

Lead Carbon VRLA Battery

SAFE ENERGY series

For Telecom, Standby Applications

MICROTEX[®]
Since 1969



Microtex is a leading manufacturer of Industrial Batteries in Bangalore, India. The factory has a covered area of 26,700 Sq ft on 5 acres of land, with 300 committed persons. Established 1969, it is a company well known for its high quality. Microtex produces in house, the specially designed lead alloys, lead oxides, grid castings, pasted plates, injection molded containers, multi-tubular gauntlets, PVC separators and produces the complete battery using state of the art industry standard battery making machinery.

The advanced SAFE ENERGY series battery technology with improved Features for Telecommunication applications.

Service life reliability of a flooded battery with the performance energy density of a maintenance free valve regulated battery, Microtex has developed the SAFE ENERGY batteries which are in high in power density due to the special advanced carbon and graphite technology provides for a 20 year designed life, in a space saving module, to reduce total ownership cost

The SAFE ENERGY battery yields good electrical energy and manufacture in an environmentally friendly plant.

APPLICATIONS

- Switching Centers
- Network Operations Centers
- Microwave Stations
- Private Branch Exchange
- Broadband Connection
- Data centers
- Wireless, wired line
- Central Offices

FEATURES & BENEFITS

- Modular design for ease of installation and stacking flexibility.
- Space saving design for the highest amount of power in a small footprint
- Available in a wide range to meet customer requirements.
- Larger Terminal Post Design - Strong posts with good conductivity and mechanical strength. Threaded Lead Tin coated copper/brass inserts gives better conductivity and increased high-rate performance.
- Lead Tin coated copper alloy connectors minimize maintenance
- Low internal resistance values for each cell.
- C wrapped highly porous Absorbent Glass Mat (AGM) separators for extra strength, ultra-low float current - increases service life.
- Thicker positive grids in European DIN design and Tin Calcium Alloys to reduce positive grid corrosion and increase battery life.
- Robust polypropylene co polymer container and cover – enhances product quality and improves strength of materials for safe operation with flammability rating UL94 V0. Excellent jar to Lid heat sealing with 100% leak testing.

- FR Resin bonded post seal with unique double seal terminal design.
- High performing vent valves which built-in flame arrestor with consistent opening and closing of valves (throughout the life of the battery) - ensures the cells do not fail due to dry out.

PROCESSES

- Advanced Nano Carbon Technology - proprietary active material mix for high utilization during its life ensures consistent high energy density and low float current.
- Balanced active materials leading to excellent charge acceptance.
- Insulated plate lugs - prevents shorting
- Advanced formation process results in a narrow float voltage, rendering on-site float matching unnecessary.
- Highly controlled manufacturing processes for exceptional and consistent plate and cell quality

SERVICE LIFE & WARRANTY

- The cell design and manufacturing processes provides for a 20-year design life
- Microtex VRLA cells have been in service in telecom applications for over 15 years.

EXPERIENCE

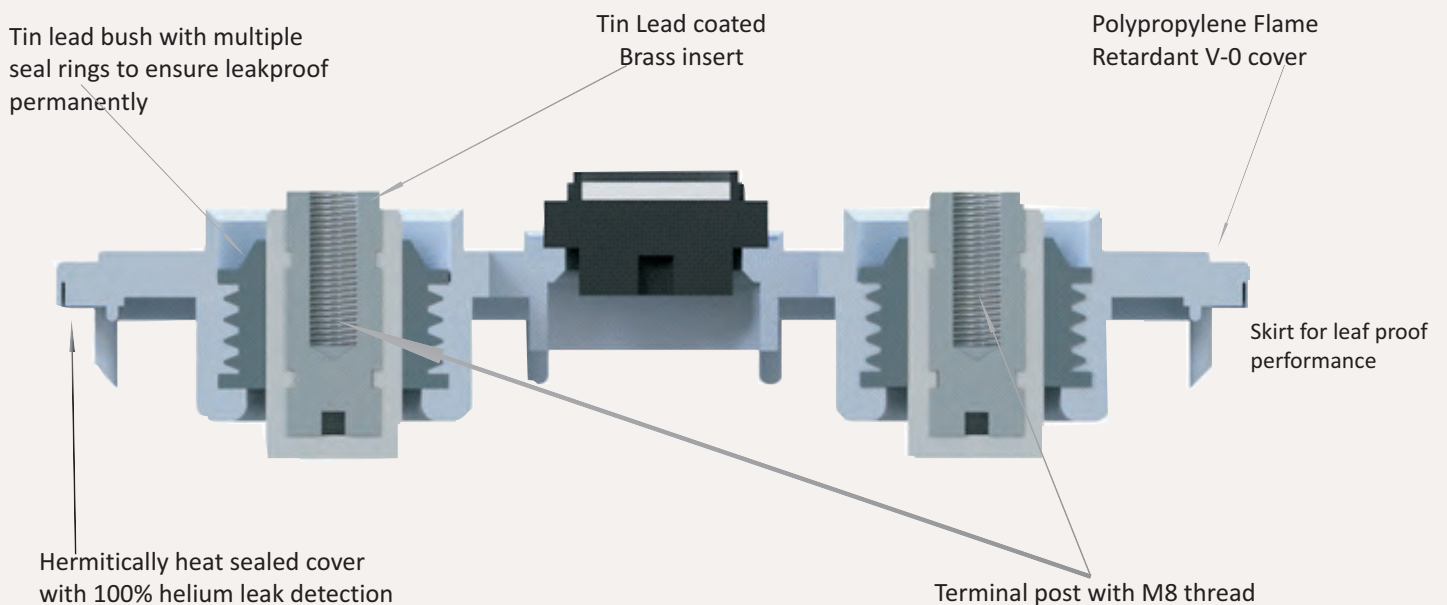
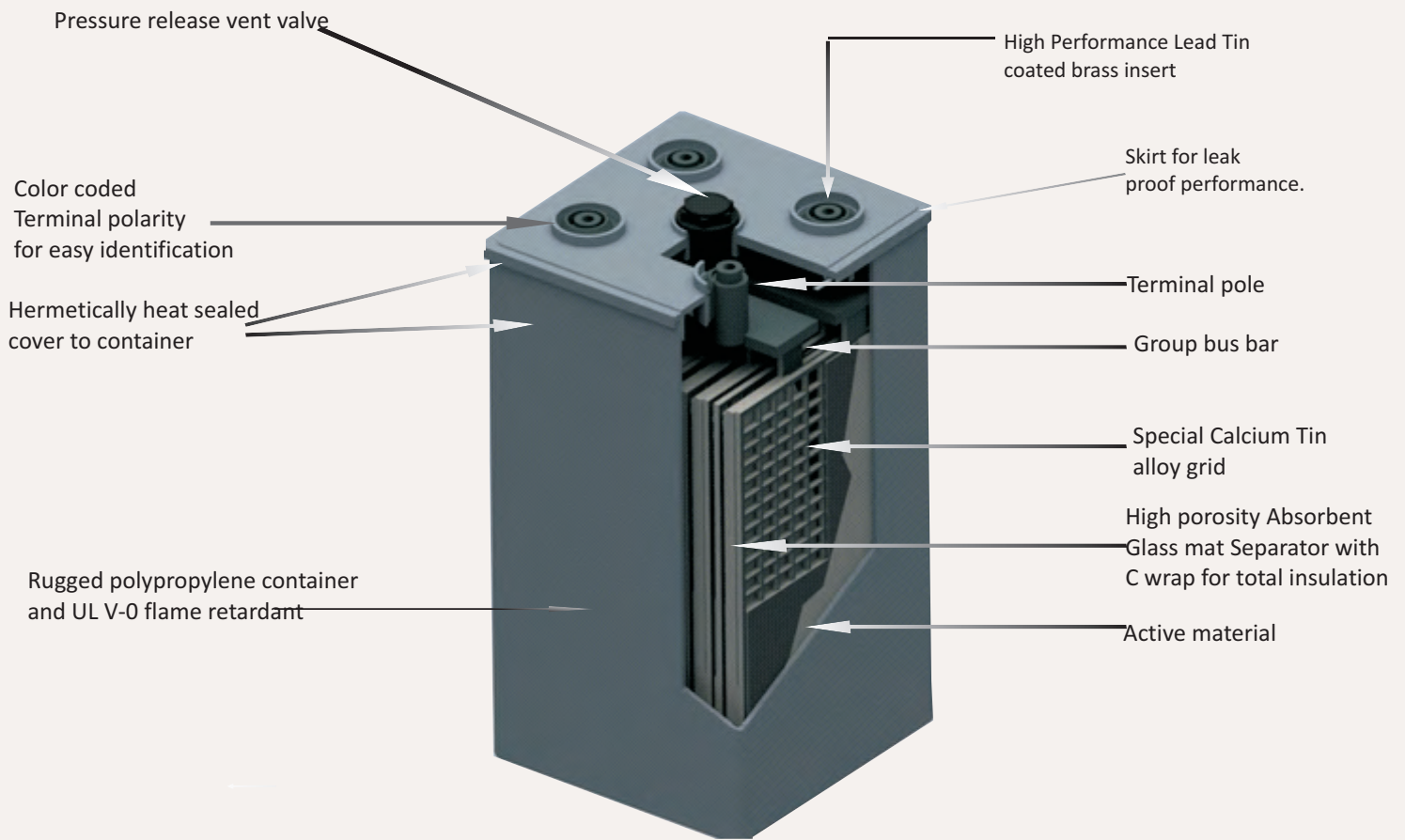
- Established 1969 - over 50 years of experience in the Battery industry
- The company produces in house the complete battery and its components

SPECIFICATIONS AND CHARACTERISTICS

Cells, Voltage per Unit	1 cell, 2V DC
Optimum Energy Saving Operating Temperature	+27°C (+80.6°F)
Connection Torque	Initial: 107 in-lbs (12 N-m), Re-torque: 125 in-lbs (14 N-m)
Recommended Float Charging Voltage	2.23 - 2.25 volts per cell average @ +27°C (+80.6°F)
Recommended Boost Charging Voltage	2.30 - 2.35 volts per cell average @ +27°C (+80.6°F)
Maximum Float Charging Current	0.2 C of rated capacity at 10 Hour @ +27°C (+80.6°F)
Maximum Boost Charging Current	0.3 C of rated capacity at 10 Hour @ +27°C (+80.6°F)

ISO 9001:2015 and ISO 14001:2015 certified

Constructional view of AGM VRLA cell



Stackable Module System with dimensions and weights

Microtex Safe Energy cells are designed to be mounted in stackable modules of either 2, 3, 4, or 6 cells per stack. The most popular module sizes and configurations for Telecom systems world wide are:

Product Code	Capacity	Nos. Of Cells per module	Modules Voltage (V)	Module Dimensions			Weight in Kgs	Internal Resistance of cell in milli ohms	Short Circuit current in KA
				Length ±15 mm	Width ±15 mm	Height ±15 mm			
M 100 V	100	6	12	655	275	216	60	0.95	2.25
M 200 V	200	6	12	655	375	216	100	0.73	2.94
M 300 V	300	4	8	857	380	141	90	0.56	3.81
M 400 V	400	4	8	870	375	180	120	0.47	4.85
M 500 V	500	4	8	888	380	235	165	0.42	5.09
M 600 V	600	4	8	888	380	235	175	0.32	6.64
M 800 V	800	3	6	690	495	235	190	0.25	8.68
M 1000 V	1000	3	6	705	495	290	215	0.34	6.26
M 1100 V	1100	3	6	705	630	290	250	0.20	11.66
M 1250 V	1250	3	6	742	600	286	295	0.16	13.25
M 2000 V	2000	2	4	505	495	530	285	0.19	11.15
M 2500 V	2500	2	4	500	600	530	375	0.13	16.3
M 3000 V	3000	2	4	650	495	790	435	0.13	16.5
M 4000 V	4000	2	4	530	495	1035	580	0.10	21.5
M 5000 V	5000	2	4	530	600	1035	780	0.06	35.3

The specific cells wide x modules high system configuration is flexible and can be configured to best match the physical requirements of the customer's site.

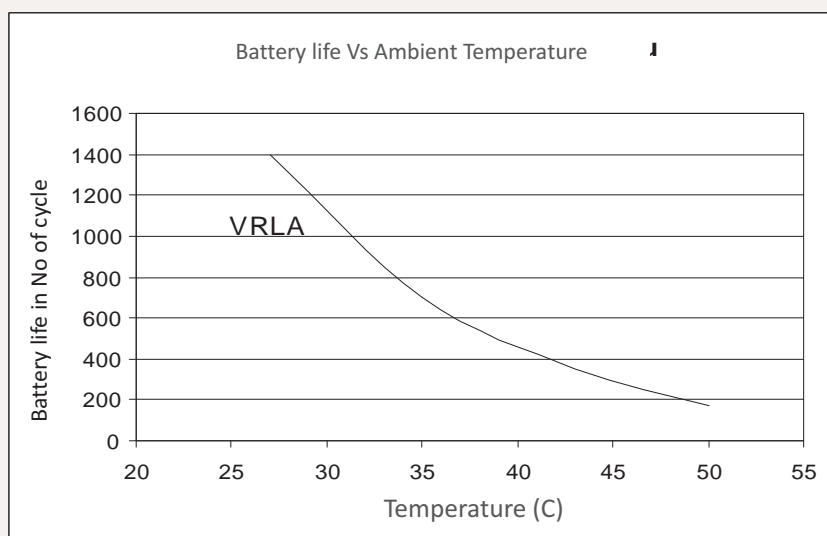
Compliance to Specifications:

IS15549:2005, IEC60896-Part 21&22

IEC61427, IEEE1188&1189

BSNL GR No TEC/GR/TX/BAT-001/04 June 2011with Amdt No 1

Service Life – Ambient Temperature



Microtex SAFE ENERGY with advanced Nano Carbon & graphite is the latest advancement in lead acid battery technology. By combining the service life reliability of a flooded battery with the performance energy density of a valve-regulated battery, Microtex has created the SAFE ENERGY — The True Long -Life unmatched in power density with space saving modular designs and have a 20-year design life to reduce total cost of ownership.

Model Type	Capacity (Ah) at C10 rate	DISCHARGE CURRENT IN AMPS AT 1.75 ECV AT 27°C															
		1 MIN	2 MIN	5 MIN	10 MIN	15 MIN	30 MIN	1 HR	2 HR	3 HR	4 HR	5 HR	6 HR	7 HR	8 HR	9 HR	10 HR
M 100 V	100	244	200	172	143	118	91	63	36	28	22	18	16	14	12	11	10
M 200 V	200	488	400	345	286	235	182	125	73	55	43	35	33	27	24	22	20
M 300 V	300	732	600	517	429	353	273	188	109	83	65	53	49	41	37	33	30
M 400 V	400	976	800	690	571	471	364	250	145	111	87	70	65	55	49	44	40
M 500 V	500	1220	1000	862	714	588	455	313	182	138	108	88	82	68	61	55	50
M 600 V	600	1463	1200	1034	857	706	545	375	218	166	130	105	98	82	73	66	60
M 800 V	800	1951	1600	1379	1143	941	727	500	291	221	173	140	131	109	98	88	80
M 1000 V	1000	2439	2000	1724	1429	1176	909	625	364	276	216	175	163	137	122	111	100
M 1100 V	1100	2683	2200	1897	1571	1294	1000	688	400	304	238	193	180	150	134	122	110
M 1250 V	1250	3048	2500	2155	1785	1470	1136	781	454	345	270	219	204	170	152	138	125
M 2000 V	2000	4878	4000	3448	2857	2353	1818	1250	727	552	433	351	327	273	244	221	200
M 2500 V	2500	6098	5000	4310	3571	2941	2273	1563	909	691	541	439	409	342	305	276	250
M 3000 V	3000	7317	6000	5172	4285	3529	2727	1878	1090	828	649	526	490	409	366	331	300
M 4000 V	4000	9756	8000	6896	5713	4705	3636	2504	1453	1104	865	702	653	545	488	441	400
M 5000 V	5000	12195	10000	8620	7141	5881	4545	3130	1816	1380	1081	877	816	681	610	551	500

Model Type	Capacity (Ah) at C10 rate	DISCHARGE CURRENT IN AMPS AT 1.80 ECV AT 27 °C															
		1 MIN	2 MIN	5 MIN	10 MIN	15 MIN	30 MIN	1 HR	2 HR	3 HR	4 HR	5 HR	6 HR	7 HR	8 HR	9 HR	10 HR
M 100 V	100	227	192	167	133	108	87	60	35	26	21	17	16	13	12	11	10
M 200 V	200	455	385	333	267	215	174	119	70	53	42	34	32	27	24	22	20
M 300 V	300	682	577	500	400	323	261	179	105	79	63	51	48	40	36	33	29
M 400 V	400	909	769	667	533	430	348	238	139	105	84	68	64	54	48	43	39
M 500 V	500	1136	962	833	667	538	435	298	174	132	105	85	80	67	60	54	49
M 600 V	600	1364	1154	1000	800	645	522	357	209	158	126	103	96	81	72	65	59
M 800 V	800	1818	1538	1333	1067	860	696	476	279	211	168	137	128	108	96	87	78
M 1000 V	1000	2273	1923	1667	1333	1075	870	595	348	263	211	171	160	135	120	109	98
M 1100 V	1100	2500	2115	1833	1467	1183	957	655	383	289	232	188	176	148	132	120	108
M 1250 V	1250	2840	2403	2082	1667	1344	1087	744	435	328	263	213	200	167	150	136	122
M 2000 V	2000	4545	3846	3333	2667	2151	1739	1190	697	526	421	342	320	270	240	217	196
M 2500 V	2500	5682	4808	4167	3333	2688	2174	1488	871	658	526	427	400	337	299	272	245
M 3000 V	3000	6818	5769	5000	4000	3226	2609	1786	1045	789	632	513	480	404	359	326	294
M 4000 V	4000	9091	7692	6667	5333	4301	3478	2381	1394	1053	842	684	640	539	479	435	392
M 5000 V	5000	11364	9615	8333	6667	5376	4348	2976	1742	1316	1053	855	800	674	599	543	490

Model Type	Capacity (Ah) at C10 rate	DISCHARGE CURRENT IN AMPS AT 1.85 ECV AT 27°C															
		1 MIN	2 MIN	5 MIN	10 MIN	15 MIN	30 MIN	1 HR	2 HR	3 HR	4 HR	5 HR	6 HR	7 HR	8 HR	9 HR	10 HR
M 100 V	100	196	185	147	122	100	77	56	33	25	20	16	14	12	11	10	10
M 200 V	200	392	370	294	244	200	154	112	67	49	40	32	27	25	22	20	19
M 300 V	300	588	556	441	366	300	231	169	100	74	60	49	41	37	33	30	29
M 400 V	400	784	741	588	488	400	308	225	133	99	80	65	55	49	44	40	38
M 500 V	500	980	926	735	610	500	385	281	167	123	100	81	68	62	56	51	48
M 600 V	600	1176	1111	882	732	600	462	337	200	148	120	97	82	74	67	61	57
M 800 V	800	1569	1481	1176	976	800	615	449	267	198	160	129	109	99	89	81	76
M 1000 V	1000	1961	1852	1471	1220	1000	769	562	333	247	200	162	137	123	111	101	95
M 1100 V	1100	2157	2037	1618	1341	1100	846	618	367	272	220	178	150	135	122	111	105
M 1250 V	1250	2451	2315	1838	1523	1250	961	702	417	309	250	202	170	153	138	126	119
M 2000 V	2000	3922	3704	2941	2439	2000	1538	1124	667	494	400	324	273	246	222	202	190
M 2500 V	2500	4902	4630	3676	3049	2500	1923	1405	833	617	500	405	342	308	278	253	238
M 3000 V	3000	5883	5556	4411	3658	3000	2307	1686	1000	741	600	486	409	369	333	303	285
M 4000 V	4000	7844	7408	5881	4877	4000	3076	2248	1333	988	800	648	545	492	444	404	380
M 5000 V	5000	9805	9260	7351	6096	5000	3845	2810	1666	1235	1000	810	681	615	555	505	475

Model Type	Capacity (Ah) at C10 rate	DISCHARGE CURRENT IN AMPS AT 1.90 ECV AT 27 °C															
		1 MIN	2 MIN	5 MIN	10 MIN	15 MIN	30 MIN	1 HR	2 HR	3 HR	4 HR	5 HR	6 HR	7 HR	8 HR	9 HR	10 HR
M 100 V	100	182	167	139	111	91	70	50	31	23	19	15	13	12	10	9	8
M 200 V	200	364	333	278	222	182	141	100	62	46	37	30	26	24	20	19	17
M 300 V	300	545	500	417	333	273	211	150	92	69	56	44	39	35	31	28	25
M 400 V	400	727	667	556	444	364	282	200	123	92	74	59	52	47	41	37	33
M 500 V	500	909	833	694	556	455	352	250	154	115	93	74	65	59	51	46	42
M 600 V	600	1091	1000	833	667	545	423	300	185	138	112	89	78	71	61	56	50
M 800 V	800	1455	1333	1111	889	727	563	400	246	183	149	119	104	94	82	74	67
M 1000 V	1000	1818	1667	1389	1111	909	704	500	308	229	186	148	130	118	102	93	83
M 1100 V	1100	2000	1833	1528	1222	1000	775	550	338	252	204	163	143	129	113	102	92
M 1250 V	1250	2272	2082	1736	1388	1136	880	625	384	286	231	185	162	146	128	115	104
M 2000 V	2000	3636	3333	2778	2222	1818	1408	1000	615	459	372	296	260	235	205	185	167
M 2500 V	2500	4545	4167	3472	2778	2273	1761	1250	769	573	465	370	325	294	256	231	208
M 3000 V	3000	5454	4999	4167	3333	2727	2112	1500	922	688	558	444	390	352	307	277	250
M 4000 V	4000	7272	6665	5556	4444	3636	2817	2000	1229	917	744	592	520	469	409	369	333
M 5000 V	5000	9090	8331	6945	5555	4545	3521	2500	1536	1146	930	740	650	586	511	461	416

Model Type	Capacity (Ah) at C10 rate	DISCHARGE POWER IN WATTS AT 1.75 ECV AT 27 °C															
		1 MIN	2 MIN	5 MIN	10 MIN	15 MIN	30 MIN	1 HR	2 HR	3 HR	4 HR	5 HR	6 HR	7 HR	8 HR	9 HR	10 HR
M 100 V	100	463	380	328	271	224	173	119	69	52	41	33	31	26	23	21	19
M 200 V	200	927	760	655	543	447	345	238	138	105	82	67	62	52	46	42	38
M 300 V	300	1390	1140	983	814	671	518	356	207	157	123	100	93	78	70	63	57
M 400 V	400	1854	1520	1310	1086	894	691	475	276	210	165	133	124	104	93	84	76
M 500 V	500	2317	1900	1638	1357	1118	864	594	345	262	206	167	155	130	116	105	95
M 600 V	600	2780	2280	1966	1629	1341	1036	713	415	315	247	200	186	156	139	126	114
M 800 V	800	3707	3040	2621	2171	1788	1382	950	553	420	329	267	248	208	185	168	152
M 1000 V	1000	4634	3800	3276	2714	2235	1727	1188	691	525	411	333	310	260	232	210	190
M 1100 V	1100	5098	4180	3603	2986	2459	1900	1306	760	577	452	367	342	286	255	231	209
M 1250 V	1250	5793	4750	4095	3393	2794	2159	1484	864	656	514	417	388	324	290	262	238
M 2000 V	2000	9268	7600	6552	5429	4471	3455	2375	1382	1050	823	667	621	519	463	420	380
M 2500 V	2500	11585	9500	8190	6786	5588	4318	2969	1727	1312	1028	833	776	649	579	525	475
M 3000 V	3000	13902	11400	9828	8143	6706	5182	3563	2073	1575	1234	1000	931	779	695	630	570
M 4000 V	4000	18537	15200	13103	10857	8941	6909	4750	2764	2099	1645	1333	1242	1038	927	840	760
M 5000 V	5000	23171	19000	16379	13571	11176	8636	5938	3455	2624	2056	1667	1552	1298	1159	1050	950

Model Type	Capacity (Ah) at C10 rate	DISCHARGE POWER IN WATTS AT 1.80 ECV AT 27 °C															
		1 MIN	2 MIN	5 MIN	10 MIN	15 MIN	30 MIN	1 HR	2 HR	3 HR	4 HR	5 HR	6 HR	7 HR	8 HR	9 HR	10 HR
M 100 V	100	438	370	321	257	207	167	115	67	51	41	33	31	26	23	21	19
M 200 V	200	875	740	642	513	414	335	229	134	101	81	66	62	52	46	42	38
M 300 V	300	1313	1111	963	770	621	502	344	201	152	122	99	92	78	69	63	57
M 400 V	400	1750	1481	1283	1027	828	670	458	268	203	162	132	123	104	92	84	75
M 500 V	500	2188	1851	1604	1283	1035	837	573	335	253	203	165	154	130	115	105	94
M 600 V	600	2625	2221	1925	1540	1242	1004	688	402	304	243	197	185	156	138	126	113
M 800 V	800	3500	2962	2567	2053	1656	1339	917	537	405	324	263	246	208	184	167	151
M 1000 V	1000	4375	3702	3208	2567	2070	1674	1146	671	507	405	329	308	259	231	209	189
M 1100 V	1100	4813	4072	3529	2823	2277	1841	1260	738	557	446	362	339	285	254	230	208
M 1250 V	1250	5469	4627	4010	3208	2587	2092	1432	838	633	507	411	385	324	288	262	236
M 2000 V	2000	8750	7404	6417	5133	4140	3348	2292	1341	1013	811	658	616	519	461	418	377
M 2500 V	2500	10938	9255	8021	6417	5175	4185	2865	1677	1266	1013	823	770	649	576	523	472
M 3000 V	3000	13125	11106	9625	7700	6210	5022	3438	2012	1520	1216	987	924	778	692	628	566
M 4000 V	4000	17500	14808	12833	10267	8280	6696	4583	2683	2026	1621	1316	1232	1038	922	837	755
M 5000 V	5000	21875	18510	16042	12833	10349	8370	5729	3354	2533	2026	1645	1540	1297	1153	1046	944

Model Type	Capacity (AH) at C10 rate	DISCHARGE POWER IN WATTS AT 1.85 ECV AT 27 °C															
		1 MIN	2 MIN	5 MIN	10 MIN	15 MIN	30 MIN	1 HR	2 HR	3 HR	4 HR	5 HR	6 HR	7 HR	8 HR	9 HR	10 HR
M 100 V	100	382	361	287	238	195	150	110	65	48	39	32	27	24	22	20	19
M 200 V	200	765	722	574	476	390	300	219	130	96	78	63	53	48	43	39	37
M 300 V	300	1147	1083	860	713	585	450	329	195	144	117	95	80	72	65	59	56
M 400 V	400	1529	1444	1147	951	780	600	438	260	193	156	126	107	96	87	79	74
M 500 V	500	1912	1806	1434	1189	975	750	548	325	241	195	158	133	120	108	98	93
M 600 V	600	2294	2167	1721	1427	1170	900	657	390	289	234	189	160	144	130	118	111
M 800 V	800	3059	2889	2294	1902	1560	1200	876	520	385	312	252	213	192	173	158	149
M 1000 V	1000	3824	3611	2868	2378	1950	1500	1096	650	481	390	316	266	240	217	197	186
M 1100 V	1100	4206	3972	3154	2616	2145	1650	1205	715	530	429	347	293	264	238	217	204
M 1250 V	1250	4779	4513	3584	2972	2437	1875	1369	812	602	487	394	332	300	270	246	231
M 2000 V	2000	7647	7222	5735	4756	3900	3000	2191	1300	963	780	631	533	480	433	394	371
M 2500 V	2500	9559	9028	7169	5945	4875	3750	2739	1625	1204	975	789	666	600	542	492	464
M 3000 V	3000	11471	10833	8603	7134	5850	4500	3287	1950	1444	1170	947	799	720	650	591	557
M 4000 V	4000	15294	14444	11471	9512	7800	6000	4382	2600	1926	1560	1262	1066	961	867	788	743
M 5000 V	5000	19118	18056	14338	11890	9750	7500	5478	3250	2407	1950	1578	1332	1201	1083	985	929

Model Type	Capacity (AH) at C10 rate	DISCHARGE POWER IN WATTS AT 1.90 ECV AT 27 °C															
		1 MIN	2 MIN	5 MIN	10 MIN	15 MIN	30 MIN	1 HR	2 HR	3 HR	4 HR	5 HR	6 HR	7 HR	8 HR	9 HR	10 HR
M 100 V	100	359	329	274	219	180	139	99	61	45	37	29	26	23	20	18	16
M 200 V	200	718	658	549	439	359	278	198	122	91	73	59	51	46	40	37	33
M 300 V	300	1077	988	823	658	539	417	296	182	136	110	88	77	70	61	55	49
M 400 V	400	1436	1317	1097	878	718	556	395	243	181	147	117	103	93	81	73	66
M 500 V	500	1795	1646	1372	1097	898	695	494	304	226	184	146	128	116	101	91	82
M 600 V	600	2155	1975	1646	1317	1077	835	593	365	272	220	176	154	139	121	110	99
M 800 V	800	2873	2633	2194	1756	1436	1113	790	486	362	294	234	205	186	162	146	132
M 1000 V	1000	3591	3292	2743	2194	1795	1391	988	608	453	367	293	256	232	202	183	165
M 1100 V	1100	3950	3621	3017	2414	1975	1530	1086	668	498	404	322	282	256	223	201	181
M 1250 V	1250	4489	4115	3429	2743	2244	1739	1234	760	566	459	366	321	290	253	229	206
M 2000 V	2000	7182	6583	5486	4389	3591	2782	1975	1215	906	734	585	513	465	405	366	329
M 2500 V	2500	8977	8229	6858	5486	4489	3477	2469	1519	1132	918	731	641	581	506	457	411
M 3000 V	3000	10773	9875	8229	6583	5386	4173	2963	1823	1359	1101	878	769	697	607	549	494
M 4000 V	4000	14364	13167	10972	8778	7182	5563	3950	2431	1812	1468	1170	1026	929	809	731	658
M 5000 V	5000	17955	16458	13715	10972	8977	6954	4938	3038	2265	1836	1463	1282	1162	1012	914	823

Performance details:

Self-discharge	:	Less than 1% per week
Shelf life without re-charge	:	May be stored up to 6 Months*
Operating conditions	:	-40°C to + 55°C
Design Float Life	:	Up to 20 Years
Design Cycle Life	:	4000 Cycles at 20% Depth of Discharge 2000 Cycles at 50% Depth of Discharge 1200 Cycles at 80% Depth of Discharge

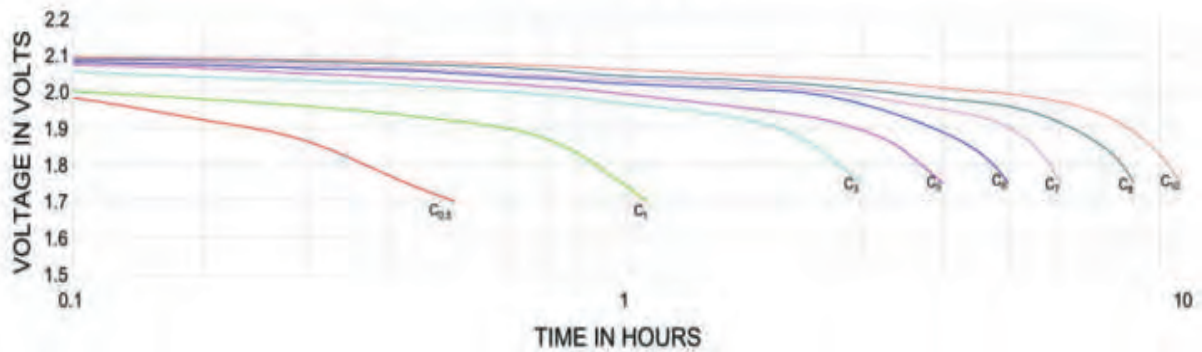
Note: All values are rated at 27°C. Charging parameters at 27°C

*Please refer to Instruction manual for storage requirements.

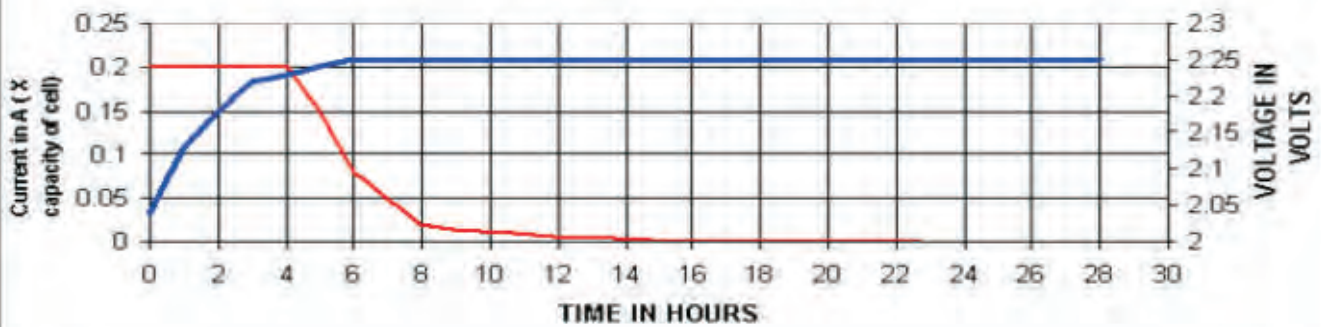
The SAFE ENERGY sealed battery is the environmentally friendly battery that saves you money in your operation.

- Up to 65% to 75% lower float current
- Consumes about 70% less electricity
- Lower float current generates less heat
- Less heat generated reduces required air conditioning
- Less electricity consumed in float charging and air conditioning = reduced carbon emissions

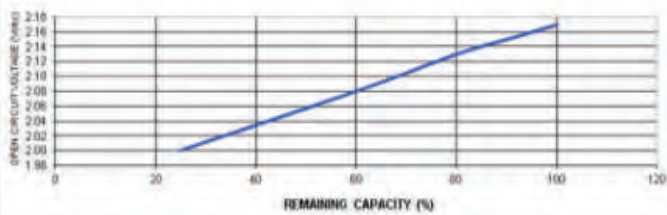
Discharge curves at different rates of discharge @ 27 Deg C



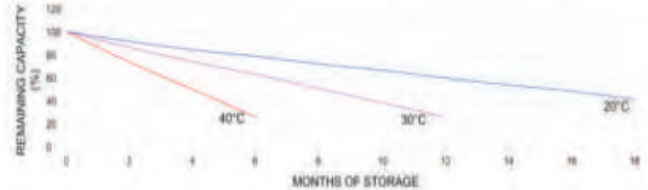
Constant voltage charging curve



Self-discharge characteristics @ 27 Deg C



Relationship between Remaining capacity & storage period



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Microtex Energy P Ltd.

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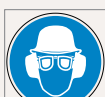
Read instruction Manual



Completely recyclable



Hand over to authorised MOEF recyclers



Protect eyes from electrolyte



Electrical Hazard

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