



# the power of tomorrow

CLEAN ENERGY DEFINES THE WORLD THAT WE LIVE IN TODAY AND TOMORROW.  
LEAD CRYSTAL® TECHNOLOGY CREATES POWER THAT IS CLEAN SAFE AND  
HIGH PERFORMING FOR A BETTER FUTURE

**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	11.4
0.05C of current close to it	11.1
0.1C of current close to it	10.8
0.2C of current close to it	10.5
From 0.2C to 0.5C	10.2
From 0.5C to 1C	9.6
From 1C to 3C	9.0
Current in excess of 3C	7.8

## SPECIFICATION

Nominal Voltage	12V		
Rated Capacity (10 hour rate)	9 AH		
Dimension	Total Height (top of terminal)	100 mm	3.94"
	Height	94 mm	3.70"
	Length	151 mm	5.94"
	Width	65 mm	2.56"

Weight	Approximately 2.57 kg / 5.62 lbs		
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Capacity 25°C	10 hour rate (0.9A)	9 AH
	5 hour rate (1.44A)	7.2 AH
	2 hour rate (3A)	6 AH

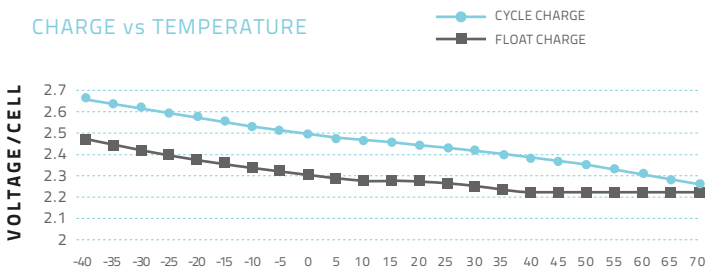
Internal Resistance	Fully charged Battery (25°C)	=<24.0mΩ
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Self-Discharge 25°C	Capacity after 3 month storage	95%
	Capacity after 6 month storage	85%
	Capacity after 12 month storage	80%

Max Discharge Current 25°C	90A (5S)
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Terminal	Standard	F2
	Optional	
Charging (Constant Voltage)	Cycle	Initial Charging Current 2.7A 14.7 / (25°C)
	Float	13.6V (25°C)

## 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 (voltage/cell)	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	10min	15min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	12h	20h	24h
1.60V	33.0	26.1	17.4	10.5	6.69	5.50	3.31	2.37	1.92	1.61	1.40	1.11	0.931	0.781	0.508	0.415
1.67V	30.6	24.6	16.9	10.4	6.64	5.45	3.23	2.33	1.91	1.58	1.38	1.10	0.920	0.780	0.507	0.414
1.70V	30.3	24.3	16.6	10.2	6.54	5.40	3.15	2.31	1.90	1.55	1.37	1.10	0.920	0.777	0.505	0.413
1.75V	27.8	23.8	16.1	10.1	6.49	5.33	3.08	2.30	1.87	1.53	1.36	1.10	0.910	0.774	0.503	0.413
1.80V	24.9	21.6	15.0	9.70	6.28	5.12	3.00	2.29	1.87	1.50	1.35	1.09	0.900	0.769	0.486	0.412
1.83V	23.8	20.5	13.8	9.60	6.02	4.88	2.96	2.19	1.78	1.46	1.30	1.07	0.877	0.738	0.481	0.406
1.85V	22.3	19.4	13.4	9.00	5.76	4.75	2.92	2.03	1.76	1.43	1.28	1.06	0.864	0.7282	0.476	0.403

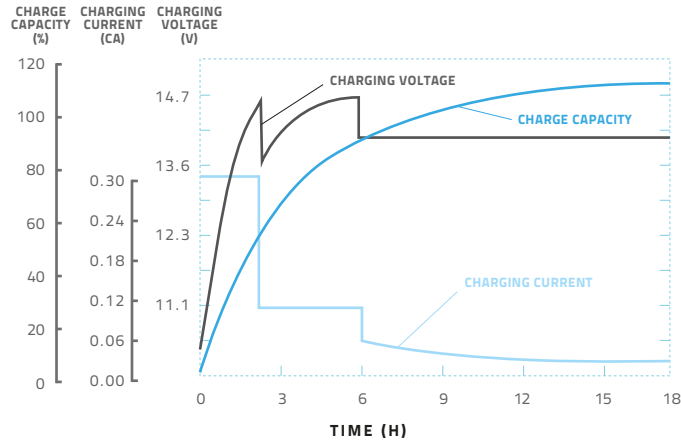
## DISCHARGE DATA WITH CONSTANT POWER UNITS: WATTS PER CELL (25°C)

End Voltage per cell	5min	10min	15min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	12h	20h	24h
1.60V	71.7	48.1	37.5	24.6	13.4	10.7	6.24	4.56	3.61	3.05	2.62	2.02	1.67	1.40	0.939	0.770
1.67V	70.0	47.0	36.6	24.1	13.3	10.7	6.24	4.50	3.61	3.05	2.61	2.02	1.67	1.40	0.939	0.770
1.70V	68.5	45.8	35.8	23.6	13.3	10.6	6.19	4.48	3.59	3.00	2.59	2.00	1.65	1.39	0.934	0.769
1.75V	65.3	42.6	34.1	22.5	13.3	10.6	6.14	4.43	3.59	2.99	2.58	1.99	1.64	1.39	0.934	0.765
1.80V	59.8	39.1	31.2	20.8	13.0	10.5	6.14	4.37	3.58	2.97	2.58	1.99	1.63	1.39	0.910	0.765
1.83V	57.5	37.6	30.1	19.8	12.6	10.1	6.09	4.30	3.46	2.94	2.49	1.99	1.60	1.37	0.900	0.760
1.85V	52.5	34.3	27.4	18.1	12.1	9.87	5.95	4.23	3.41	2.86	2.44	1.91	1.59	1.34	0.891	0.755

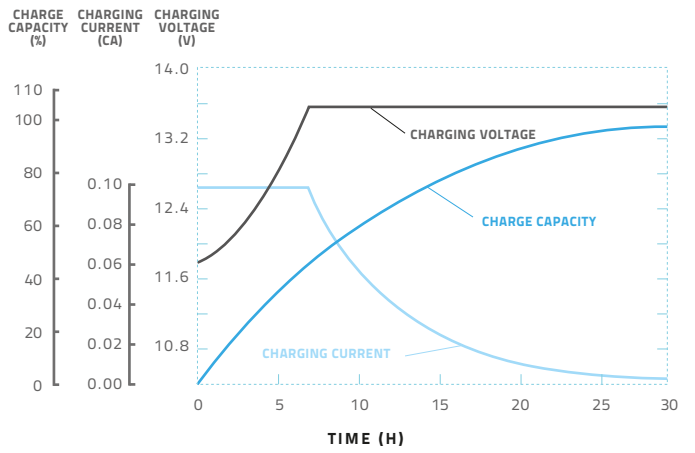
CYCLE CHARGE CHARACTERISTIC (25°C)

FLOATING CHARGE CHARACTERISTIC (25°C)

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

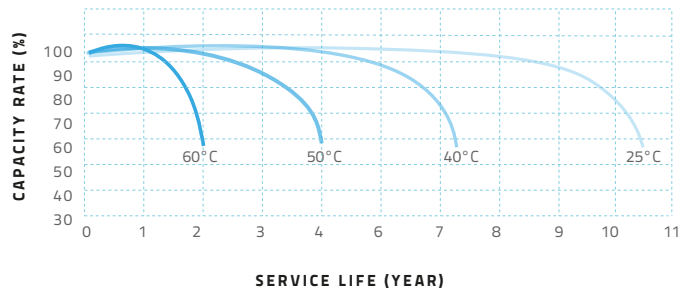
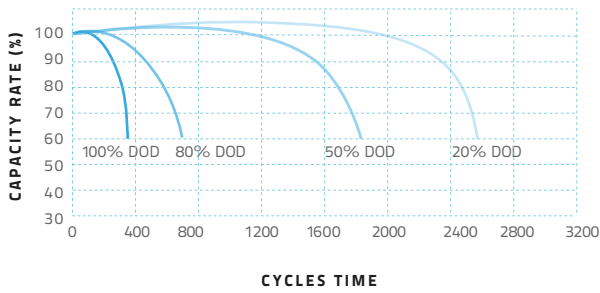


FLOATING CHARGE CHARACTERISTICS 77°F (25°C)



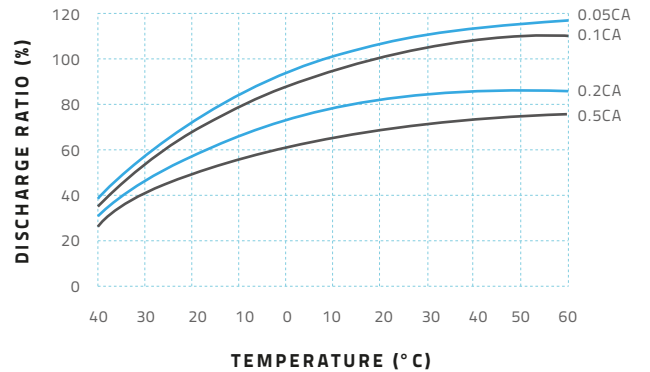
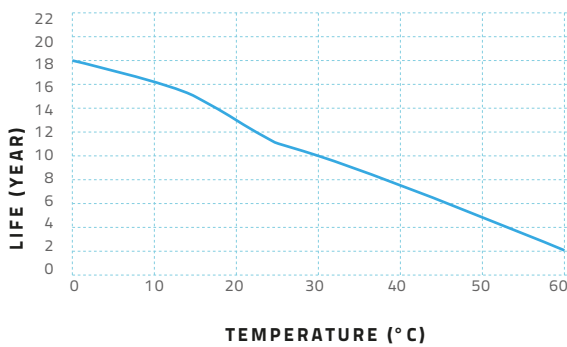
CYCLE LIFE CURVE 25°C

TEMPERATURE AND FLOAT SERVICE LIFE



FLOAT SERVICE LIFE CURVE GRAPH

TEMPERATURE & DISCHARGE CAPACITY



6-HCNFJ-7.2 12V/9Ah

## LEAD CRYSTAL®: CHANGING THE FUTURE

**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 SiO<sub>2</sub> electrolyte solution that solidifies into a white crystalline powder when charged/discharged.

**Cleaner & safe** 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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