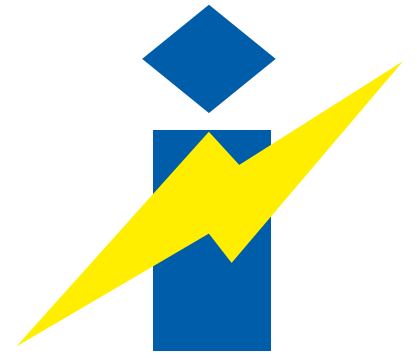


interberg batteries



NiCd Battery Catalogue



ISO 9001:08 - ISO 14001:04 - OHSAS 18001:07
Certificado Nr. 09-QEO-01427-TIC



interberg batteries

Interberg Batteries works hard to become one of the most respected and leading companies within the world's battery business. That is why the company is always looking for the latest advanced technical know-how, the sophisticated production machinery and the most modern laboratory equipments. To ensure quality in all these business processes, Interberg Batteries maintains an international quality system in compliance with the requirements of standards: ISO 9001:2008, ISO 14001:2004 and BS OHSAS 18001:2007.

Interberg Batteries is known for being a provider of stored energy solutions for virtually any imaginable application, thanks to the widest spectrum of battery technologies and ranges it offers to the market:

NICKEL-CADMIUM BATTERIES:

- Pocket Plate Battery Cells: KPL, KPM, KPH
- Sintered Plate Battery Cells: KPX
- Valve Regulated Battery Cells: NiVa-L, NiVa-M
- Solar Energy Battery Cells: SNC

NICKEL-IRON BATTERIES: Renewable Energy Battery Cells: SNF

LEAD BATTERIES:

- Flat Plate Valve Regulated Lead Acid VRLA-AGM
- Flat Plate Valve Regulated Lead Acid VRLA-GEL
- Tubular Plate Vented Battery Cells: OPzS
- Tubular Plate Valve Regulated Battery Cells: OPzV
- Planté Vented Battery Cells: GroE

Motive Power Traction Batteries: Lead Acid, Lithium

Automotive SLI Batteries (DIN and JIS), as well as Life PO₄ Batteries for Electrical Vehicles

Interberg also can provide other complementary and interesting products:

CHARGERS – UPS – RECTIFIERS – RENEWABLE ENERGY SYSTEMS (SOLAR - WIND)

And finally a new business activity has been incorporated to the company: the **MODULAR HOUSES**.



ISO 9001:08 - ISO 14001:04 - OHSAS 18001:07
Certificado Nr. 09-QEO-01427-TIC



TGA-ZM-26-96-00



CHARACTERISTICS of Interberg Alkaline NiCd batteries:

THE MARKET'S LOWEST LIFE-CYCLE COST

DULY AND ENTIRELY RECYCLABLE

PROLONGED STORAGE CAPABILITY

EASY AND SIMPLE INSTALLATION REQUIREMENTS

Remarkable Advantages of the Stationary Alkaline Batteries:

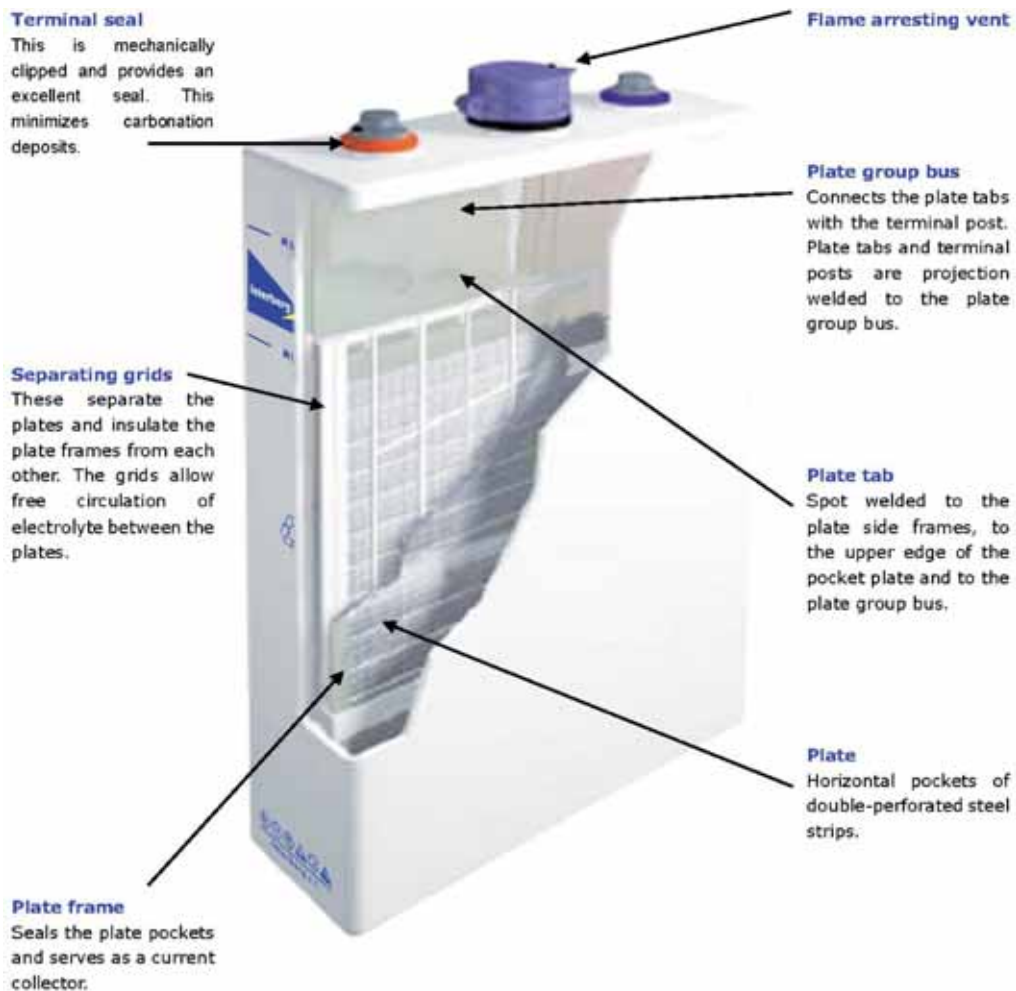
- **Wide Temperature Operation Range**
NiCd batteries are much less affected by temperature extremes than other battery technologies. NiCd batteries can be operated in a temperature range from -50°C to $+60^{\circ}\text{C}$ without problems.
- **Minimum and Easy Maintenance**
NiCd batteries require only little maintenance for topping-up water at (very) long intervals. NiCd batteries can be stored for many years without maintenance and the commissioning of NiCd batteries is also very easy and simple.
- **Extremely Long Service Life**
NiCd batteries are designed to be absolutely reliable for more than 20 years of continuous tough operation.
- **Superb Resistance against Electrical and Mechanical Stress and Abuses**
NiCd batteries are unaffected by short circuits, polarity reversal, total discharge and overcharge. The robust mechanical construction of both cells and batteries is suitable for the operation under the toughest and roughest environmental conditions.

Compliant Standards

Interberg Pocket and Sintered Plate Alkaline Batteries meet or exceed the performance parameters and requirements of IEC-EN-60623/2001, GB9368-1988, GB15142-2002 and UIC-854R.

POCKET PLATE BATTERY CELLS

Construction Features of the Alkaline Pocket Plate Battery Cell



POCKET PLATE BATTERY CELLS

GENERAL SELECTION OF THE BATTERY CELL RANGES

1.14								
1.12								
1.10								
1.08								
1.06								
1.04								
1.02								
1.00								
	5 min	15 min	30 min	1 h	2 h	3 h	5 h	
	KPH		KPM			KPL		

TECHNICAL CHARACTERISTICS OF POCKET PLATE BATTERY CELLS

	KPH	KPL	KPM
Constant Current Charging			
- C.C. Standard Charge	0.2C/5 for 8 h	0.2C/5 for 8 h	0.2C/5 for 8 h
- C.C. Fast Charge	0.3C/5 for 2.5 h followed by 0,2C/5 For 2 h	0.3C/5 for 2.5 h	0.3C/5 for 2.5 h Followed by 0,2C/5 For 2 h
- C.C. min. Effective Rate	1.5 mA per Ah	1.5 mA per Ah	1.5 mA per Ah
Constant Voltage Charging			
- C.V. Float Charge (with Boost)	1.40 – 1.42 V	1.40 – 1.42 V	1.40 – 1.42 V
- C.V. Boost Voltage Range	1.53 – 1.67 V	1.55 – 1.70 V	1.54 – 1.69 V
- C.V. Float Voltage (without Boost)	1.46 – 1.47 V	1.47 – 1.50 V	1.46 – 1.49 V
D.C. Internal Resistance	0.07 x 1/C5 Ohms	0.25 x 1/C5 Ohms	0.15 x 1/C5 Ohms
Max. Short Circuit Current	23 x C/5 Amps	10 x C/5 Amps	15 x C/5 Amps

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POCKET PLATE BATTERY CELLS

Typical Operating Voltages for Pocket Plate Alkaline Batteries

Voltage Values	Operating Voltages
1.80 to 1.55	Boost Charging Voltage
1.55 to 1.47	Automatic Charging Voltage
1.47 to 1.40	Floating Voltage
1.28	Open Circuit Voltage
1.20	Nominal Voltage
0.85	Cranking Voltage
0.65	Boost Voltage

Constant Current Charging of Pocket Plate Alkaline Batteries

Type of Cell	Full Charge	Efficient Charge	Fast Charge
KPL –KPM	C/5 during 10 hours	C/5 during 7 hours	C/3 during 4 hours
KPH	C/5 during 8 hours	C/4 during 5 hours	C/2 during 2.5 hours

Constant Voltage Charging of Pocket Plate Alkaline Batteries

Type of Cell	Minimum Floating Voltage	Automatic Floating Voltage
KPL –KPM	C/5 during 10 hours	C/5 during 7 hours
KPH	C/5 during 8 hours	C/4 during 5 hours

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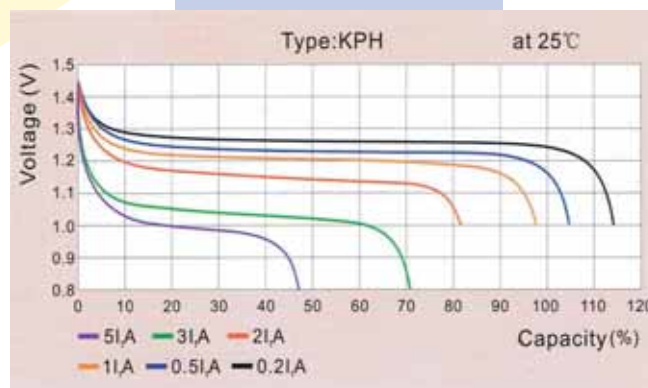
POCKET PLATE BATTERY CELLS

MAIN APPLICATIONS OF HIGH RATE OF DISCHARGE BATTERIES (KPH): Engine Starting, UPS (up to 30 min), Operation and Control of DC Motors, Water Treatment Plants, Switch Closing and Tripping, etc...

CELL RANGES AND SPECIFICATIONS High Rate of Discharge (KPH)

Cell Type	V	Capacity (Ah/5h)	Cell Length (mm)	Cell Width (mm)	Cell Height (mm)	Cell Weight (Wet) Kg	Electrolyte Volume (1.20Kg/Lit)	Container Material
KPH-10	1.2	10	48	81	245	1.80	0.25	MBS
KPH-20	1.2	20	68	134	245	2.80	0.70	MBS/PP
KPH-30	1.2	30	70	134	285	4.00	1.00	MBS/PP
KPH-40	1.2	40	70	134	285	4.50	0.90	MBS/PP
KPH-50	1.2	50	80	141	370	6.20	1.50	MBS/PP
KPH-60	1.2	60	80	141	370	6.50	1.50	MBS/PP
KPH-70	1.2	70	106	164	345	9.00	2.20	MBS/PP
KPH-80	1.2	80	106	164	345	9.20	1.70	MBS/PP
KPH-100	1.2	100	106	164	345	10.00	2.10	MBS/PP
KPH-120	1.2	120	164	167	365	14.00	4.00	MBS/PP
KPH-150	1.2	150	164	167	365	15.00	3.20	MBS/PP
KPH-200	1.2	200	176	291	510	22.00	10.70	MBS
KPH-250	1.2	250	176	291	510	36.00	10.30	MBS
KPH-300	1.2	300	176	291	510	37.00	9.30	MBS
KPH-350	1.2	350	176	291	510	38.00	7.50	MBS
KPH-400	1.2	400	186	398	570	58.00	18.40	MBS
KPH-500	1.2	500	186	398	570	59.00	16.50	MBS

DISCHARGE CURVE KPH



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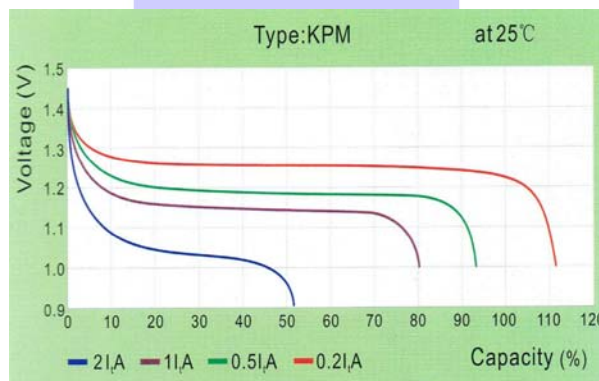
POCKET PLATE BATTERY CELLS

MAIN APPLICATIONS OF MEDIUM RATE OF DISCHARGE BATTERIES (KPM):
 UPS (over 30 min), Railway DC Power Source, Auxiliary Power Source for Power Stations, Chemical Plants, Oil Refineries, Iron Works, Heavy Industry, etc...

CELL RANGES AND SPECIFICATIONS Medium Rate of Discharge (KPM)

Cell Type	V	Capacity (Ah/5h)	Cell Length (mm)	Cell Width (mm)	Cell Height (mm)	Cell Weight (Wet) Kg	Electrolyte Volume (1.20 Kg/Lit)	Container Material
KPM-10	1.2	10	48	81	245	1.50	0.30	MBS
KPM-20	1.2	20	68	134	245	2.50	0.80	MBS/PP
KPM-30	1.2	30	68	134	245	3.00	0.70	MBS/PP
KPM-40	1.2	40	70	134	285	4.00	1.00	MBS/PP
KPM-50	1.2	50	70	134	285	4.20	1.00	MBS/PP
KPM-60	1.2	60	80	141	370	6.00	1.80	MBS/PP
KPM-70	1.2	70	80	141	370	6.40	1.50	MBS/PP
KPM-80	1.2	80	80	141	370	6.60	1.40	MBS/PP
KPM100	1.2	100	106	164	345	9.00	2.10	MBS/PP
KPM-120	1.2	120	106	164	345	9.50	2.10	MBS/PP
KPM-150	1.2	150	164	167	345	13.00	3.70	MBS/PP
KPM-200	1.2	200	164	167	345	14.50	3.30	MBS/PP
KPM-250	1.2	250	152	170	385	16.00	3.30	PP
KPM-300	1.2	300	162	200	450	23.00	4.60	PP
KPM-350	1.2	350	162	200	450	24.00	4.60	PP
KPM-400	1.2	400	138	278	490	27.00	4.20	PP
KPM-500	1.2	500	176	291	510	40.00	9.10	MBS
KPM-600	1.2	600	176	291	510	42.00	8.30	MBS
KPM-700	1.2	700	186	398	570	58.00	16.70	MBS
KPM-800	1.2	800	186	398	570	60.00	16.00	MBS
KPM-900	1.2	900	186	398	570	64.00	14.70	MBS
KPM-1000	1.2	1000	186	398	570	65.00	13.00	MBS

DISCHARGE CURVE KPM



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POCKET PLATE BATTERY CELLS

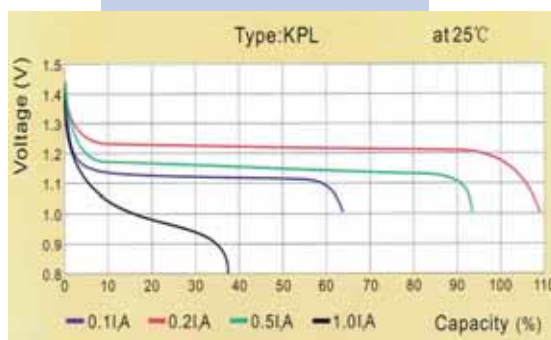
MAIN APPLICATIONS OF LOW RATE OF DISCHARGE BATTERIES (KPL):

Emergency Lighting, Telecommunications, Operation of Communication Equipments on ships, Emergency Lighting and Air Conditioning on trains, Railway Signaling, etc...

CELL RANGES AND SPECIFICATIONS Low Rate of Discharge (KPL)

Cell Type	V	Capacity (Ah/5h)	Cell Length (mm)	Cell Width (mm)	Cell Height (mm)	Cell Weight (Wet) Kg	Electrolyte Volume (1.20 Kg/Lit)	Container Material
KPL-10	1.2	10	38	84	138	0.80	0.20	MBS/PP
KPL-20	1.2	20	32	113	220	1.20	0.30	MBS/PP
KPL-30	1.2	30	68	134	245	2.80	0.80	MBS/PP
KPL-40	1.2	40	68	134	245	3.00	0.80	MBS/PP
KPL-50	1.2	50	68	134	245	3.00	0.70	MBS/PP
KPL-60	1.2	60	70	134	285	4.20	0.90	MBS/PP
KPL-80	1.2	80	80	141	365	5.80	1.70	MBS/PP
KPL-100	1.2	100	80	141	365	6.20	1.60	MBS/PP
KPL-120	1.2	120	80	141	365	6.40	1.40	MBS/PP
KPL-150	1.2	150	106	164	345	9.00	2.50	MBS/PP
KPL-200	1.2	200	106	164	345	10.00	1.80	MBS/PP
KPL-250	1.2	250	164	167	345	13.50	2.80	MBS/PP
KPL-300	1.2	300	164	167	345	15.00	2.70	MBS/PP
KPL-400	1.2	400	152	170	385	17.50	4.70	PP
KPL-500	1.2	500	138	276	490	27.00	6.10	PP
KPL-600	1.2	600	176	291	510	38.00	9.20	MBS
KPL-700	1.2	700	176	291	510	39.00	8.40	MBS
KPL-800	1.2	800	186	398	570	59.00	17.20	MBS
KPL-900	1.2	900	186	398	570	60.00	15.60	MBS
KPL-1000	1.2	1000	186	398	570	61.00	15.00	MBS

DISCHARGE CURVE KPL



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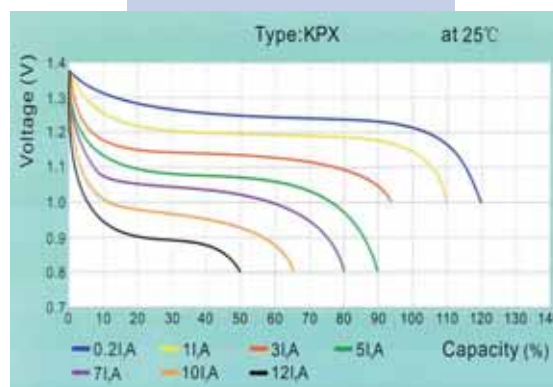
SINTERED PLATE BATTERY CELLS

MAIN APPLICATIONS OF ULTRA HIGH RATE OF DISCHARGE BATTERIES (KPX):
AGV, Gas Turbines, Diesel Generators, Engine Starting, Operation and Control of Computer Systems, Transportation Networks, etc...

CELL RANGES AND SPECIFICATIONS KPX

Cell Type	V	Capacity (Ah/5h)	Cell Length (mm)	Cell Width (mm)	Cell Height (mm)	Cell Weight (Wet) Kg	Electrolyte Volume (1.20 Kg/Lit)	Container Material
KPX-10	1.2	10	29	81	218	1,05	0,16	PA
KPX-20	1.2	20	37	82	244	1,30	0.15	AS
KPX-30	1.2	30	43	82	255	1,65	0.22	AS
KPX-40	1.2	40	43	82	255	1,75	0,21	AS
KPX-50	1.2	50	49	82	244	2,00	0,19	AS
KPX-60	1.2	60	62	139	267	3,80	0,91	ABS
KPX-70	1.2	70	70	134	285	4,40	1,00	ABS
KPX-80	1.2	80	62	139	267	4,00	0,90	ABS
KPX-90	1.2	90	75	81	243	3,10	0,40	PA
KPX-100	1.2	100	70	134	285	5,00	0,85	ABS
KPX-120	1.2	120	79	140	367	7,00	1,30	ABS
KPX-140	1.2	140	79	140	367	7,20	1,20	PP
KPX-170	1.2	170	79	140	367	7,70	1,02	PP
KPX-190	1.2	190	79	140	367	8,00	1,00	PP
KPX-200	1.2	200	107	165	348	10,00	1,70	PP
KPX-210	1.2	210	107	165	348	10,30	1,65	PP
KPX-220	1.2	220	107	165	348	10,50	1,65	PP
KPX-230	1.2	230	107	165	348	10,60	1,60	PP
KPX-240	1.2	240	107	165	348	10,70	1,60	PP
KPX-250	1.2	250	107	165	348	10,90	1,60	PP

DISCHARGE CURVE KPX



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APPLICATION EXAMPLES





the power of energy

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