

CELLYTE 12 PLF & 12PLT Range

Sealed VRLA Pure Lead Range of Batteries
15 year design life in float service at 20°C



Pure Lead Monobloc batteries using advanced thin pressed plates to provide very high performance, energy density, reliability and very long life in both float and cyclic service. Initially the Pure Lead range comprises of 3 sizes of Front Terminal 12PLF 110 Ah. to 200 Ah. and 2 sizes of Top Terminal 12PLT 18 Ah. to 110 Ah. for use in Telecom racks and cabinets.

Telecom Applications

- Telecommunication
- Telecom BTS
- Standby Power
- Emergency lighting
- Uninterruptable Power Supplied
- Cellular radio
- Renewable Energy
- Solar PV Systems
- Switchgear

Key Features

- Long standby design life
- High-rate performance
- Low internal resistance
- Low self-discharge rate
- High energy density
- Fast charging acceptance
- Heat sealed plastic container
- Flame retardant to UL94-VO
- Up to 2 years self life @ 20°C (68°F)

Manufacturing Standards



Advance Pure Lead Technology

In keeping with SEC's philosophy to stay at the forefronts of the ever expanding Telecom Standby battery markets SEC has now extended its battery range to include extra high performance Pure Lead gas recombination technology 12 volt batteries with proven design life of 15 years in float service at 20°C. These batteries are of the Absorbed Glass Mat (AGM) technology combined with thin punched Pure Lead plates. The gasses generated in the normal charge / discharge use of a rechargeable lead acid battery are internally recombined during normal use more than 99% of the gas.

Pure Lead Batteries combine benefits of high performance and long life in a cost effective battery solution for telecommunications, UPS, electric utilities and engine starting applications. The use of gas recombination technology for lead acid batteries has completely changed the concept of standby power. This technology provides the user with the freedom to use lead acid batteries in a range of applications. The minimal level of gas production allows battery installation in cabinets or on stands, in offices or near main equipment, thus maximising space utilisation and reducing battery installation and maintenance costs.

Wide operating temperature range -40 to +40°C. The batteries can be installed in any orientation except upside down (vents on the bottom).

Pure Lead Battery Construction

Terminal posts comprise high conductivity brass female insert with Stainless Steel M8 & M5 bolt and washers. The terminal post is sealed with a compressed rubber grommet for long trouble free battery life. Container case and cover ABS co-polymer flame retardant to UL94V-0 heat sealed for maximum strength. One way safety valve with flame arrestor maintains positive internal pressure ensuring that oxygen cannot enter the cell.

Batteries designed with manifolded venting system, neoprene tubing can be provided to vent gases from the battery enclosure if required. Batteries designed for float service or cyclic applications. The electrolyte used is medical quality dilute sulphuric acid and is 100% absorbed into the ABS separator material.

Energy Density

The advanced thin plate pure lead technology promotes exceptionally efficient utilisation of the active materials. Pure Lead Batteries energy density is typically 10 to 30 % higher than conventional lead Calcium VRLA batteries

Battery Installation

Before conducting a capacity discharge test the batteries must be given an equalize charge or have been on float charge for at least 7 days. Please see SEC Installation and Operating manual for full installations details.

Approvals and Standards

The batteries, their shipping container and external packaging must be labelled "nonspillable" or "nonspillable battery".

- 12PLF & 12PLT batteries fully compliant with IEC 60896-21/22:2004.
- Manufactured to comply with all current internationally recognised codes, DOT 173.159, ICAO/IATA Packaging instruction 806 and A67.
- IMDG UN No 2800 Class 8 Exempt when securely packaged and protected against short circuits.
- Manufactured in compliant facility ISO9001:2000, ISO14001, TS16949 in UL registered production facility.



CELLYTE - Battery Sizing 12PLF & 12PLT Range

12PLF110 Discharge Data Amp & Amps Hours - 20°C

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps Hours											
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr	48 Hr	100 Hr	
1.85	180	154	132	102	75	60	70.1	75.7	80.3	84.0	92.2	95.4	97.4	105.0	111.0	113.6	
1.80	201	167	142	107	78	62	71.6	77.2	81.8	85.4	94.5	97.0	98.9	106.7	112.8	115.4	
1.75	218	179	150	111	80	64	73.0	78.9	83.3	86.9	96.0	98.9	100.9	108.8	115.0	117.7	
1.70	235	190	156	114	82	65	73.9	80.1	84.5	88.8	96.8	99.9	101.9	109.9	116.2	118.9	
1.67	253	200	162	117	84	66	75.3	81.5	86.0	89.8	97.5	100.9	102.9	110.6	-	-	
1.60	269	209	169	121	86	67	76.2	82.4	87.2	91.2	99.1	101.9	103.9	111.6	-	-	

12PLF160 Discharge Data Amp & Amp Hours - 20°C

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps Hours											
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr	48 Hr	100 Hr	
1.85	273	234	207	157	116	92	107.1	117.2	124.4	129.6	139.0	142.6	145.4	156.8	165.8	169.7	
1.80	302	256	220	165	120	95	110.4	120.4	127.1	131.5	141.3	145.5	148.4	160.1	169.2	173.1	
1.75	329	273	231	171	124	98	113.1	122.7	129.0	133.9	144.0	148.4	151.4	163.3	172.6	176.6	
1.70	346	289	240	176	127	100	115.2	125.0	131.3	135.8	145.9	150.4	153.4	165.4	174.8	178.9	
1.67	364	300	248	180	130	103	117.1	126.7	133.6	138.2	147.5	151.3	154.3	167.8	-	-	
1.60	387	314	254	185	133	105	119.2	128.7	135.6	140.2	149.0	153.3	156.3	168.8	-	-	

12PLF200 Discharge Data Amp & Amp Hours - 20°C

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps Hours											
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr	48 Hr	100 Hr	
1.85	281	245	219	180	138	113	134.2	147.7	156.3	163.7	180.5	186.2	190.0	204.9	216.6	221.6	
1.80	310	264	232	187	143	117	138.0	150.6	159.4	166.6	183.6	189.2	192.9	208.1	219.9	225.1	
1.75	337	283	245	196	147	120	140.4	153.8	162.0	169.4	187.4	193.0	196.9	212.3	224.5	229.7	
1.70	360	299	256	203	152	123	143.4	156.4	164.7	172.8	189.7	195.0	198.9	214.5	226.7	232.0	
1.67	381	315	270	209	156	125	145.7	158.7	167.4	174.7	191.2	196.9	200.8	216.3	-	-	
1.60	402	328	280	216	159	128	148.6	161.3	170.1	177.6	194.3	199.8	203.8	217.3	-	-	

12PLT18 Discharge Data Amp & Amp Hours - 20°C

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps Hours											
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr	48 Hr	100 Hr	
1.85	35	30	27	20	15	12	13.1	13.8	14.5	15.0	16.0	16.5	16.8	18.1	19.2	19.6	
1.80	41	34	29	21	15	12	13.4	14.1	14.8	15.3	16.2	16.7	17.0	18.4	19.4	19.9	
1.75	46	37	31	22	16	12	13.7	14.5	15.1	15.6	16.4	16.9	17.2	18.6	19.6	20.1	
1.70	50	40	33	23	17	13	14.1	14.7	15.3	15.8	16.7	17.1	17.4	18.8	19.9	20.3	
1.67	56	43	34	24	17	13	14.4	15.0	15.6	16.0	16.9	17.4	17.7	19.0	-	-	
1.60	61	45	36	25	18	14	14.7	15.4	15.8	16.2	17.1	17.6	17.9	19.1	-	-	

12PLT110 Discharge Data Amp & Amp Hours - 20°C

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps Hours											
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr	48 Hr	100 Hr	
1.85	172	147	129	100	75	60	71.2	76.9	81.0	84.5	92.9	96.1	98.0	105.7	111.8	114.4	
1.80	199	165	140	107	79	63	73.5	79.2	83.3	86.9	94.5	98.0	99.9	107.8	113.9	116.6	
1.75	225	181	149	113	83	66	75.6	81.5	85.6	88.8	96.8	99.9	101.9	109.9	116.2	118.9	
1.70	247	195	160	119	86	68	77.6	83.2	87.2	90.2	97.5	100.9	102.9	111.0	117.3	120.0	
1.67	269	208	168	124	89	70	79.1	84.7	89.1	91.7	98.3	101.9	103.9	111.6	-	-	
1.60	287	219	176	129	92	72	81.0	86.4	90.2	92.6	99.8	102.8	104.9	112.5	-	-	

Actual battery capacity may be +/- 5% of figures shown



CELLYTE - Battery Sizing 12PLF & 12PLT Range

12PLF110 Constant Current Discharge Data Amps at 20°C.

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps								
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr
1.85	180	154	132	102	75.0	60.1	35.0	25.2	20.1	16.8	11.5	9.54	8.11	8.75
1.80	201	167	142	107	78.3	62.0	35.8	25.7	20.4	17.1	11.8	9.70	8.25	8.89
1.75	218	179	150	111	80.2	63.6	36.5	26.3	20.8	17.4	12.0	9.89	8.41	9.07
1.70	235	190	156	114	82.4	64.7	37.0	26.7	21.1	17.8	12.1	9.99	8.49	9.16
1.67	253	200	162	117	83.9	65.6	37.6	27.2	21.5	18.0	12.2	10.1	8.57	9.22
1.60	269	209	169	121	85.6	66.9	38.1	27.5	21.8	18.2	12.4	10.2	8.66	9.30

12PLF160 Constant Current Discharge Data Amps at 20°C.

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps								
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr
1.85	273	234	207	157	116	92.2	53.6	39.1	31.1	25.9	17.4	14.3	12.1	13.1
1.80	302	256	220	165	120	95.2	55.2	40.1	31.8	26.3	17.7	14.6	12.4	13.3
1.75	329	273	231	171	124	98.2	56.5	40.9	32.3	26.8	18.0	14.8	12.6	13.6
1.70	346	289	240	176	127	100	57.6	41.7	32.8	27.2	18.2	15.0	12.8	13.8
1.67	364	300	248	180	130	103	58.6	42.2	33.4	27.6	18.4	15.1	12.9	14.0
1.60	387	314	254	185	133	105	59.6	42.9	33.9	28.0	18.6	15.3	13.0	14.1

12PLF200 Constant Current Discharge Data Amps at 20°C.

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps								
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr
1.85	281	245	219	180	138	113	67.1	49.2	39.1	32.7	22.6	18.6	15.8	17.1
1.80	310	264	232	187	143	117	69.0	50.2	39.8	33.3	22.9	18.9	16.1	17.3
1.75	337	283	245	196	147	120	70.2	51.3	40.5	33.9	23.4	19.3	16.4	17.7
1.70	360	299	256	203	152	123	71.7	52.1	41.2	34.6	23.7	19.5	16.6	17.9
1.67	381	315	270	209	156	125	72.9	52.9	41.9	34.9	23.9	19.7	16.7	18.0
1.60	402	328	280	216	159	128	74.3	53.8	42.5	35.5	24.3	20.0	17.0	18.1

12PLT18 Constant Current Discharge Data Amps at 20°C.

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps								
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr
1.85	35.2	30.2	26.6	20.2	14.7	11.6	6.53	4.59	3.63	3.00	2.00	1.65	1.40	1.51
1.80	40.8	33.8	28.7	21.3	15.4	12.1	6.71	4.70	3.70	3.06	2.03	1.67	1.42	1.53
1.75	45.6	36.8	30.8	22.3	16.0	12.4	6.87	4.82	3.76	3.11	2.05	1.69	1.43	1.55
1.70	50.3	39.7	32.7	23.4	16.5	12.8	7.05	4.91	3.83	3.16	2.08	1.71	1.45	1.56
1.67	55.8	42.7	34.4	24.4	17.2	13.2	7.21	5.01	3.90	3.21	2.11	1.74	1.48	1.58
1.60	60.8	45.0	36.0	25.4	17.7	13.6	7.36	5.12	3.96	3.24	2.14	1.76	1.49	1.59

12PLT110 Constant Current Discharge Data Amps at 20°C.

Float Voltage & Time	Discharge Data Amps					Discharge Data Amps								
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr
1.85	172	147	129	100	75.3	60.4	35.6	25.6	20.3	16.9	11.6	9.54	8.17	8.81
1.80	199	165	140	107	79.3	63.5	36.8	26.4	20.8	17.4	11.8	9.70	8.33	8.98
1.75	225	181	149	113	82.6	65.6	37.8	27.2	21.4	17.8	12.1	9.89	8.49	9.16
1.70	247	195	160	119	86.0	67.9	38.8	27.7	21.8	18.0	12.2	9.99	8.57	9.25
1.67	269	208	168	124	89.3	70.2	39.6	28.2	22.3	18.3	12.3	10.09	8.66	9.30
1.60	287	219	176	129	92.2	72.3	40.5	28.8	22.6	18.5	12.5	10.19	8.74	9.38

Actual battery capacity may be +/- 5% of figures shown



CELLYTE - Battery Sizing 12PLF & 12PLT Range

12PLF110 Constant Power Discharge Data Watts at 20 °C.

Float Voltage & Time	Constant Power Discharge Data Watts					Constant Power Discharge Data Watts									
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr	
1.85	340	294	255	199	147	119	69.6	50.5	40.2	33.9	23.3	19.4	16.3	8.54	
1.80	374	316	272	206	153	122	70.9	51.4	41.0	34.4	23.7	19.6	16.5	8.62	
1.75	401	334	283	213	155	125	72.1	52.2	41.6	34.8	24.1	20.0	16.8	8.79	
1.70	427	351	293	217	159	126	72.7	52.9	42.0	35.4	24.3	20.2	16.9	8.88	
1.67	452	366	302	308	161	127	73.6	53.6	42.5	35.8	24.5	20.3	17.0	8.92	
1.60	470	374	311	226	162	129	74.2	53.8	43.0	36.1	24.6	20.4	17.1	8.96	

12PLF160 Constant Power Discharge Data Watts at 20 °C.

Float Voltage & Time	Constant Power Discharge Data Watts					Constant Power Discharge Data Watts								
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr
1.85	516	447	399	306	227	182	106.6	78.0	62.5	52.2	35.0	29.0	24.4	12.8
1.80	564	484	421	318	234	187	109.5	80.0	63.6	52.9	35.5	29.5	24.8	13.0
1.75	606	511	437	328	240	192	111.7	81.3	64.4	53.8	36.2	29.9	25.1	13.1
1.70	628	534	451	334	245	196	113.3	82.5	65.4	54.4	36.6	30.3	25.4	13.3
1.67	652	549	461	247	249	199	114.7	83.4	66.2	55.2	37.0	30.5	25.6	13.4
1.60	676	562	467	345	252	201	116.1	84.2	66.9	55.6	37.1	30.5	25.6	13.4

12PLF200 Constant Power Discharge Data Watts at 20 °C.

Float Voltage & Time	Constant Power Discharge Data Watts					Constant Power Discharge Data Watts								
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr
1.85	532	467	423	350	270	223	134	98.5	78.4	66.0	45.6	37.7	31.7	16.6
1.80	579	499	443	361	278	230	137	100	79.9	67.0	46.4	38.3	32.2	16.9
1.75	621	530	465	375	285	235	139	102	81.0	68.0	47.1	38.9	32.7	17.1
1.70	654	552	481	386	292	239	141	103	82.0	69.1	47.6	39.3	33.0	17.3
1.67	683	576	502	396	298	243	143	104	83.0	69.8	47.9	39.6	33.2	17.4
1.60	704	588	513	404	303	247	145	105	83.8	70.4	48.2	40.0	33.6	17.6

12PLT18 Constant Power Discharge Data Watts at 20 °C.

Float Voltage & Time	Constant Power Discharge Data Watts					Constant Power Discharge Data Watts									
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr	
1.85	66.7	57.9	51.3	39.3	28.8	22.9	13.0	9.18	7.30	6.07	4.03	3.35	2.81	1.47	
1.80	76.1	63.9	55.0	41.1	30.0	23.7	13.3	9.37	7.41	6.16	4.09	3.38	2.84	1.49	
1.75	84.1	68.8	58.2	42.8	31.0	24.3	13.5	9.57	7.53	6.24	4.13	3.41	2.87	1.50	
1.70	91.2	73.2	61.3	44.4	31.9	25.1	13.8	9.72	7.62	6.32	4.19	3.44	2.89	1.52	
1.67	99.9	77.9	63.9	46.3	32.9	25.7	14.1	9.89	7.74	6.40	4.22	3.48	2.93	1.53	
1.60	106	80.8	66.0	47.5	33.4	26.2	14.3	10.1	7.80	6.44	4.25	3.49	2.93	1.54	

12PLT110 Constant Power Discharge Data Watts at 20 °C.

Float Voltage & Time	Constant Power Discharge Data Watts					Constant Power Discharge Data Watts									
	10 Min	15 Min	20 Min	30 Min	45 Min	1 Hr	2 Hr	3 Hr	4 Hr	5 Hr	8 Hr	10 Hr	12 Hr	24 Hr	
1.85	325	282	250	194	148	119	70.8	51.4	40.8	34.1	23.4	19.5	16.7	9.22	
1.80	371	312	268	207	155	125	73.0	52.7	41.9	34.8	23.8	19.7	16.9	9.34	
1.75	415	338	282	217	160	129	74.8	54.0	42.7	35.5	24.1	20.1	17.2	9.44	
1.70	449	360	300	226	166	132	76.2	54.9	44.4	36.0	24.4	20.3	17.4	9.54	
1.67	481	380	314	235	171	136	77.4	55.7	44.1	36.6	24.7	20.4	17.5	9.57	
1.60	502	393	323	241	175	139	78.7	56.4	44.5	36.8	24.8	20.5	17.6	9.57	

Actual battery capacity may be +/- 5% of figures shown



CELLYTE 12PLF & 12PLT Bloc Data & Dimensions

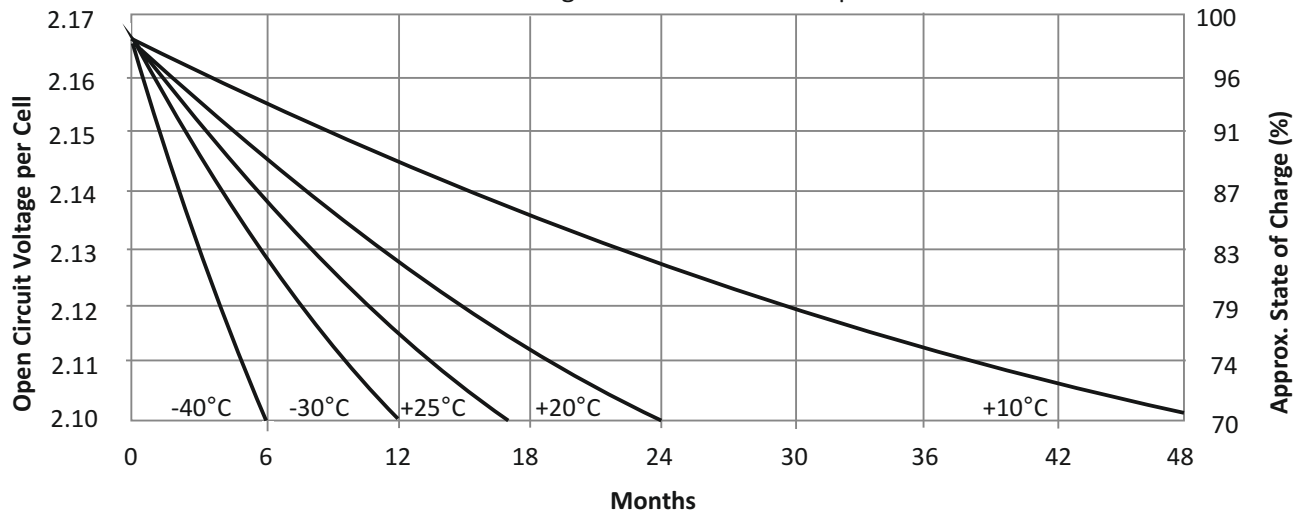
SEC Battery Type	Voltage	10Hr. @ 25 °C 180Vpc	8Hr. @25°C 175Vpc	Maximum Discharge Current(A)	Internal Resistance mOhms	Maximum Charge Current(A)	Female Terminal Type	Battery Dimensions							
								Weight		Length		Width		Height	
								KG	lbs	Inch	mm	Inch	mm	Inch	mm
12PLF110	12	100	100	1200	5.5	17.8	FT5-M8	30.4	67.03	15.55	395	4.25	108	11.30	278
12PLF160	12	150	150	1350	4.0	24.4	FT5-M8	46.3	101.9	22.05	560	4.92	125	10.24	260
12PLF200	12	195	195	1500	3.1	35.6	FT5-M8	59.8	131.6	22.05	560	4.92	125	12.60	320
12PLT18	12	18	18	216	8.0	3.19	FT3-M5	5.9	13.00	7.15	181.5	3.03	77	6.56	166.5
12PLT110	12	100	100	1200	3.6	18.1	FT5-M8	32.2	71.00	13.44	341.5	6.89	213	8.39	215

6 mm Female Terminal - FT 3 = 12 mm with M5 Bolt

8 mm Female Terminal - FT 5 = 20 mm with M8 Bolt

Operating Temperature Range	Discharge: 15~50 °C (5~122°F)	
	Charge: 0~40 °C (32~104°F)	
	Storage: 15~40 °C (5~104°F)	
Capacity affected by Temperature	40 °C (104° F) 103%	
	20 °C (68° F) 100%	
	0 °C (86° F) 86%	
Self discharge	The Pure Lead Range of batteries may be sorted for up to 24 months at 20 °C (68°F) and then afreshening charge is required. For higher temperature the time interval will be shorter.	

Relationship between Storage time, Open circuit voltage (OCV) and State of charge as a Function of temperature

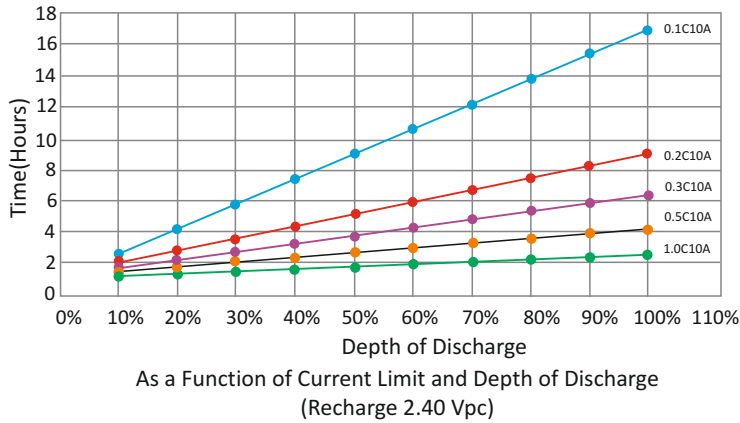


Temperature (°C / °F)	Storage Time (Months)	OCV Audit Interval (Months)
+10 / +50	48	6
+15 / +59	34	6
+20 / +68	24	4
+25 / +77	17	4
+30 / +86	12	3
+35 / +95	8.5	2
+40 / +104	6.0	2

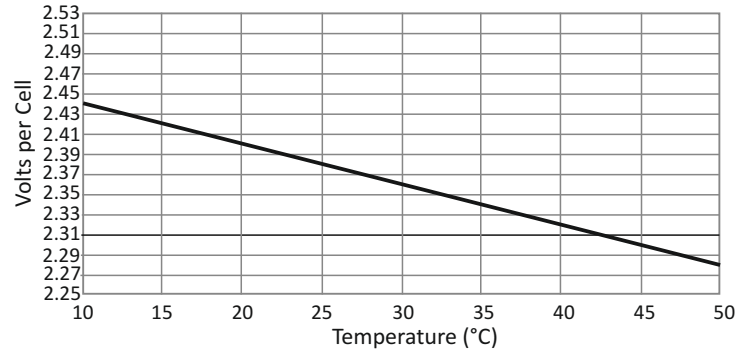


CELLYTE 12PLF & 12PLT Bloc Data

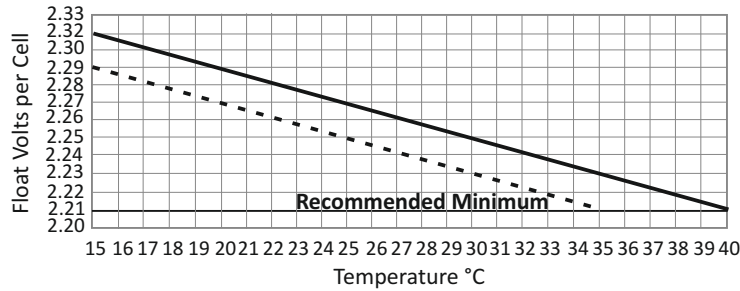
Time to Full State of Charge



Fast Charge Temperature Correction



Float Voltage Temperature Correction

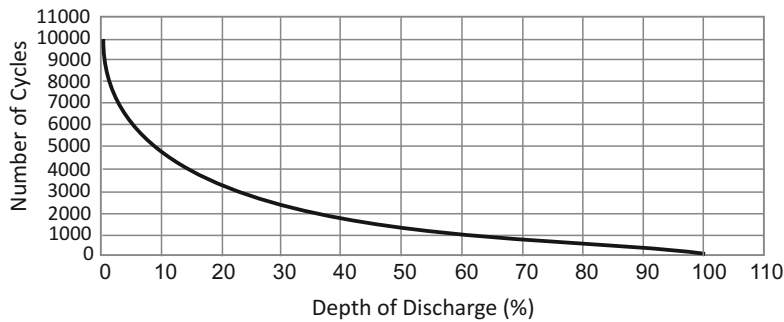


Hydrogen Evolution = ml / day / bloc

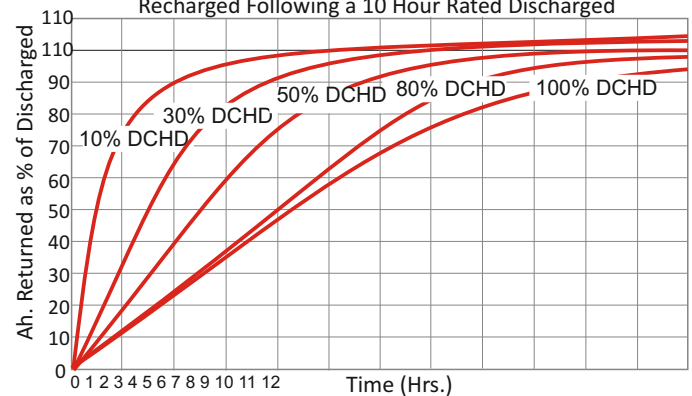
SEC Type	At 2.27Vpc	At 2.40Vpc
12PLF110	65	325
12PLF160	86	430
12PLF200	120	600
12PLT18	31	155
12PLT110	60	300

SEC Battery Type	Female Terminal Type	Torque Settings
12PLF110	M8	5 Nm / 44 in lbs
12PLF160	M8	5 Nm / 44 in lbs
12PLF200	M8	5 Nm / 44 in lbs
12PLT18	M5	3.9 Nm / 35 in lbs
12PLT110	M8	5 Nm / 44 in lbs

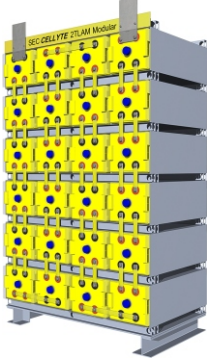
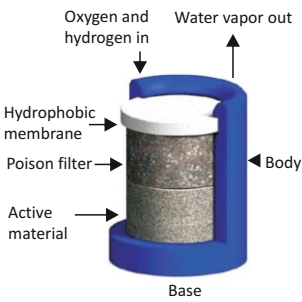
Cycle Life as a Function of Depth of Discharge @ C10 Rate



Recharge Profile @ 2.27Vpc & C/10 Amps Recharged Following a 10 Hour Rated Discharge



SEC Industrial Battery Co. range of products

			
CELLYTE 2CMT/G Modular	CELLYTE 2TLM/G Tubular	CELLYTE 2CMT/G, CELLYTE 2TLM/G with Catalyst	
			
CELLYTE 12 PLF & 12PLT Range	CELLYTE 12FTA/G Range	CELLYTE 6-12TUA Range	CELLYTE 6-12TSG Range
			
CELLYTE 6-12TLA Range	CELLYTE 6-12TLG Range	MICROLYTE +Plus Range	MICROLYTE Red Top Range
			
SEC 2ETG OPzV Range in Tubular Rack	SEC Tubular OPzS Range	SEC Nickel Cadmium Range Pocket Plate flooded and VR	Typical VRLA catalyst

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