | 31.20 | 23.20 | 19.20 | 16.50 | 10.70 | 8.79 |
| 1.85V | 248.40 | 202.19 | 152.40 | 152.40 | 104.00 | 65.00 | 48.80 | 40.20 | 32.20 | 30.30 | 22.40 | 18.70 | 16.10 | 10.60 | 8.57 |

SPECIFICATION

| | | | |
|-------------------------------|---------------------------------|---|-------|
| Nominal Voltage | 2V | | |
| Rated Capacity (10 hour rate) | 100 AH | | |
| Dimension | Total Height (top of terminal) | 210 mm | 8.27" |
| | Height | 205 mm | 8.07" |
| | Length | 172 mm | 6.77" |
| | Width | 72 mm | 2.83" |
| Weight | Approximately 5.8 kg / 12.78lbs | | |
| Capacity | 120 hour rate (1.0A) | 120 AH | |
| | 25°C 20 hour rate (5.4A) | 108 AH | |
| | 10 hour rate (10A) | 100 AH | |
| Internal Resistance | Fully charged Battery (25°C) | 0.6mΩ | |
| Self-Discharge 25°C | Capacity after 3 month storage | 95% | |
| | Capacity after 6 month storage | 85% | |
| | Capacity after 12 month storage | 80% | |
| Max Discharge Current 25°C | 1000A (5S) | | |
| Terminal | Standard | F3 | |
| | Optional | | |
| Charging (Constant Voltage) | Cycle | Initial Charging Current 30A 2.45V/ (25°C) | |
| | Float | 2.27V/ (25°C) | |

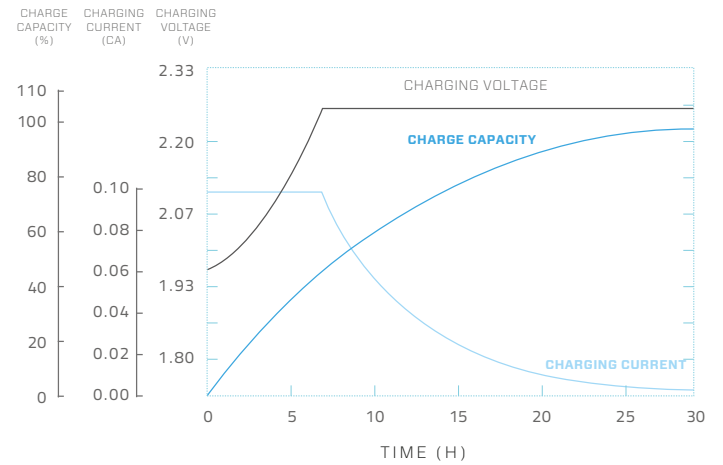
CYCLE CHARGE CHARACTERISTIC (25°C)

REGULAR CYCLE CHARGE CHARACTERISTICS 77°F (25°C)



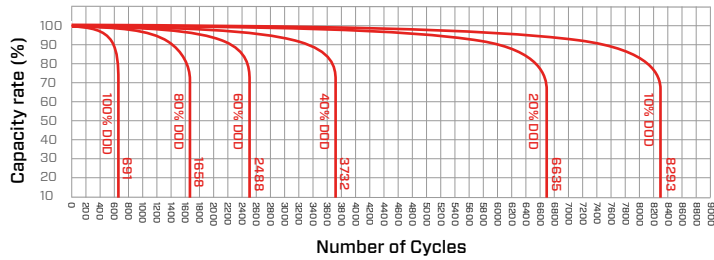
FLOATING CHARGE CHARACTERISTIC (25°C)

FLOATING CHARGE CHARACTERISTICS 77°F (25°C)

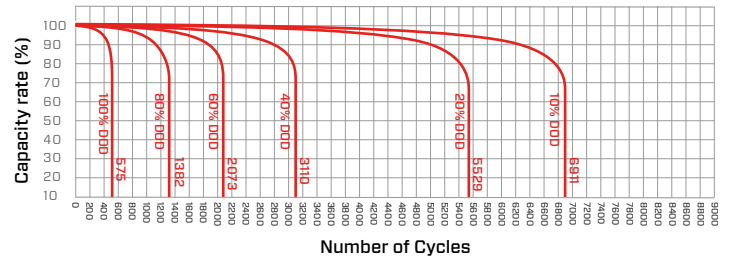


CYCLE LIFE CURVE GRAPH

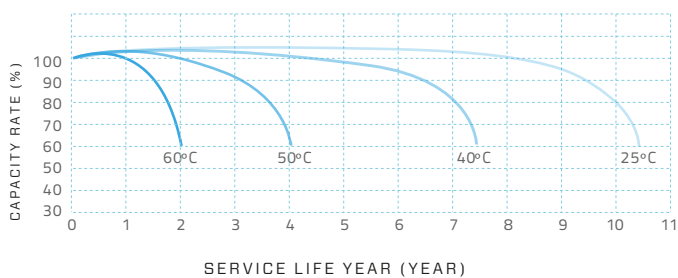
Cycle life curve graph (25°C) 2V



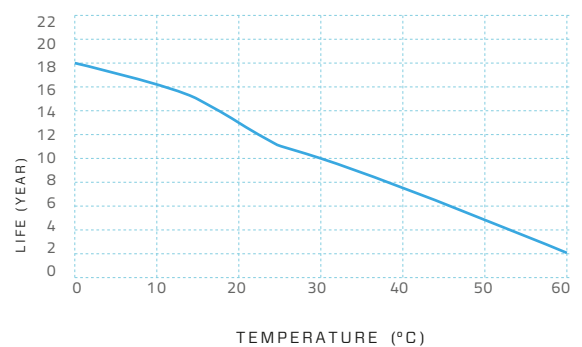
Cycle life curve graph (40°C) 2V



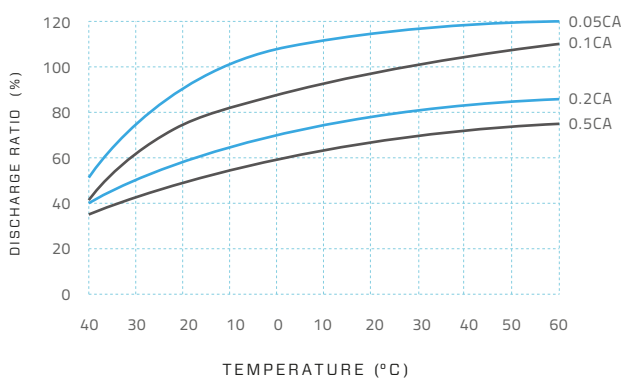
TEMPERATURE & FLOAT SERVICE LIFE



FLOAT SERVICE LIFE CURVE GRAPH



TEMPERATURE & DISCHARGE CAPACITY



CNFJ-100 2V / 150 A



Energy Evolved.

Performance: Robust, resilient, high performing. Lead Crystal® batteries can be discharged deeper, cycled more often (also in extreme temperatures) and have a longer service life. They recover to full rated capacity over and over again.

Technology: A unique micro-porous high absorbent mat (AGM), high-purity lead calcium selenium plates, safe SiO₂ electrolyte solution that solidifies into a white crystalline powder when charged/discharged.

Cleaner & Safer: Less acid, no cadmium, no antimony. Lead Crystal® batteries are up to 99% recyclable and are classified as non-hazardous goods for transport.

Markets: Lead Crystal® batteries are being used in telecoms, UPS, petrochem/marine, defence, renewable energy, health care, manufacturing, transportation and electric motion (wheelchairs, golf carts & trolleys).



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