

NCPP

Nickel Cadmium Pocket Plate Batteries



Single Cell Catalogue



Introduction:

HBL's Nickel Cadmium Pocket Plate battery designs are based on the superior pocket plate technology.

A fully integrated modern factory, supported by strong process management and quality controls makes HBL one of the best Nickel Cadmium battery production facilities in the world.

HBL's single cells are offered in 1.2 voltage per cell and in wide capacity range.

NCPP single cell range is designed to comply with IS 10918 & IEC 60623.

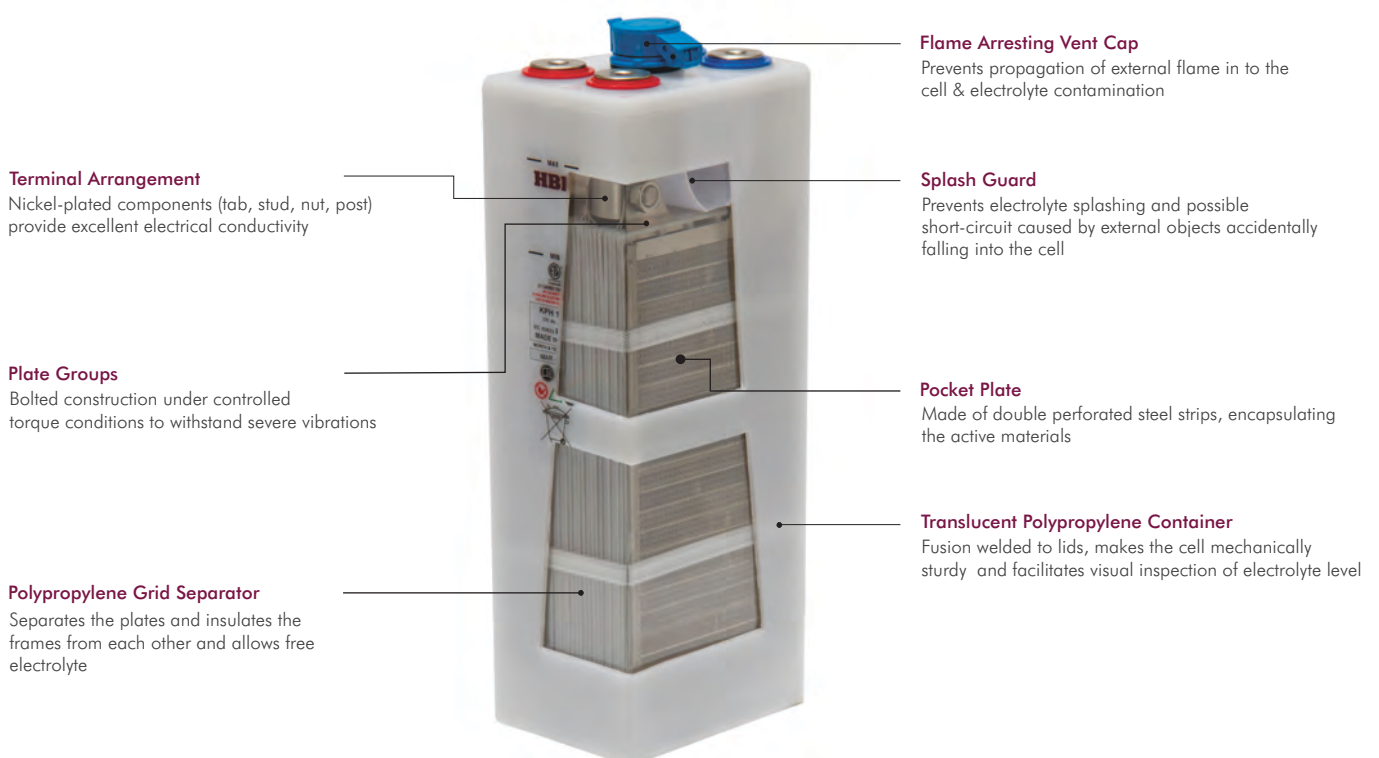
Construction

The internal mechanical structure is made of nickel plated steel making it highly rugged and capable of withstanding mechanical abuses. The active materials are encapsulated between specially designed folded steel strips, which are perforated on both sides. This design increases the effective surface area by 30% which in turn results in effective utilization of active material and makes the battery more efficient.

Single cells use special polypropylene separator system, which is chemically inert and highly immune to wear and tear. Cells come in tough, shock resistant, fusion welded polypropylene containers and lids. A unique flame arresting flip type vent cap in the cells prevents any unusual event and electrolyte contamination.

Single cells are supplied either in filled condition (charged or discharged) or dry & discharged condition with inter-cell connectors, cable connectors, associated hardware and accessories that are required for normal operation and maintenance. Powder coated Mild Steel racks to house the batteries can be provided as an option.

Cut-view of cell:



Benefits

- ❖ High reliability
- ❖ Long float life - 20 years+ at 20° C for standby applications
- ❖ Long shelf life - 5 years+ for the cells supplied in dry condition & 1 year in filled condition
- ❖ Quick charging - More than 90 % capacity available within 6 hours of charging
- ❖ Low internal resistance - For enhanced battery performance
- ❖ Resistant to mechanical & electrical abuses - Making it ideal for deployment in harsh environments
- ❖ Wide operating temperature range (-20°C to +50°C)
- ❖ Application specific designs (KPH, KPM & KPL)
- ❖ Easy installation & low maintenance
- ❖ Best TCO (Total Cost of Ownership) for demanding application needs
- ❖ No risk of sudden death failure

Capacity Range

High Discharge - KPH:

- ❖ Thin plates with more plate surface area
- ❖ For high discharge applications with less than 1 hour backup time requirements
- ❖ 10 Ah to 265 Ah
- ❖ 33 standard cell models to choose from

Medium Discharge - KPM:

- ❖ Optimized plate thickness
- ❖ For medium discharge applications, between 1 to 3 hours backup time requirements which involves high and long discharges
- ❖ 10 Ah to 395 Ah
- ❖ 42 standard cell models to choose from

Long Discharge - KPL:

- ❖ Thick plates with more amount of active material
- ❖ For long discharge applications, with more than 3 hours backup time requirements
- ❖ 11 Ah to 480 Ah
- ❖ 41 standard cell models to choose from



Applications

Single cell range is specially designed for industrial markets considering the reliability, cost-optimization and low-maintenance requirements for the following applications and segments

- ❖ Fire alarm systems
- ❖ Signaling and Telecommunications
- ❖ Solar Photovoltaic
- ❖ Instrumentation & Process control
- ❖ Switchgear protection
- ❖ Emergency lighting
- ❖ Switchyard
- ❖ UPS
- ❖ Genset starting
- ❖ Diesel Locomotive cranking
- ❖ Electromagnetic lifters (EOT crane)

Battery Charging

Following are recommended charge conditions:

Commissioning Charge:

- ❖ Constant current charge of 10 hours at $0.2 C_5$ A (20 amps for 100 Ah battery)

Quick Charging:

- ❖ Constant current charge at $0.4 C_5$ A for first 2.5 hours followed by $0.2 C_5$ A for next 2.5 hours

Charging in Operation:

The recommended charging voltages for continuous parallel operation, with occasional battery discharges:

Two Level Charging:

- ❖ Float level:
 - 1.40 V/cell for KPH & KPM
 - 1.42 V/cell for KPL
 - Float charging current: 1 to 2 mA per Ah
- ❖ *Boost level:
 - 1.45 to 1.70 V/cell for KPH & KPM
 - 1.47 to 1.70 V/cell for KPL
 - Current limit: $0.2C_5$ A

Single Level Charging:

- ❖ 1.43 – 1.50 V/cell
(may increase water consumption)

* Refer charge curves at page#13

(A higher voltage will keep the battery at high state of charge)



H Range

Cell dimensions and weight details

Cell type	Capacity (C ₅ Ah)	Cell dimensions in mm			Approx. weight per cell in kg	Cell connection bolt size	Container size reference	Approx. reserve electrolyte cc/cell
		Height	Width	Length				
KPH 10 P	10	229	86	46	1.45	M6	S1	100
KPH 12 P	12				1.50			
KPH 16 P	16	229	86	61	1.90	M6	S2	130
KPH 20 P	20	239	134	44	2.15	M6	S3	140
KPH 24 P	24	289	134	59	3.20	M10	S4	200
KPH 30 P	30				3.55			
KPH 35 P	35				3.70			
KPH 40 P	40	374	134	59	4.50	M10	S4A	200
KPH 45 P	45				4.80			
KPH 50 P	50				5.00			
KPH 57 P	57	374	134	74	6.30	M10	S5	420
KPH 63 P	63				6.50			
KPH 69 P	69				6.70			
KPH 76 P	76				6.80			
KPH 80 P	80				6.85			
KPH 85 P	85	391	134	101	9.40	2 x M10	S6	580
KPH 94 P	94				9.70			
KPH 100 P	100				9.80			
KPH 110 P	110				10.2			
KPH 120 P	120				10.5			
KPH 130 P	130	417	159	106	12.5	2 x M10	S7	740
KPH 140 P	140				13.0			
KPH 145 P	145				13.2			
KPH 155 P	155				13.6			
KPH 160 P	160	417	159	138	14.2	2 x M10	S7A	960
KPH 170 P	170				14.5			
KPH 180 P	180				14.9			
KPH 190 P	190				15.2			
KPH 210 P	210	443	163	166	20.0	2 X M10	S8	1210
KPH 230 P	230				20.8			
KPH 240 P	240				21.6			
KPH 255 P	255				22.0			
KPH 265 P	265				22.4			

M Range

Cell dimensions and weight details

Cell type	Capacity (C ₅ Ah)	Cell dimensions in mm			Approx. weight per cell in kg	Cell connection bolt size	Container size reference	Approx. reserve electrolyte cc/cell
		Height	Width	Length				
KPM 10 P	10	229	86	46	1.3	M6	S1	100
KPM 13 P	13	229	86	61	1.5	M6	S2	130
KPM 19 P	19	239	134	44	1.9	M6	S3	140
KPM 25 P	25	289	134	59	2.4	M10	S4	200
KPM 32 P	32				2.7			
KPM 38 P	38				3.2			
KPM 43 P	43				3.8			
KPM 50 P	50				4.0			
KPM 54 P	54				4.2			
KPM 60 P	60	374	134	59	4.7	M10	S4A	200
KPM 64 P	64				5.1			
KPM 70 P	70				5.6			
KPM 75 P	75	374	134	74	5.9	M10	S5	420
KPM 80 P	80				6.2			
KPM 90 P	90				6.4			
KPM 95 P	95				6.6			
KPM 105 P	105				7.0			
KPM 112 P	112				7.3			
KPM 120 P	120				7.6			
KPM 128 P	128	391	134	101	9.3	2 x M10	S6	580
KPM 136 P	136				9.6			
KPM 150 P	150				9.9			
KPM 158 P	158				10.3			
KPM 164 P	164				10.5			
KPM 170 P	170	417	159	106	10.8	2 x M10	S7	740
KPM 180 P	180				11.3			
KPM 188 P	188				11.7			
KPM 200 P	200				12.2			
KPM 212 P	212				12.6			
KPM 220 P	220				12.9			
KPM 235 P	235				13.2			
KPM 250 P	250				13.6			
KPM 260 P	260	417	159	138	14.5	2 x M10	S7A	960
KPM 270 P	270				14.9			
KPM 280 P	280				15.4			
KPM 300 P	300				16.0			
KPM 320 P	320	443	163	166	20.0	2 X M10	S8	1210
KPM 330 P	330				20.2			
KPM 345 P	345				20.6			
KPM 354 P	354				21.0			
KPM 370 P	370				21.5			
KPM 395 P	395				22.0			

L Range

Cell dimensions and weight details

Cell type	Capacity (C ₅ Ah)	Cell dimensions in mm			Approx. weight per cell in kg	Cell connection bolt size	Container size reference	Approx. reserve electrolyte cc/cell
		Height	Width	Length				
KPL 11 P	11	229	86	46	1.40	M6	S1	100
KPL 17 P	17				1.60			
KPL 23 P	23	229	86	61	1.90	M6	S2	130
KPL 27 P	27	289	134	59	3.20	M10	S4	200
KPL 32 P	32				3.50			
KPL 36 P	36				3.80			
KPL 41 P	41				4.20			
KPL 45 P	45				4.30			
KPL 55 P	55				4.50			
KPL 60 P	60	374	134	59	5.00	M10	S4A	200
KPL 69 P	69				5.60			
KPL 75 P	75	374	134	74	5.90	M10	S5	420
KPL 80 P	80				6.10			
KPL 88 P	88				6.20			
KPL 92 P	92				6.30			
KPL 100 P	100				6.40			
KPL 115 P	115				6.60			
KPL 120 P	120				6.80			
KPL 135 P	135	391	134	101	9.50	2 x M10	S6	580
KPL 150 P	150				10.0			
KPL 160 P	160				10.4			
KPL 170 P	170				10.7			
KPL 180 P	180				11.0			
KPL 190 P	190	417	159	106	12.5	2 x M10	S7	740
KPL 210 P	210				12.8			
KPL 220 P	220				13.0			
KPL 235 P	235				13.5			
KPL 255 P	255				13.8			
KPL 270 P	270				14.0			
KPL 285 P	285				14.3			
KPL 300 P	300	417	159	138	18.0	2 x M10	S7A	960
KPL 310 P	310				18.4			
KPL 335 P	335				18.8			
KPL 355 P	355				19.2			
KPL 370 P	370	443	163	166	21.5	2 X M10	S8	1210
KPL 390 P	390				22.0			
KPL 410 P	410				22.4			
KPL 425 P	425				22.6			
KPL 445 P	445				22.9			
KPL 460 P	460				23.2			
KPL 480 P	480				23.5			

Battery Arrangement as per Standard Rack Designs

(NORMAL ARRANGEMENT)																
Container size reference	1TIER								2TIER							
	1STEP		2STEP		3STEP		4STEP		1STEP		2STEP		3STEP		4STEP	
	W	H	W	H	W	H	W	H	W	H	W	H	W	H	W	H
S1 & S2			222	668	323	783	424	898								
S3			318	678	467	793	616	908			318	1070	467	1300	616	1550
S4			318	728	467	843	616	958			318	1250	467	1450	616	1700
S4A			318	813	467	928	616	1043			318	1450	467	1670	616	1900
S5			318	813	467	928	616	1043			318	1450	467	1670	616	1900
S6			318	830	467	945	616	1060			318	1536	467	1786	616	2036
S7			376	856	554	971	732	1086			376	1624	554	1834	732	2074
S7A			376	856	554	971	732	1086			376	1624	554	1834	732	2074
S8			376	882	554	997	732	1112			376	1650	554	1860	732	2100

(All dimensions in mm. Height is including cells)

Evaluation of Rack Length

Normal Arrangement

Length of rack= (X + 1) x No. of cells in a row for S1 to S5 containers
= (X + 2) x No. of cells in a row for S6 to S8 containers

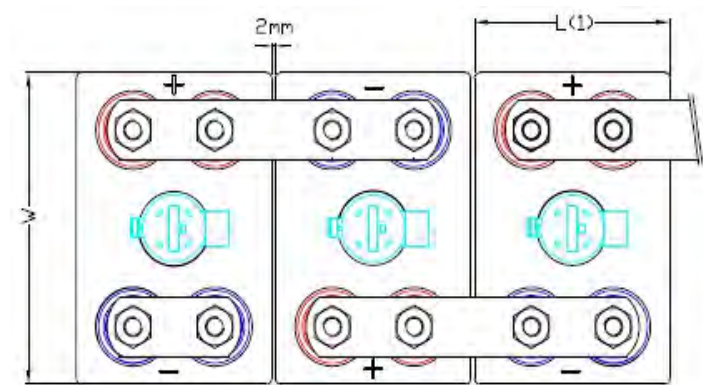
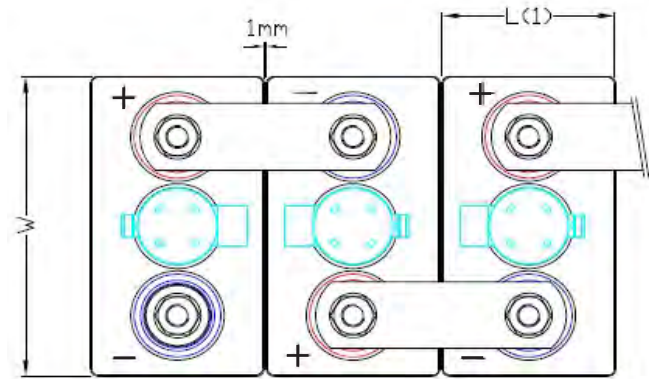
Where, X = Length of cell

The value of length should be rounded-off to nearest to 100 mm and 5 mm should be added to arrive at the final length of rack.

Standard Arrangement of Cells

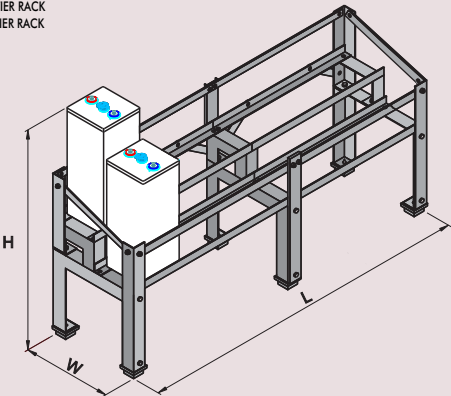
KPH 10 - KPH 80
KPM 10 - KPM 120
KPL 11 - KPL 120

KPH 85 - KPH 265
KPM 128 - KPM 395
KPL 135 - KPL 480

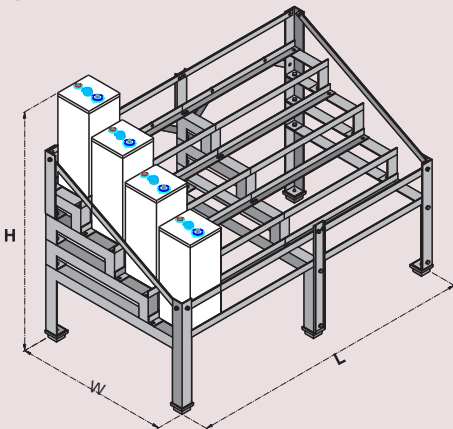


Battery Rack Arrangement

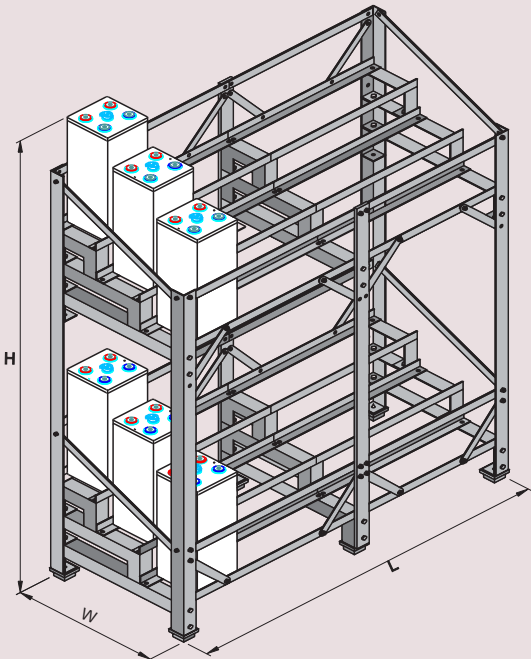
SINGLE TIER RACK
2STEP 1TIER RACK



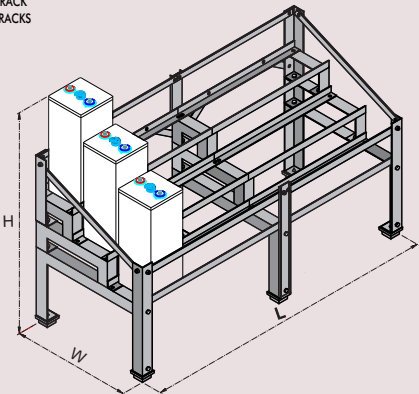
SINGLE TIER RACK
4STEP 1TIER RACK



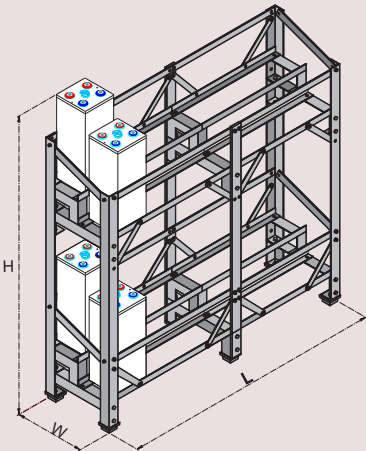
TWO TIER RACK
3STEP 2TIER RACK



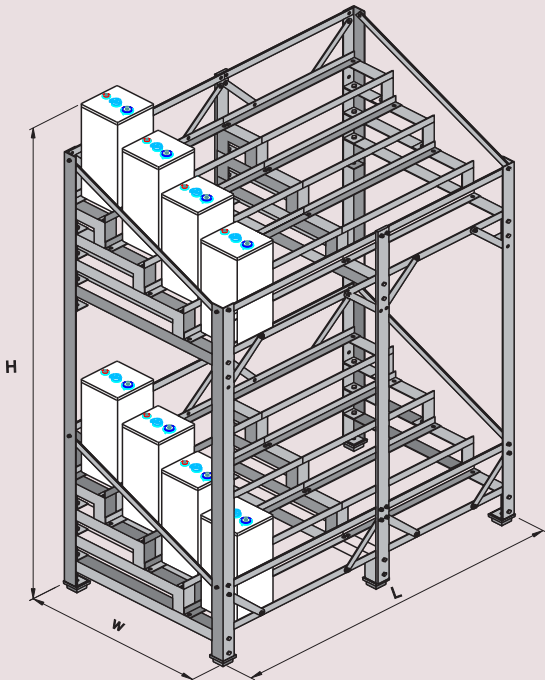
SINGLE TIER RACK
3STEP 1TIER RACKS



TWO TIER RACK
2STEP 2TIER RACK



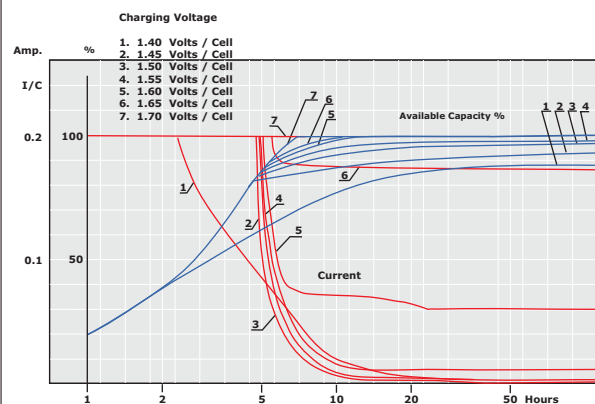
TWO TIER RACK
4STEP 2TIER RACK



Typical Characteristics

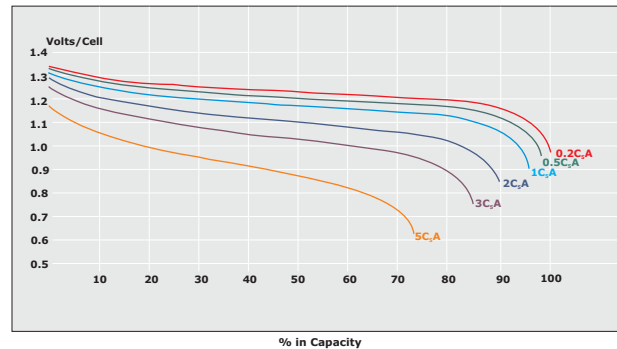
KPH

Charge



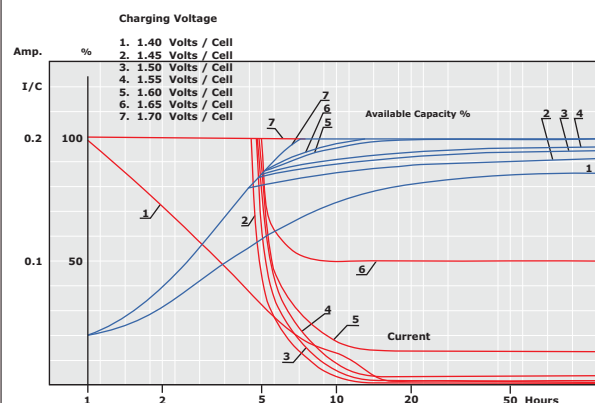
KPH

Discharge



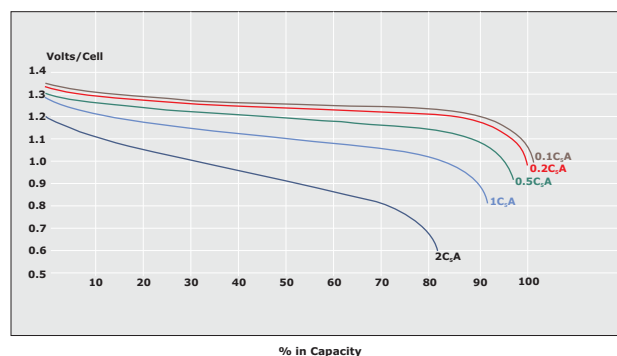
KPM

Charge



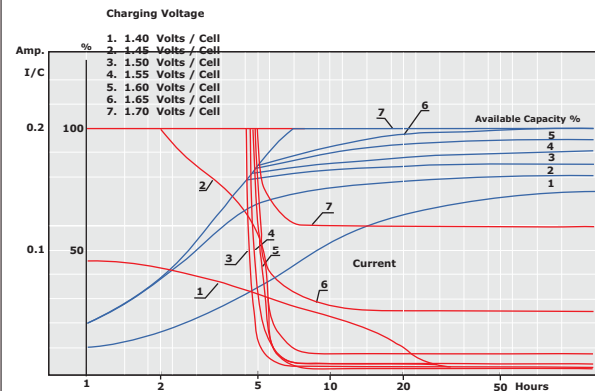
KPM

Discharge



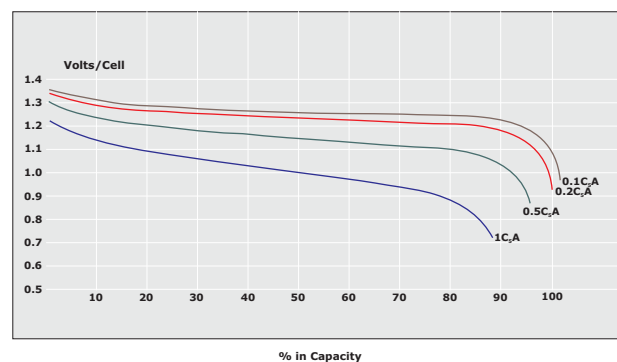
KPL

Charge



KPL

Discharge



Certifications



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