

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



SPECIFICATION

Nominal Voltage	12V		
Rated Capacity (10 hour rate)	200 AH		
Dimension	Total Height (top of terminal)	223 mm	8.78"
	Height	219 mm	8.62"
	Length	522 mm	20.55"
	Width	240 mm	9.45"

Weight	Approximately 64 kg / 141.09 lbs		
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Capacity 25°C	120 hour rate (2.0A)	240 AH
	20 hour rate (11A)	220 AH
	10 hour rate (20A)	200 AH

Internal Resistance	Fully charged Battery (25°C)	3.5mΩ
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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%

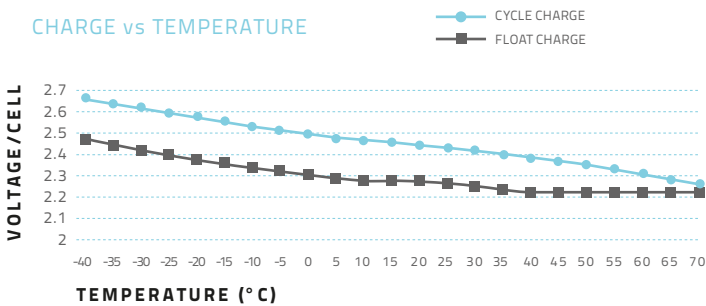
Max Discharge Current 25°C	2000A (5S)	
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Terminal	Standard	F4
	Optional	
Charging (Constant Voltage)	Cycle	Initial Charging Current 60A 14.7V/ (25°C)
	Float	13.6V/ (25°C)

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

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)

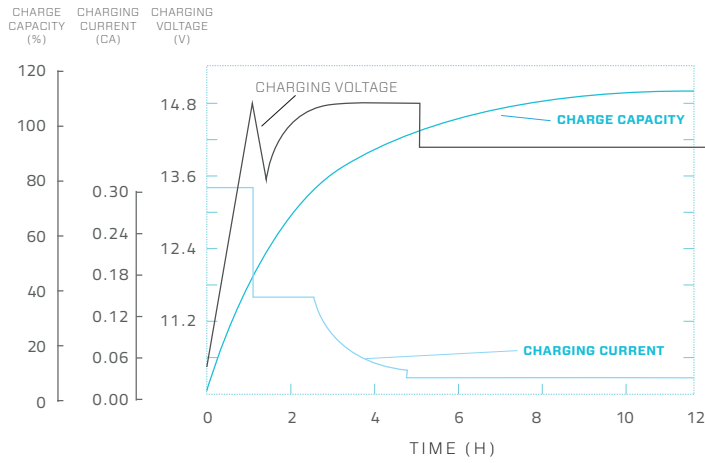
End Voltage per cell	5min	15min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	12h	20h	24h
1.60V	733.92	388.40	234.68	171.09	137.80	78.95	57.34	44.97	38.36	32.60	24.86	20.69	17.37	11.31	9.24
1.67V	682.08	375.68	231.20	169.92	137.56	78.61	56.30	44.74	37.80	32.37	24.82	20.46	17.34	11.27	9.20
1.70V	675.12	369.92	228.88	167.63	136.42	77.92	55.95	44.51	37.22	32.02	24.74	20.46	17.28	11.24	9.19
1.75V	618.48	358.32	226.60	166.48	134.10	76.42	55.72	43.95	36.88	31.79	24.62	20.23	17.20	11.19	9.18
1.80V	554.88	335.20	217.32	161.84	130.64	75.26	55.49	43.82	36.42	31.45	24.51	20.00	17.11	10.81	9.16
1.83V	530.40	307.52	213.88	156.08	124.86	74.57	53.29	41.97	35.61	30.29	23.99	19.19	16.42	10.69	9.04
1.85V	497.04	298.24	200.00	150.29	121.38	71.56	51.91	41.39	34.68	29.29	23.70	18.96	16.18	10.58	8.96

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	1226.39	681.99	439.25	320.19	257.57	149.11	109.00	86.35	72.94	62.65	48.32	40.00	33.64	22.43	18.38
1.67V	1167.46	671.58	421.49	317.88	257.77	149.11	107.62	86.23	72.94	62.54	48.32	39.88	33.64	22.42	18.38
1.70V	1160.52	666.96	421.28	317.88	255.44	147.96	107.38	85.91	71.78	62.07	47.97	39.53	33.29	22.31	18.38
1.75V	1080.77	658.86	421.75	317.87	254.30	146.80	107.16	85.77	71.55	61.61	47.74	39.27	33.29	22.31	18.26
1.80V	991.78	625.34	412.66	312.09	253.15	146.80	107.04	85.54	71.09	61.61	47.62	39.07	33.29	21.73	18.26
1.83V	957.09	574.49	409.20	302.85	242.74	145.65	104.03	82.65	70.28	59.65	47.62	37.91	32.71	21.50	18.15
1.85V	886.58	561.76	380.29	291.31	235.81	142.18	101.14	81.61	68.31	58.49	45.78	37.57	32.13	21.27	18.03

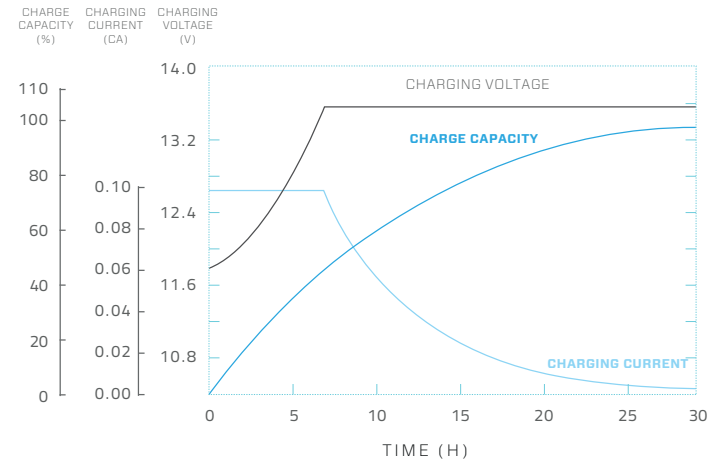
CYCLE CHARGE CHARACTERISTIC (25°C)

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



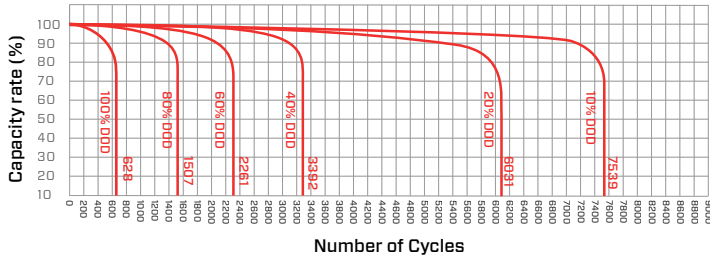
FLOATING CHARGE CHARACTERISTIC (25°C)

FLOATING CHARGE CHARACTERISTICS 77°F (25°C)

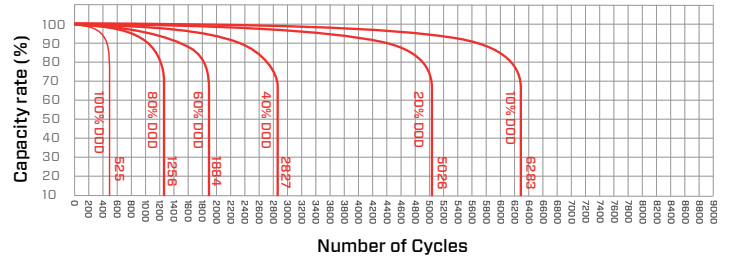


CYCLE LIFE CURVE GRAPH

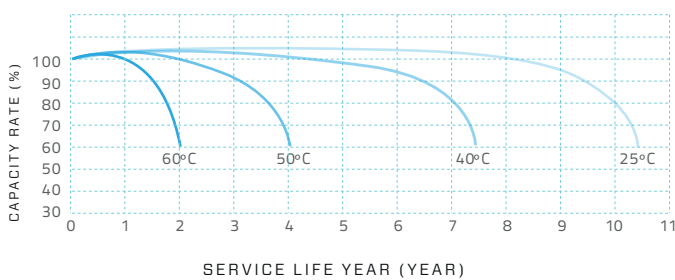
Cycle life curve graph (25°C) 12V



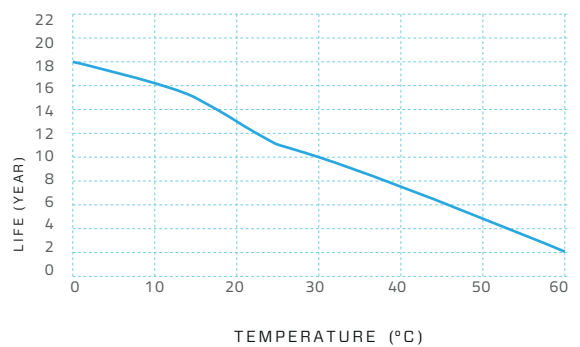
Cycle life curve graph (40°C) 12V



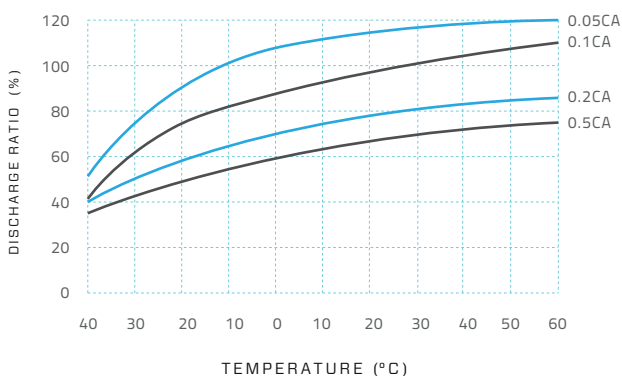
TEMPERATURE & FLOAT SERVICE LIFE



FLOAT SERVICE LIFE CURVE GRAPH



TEMPERATURE & DISCHARGE CAPACITY



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 SiO₂ 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).

