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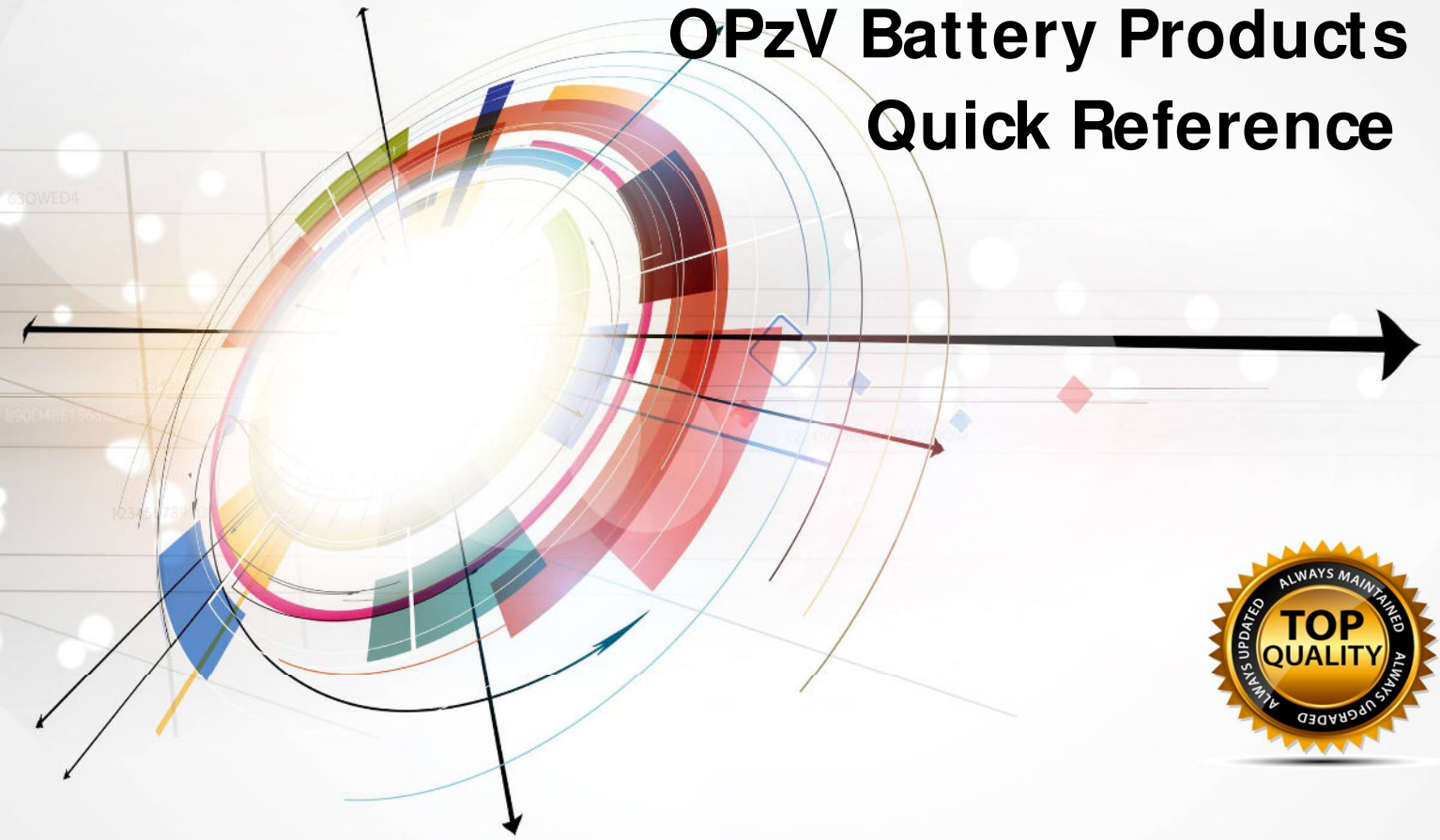
Engineered with Care. Built with Vision.

OPzV Battery Products Quick Reference



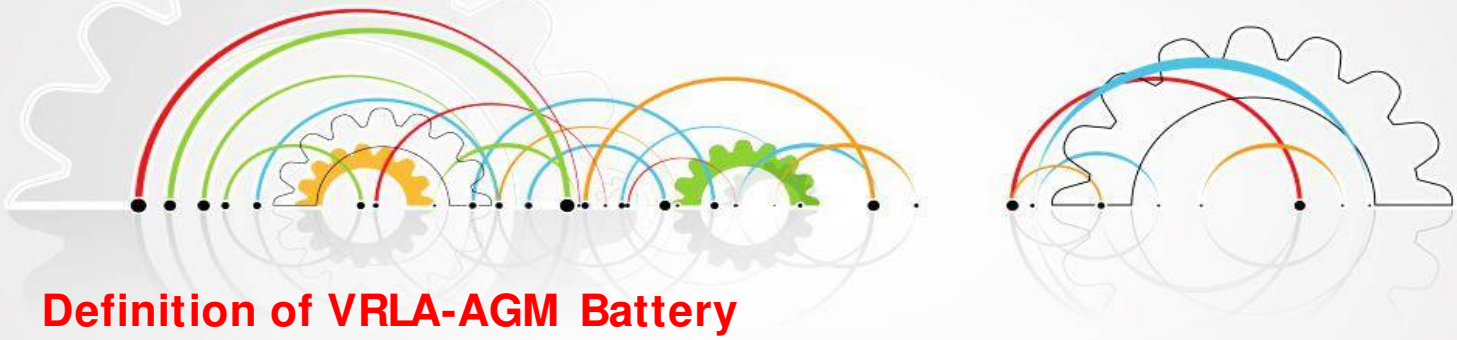
For more inquiries, please contact sales at **65708068**. For more PowerHub product details, log on to **www.powerhub.com.sg**

PowerHub VRLA-AGM Battery

Introduction

Choosing the correct standby battery can be confusing especially when there are so many different kind of batteries and applications. PowerHub has years of experiences in providing industries with backup batteries that suits your requirement. This makes us the perfect choice if you want impartial advice on which standby batteries would be best for your application.

We have backup batteries or standby batteries for a variety of applications like UPS, Green Energy solutions, etc. for use in Data Centers, factories, hotels and so on. Whatever be your application, we have the perfect backup battery and charger solution you need and we'll make sure our products will keep running for years to come.



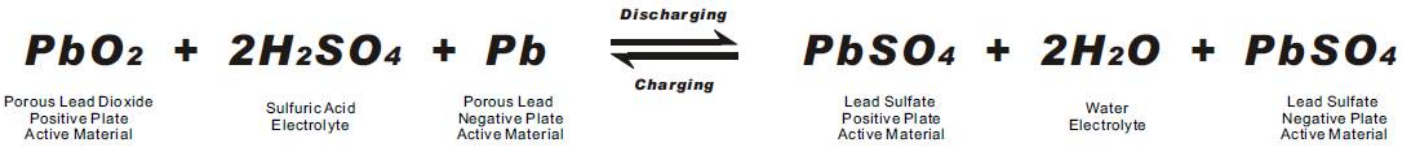
Definition of VRLA-AGM Battery

A VRLA-AGM battery is an electric storage lead-acid battery

- Sealed with special compound epoxy and using pressure controlled vent valves.
- Starved electrolyte design - acid solution is absorbed in separators .
- Using a recombination reaction to prevent the escape of hydrogen and oxygen gases.
- Non spill-able - can be operated in any position.
- Maintenance free. But connections must be retorqued and the batteries should be cleaned periodically.

A VRLA-AGM battery uses recombinant technology. The oxygen produced from the positive plates of the battery is absorbed by the negative plates. This suppresses the generation of hydrogen at the negative plates. The recombination of oxygen and hydrogen leads to Water (H_2O), retaining the electrolyte amount within the battery. Water filling is never required. Battery should never be opened as this would damage the battery with additional oxygen from the air. The warranty will be void if the battery is opened.

Battery Operation Theory



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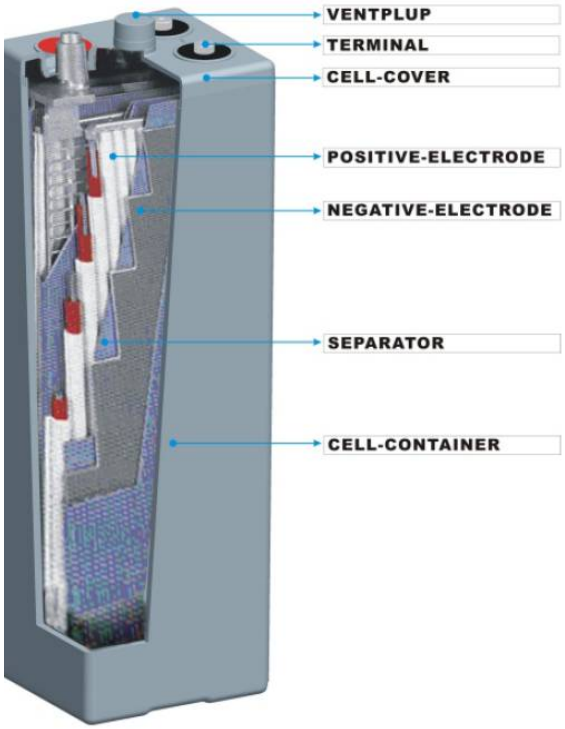
OPzV Series

Tubular Gel Battery

■ Main Technical Advantages

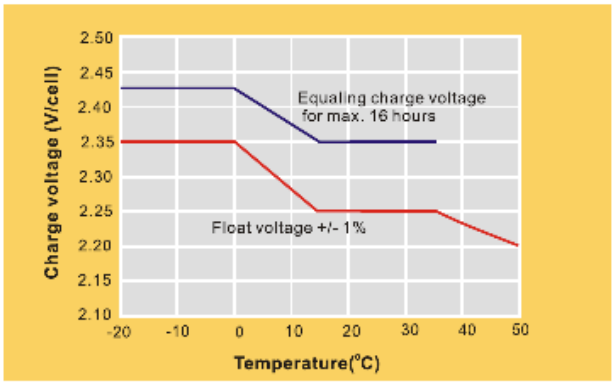
- Completely sealing throughout the batteries life.
- Gel electrolyte.
- Low gassing thanks to antimony-free alloy and internal oxygen recombination.
- Minimum space required and room requirements are minimal e.g. no washing facilities needed, ventilation requirements are minimal.
- Easy to move and handle.
- Easy install using cable connectors with insulated terminal covers.
- Ready for immediate use without further commissioning work.
- Can be supplied as a standard vertical installation or by special request, for a horizontal installation.
- Very low self-discharge ＜50% of rated capacity in 2 years at 20℃ ambient temperature.
- High cyclic ability over 600 cycles when discharged at 10 hours rate to an end voltage of 1.8Volt/cell at 20℃.
- Deep discharge protected, a load can be connected to the battery for up to 4 weeks.
- No internal short circuits possible due to the gel structure.
- No acid stratification, so no equalizing charge necessary.



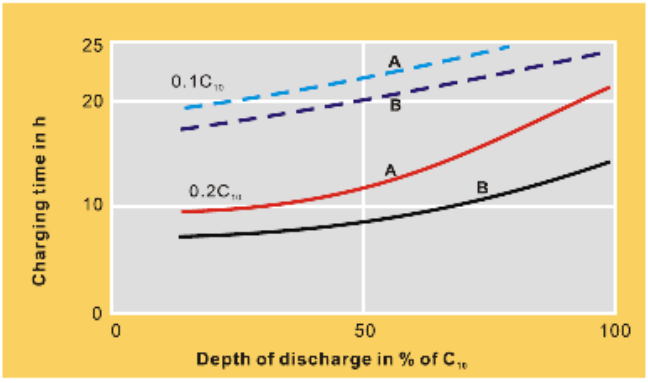
Main Applications

- Telecommunications
- Radio and cellular telephone relay stations
- Emergency lighting systems
- Power stations, Conventional power stations, alternative power (solar, wind)
- Large UPS and computer back-up
- Railway signalling
- Maritime standby power on ships and ashore
- Process and control engineering
- Standby power
- Buoy lighting

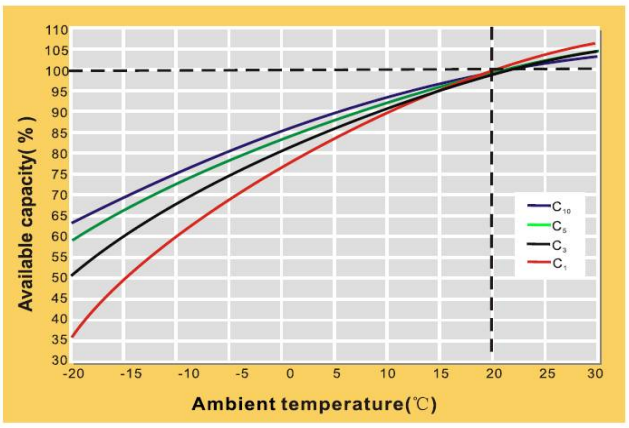
■ OPzV Curve



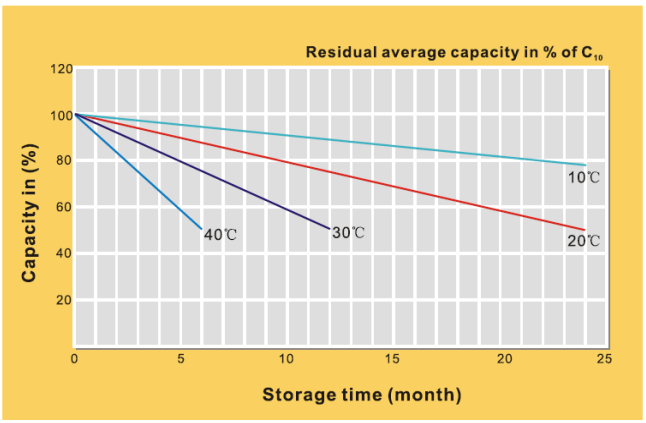
We recommend the volotage 2.25V for continuous charging.
The charging voltage should be compensated to the curve under different ambinet temperature.



Re-charging time in relation to the initial charging current at 20℃.
Charge voltage:
A—2.25 V/cell B— 2.40 V/cell
State of charge 100 % State of charge 90 %



Available capacity in relation to the ambient temperature

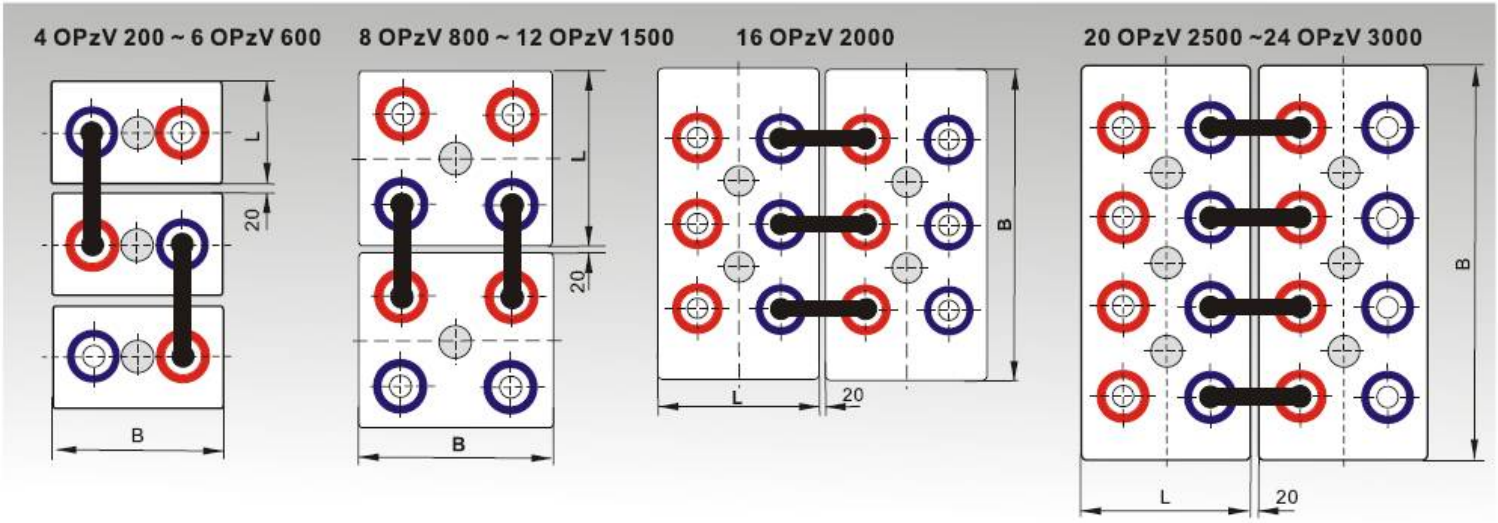


Self-discharge in relation to the storage temperature

OPzV Specification

Model Number	Nominal Voltage (V)	Rated Capacity C_{10}(Ah)	Dimension (mm/in)								Approx Weight	
			Length		Width		Height		Total Height			
			mm	in	mm	in	mm	in	mm	in	Kg	lbs
4OPzV200	2	200	103	4.06	206	8.11	355	13.98	390	15.35	18.0	39.7
5OPzV250	2	250	124	4.88	206	8.11	355	13.98	390	15.35	22.0	48.5
6OPzV300	2	300	145	5.71	206	8.11	355	13.98	390	15.35	26.0	57.3
5OPzV350	2	350	124	4.88	206	8.11	471	18.54	506	19.92	29.0	63.9
6OPzV420	2	420	145	5.71	206	8.11	471	18.54	506	19.92	34.0	74.9
7OPzV490	2	490	166	6.54	206	8.11	471	18.54	506	19.92	39.0	86.0
6OPzV600	2	600	145	5.71	206	8.11	646	25.43	681	26.81	46.0	101.4
8OPzV800	2	800	191	7.52	210	8.27	646	25.43	681	26.81	64.5	142.2
10OPzV1000	2	1000	233	9.17	210	8.27	646	25.43	681	26.81	78.5	173.0
12OPzV1200	2	1200	275	10.83	210	8.27	646	25.43	681	26.81	93.0	205.0
12OPzV1500	2	1500	275	10.83	210	8.27	796	31.34	831	32.72	115.0	253.5
16OPzV2000	2	2000	399	15.71	214	8.27	772	30.39	807	31.77	155.0	341.6
20OPzV2500	2	2500	487	19.17	212	8.35	772	30.39	807	31.77	196.0	432.0
24OPzV3000	2	3000	576	22.68	212	8.35	772	30.39	807	31.77	232.0	511.3

Connection



Constant Current(Amp) and Constant Power (Watt) Discharge Table

Type acc. to DIN 40 742	1.90 V/cell - Discharge in A at 20 ℃									1.90 V/cell - Discharge in W/Cell at 20 ℃								
	10min	15min	30min	1h	2h	3h	5h	8h	10h	10min	15min	30min	1h	2h	3h	5h	8h	10h
4 OPzV 200	129	119	97.0	74.7	52.1	40.5	28.0	19.7	16.7	245	227	187	145	102	79.4	55.2	39.1	33.3
5 OPzV 250	162	149	121	93.4	65.1	50.6	35.0	24.6	20.9	306	284	234	182	127	99.3	69.0	48.9	41.6
6 OPzV 300	194	179	146	112	78.1	60.7	41.9	29.5	25.1	367	341	281	218	153	119	82.8	58.7	49.9
5 OPzV 350	208	194	164	130	90.0	70.2	48.6	34.3	29.2	393	370	316	254	176	138	96.0	68.1	58.2
6 OPzV 420	249	233	197	157	108	84.3	58.3	41.1	35.1	472	444	380	305	211	165	115	81.7	69.9
7 OPzV 490	291	272	229	183	126	98.3	68.1	48.0	40.9	551	518	443	355	246	193	134	95.3	81.5
6 OPzV 600	310	298	266	223	152	119	82.6	58.3	50.1	587	568	513	433	297	233	163	116	99.8
8 OPzV 800	413	398	354	297	202	158	110	77.8	66.8	782	758	684	578	395	311	217	154	133
10 OPzV 1000	517	497	443	371	253	198	138	97.2	83.5	978	947	855	722	494	389	272	193	166
12 OPzV 1200	620	597	532	445	303	238	165	117	100	1174	1136	1026	867	593	466	326	232	200
12 OPzV 1500	663	656	620	555	373	294	205	145	125	1256	1249	1197	1080	729	576	404	288	250
16 OPzV 2000	885	874	827	740	498	392	273	193	167	1675	1665	1597	1440	973	768	539	384	333
20 OPzV 2500	1106	1093	1034	925	622	490	341	241	209	2093	2082	1996	1800	1216	960	673	480	416
24 OPzV 3000	1327	1311	1241	1110	746	587	409	290	251	2512	2498	2395	2160	1459	1152	808	576	499

Type acc. to DIN 40 742	1.85 V/cell - Discharge in A at 20 ℃									1.85 V/cell - Discharge in W/Cell at 20 ℃								
	10min	15min	30min	1h	2h	3h	5h	8h	10h	10min	15min	30min	1h	2h	3h	5h	8h	10h
4 OPzV 200	171	155	122	89.7	60.8	46.7	31.9	22.2	18.7	318	292	233	174	118	91.2	62.7	44.1	37.3
5 OPzV 250	213	194	153	112	76.0	58.4	39.9	27.8	23.4	397	365	292	217	148	114	78.4	55.1	46.6
6 OPzV 300	256	233	183	135	91.2	70.0	47.8	33.3	28.1	476	438	350	260	177	137	94.1	66.1	55.9
5 OPzV 350	274	253	206	157	105	81.0	55.5	38.7	32.8	510	475	394	303	204	158	109	76.7	65.2
6 OPzV 420	329	303	248	188	126	97.2	66.5	46.4	39.3	612	570	473	363	245	190	131	92.0	78.2
7 OPzV 490	384	354	289	219	147	113	77.6	54.2	45.9	714	665	552	424	286	221	153	107	91.3
6 OPzV 600	409	389	335	267	177	137	94.2	65.8	56.2	761	730	640	517	344	268	185	130	112
8 OPzV 800	545	518	446	356	236	183	126	87.8	74.9	1014	973	853	689	459	357	247	174	149
10 OPzV 1000	682	648	558	445	295	228	157	110	93.7	1268	1217	1066	862	574	446	309	217	186
12 OPzV 1200	818	777	670	535	354	274	188	132	112	1522	1460	1279	1034	689	535	370	261	224
12 OPzV 1500	876	854	781	666	436	339	233	164	140	1629	1605	1492	1288	847	661	459	324	279
16 OPzV 2000	1167	1139	1041	888	581	452	311	218	187	2171	2140	1990	1718	1129	882	612	432	373
20 OPzV 2500	1459	1424	1302	1110	726	565	389	273	234	2714	2675	2487	2147	1412	1102	765	540	466
24 OPzV 3000	1751	1708	1562	1332	871	677	467	327	281	3257	3210	2985	2577	1694	1323	918	648	559

Constant Current(Amp) and Constant Power (Watt) Discharge Table

Type acc. to DIN 40 742	1.80 V/cell - Discharge in A at 20 ℃									1.80 V/cell - Discharge in W/Cell at 20 ℃								
	10min	15min	30min	1h	2h	3h	5h	8h	10h	10min	15min	30min	1h	2h	3h	5h	8h	10h
4 OPzV 200	210	188	142	101	66.8	50.8	34.4	23.8	20.0	384	348	269	194	129	98.8	67.4	47.1	39.7
5 OPzV 250	263	235	178	126	83.5	63.5	43.0	29.8	25.0	480	435	337	243	161	123	84.3	58.8	49.6
6 OPzV 300	315	282	214	152	100	76.2	51.6	35.7	30.0	576	522	404	291	194	148	101	70.6	59.6
5 OPzV 350	337	306	240	176	115	88.1	59.8	41.4	35.0	616	567	455	339	223	171	117	82.0	69.5
6 OPzV 420	405	367	289	212	139	106	71.8	49.7	42.0	740	680	546	407	268	206	141	98.4	83.4
7 OPzV 490	472	429	337	247	162	123	83.7	58.0	49.0	863	794	637	474	313	240	164	115	97.3
6 OPzV 600	503	470	390	301	195	149	102	70.5	60.0	919	871	738	578	376	290	199	139	119
8 OPzV 800	671	627	520	401	259	199	135	94.0	80.0	1226	1162	984	771	502	387	265	186	159
10 OPzV 1000	839	784	650	502	324	249	169	118	100	1532	1452	1230	964	627	483	332	232	199
12 OPzV 1200	1006	941	780	602	389	298	203	141	120	1839	1743	1476	1157	753	580	398	279	238
12 OPzV 1500	1077	1034	910	750	479	369	252	175	150	1968	1916	1722	1442	926	717	493	346	298
16 OPzV 2000	1436	1379	1214	1000	638	491	336	234	200	2624	2554	2296	1922	1234	955	658	462	397
20 OPzV 2500	1795	1723	1517	1250	798	614	420	292	250	3280	3193	2870	2403	1543	1194	822	577	496
24 OPzV 3000	2154	2068	1820	1500	957	737	504	350	300	3936	3831	3444	2883	1852	1433	987	693	596

Type acc. to DIN 40 742	1.75 V/cell - Discharge in A at 20 ℃									1.75 V/cell - Discharge in W/Cell at 20 ℃								
	10min	15min	30min	1h	2h	3h	5h	8h	10h	10min	15min	30min	1h	2h	3h	5h	8h	10h
4 OPzV 200	248	210	152	105	68.6	51.9	35.1	24.2	20.3	446	384	284	201	132	101	68.5	47.8	40.3
5 OPzV 250	311	263	190	131	85.8	64.9	43.8	30.3	25.4	558	480	355	251	165	126	85.6	59.7	50.4
6 OPzV 300	373	316	228	158	103	77.9	52.6	36.3	30.5	669	577	426	301	198	151	103	71.7	60.4
5 OPzV 350	399	343	256	183	119	90.1	61.0	42.1	35.6	717	626	480	350	228	174	119	83.2	70.5
6 OPzV 420	479	411	308	220	142	108	73.1	50.6	42.7	860	751	576	420	274	209	143	99.8	84.6
7 OPzV 490	559	480	359	257	166	126	85.3	59.0	49.8	1003	876	672	491	320	244	167	116	98.7
6 OPzV 600	595	526	416	313	200	152	104	71.7	60.9	1069	962	779	598	385	295	202	141	121
8 OPzV 800	794	702	554	418	267	203	138	95.6	81.3	1425	1282	1038	798	513	394	270	189	161
10 OPzV 1000	992	877	693	522	333	254	173	119	102	1782	1603	1298	997	641	492	337	236	201
12 OPzV 1200	1190	1053	832	626	400	305	207	143	122	2138	1923	1557	1196	769	591	404	283	242
12 OPzV 1500	1274	1157	970	781	492	377	257	178	152	2288	2114	1817	1491	946	730	501	351	302
16 OPzV 2000	1698	1543	1293	1041	656	502	342	237	203	3051	2819	2422	1987	1262	973	668	469	403
20 OPzV 2500	2123	1929	1617	1301	820	628	428	297	254	3814	3523	3028	2484	1577	1216	835	586	504
24 OPzV 3000	2548	2314	1940	1561	984	754	513	356	305	4576	4228	3634	2981	1893	1460	1002	703	604

Type acc. to DIN 40 742	1.70 V/cell - Discharge in A at 20℃									1.70 V/cell - Discharge in W/Cell at 20 ℃								
	10min	15min	30min	1h	2h	3h	5h	8h	10h	10min	15min	30min	1h	2h	3h	5h	8h	10h
4 OPzV 200	279	230	161	109	70.4	53.0	35.6	24.5	20.5	492	413	298	207	135	102	69.3	48.3	40.7
5 OPzV 250	348	287	201	136	88.0	66.3	44.5	30.6	25.7	615	517	372	259	168	128	86.7	60.3	50.9
6 OPzV 300	418	344	241	164	106	79.5	53.4	36.8	30.8	738	620	447	311	202	153	104	72.4	61.0
5 OPzV 350	448	374	271	191	122	91.9	61.9	42.7	36.0	790	673	503	362	233	177	121	84.1	71.2
6 OPzV 420	537	449	326	229	146	110	74.3	51.2	43.2	948	808	604	434	280	213	145	101	85.4
7 OPzV 490	627	523	380	267	170	129	86.7	59.8	50.3	1106	942	704	506	326	248	169	118	99.7
6 OPzV 600	668	574	440	325	205	156	105	72.6	61.6	1178	1034	816	617	393	300	205	143	122
8 OPzV 800	891	766	587	434	273	207	140	96.8	82.2	1571	1379	1088	823	524	400	273	191	163
10 OPzV 1000	1113	957	733	542	342	259	175	121	103	1964	1724	1360	1029	654	500	341	238	203
12 OPzV 1200	1336	1149	880	651	410	311	210	145	123	2357	2069	1632	1234	785	600	409	286	244
12 OPzV 1500	1430	1263	1027	811	504	385	261	180	154	2522	2274	1903	1538	966	742	507	355	305
16 OPzV 2000	1906	1684	1369	1081	673	513	348	240	205	3363	3032	2538	2051	1288	989	676	474	407
20 OPzV 2500	2383	2105	1711	1351	841	641	434	301	257	4204	3790	3172	2564	1610	1236	846	592	509
24 OPzV 3000	2859	2526	2054	1621	1009	769	521	361	308	5045	4548	3807	3076	1932	1483	1015	710	610

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