



The CELLYTE 6/12-TLA Series

6/12V flat plate monobloc
AGM battery

**A powerful
standby battery
for long, reliable
service**



6/12-TLA



Specification

Positive electrode:	Lead Calcium Tin grid alloy
Negative electrode:	Lead Calcium grid alloy
Float voltage:	2.25 - 2.30 vpc ± 1% at 25°C
Max. charge voltage:	2.50 vpc ± 1% at 25°C
Electrolyte:	Sulphuric acid absorbed into AGM separator
Safety valve:	1-3 psi self-resealing
Separators:	Absorptive glass mat (AGM) separator
Terminals:	Integral brass insert for stainless steel bolt
Electrical:	6V 117Ah to 205Ah & 12V 15Ah to 240Ah at C/10 to 1.80vpc @ 25°C

Design life

Float life:	10-years in float service @ 25°C
Cycle life:	320 cycles @ 80% DOD at 25°C

Product compliance

IEC	60896-21/22-2004
BS	6290 part 4
UL	component approval
Eurobat	

Company accreditation

ISO	9001:2015
ISO	14001:2004

Product information

The CELLYTE 6/12-TLA series

Offers rugged, reliable performance

The SEC Cellyte 6-12-TLA series of valve regulated (VRLA) AGM monoblocs is a classic top terminal range, designed for when a cost-effective but reliable solution is required. The 6/12-TLA series complies with a number of international standards and has a proven record after performing in the market for over 10-years.

Recent enhancements to the 6/12-TLA series include the design of larger sizes of the 12V for heavy-duty applications. We have also added handles for easy lifting and brass insert terminals for higher current capacity. The new terminal design makes the battery more robust during transportation and storage.

Industry-leading construction

By marrying cutting-edge technology and the world's best components, SEC continues to make industrial batteries that lead the global market. The CELLYTE 6/12-TLA is constructed with the highest regard to quality in 6V or 12V blocs with a choice of standard or flame retardant casing.

Our engineers used the best possible raw materials. The German-made bespoke separators and thick, Lead Calcium grids have given it a reputation as a true industry workhorse. The Japanese triple-post sealant and gas recombinant function increase both safety and energy density in this affordable series.

Product features

- Valve regulated Lead Acid AGM
- Suitable for float and standby service
- Lead Calcium Tin alloy made from virgin pure Lead
- Never requires additional water
- Safety seal prevents spills and leaks
- Enhanced performance
- Low gassing on float charge
- Very low self-discharge rates
- Suited to a wide range of applications

“This range of monoblocs is proven to be reliable and long lasting. It is designed and manufactured to high standards whilst still being competitively priced.”

Dr. Mike McDonagh
SEC Group

Product benefits

Very low maintenance

The 6/12-TLA is designed for standby and float requirements. A reliable high-energy battery, it does not require additional electrolytes or water. This makes it virtually maintenance-free and offers peace of mind for busy operators in a range of applications.

Suited for use in compact areas

During normal operation more than 99% of the gases generated inside the 6/12-TLA are recombined. Additionally, the 12Volt models feature a central-manifold gassing system with a flame arresting membrane, allowing safe venting while being used in enclosed environments.

Wide operating temperature range

The 6/12-TLA performs well under variable temperature conditions in many applications. Whilst continuous operation over 45°C is not recommended for any VRLA battery, the 6/12-TLA has an operating temperature range of -15°C to + 50°C.

Advanced valve system

When pressure builds up in the cell, the one-way safety valve opens at 1-3 psi and releases pressure before closing again. This patented Swedish valve system is sturdy and reliable, preventing the ingress of oxygen, which reduces battery life.

Long life in operation and storage

We have optimised the grid design and paste formulation to extend the 6/12-TLA's service life in both operation and storage. The series recovers well from accidental deep-discharge and has a very low rate of self-discharge.

Suited for multiple applications

The 6/12-TLA is a powerful top terminal battery that can be used in horizontal and vertical positions. It's suited for a wide range of applications, but SEC engineers particularly recommend it for the UPS, emergency lighting and medical markets.

Applications



Telecommunication



**Fire & security
alarm systems**



**Switch-gear
operations**



Emergency lighting



UPS systems



Medical



Cellular radio



**Standby power
supply**

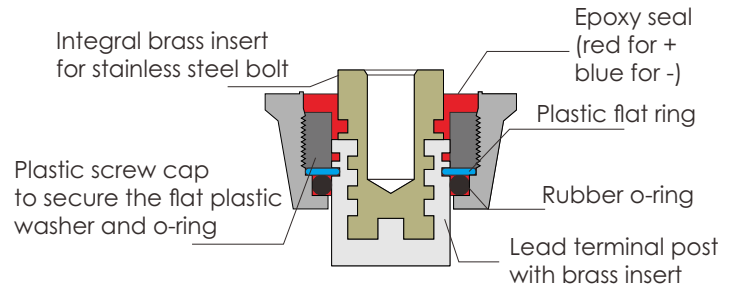


Industrial standby

Cell outline

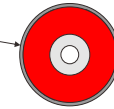


Triple-seal detail



SEC TRIPLE-SEAL DESIGN

Integral brass insert for M-Bolt



Material:
ABS case & cover
color:
Case: pantone yellow C
Cover: black

Female terminal type

Female terminal type	Description
FT2	12mm ø brass insert terminal for M5 bolt
FT3	14mm ø brass insert terminal for M6 bolt
FT4	16mm ø brass insert terminal for M6 bolt
FT5	16mm ø brass insert terminal for M8 bolt

Cell dimensions

Dimensions/ Weights/ Data

SEC bloc type	Nominal capacity (Ah) C/10 1.80 vpc	Battery weight		Overall battery dimension						Short circuit amps	Internal resistance (mΩ)	Maximum charge current(A)	Female terminal type
		kg	lbs	Length		Width		Overall height					
				mm	Inch	mm	Inch	mm	Inch				
6-TLA-130	117	16.0	35.3	196	7.72	170	6.69	214	8.43	3200	3.00	23.4	FT 4
6-TLA-200	175	26.5	58.4	306	12.0	168	6.61	225	8.86	4600	2.40	35.0	FT 5
6-TLA-210	195	30.5	67.2	323	12.7	178	7.01	230	9.06	5000	2.30	39.0	FT 5
6-TLA-230	205	31.8	70.1	243	9.57	188	7.40	275	10.8	5500	2.20	41.0	FT 5
12-TLA-15	15.8	5.20	11.5	181	7.13	77.0	3.03	167	6.57	650	14.0	3.16	FT 2
12-TLA-20	22.2	7.30	16.1	175	6.89	166	6.54	125	4.92	940	12.0	4.44	FT 3
12-TLA-25	25.3	7.80	17.2	165	6.50	125	4.92	176	6.93	1220	8.20	5.06	FT 3
12-TLA-35	31.2	10.5	23.1	196	7.72	131	5.16	181	7.13	1500	7.30	6.24	FT 3
12-TLA-40	38.1	12.0	26.5	197	7.76	165	6.50	170	6.69	1600	6.70	7.62	FT 3
12-TLA-45	42.9	13.5	29.8	197	7.76	165	6.50	170	6.69	1700	6.00	8.58	FT 3
12-TLA-60	53.6	16.5	36.4	230	9.06	138	5.43	228	8.98	1900	5.60	10.7	FT 3

Cell dimensions

Dimensions/ Weights/ Data

SEC bloc type	Nominal capacity (Ah) C/10 1.80 vpc	Battery weight		Overall battery dimension						Short circuit amps	Internal resistance (mΩ)	Maximum charge current(A)	Female terminal type
				Length		Width		Overall height					
		kg	lbs	mm	Inch	mm	Inch	mm	Inch				
12-TLA-70	63.3	20.0	44.1	350	13.8	167	6.57	179	7.05	2000	5.50	21.0	FT 3
12-TLA-80	68.2	20.5	45.2	260	10.2	169	6.65	227	8.94	2100	5.40	21.5	FT 3
12-TLA-90	77.9	21.0	46.3	260	10.2	169	6.65	227	8.94	2400	4.50	22.5	FT 3
12-TLA-100	87.7	26.0	57.3	307	12.1	170	6.69	227	8.94	2650	4.30	27.0	FT 4
12-TLA-110	97.4	29.0	63.9	331	13.0	176	6.93	225	8.86	2900	3.90	31.0	FT 4
12-TLA-120	105	31.0	68.3	331	13.0	176	6.93	225	8.86	3000	3.40	31.5	FT 4
12-TLA-130	116	31.5	69.4	342	13.5	173	6.81	285	11.2	3300	3.10	32.0	FT 4
12-TLA-150	130	41.0	90.4	342	13.5	173	6.81	285	11.2	4200	2.90	41.0	FT 5
12-TLA-160	145	40.0	88.2	483	19.0	170	6.69	240	9.45	4500	2.80	44.0	FT 5
12-TLA-175	154	49.0	108	532	20.9	207	8.15	240	9.45	4500	2.60	52.0	FT 5
12-TLA-200	174	51.0	112	532	20.9	207	8.15	240	9.45	4700	2.30	54.0	FT 5
12-TLA-220	193	60.5	133	522	20.6	240	9.45	225	8.86	5400	2.20	60.5	FT 5
12-TLA-250	222	67.5	149	522	20.6	269	10.6	245	9.65	6157	2.00	66.8	FT 5
12-TLA-275	240	73.0	161	522	20.6	269	10.6	245	9.65	6700	1.90	73.0	FT 5

Catalyst can be added upon request except 6-TLA-130, 6-TLA-200, 6-TLA-210, 12-TLA-15, 12-TLA-20, 12-TLA-25 and 12-TLA-35, 12-TLA-40 and 12-TLA-45 and 12-TLA-70.

Operating temperature

Design operating temperature	25°C
Limit for charging	-10 to +50°C
Limit for discharging	-15 to +50°C
Limit for storage	-20 to +50°C

Charging method

Float charging voltage at 25°C	2.25 - 2.30vpc with temperature compensation
Maximum charging voltage at 25°C	2.50vpc with temperature compensation
Float charge temperature compensation factor	-3 mV/cell/°C above 25°C +3 mV/cell/°C below 25°C
Cyclic charge temperature compensation factor	-5 mV/cell/°C above 25°C +5 mV/cell/°C below 25°C

Capacity

Ampere hour at 25°C

SEC bloc type	Discharge ampere hour at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
6-TLA-130	1.80	42.1	54.2	60.4	1.85	67.8	78.4	83.9	89.6	93.8	97.0	101	107	109	111	120
	1.75	43.3	55.8	62.2	1.80	71.3	83.1	89.0	95.1	99.6	103	107	114	117	119	130
	1.67	45.6	57.1	62.8	1.75	73.4	85.2	91.2	97.4	102	106	109	117	120	122	134
6-TLA-200	1.80	63.2	81.4	91	1.85	102	118	126	134	141	146	151	161	164	167	181
	1.75	65.0	83.7	93	1.80	107	125	134	143	149	155	160	171	175	179	195
	1.67	68.3	85.6	94	1.75	110	128	137	146	153	158	164	175	180	184	201
6-TLA-210	1.80	70.3	90.5	101	1.85	113	131	140	149	156	162	167	179	182	186	201
	1.75	72.0	92.8	103	1.80	119	139	148	158	166	172	178	190	195	198	217
	1.67	75.8	94.9	104	1.75	122	142	152	162	170	176	182	195	200	204	223
6-TLA-230	1.80	73.8	95.1	106	1.85	119	137	147	157	164	170	176	188	191	194	210
	1.75	76.2	98.1	109	1.80	125	146	156	166	174	180	187	199	205	208	227
	1.67	80.1	100	110	1.75	129	149	160	170	178	185	191	205	210	214	233
12-TLA-15	1.80	5.67	7.30	8.14	1.85	8.6	10.6	11.3	12.1	12.7	13.1	13.6	14.5	14.7	15.0	16.8
	1.75	5.85	7.53	8.39	1.80	9.6	11.2	12.0	12.8	13.4	13.9	14.4	15.4	15.8	16.1	18.0
	1.67	6.15	7.70	8.48	1.75	9.9	11.5	12.3	13.1	13.8	14.3	14.8	15.8	16.2	16.5	18.2
12-TLA-20	1.80	7.97	10.3	11.4	1.85	12.9	14.9	15.9	17.0	17.8	18.5	19.1	20.4	20.7	21.1	21.8
	1.75	8.27	10.7	11.9	1.80	13.5	15.8	16.9	18.1	18.9	19.6	20.3	21.7	22.2	22.6	24.0
	1.67	8.69	10.9	12.0	1.75	14.0	16.2	17.3	18.5	19.4	20.1	20.8	22.2	22.8	23.3	24.4
12-TLA-25	1.80	9.09	11.7	13.1	1.85	14.7	17.0	18.2	19.4	20.3	21.0	21.8	23.3	23.7	24.1	25.6
	1.75	9.39	12.1	13.5	1.80	15.4	18.0	19.3	20.6	21.6	22.3	23.1	24.7	25.3	25.8	25.9
	1.67	9.87	12.4	13.6	1.75	15.9	18.5	19.8	21.1	22.1	22.9	23.7	25.3	26.0	26.5	28.3
12-TLA-35	1.80	11.2	14.5	16.1	1.85	18.1	20.9	22.4	23.9	25.0	25.9	26.8	28.6	29.1	29.7	31.0
	1.75	11.6	14.9	16.6	1.80	19.0	22.2	23.7	25.4	26.5	27.5	28.4	30.4	31.2	31.8	33.0
	1.67	12.2	15.2	16.8	1.75	19.6	22.7	24.3	26.0	27.2	28.2	29.2	31.2	32.0	32.6	34.5
12-TLA-40	1.80	13.7	17.7	19.7	1.85	22.1	25.5	27.3	29.2	30.6	31.7	32.8	35.0	35.6	36.3	36.4
	1.75	14.1	18.2	20.3	1.80	23.2	27.1	29.0	31.0	32.4	33.6	34.8	37.1	38.1	38.8	39.1
	1.67	14.8	18.6	20.5	1.75	23.9	27.8	29.7	31.8	33.2	34.4	35.6	38.1	39.1	39.8	41.5
12-TLA-45	1.80	15.4	19.9	22.1	1.85	24.9	28.7	30.8	32.9	34.4	35.6	36.9	39.4	40.0	40.8	41.0
	1.75	15.9	20.5	22.8	1.80	26.1	30.5	32.6	34.8	36.5	37.8	39.1	41.8	42.9	43.7	43.9
	1.67	16.7	20.9	23.0	1.75	26.9	31.2	33.4	35.7	37.4	38.7	40.1	42.9	44.0	44.9	46.7
12-TLA-60	1.80	19.3	24.9	27.7	1.85	31.1	35.9	38.4	41.1	43.0	44.5	46.1	49.3	50.1	51.0	52.0
	1.75	19.9	25.6	28.6	1.80	32.7	38.1	40.8	43.5	45.6	47.2	48.9	52.2	53.6	54.6	55.0
	1.67	20.9	26.2	28.9	1.75	33.7	39.0	41.8	44.7	46.8	48.4	50.1	53.6	55.0	56.1	59.9
12-TLA-70	1.80	24.3	31.3	34.9	1.85	36.7	42.5	45.4	48.6	50.8	52.5	54.5	58.2	59.2	60.3	63.8
	1.75	25.0	32.3	35.9	1.80	41.2	45.0	48.2	51.5	53.9	55.8	57.8	61.7	63.3	64.5	65.0
	1.67	26.3	33.0	36.3	1.75	42.4	46.2	49.4	52.8	55.2	57.0	59.2	63.3	65.0	66.3	71.0
12-TLA-80	1.80	24.6	31.7	35.3	1.85	39.5	45.7	48.9	52.2	54.7	56.5	58.7	62.7	63.7	64.9	69.4
	1.75	25.3	32.6	36.3	1.80	41.6	48.5	51.9	55.5	58.0	60.0	62.2	66.5	68.2	69.5	74.9
	1.67	26.6	33.3	36.6	1.75	42.8	49.7	53.2	56.7	59.5	61.5	63.6	68.2	70.0	71.4	77.0
12-TLA-90	1.80	28.1	36.1	40.3	1.85	45.2	52.2	55.9	59.7	62.4	64.8	67.1	71.7	72.8	74.3	80.4
	1.75	28.9	37.3	41.5	1.80	47.5	55.4	59.3	63.3	66.4	68.5	71.1	76.0	77.9	79.4	77.0
	1.67	30.4	38.1	42.0	1.75	49.0	56.8	60.8	65.0	68.0	70.4	72.9	77.9	80.0	81.6	89.3
12-TLA-100	1.80	31.6	40.7	45.3	1.85	50.8	58.8	62.9	67.2	70.4	72.9	75.5	80.6	81.9	83.5	91.4
	1.75	32.5	41.9	46.7	1.80	53.5	62.4	66.8	71.3	74.7	77.3	79.8	85.5	87.7	89.3	89.0
	1.67	34.2	42.9	47.2	1.75	55.1	63.9	68.4	73.1	76.4	79.0	82.0	87.7	90.0	91.8	102
12-TLA-110	1.80	35.1	45.2	50.3	1.85	56.5	65.3	69.9	74.7	78.2	81.0	83.8	89.6	91.0	92.8	103
	1.75	36.1	46.6	51.9	1.80	59.4	69.3	74.2	79.2	82.8	85.9	88.8	95.0	97.4	99.2	109
	1.67	38.0	47.6	52.4	1.75	61.2	71.0	76.0	81.2	85.0	88.0	91.1	97.4	100	102	112

Capacity

Ampere hour at 25°C

SEC bloc type	Discharge ampere hour at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
12-TLA-120	1.80	37.9	48.8	54.4	1.85	61.0	70.5	75.5	80.7	84.4	87.4	90.6	96.8	98.3	100	110
	1.75	39.0	50.3	56.0	1.80	64.2	74.8	80.1	85.5	89.6	92.8	96.0	102	105	107	109
	1.67	41.0	51.4	56.6	1.75	66.1	76.7	82.0	87.6	91.8	95.0	98.4	105	108	110	122
12-TLA-130	1.80	41.7	53.7	59.8	1.85	67.1	77.6	83.0	88.7	92.8	96.0	99.6	106	108	109	120
	1.75	42.9	55.3	61.6	1.80	70.6	82.3	88.1	94.2	98.4	102	106	113	116	117	120
	1.67	45.1	56.6	62.2	1.75	72.7	84.3	90.2	96.5	101	105	108	116	119	120	134
12-TLA-150	1.80	45.2	58.2	64.8	1.85	75.2	87.0	93.1	99.5	104	108	112	119	121	124	135
	1.75	46.5	60.0	66.8	1.80	76.5	92.3	98.8	106	110	114	118	126	130	132	139
	1.67	48.9	61.3	67.5	1.75	78.8	94.5	101	108	113	117	121	130	133	136	150
12-TLA-160	1.80	52.1	67.1	74.8	1.85	83.9	97.0	104	111	116	120	125	133	135	138	151
	1.75	53.7	69.2	77.0	1.80	88.2	103	110	118	123	128	132	141	145	147	157
	1.67	56.4	70.7	77.8	1.75	90.9	105	113	121	126	131	135	145	149	151	167
12-TLA-175	1.80	59.1	76.1	84.8	1.85	89.5	103	111	118	124	128	133	142	144	147	161
	1.75	60.8	78.4	87.3	1.80	100	110	117	125	131	136	141	150	154	157	179
	1.67	64.0	80.1	88.2	1.75	103	112	120	129	135	139	144	154	158	162	179
12-TLA-200	1.80	62.6	80.6	89.8	1.85	101	116	125	133	139	144	149	160	162	165	181
	1.75	64.4	82.9	92.4	1.80	106	123	132	141	148	153	158	169	174	176	179
	1.67	67.7	84.8	93.3	1.75	109	126	135	145	151	157	162	174	178	181	201
12-TLA-220	1.80	69.7	89.8	100	1.85	112	129	138	148	155	160	166	177	180	184	201
	1.75	71.5	92.1	103	1.80	118	137	147	157	164	170	176	188	193	197	228
	1.67	75.1	94.1	104	1.75	121	141	150	161	168	174	180	193	198	202	223
12-TLA-250	1.80	79.7	98.1	109	1.85	129	149	159	170	178	184	191	204	207	211	230
	1.75	87.4	103	115	1.80	135	158	169	180	189	196	202	216	222	226	249
	1.67	91.9	106	117	1.75	139	162	173	185	194	200	208	222	228	232	257
12-TLA-275	1.80	86.2	106	118	1.85	139	161	172	184	192	199	206	220	224	228	250
	1.75	94.3	112	125	1.80	146	170	182	195	204	211	218	234	240	244	269
	1.67	99.2	114	126	1.75	150	174	187	200	209	216	224	239	246	251	277

Current

Amps at 25°C

SEC bloc type	Discharge amps at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
6-TLA-130	1.80	168	108	80.6	1.85	67.8	52.3	42.0	29.9	23.5	19.4	16.8	13.4	10.9	9.25	5.02
	1.75	173	112	83.0	1.80	71.3	55.4	44.5	31.7	24.9	20.6	17.8	14.2	11.7	9.92	5.42
	1.67	182	114	83.8	1.75	73.4	56.8	45.6	32.5	25.5	21.1	18.2	14.6	12.0	10.2	5.58
6-TLA-200	1.80	253	163	121	1.85	102	78.4	62.9	44.7	35.2	29.1	25.2	20.1	16.4	13.9	7.54
	1.75	260	167	124	1.80	107	83.2	66.8	47.6	37.3	30.9	26.7	21.4	17.5	14.9	8.13
	1.67	273	171	126	1.75	110	85.2	68.4	48.7	38.3	31.6	27.3	21.9	18.0	15.3	8.37
6-TLA-210	1.80	281	181	134	1.85	113	87.1	69.9	49.7	39.0	32.4	27.9	22.4	18.2	15.5	8.37
	1.75	288	186	138	1.80	119	92.4	74.0	52.8	41.5	34.4	29.6	23.7	19.5	16.5	9.03
	1.67	303	190	139	1.75	122	94.7	76.0	54.0	42.5	35.2	30.3	24.4	20.0	17.0	9.29
6-TLA-230	1.80	295	190	141	1.85	119	91.3	73.4	52.3	41.0	34.0	29.3	23.5	19.1	16.2	8.75
	1.75	305	196	146	1.80	125	97.0	77.9	55.3	43.5	36.0	31.1	24.9	20.5	17.3	9.44
	1.67	320	201	147	1.75	129	99.3	79.8	56.8	44.6	37.0	31.8	25.6	21.0	17.8	9.71
12-TLA-15	1.80	22.7	14.6	10.8	1.85	8.55	7.05	5.65	4.03	3.17	2.62	2.26	1.81	1.47	1.25	0.70
	1.75	23.4	15.1	11.2	1.80	9.60	7.47	6.00	4.27	3.35	2.78	2.40	1.92	1.58	1.34	0.75
	1.67	24.6	15.4	11.3	1.75	9.90	7.67	6.15	4.38	3.44	2.85	2.46	1.97	1.62	1.38	0.76

Current

Amps at 25°C

SEC bloc type	Discharge amps at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
12-TLA-20	1.80	31.9	20.5	15.3	1.85	12.9	9.93	7.95	5.67	4.45	3.69	3.18	2.55	2.07	1.76	0.91
	1.75	33.1	21.3	15.8	1.80	13.5	10.5	8.45	6.02	4.73	3.92	3.38	2.71	2.22	1.88	1.00
	1.67	34.8	21.8	16.0	1.75	14.0	10.8	8.65	6.17	4.85	4.01	3.46	2.78	2.28	1.94	1.02
12-TLA-25	1.80	36.4	23.4	17.4	1.85	14.7	11.3	9.09	6.47	5.08	4.20	3.63	2.91	2.37	2.01	1.07
	1.75	37.6	24.2	18.0	1.80	15.4	12.0	9.64	6.87	5.39	4.46	3.85	3.09	2.53	2.15	1.08
	1.67	39.5	24.7	18.2	1.75	15.9	12.3	9.88	7.03	5.53	4.58	3.95	3.16	2.60	2.21	1.18
12-TLA-35	1.80	44.9	28.9	21.5	1.85	18.1	13.9	11.2	7.97	6.25	5.18	4.47	3.58	2.91	2.48	1.29
	1.75	46.3	29.8	22.2	1.80	19.0	14.8	11.9	8.45	6.63	5.50	4.74	3.80	3.12	2.65	1.38
	1.67	48.7	30.5	22.4	1.75	19.6	15.1	12.2	8.66	6.80	5.63	4.86	3.90	3.20	2.72	1.44
12-TLA-40	1.80	54.8	35.3	26.2	1.85	22.1	17.0	13.7	9.73	7.65	6.33	5.47	4.38	3.56	3.03	1.52
	1.75	56.5	36.4	27.0	1.80	23.2	18.1	14.5	10.3	8.10	6.72	5.80	4.64	3.81	3.23	1.63
	1.67	59.4	37.2	27.3	1.75	23.9	18.5	14.9	10.6	8.30	6.88	5.93	4.76	3.91	3.32	1.73
12-TLA-45	1.80	61.7	39.7	29.5	1.85	24.9	19.1	15.4	11.0	8.60	7.12	6.15	4.93	4.00	3.40	1.71
	1.75	63.5	40.9	30.4	1.80	26.1	20.3	16.3	11.6	9.13	7.56	6.52	5.22	4.29	3.64	1.83
	1.67	66.8	41.9	30.7	1.75	26.9	20.8	16.7	11.9	9.35	7.74	6.68	5.36	4.40	3.74	1.95
12-TLA-60	1.80	77.2	49.8	37.0	1.85	31.1	23.9	19.2	13.7	10.8	8.90	7.68	6.16	5.01	4.25	2.17
	1.75	79.6	51.3	38.1	1.80	32.7	25.4	20.4	14.5	11.4	9.44	8.15	6.53	5.36	4.55	2.29
	1.67	83.7	52.4	38.5	1.75	33.7	26.0	20.9	14.9	11.7	9.68	8.35	6.70	5.50	4.68	2.50
12-TLA-70	1.80	97.3	62.7	46.6	1.85	36.7	28.3	22.7	16.2	12.7	10.5	9.08	7.28	5.92	5.03	2.66
	1.75	100	64.5	47.9	1.80	41.2	30.0	24.1	17.2	13.5	11.2	9.63	7.71	6.33	5.38	2.71
	1.67	105	66.0	48.4	1.75	42.4	30.8	24.7	17.6	13.8	11.4	9.87	7.91	6.50	5.53	2.96
12-TLA-80	1.80	98.3	63.3	47.0	1.85	39.5	30.5	24.5	17.4	13.7	11.3	9.78	7.84	6.37	5.41	2.89
	1.75	101	65.1	48.4	1.80	41.6	32.3	26.0	18.5	14.5	12.0	10.4	8.31	6.82	5.79	3.12
	1.67	106	66.6	48.9	1.75	42.8	33.1	26.6	18.9	14.9	12.3	10.6	8.52	7.00	5.95	3.21
12-TLA-90	1.80	112	72.3	53.7	1.85	45.2	34.8	28.0	19.9	15.6	13.0	11.2	8.96	7.28	6.19	3.35
	1.75	116	74.6	55.4	1.80	47.5	36.9	29.7	21.1	16.6	13.7	11.9	9.50	7.79	6.62	3.21
	1.67	122	76.2	55.9	1.75	49.0	37.9	30.4	21.7	17.0	14.1	12.2	9.74	8.00	6.80	3.72
12-TLA-100	1.80	126	81.4	60.5	1.85	50.8	39.2	31.5	22.4	17.6	14.6	12.6	10.1	8.19	6.96	3.81
	1.75	130	83.8	62.3	1.80	53.5	41.6	33.4	23.8	18.7	15.5	13.3	10.7	8.77	7.44	3.71
	1.67	137	85.7	62.9	1.75	55.1	42.6	34.2	24.4	19.1	15.8	13.7	11.0	9.00	7.65	4.23
12-TLA-110	1.80	140	90.4	67.1	1.85	56.5	43.5	35.0	24.9	19.6	16.2	14.0	11.2	9.10	7.73	4.29
	1.75	145	93.1	69.2	1.80	59.4	46.2	37.1	26.4	20.7	17.2	14.8	11.9	9.74	8.27	4.54
	1.67	152	95.2	69.9	1.75	61.2	47.3	38.0	27.1	21.3	17.6	15.2	12.2	10.0	8.50	4.65
12-TLA-120	1.80	152	97.7	72.6	1.85	61.0	47.0	37.8	26.9	21.1	17.5	15.1	12.1	9.83	8.33	4.57
	1.75	156	101	74.7	1.80	64.2	49.9	40.1	28.5	22.4	18.6	16.0	12.8	10.5	8.92	4.54
	1.67	164	103	75.5	1.75	66.1	51.1	41.0	29.2	23.0	19.0	16.4	13.1	10.8	9.17	5.08
12-TLA-130	1.80	167	107	79.8	1.85	67.1	51.7	41.5	29.6	23.2	19.2	16.6	13.3	10.8	9.08	5.02
	1.75	172	111	82.2	1.80	70.6	54.9	44.1	31.4	24.6	20.4	17.6	14.1	11.6	9.73	5.00
	1.67	181	113	83.0	1.75	72.7	56.2	45.1	32.2	25.2	20.9	18.0	14.5	11.9	10.0	5.58
12-TLA-150	1.80	181	116	86.5	1.85	75.2	58.0	46.6	33.2	26.0	21.6	18.6	14.9	12.1	10.3	5.63
	1.75	186	120	89.1	1.80	76.5	61.5	49.4	35.2	27.6	22.8	19.7	15.8	13.0	11.0	5.79
	1.67	196	123	90.0	1.75	78.8	63.0	50.5	36.0	28.3	23.4	20.2	16.2	13.3	11.3	6.25
12-TLA-160	1.80	208	134	100	1.85	83.9	64.7	51.9	37.0	29.0	24.0	20.8	16.6	13.5	11.5	6.28
	1.75	215	138	103	1.80	88.2	68.6	55.0	39.2	30.8	25.5	22.0	17.6	14.5	12.3	6.54
	1.67	226	141	104	1.75	90.9	70.0	56.4	40.2	31.5	26.1	22.5	18.1	14.9	12.6	6.96
12-TLA-175	1.80	236	152	113	1.85	89.5	68.7	55.4	39.3	31.0	25.6	22.1	17.7	14.4	12.3	6.70
	1.75	243	157	116	1.80	100	73.2	58.5	41.8	32.8	27.2	23.5	18.8	15.4	13.1	7.46
	1.67	256	160	118	1.75	103	74.7	60.0	42.9	33.7	27.8	24.0	19.3	15.8	13.5	7.44

Current

Amps at 25°C

SEC bloc type	Discharge amps at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
12-TLA-200	1.80	250	161	120	1.85	101	77.3	62.3	44.3	34.8	28.8	24.8	20.0	16.2	13.8	7.54
	1.75	257	166	123	1.80	106	82.0	66.0	47.0	37.0	30.6	26.3	21.1	17.4	14.7	7.46
	1.67	271	170	124	1.75	109	84.3	67.5	48.2	37.8	31.4	27.0	21.7	17.8	15.1	8.37
12-TLA-220	1.80	279	180	133	1.85	112	86.0	69.0	49.3	38.7	32.0	27.7	22.1	18.0	15.3	8.37
	1.75	286	184	137	1.80	118	91.3	73.4	52.3	41.0	34.0	29.3	23.5	19.3	16.4	9.50
	1.67	301	188	138	1.75	121	93.7	75.0	53.6	42.0	34.8	30.0	24.1	19.8	16.8	9.29
12-TLA-250	1.80	319	196	146	1.85	129	99.2	79.5	56.7	44.5	36.8	31.8	25.5	20.7	17.6	9.60
	1.75	350	207	154	1.80	135	105	84.4	60.0	47.2	39.1	33.7	27.0	22.2	18.8	10.4
	1.67	368	211	155	1.75	139	108	86.5	61.6	48.4	40.0	34.6	27.7	22.8	19.3	10.7
12-TLA-275	1.80	345	212	157	1.85	139	107	86.0	61.2	48.0	39.8	34.3	27.5	22.4	19.0	10.4
	1.75	377	224	166	1.80	146	113	91.0	65.0	51.0	42.2	36.4	29.2	24.0	20.3	11.2
	1.67	397	229	168	1.75	150	116	93.4	66.6	52.3	43.2	37.3	29.9	24.6	20.9	11.5

Power

Watts/cell at 25°C

SEC bloc type	Discharge watts/cell at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
6-TLA-130	1.80	319	205	153	1.85	130	101	81.1	58.2	46.0	38.2	33.2	26.6	21.7	18.5	10.1
	1.75	323	208	155	1.80	135	106	85.4	61.4	48.6	40.4	35.0	28.1	23.2	19.7	10.8
	1.67	340	213	156	1.75	137	107	86.5	62.3	49.3	41.0	35.4	28.6	23.6	20.1	11.1
6-TLA-200	1.80	479	308	229	1.85	195	151	122	87.1	69.1	57.3	49.8	40.0	32.7	27.8	15.1
	1.75	485	312	232	1.80	203	159	128	92.2	72.6	60.5	52.4	42.3	34.7	29.6	16.3
	1.67	510	319	234	1.75	205	161	130	93.3	73.9	61.4	53.2	42.9	35.4	30.2	16.6
6-TLA-210	1.80	532	343	255	1.85	216	168	135	96.8	76.5	63.8	55.2	44.5	36.3	31.0	16.8
	1.75	537	346	257	1.80	225	176	142	102	80.9	67.4	58.2	46.9	38.7	32.8	18.1
	1.67	565	354	260	1.75	228	178	144	104	82.1	68.4	59.1	47.8	39.4	33.5	18.5
6-TLA-230	1.80	559	360	268	1.85	228	176	142	102	80.4	67.0	57.9	46.7	38.1	32.4	17.6
	1.75	568	366	272	1.80	237	185	150	107	84.8	70.5	61.1	49.2	40.7	34.5	18.9
	1.67	598	374	275	1.75	241	187	151	109	86.2	71.9	62.0	50.2	41.3	35.2	19.3
12-TLA-15	1.80	43.0	27.7	20.5	1.85	16.4	13.6	10.9	7.85	6.22	5.16	4.5	3.60	2.93	2.50	1.40
	1.75	43.6	28.1	20.9	1.80	18.2	14.3	11.5	8.26	6.53	5.45	4.7	3.80	3.13	2.67	1.50
	1.67	45.9	28.7	21.1	1.75	18.5	14.5	11.7	8.40	6.65	5.53	4.8	3.86	3.19	2.71	1.51
12-TLA-20	1.80	60.4	38.9	28.9	1.85	24.7	19.1	15.4	11.0	8.73	7.27	6.3	5.07	4.13	3.52	1.83
	1.75	61.7	39.7	29.5	1.80	25.6	20.0	16.2	11.7	9.21	7.68	6.6	5.36	4.40	3.75	2.00
	1.67	64.9	40.6	29.8	1.75	26.1	20.4	16.4	11.8	9.37	7.79	6.7	5.44	4.49	3.83	2.02
12-TLA-25	1.80	68.9	44.4	33.0	1.85	28.1	21.7	17.6	12.6	10.0	8.27	7.2	5.78	4.73	4.01	2.14
	1.75	70.1	45.1	33.5	1.80	29.2	22.9	18.5	13.3	10.5	8.74	7.6	6.10	5.02	4.28	2.16
	1.67	73.7	46.1	33.9	1.75	29.7	23.2	18.8	13.5	10.7	8.89	7.7	6.20	5.12	4.36	2.34
12-TLA-35	1.80	85.0	54.8	40.7	1.85	34.6	26.7	21.6	15.5	12.3	10.2	8.8	7.11	5.80	4.95	2.59
	1.75	86.4	55.6	41.3	1.80	36.0	28.3	22.8	16.4	12.9	10.8	9.3	7.51	6.19	5.27	2.75
	1.67	90.8	56.9	41.7	1.75	36.6	28.5	23.1	16.6	13.1	10.9	9.5	7.64	6.30	5.36	2.85
12-TLA-40	1.80	104	66.9	49.7	1.85	42.3	32.7	26.4	19.0	15.0	12.5	10.8	8.69	7.10	6.05	3.04
	1.75	105	67.8	50.4	1.80	43.9	34.5	27.8	20.0	15.8	13.2	11.4	9.17	7.56	6.42	3.26
	1.67	111	69.4	50.9	1.75	44.6	34.9	28.2	20.3	16.0	13.4	11.6	9.33	7.69	6.55	3.43
12-TLA-45	1.80	117	75.2	55.9	1.85	47.6	36.8	29.8	21.4	16.9	14.0	12.2	9.79	7.98	6.80	3.43
	1.75	119	76.3	56.7	1.80	49.4	38.8	31.3	22.5	17.8	14.8	12.8	10.3	8.51	7.24	3.66
	1.67	125	78.1	57.3	1.75	50.2	39.2	31.7	22.8	18.1	15.0	13.0	10.5	8.66	7.38	3.86

Power

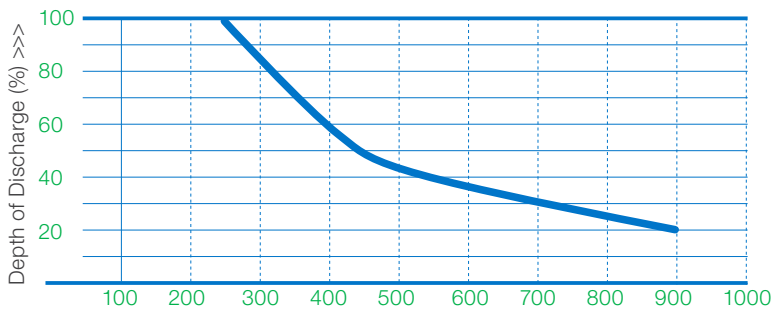
Watts/cell at 25°C

SEC bloc type	Discharge watts/cell at 25°C															
	End volts /Cell	Discharge time in minutes			End Volts /Cell	Discharge time in hours										
		15min	30min	45min		1hr	1.5hr	2hr	3hr	4hr	5hr	6hr	8hr	10hr	12hr	24hr
12-TLA-60	1.80	146	94.2	70.0	1.85	59.5	46.0	37.1	26.7	21.1	17.5	15.2	12.2	10.0	8.50	4.35
	1.75	148	95.6	71.0	1.80	61.9	48.5	39.2	28.1	22.2	18.5	16.0	12.9	10.6	9.05	4.58
	1.67	156	97.8	71.7	1.75	62.9	49.0	39.7	28.6	22.6	18.8	16.3	13.1	10.8	9.22	4.96
12-TLA-70	1.80	184	119	88.2	1.85	70.2	54.4	43.9	31.6	24.9	20.7	18.0	14.5	11.8	10.0	5.34
	1.75	187	120	89.4	1.80	78.0	57.3	46.3	33.3	26.3	21.9	18.9	15.2	12.6	10.7	5.42
	1.67	196	123	90.3	1.75	79.1	58.1	46.9	33.8	26.7	22.1	19.2	15.5	12.8	10.9	5.88
12-TLA-80	1.80	186	120	89.0	1.85	75.6	58.6	47.3	33.9	26.8	22.3	19.3	15.6	12.7	10.8	5.80
	1.75	189	121	90.2	1.80	78.8	61.7	49.8	35.8	28.3	23.5	20.4	16.4	13.5	11.5	6.24
	1.67	198	124	91.1	1.75	79.8	62.4	50.5	36.3	28.7	23.9	20.7	16.7	13.8	11.7	6.38
12-TLA-90	1.80	213	137	102	1.85	86.5	67.0	54.0	38.8	30.6	25.5	22.1	17.8	14.5	12.4	6.72
	1.75	216	139	103	1.80	90.0	70.5	56.9	40.9	32.4	26.8	23.3	18.8	15.5	13.2	6.42
	1.67	227	142	104	1.75	91.4	71.4	57.7	41.6	32.8	27.3	23.7	19.1	15.7	13.4	7.39
12-TLA-100	1.80	239	154	115	1.85	97.2	75.4	60.8	43.7	34.5	28.7	24.9	20.0	16.3	13.9	7.64
	1.75	243	156	116	1.80	101	79.4	64.1	46.0	36.4	30.3	26.1	21.1	17.4	14.8	7.42
	1.67	255	160	117	1.75	103	80.3	64.9	46.7	36.9	30.7	26.6	21.5	17.7	15.1	8.40
12-TLA-110	1.80	266	171	127	1.85	108	83.7	67.6	48.5	38.4	31.9	27.6	22.3	18.1	15.5	8.61
	1.75	270	174	129	1.80	113	88.2	71.2	51.1	40.4	33.7	29.1	23.5	19.3	16.4	9.08
	1.67	284	178	130	1.75	114	89.2	72.1	51.9	41.1	34.2	29.6	23.9	19.7	16.8	9.23
12-TLA-120	1.80	287	185	137	1.85	117	90.4	73.0	52.4	41.4	34.4	29.9	24.0	19.6	16.7	9.17
	1.75	291	188	139	1.80	122	95.2	76.9	55.2	43.7	36.4	31.5	25.3	20.8	17.7	9.08
	1.67	306	192	141	1.75	123	96.3	77.8	56.0	44.3	36.9	32.0	25.7	21.3	18.1	10.1
12-TLA-130	1.80	316	203	151	1.85	128	99.5	80.2	57.6	45.5	37.8	32.8	26.3	21.5	18.2	10.1
	1.75	320	206	153	1.80	134	105	84.6	60.8	48.0	40.0	34.6	27.9	23.0	19.4	10.0
	1.67	337	211	155	1.75	136	106	85.6	61.7	48.7	40.6	35.1	28.4	23.4	19.7	11.1
12-TLA-150	1.80	342	220	164	1.85	144	112	90.0	64.6	51.0	42.6	36.8	29.6	24.1	20.6	11.3
	1.75	347	224	166	1.80	145	117	94.8	68.2	53.8	44.7	38.7	31.1	25.8	21.9	11.6
	1.67	365	229	168	1.75	147	119	95.8	69.0	54.6	45.4	39.3	31.8	26.2	22.3	12.4
12-TLA-160	1.80	395	254	189	1.85	161	124	100	72.1	56.9	47.3	41.1	33.0	26.9	23.0	12.6
	1.75	400	258	192	1.80	167	131	106	75.9	60.0	50.0	43.3	34.8	28.8	24.4	13.1
	1.67	421	264	194	1.75	170	132	107	77.1	60.9	50.7	43.9	35.5	29.3	24.8	13.8
12-TLA-175	1.80	447	288	214	1.85	171	132	107	76.7	60.8	50.4	43.7	35.2	28.7	24.5	13.4
	1.75	454	292	217	1.80	189	140	112	81.0	63.9	53.3	46.2	37.1	30.6	26.0	14.9
	1.67	477	299	219	1.75	192	141	114	82.3	65.1	54.0	46.8	37.7	31.1	26.6	14.8
12-TLA-200	1.80	474	305	227	1.85	193	149	120	86.4	68.2	56.7	49.1	39.7	32.3	27.5	15.1
	1.75	480	309	230	1.80	201	157	127	91.0	72.2	59.9	51.8	41.8	34.5	29.2	14.9
	1.67	505	316	232	1.75	203	159	128	92.4	72.9	61.0	52.6	42.5	35.0	29.8	16.6
12-TLA-220	1.80	528	340	253	1.85	214	165	133	96.1	75.9	63.0	54.7	44.0	35.9	30.6	16.8
	1.75	533	343	255	1.80	223	174	141	101	80.0	66.6	57.6	46.5	38.3	32.6	19.0
	1.67	561	351	258	1.75	226	177	142	103	81.1	67.6	58.5	47.2	39.0	33.1	18.5
12-TLA-250	1.80	604	376	279	1.85	247	191	154	110	87.3	72.5	62.9	50.7	41.3	35.1	19.3
	1.75	652	392	291	1.80	256	200	162	116	92.0	76.6	66.2	53.4	44.0	37.4	20.8
	1.67	685	400	294	1.75	259	204	164	118	93.5	77.7	67.4	54.3	44.9	38.1	21.3
12-TLA-275	1.80	653	405	301	1.85	266	206	166	119	94.2	78.4	67.9	54.6	44.7	38.0	20.9
	1.75	703	423	315	1.80	277	216	175	126	99.5	82.7	71.6	57.7	47.6	40.4	22.4
	1.67	740	433	318	1.75	280	219	177	128	101	83.9	72.8	58.6	48.4	41.2	22.9

Cycle life

Relationship between depth of discharge and cycle life

Ambient temperature 25°C



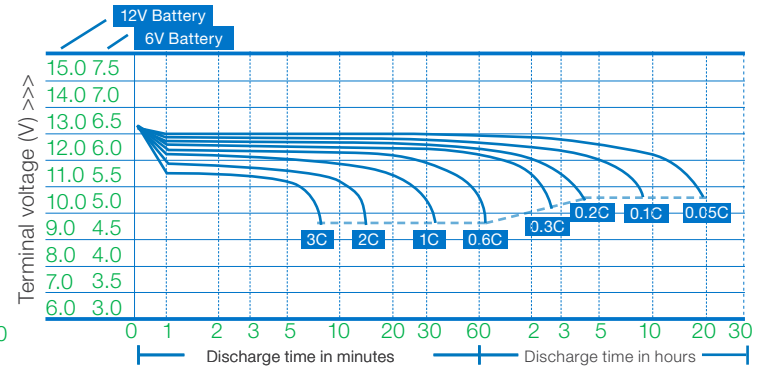
Cycle life >>>

The depth of discharge critically affects the number of cycles which a battery will complete during its life time.

Discharge characteristics

Discharge current VS discharge time curve

Ambient temperature 25°C

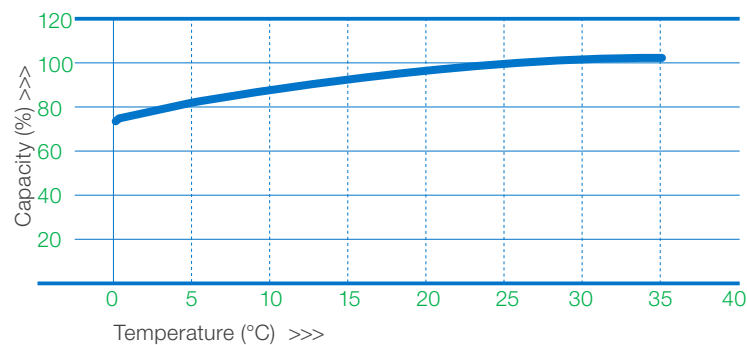


Discharge duration (h) >>>

Effect of discharge rate on battery capacity.

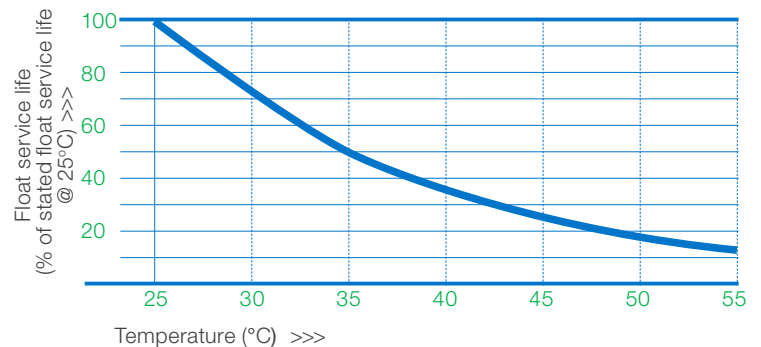
Effect of inclined temperature

Effect of temperature on capacity at C/10 discharge rate



A high ambient temperature will increase the cell capacity but will significantly shorten its calendar and cycle life.

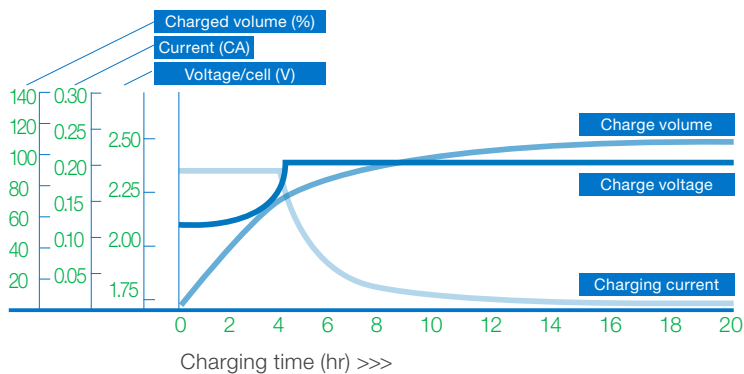
Float service life VS temperature



Effect of temperature on float service life.

Charge method

Constant current/voltage charge characteristics



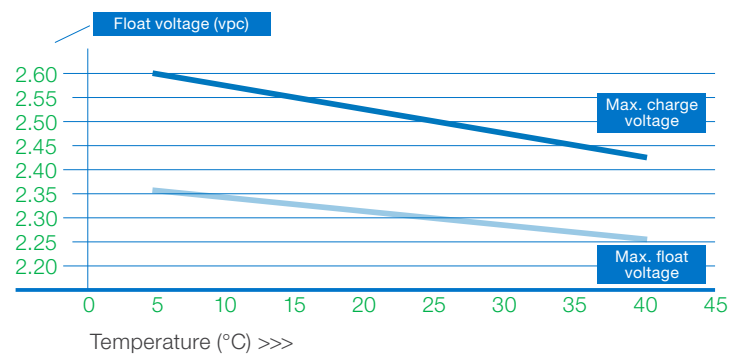
The preferred charging procedure should be in accordance with DIN 41773, constant current/constant voltage (IU characteristics). Constant float charging utilising a constant voltage charger is also acceptable.

Charging voltage measured at the battery terminals: $2.40 \pm 1\% \times \text{number of cells}$.

Equalising or fast charging can occasionally be permitted in which the charging voltage is $2.50V \times \text{number of cells}$ for a maximum fixed period of 8 hours (depends on state of charge). This will apply in deep discharge and limited recharge operations such as stand-by with parallel connections. Automatic changeover to the charging voltage of $2.30V \pm 1\% \times \text{number of cells}$ should follow after this period.

Charge compensation

Temperature compensation for float voltage



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