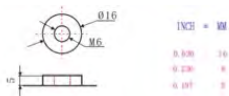
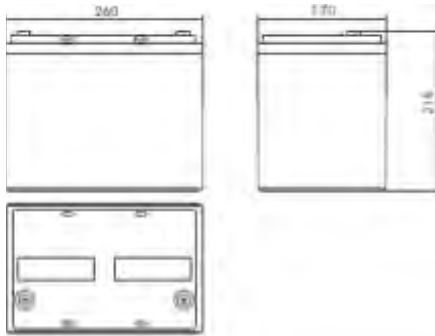


# the power of tomorrow

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**

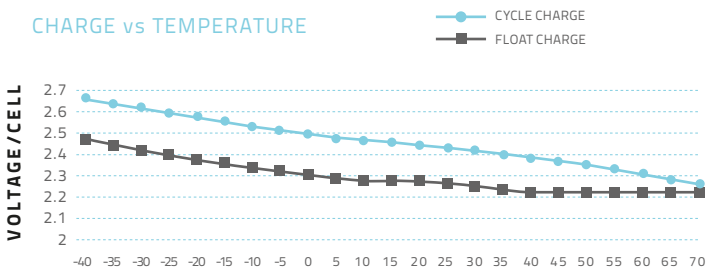
POWERED BY  
**Betta Batteries**



## SPECIFICATION

Nominal Voltage	12V		
Rated Capacity (3 hour rate)	60 AH		
Dimension	Total Height (top of terminal)	215 mm	8.46"
	Height	215 mm	8.46"
	Length	260 mm	10.23"
	Width	170 mm	6.69"
Weight	Approximately 22.5 kg / 49.60 lbs		
Capacity 25°C	10 hour rate (7.0A)	70 AH	
	5 hour rate (13.2A)	66 AH	
	2 hour rate (27A)	54 AH	
Internal Resistance	Fully charged Battery (25°C)	≈<8.5mΩ	
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	600A (5S)		
Terminal	Standard	F3	
	Optional		
Charging (Constant Voltage)	Cycle	Initial Charging Current 12A or small 14.6V~14.7V (25°C)	
	Float	13.6V~13.7V (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	2.61	2.59	2.57	2.55	2.53	2.51	2.49	2.47	2.45	2.43	2.41	2.39	2.37	2.35	2.33	2.31	2.29	2.27	2.25	2.25	2.25	2.25	2.25
Float Charge	2.45	2.43	2.42	2.40	2.39	2.37	2.36	2.34	2.33	2.31	2.30	2.28	2.27	2.25	2.24	2.22	2.21	2.21	2.21	2.21	2.21	2.21	2.21

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

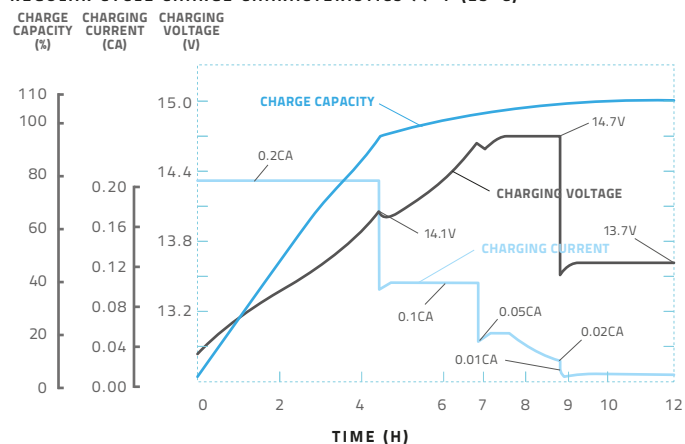
End Voltage per cell	5min	15min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	12h	20h	24h
1.60V	189	120	79.5	59.8	41.3	27.6	21.0	16.7	14.0	12.7	9.63	7.35	6.20	3.87	3.24
1.67V	162	109	73.7	56.7	40.7	27.3	20.4	16.3	13.6	12.2	9.28	7.21	6.20	3.87	3.24
1.70V	155	106	71.4	56.0	40.4	26.9	20.3	16.0	13.4	11.7	9.01	7.14	6.20	3.86	3.23
1.75V	141	99.2	68.6	53.8	40.0	26.6	20.1	15.7	13.2	11.2	8.75	7.07	6.14	3.86	3.23
1.80V	125	90.9	66.0	51.8	39.9	26.2	19.6	15.4	12.9	11.2	8.54	7.00	6.01	3.85	3.21
1.83V	109	83.0	60.9	48.2	38.8	25.9	19.0	14.8	12.6	10.8	8.26	6.79	5.85	3.84	3.12
1.85V	93.3	75.2	56.0	44.59	37.8	25.5	18.3	14.2	12.4	10.5	7.98	6.60	5.68	3.83	3.03

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

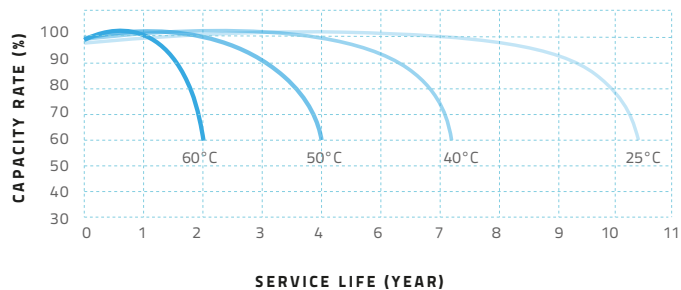
End Voltage per cell	5min	15min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	12h	20h	24h
1.60V	312	210	144	109	76.4	55.4	39.0	31.6	26.9	23.6	17.8	14.5	12.2	7.56	6.34
1.67V	279	196	134	104	76.2	53.6	38.9	31.4	26.0	23.3	17.5	14.2	12.2	7.56	6.34
1.70V	270	191	131	103	76.0	52.3	37.9	31.2	25.5	23.2	17.4	14.1	12.2	7.56	6.34
1.75V	249	180	126	100	75.7	50.5	37.4	30.7	24.9	22.8	17.1	13.9	12.2	7.56	6.33
1.80V	226	165	122	97.5	75.5	48.8	37.1	30.2	24.3	22.5	16.8	13.8	11.8	7.49	6.31
1.83V	199	152	114	91.3	75.2	47.1	36.8	29.2	23.4	21.8	16.2	13.4	11.5	7.49	6.15
1.85V	173	140	106	85.1	74.9	45.2	36.5	28.1	22.5	21.2	15.7	13.1	11.3	7.42	6.00

CHARGE CHARACTERISTIC 77°F (25°C)

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

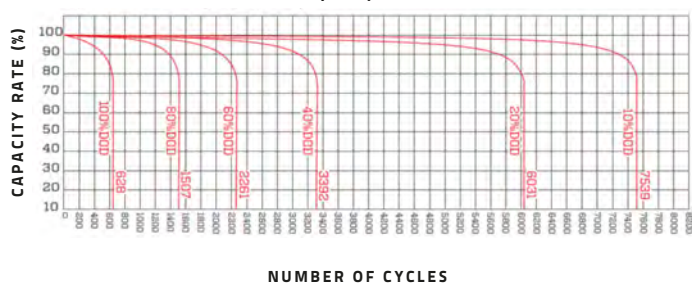


TEMPERATURE AND FLOAT SERVICE LIFE

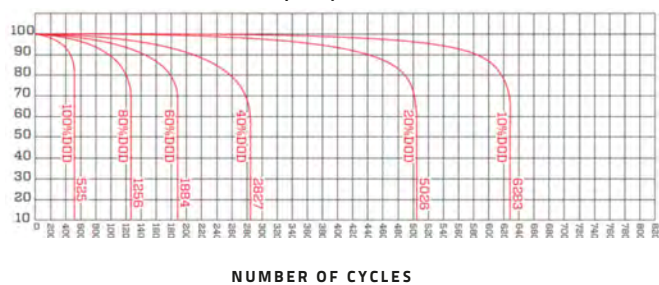


CYCLE LIFE CURVE GRAPH

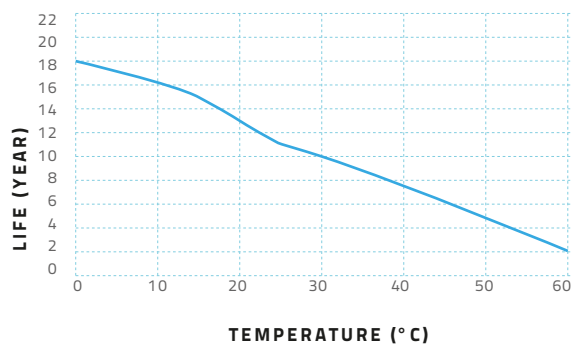
CYCLE LIFE CURVE GRAPH (25°C)



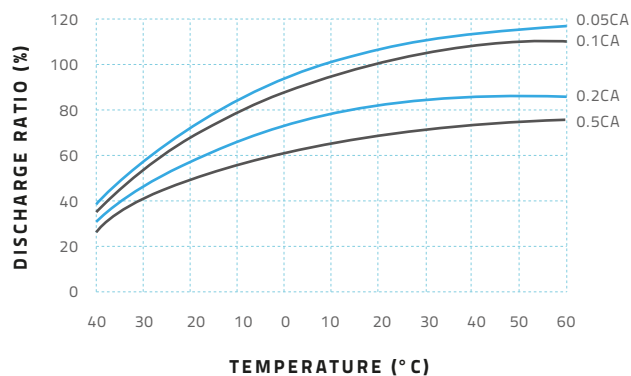
CYCLE LIFE CURVE GRAPH (40°C)



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 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).

