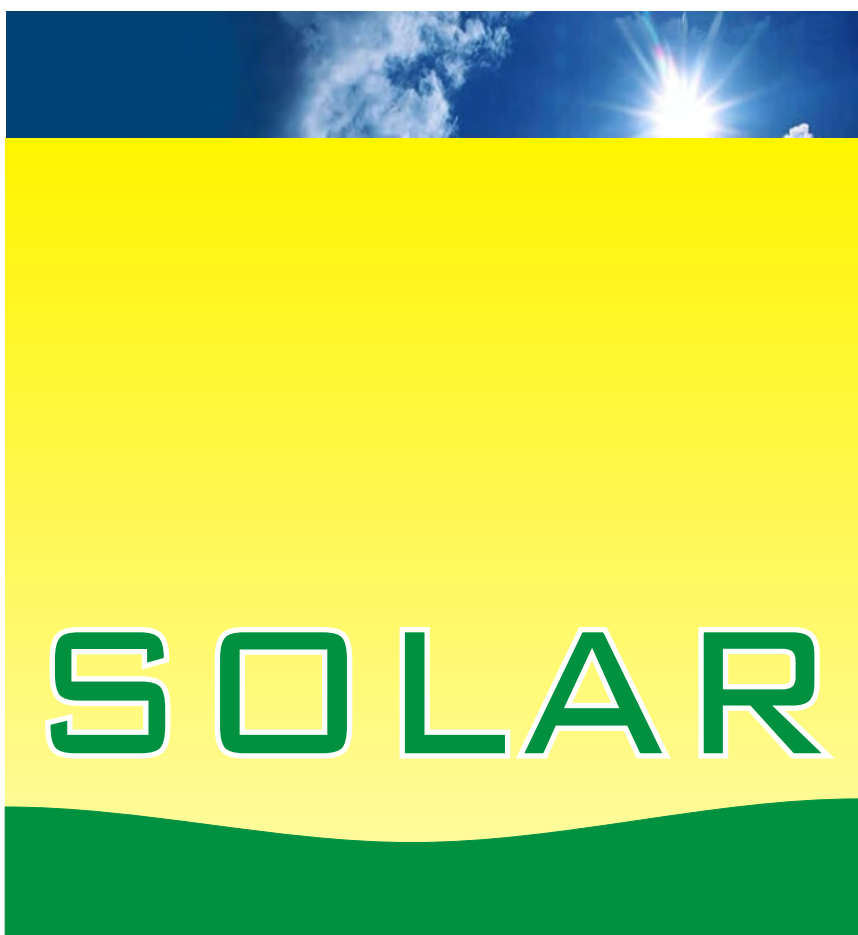
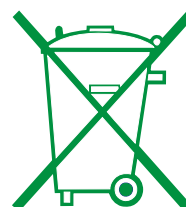




HÄZC



SOLAR



Pb



APPLICATIONS

Photovoltaic power supply of:

- Power plants of remote villages
- Signal Installations of the air-, sea-, road and railway transport
- Radio relay stations of telecommunication services
- Cellular roadside and roof top transmission / repeater stations
- Street & garden lighting
- Hybrid power supplies



Batteries have terminal options to meet the multitude of connection requirements.

Haze SOLAR are all SLA - VRLA Industrial Monobloc units, eliminating the need for maintenance and the possibility of acid spills.



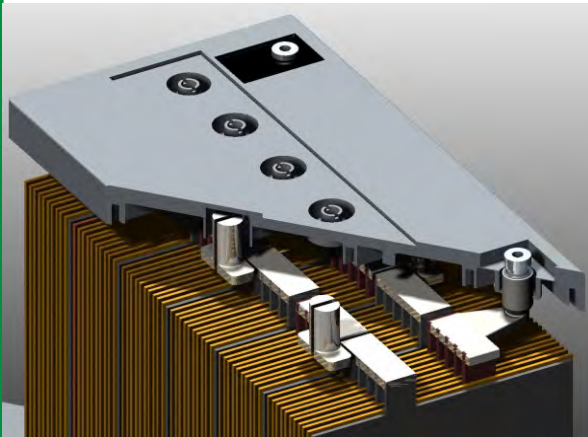
CONSTRUCTION - SOLAR Gel battery construction is as shown in the diagram. The positive and negative grids are cast from a calcium/tin lead alloy to reduce grid growth and corrosion. The active material is manufactured from a high purity lead (99.9999%) to minimize the negative effects of impurities.

Separator is manufactured by world leaders in the field, utilizing the latest German technology. The base material is a microporous duroplastic exhibiting excellent high temperature stability and mechanical strength, resulting in very good resistance to vibration and mechanical shock. The integrity of the battery will be maintained under extreme conditions.

The purpose of the separator is to maintain a constant distance between the positive and negative plates, totally eliminating the possibility of short circuits whilst allowing the active materials to fully react with the gelled electrolyte.

The separator also has an open construction, which allows little resistance to the flow of the electrolyte during filling.

A thin layer (typically 0.4mm) of non-woven glass mat is an integral part of the separator and is placed against the positive plate for improved surface contact.



Gel construction with case removed and cover cut away to show internal battery parts.

ELECTROLYTE FILLING - Gelled electrolyte is introduced to the cell by means of custom-built vacuum filling machines; vacuum cycling is utilized after the filling process. The battery design and construction negates the need for electrolyte addition and the battery remains maintenance free throughout its design life.

Typical separator properties are:

Acid displacement - 150 ml /sqm
 Pore volume - 70%
 Average pore size - 0.5 micro m
 Maximum pore Diameter - 1 micro m

CHARGING CHARACTERISTICS

Solar installations can occasionally have limitations on their ability to charge batteries due to unfavourable weather conditions, for this reason charging voltages should optimise the charge time available and higher currents are ideal to "RAPID" charge the battery.

The charging current may vary from 0.01 to 5 times I10 but the charging voltage should be restricted to 2.3 to 2.45 VPC.
 Daily discharge below 0.2 C100 - 2.35-2.40VPC
 Daily discharge above 0.2 C100 - 2.35-2.45VPC
 (Based on 20 °C)

If the monthly average temperature is below 10 °C the charging voltage should be increased by 0.003V per °C.



Each battery technology has its advantages and disadvantages, it is therefore important to choose the right battery for the application.

For SOLAR applications GEL technology is without doubt the right choice, the price premium is easily off-set by the life and cycle expectations for this demanding application subjected to high and low temperatures, unpredictable charging, daily cycling, probable partial state of charge discharges.

Advantages of Gel Batteries:

- Full recovery from deep discharge, even when the battery is not recharged immediately.
- Ideal for repeat cycling daily use.
- Excellent performance over long discharges
- Good tolerance to higher temperature applications
- Improved resistance to freezing
- Suitable where mains power is unstable
- Zero stratification due to immobilized electrolyte
- Reduced self-discharge
- Limiting design protects the positive plates to greatly improve cycle life
- Thicker plates for reduced grid corrosion and increased cycle life
- Improved charge acceptance due to low internal resistance
- High resistance to water loss with the right charging set up
- Ultra stable polymer separator with glass mat for increased performance
- High resistance to shorting due to superior mechanical strength of the polymer separator
- Increased tolerance to poor charging parameters
- Can be discharged even when full recharge has not been achieved, without loss of battery capacity

Advantages of AGM Batteries:

- Lower initial cost when compared to equivalent power Gel
- Ideal for starting and stationary applications
- Superior performance for shorter duration / higher current discharges
- Smaller size battery can be used for higher rate discharges.

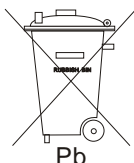


Capacity temperature correction Factor to be applied to Data at 20/25 Degrees C

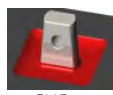
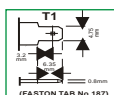
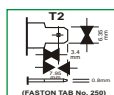
Discharge Time	-30 °C	-20 °C	-10 °C	0 °C	5 °C	10 °C	15 °C	20-25 °C	30 °C	35 °C	40 °C	50 °C
5 minutes to 59 minutes	3%	8%	48%	77%	84%	89%	94%	100%	105%	107%	108%	110%
1 Hour to 100 Hours	45%	65%	77%	89%	91%	94%	96%	100%	104%	106%	107%	108%

**Website: www.hazebattery.com
E mail : sales@hazebattery.com**

Haze Battery Company keenly encourages environmental awareness; PLEASE follow guidelines for the recycling /disposal of lead.



TERMINAL OPTIONS



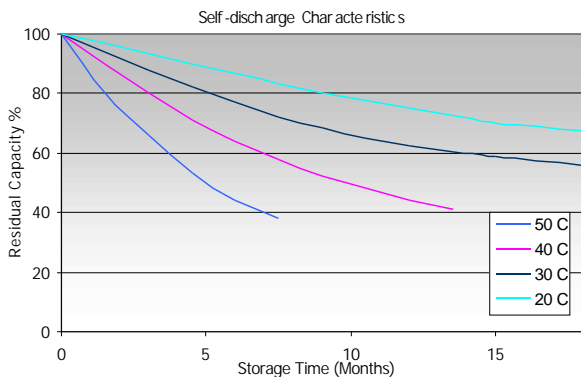
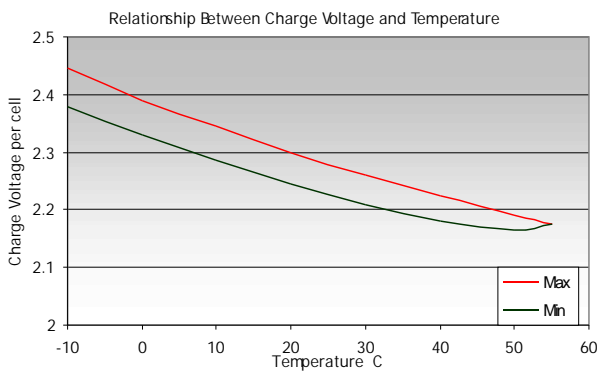
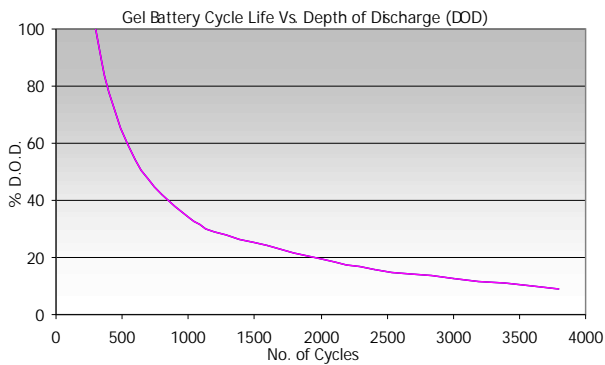
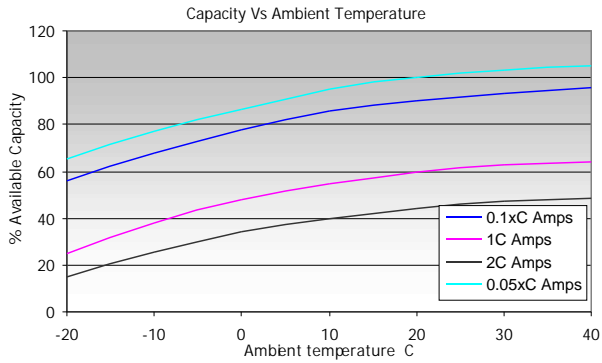
T3 Insert M6

T4 Cu Flag

T5 Lead Flag

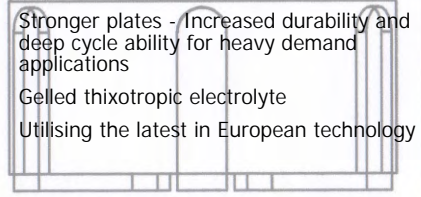
T6 J Type

T7 Automotive



Innovative Features

- Completely maintenance free, sealed construction eliminates the need for watering
- Spill proof / leak proof
- Valve regulated Max internal pressure 2.5 psi
- Multi-position usage
- Analytical Grade electrolyte
- Multi-cell container
- ABS Case and cover - VO on request
- Low self discharge
- FAA and IATA approved as non-hazardous
- Electrolyte will not stratify, no equalization charge required
- Stronger plates - Increased durability and deep cycle ability for heavy demand applications
- Gelled thixotropic electrolyte
- Utilising the latest in European technology

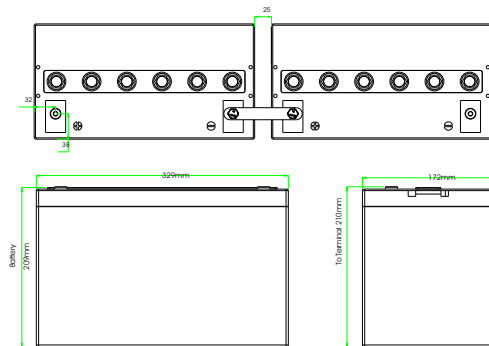
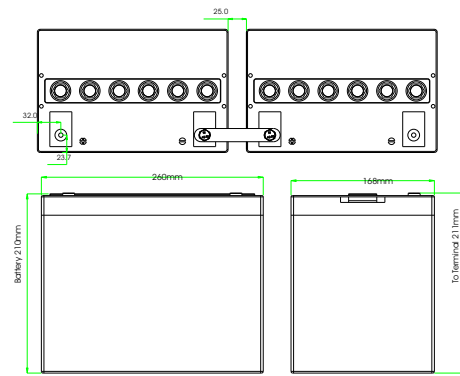
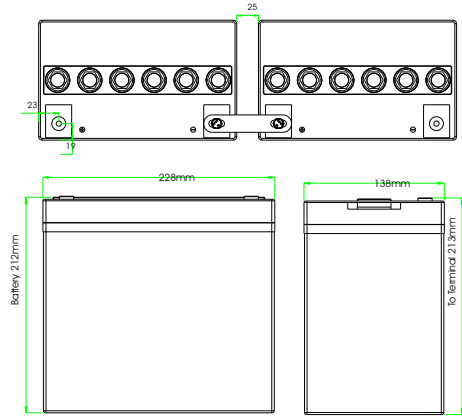
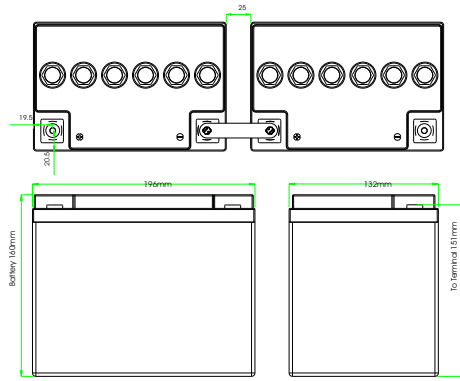


Specifications

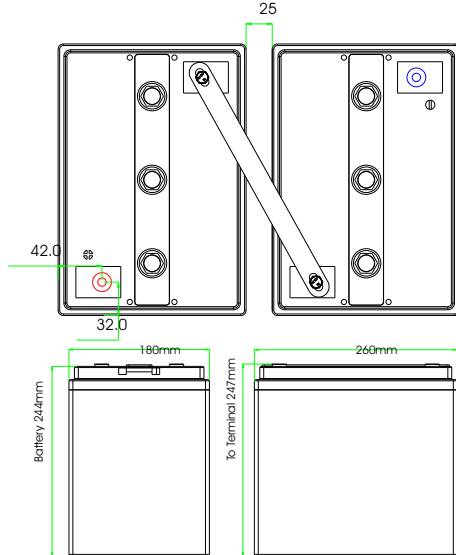
Nominal Voltage	6 & 12 Volts
Operating Temperature	-20 °C to 50 °C
Grid alloy	Calcium / Tin lead alloy
Plates	Flat Pasted
Separator	Gel - Microporous Duroplastic
Active material	Very high purity lead
Case and cover	ABS (VO on request)
Charge Voltage	See page 3 Max ripple 0.05C (A)
Electrolyte	Sulphuric acid Analytical grade purity
Venting Valve	EPDM Rubber 1.5 to 2 psi (10.5 - 14 KPa) release pressure. Resealing at 1 psi (7 KPa)
Torque setting	The recommended torque value for insert & automotive types is 5-7 Nm
Cables	Insulated cables / connectors supplied on request.
Design Life (HZY12-7.5 to HZY12-12)	5 Years
Design Life (All others)	12 Years

Model No	Volts	Capacity - Ampere Hour to 1.8 VPC @20 °C								Dimensions & Weight mm & inches							
		100 Hr	72 Hr	48 Hr	20 Hr	10 Hr	5 Hr	3 Hr	1 Hr	L	W	H	Kg	lbs			
HZY-SL12-7.5	12	8.6	8.4	8.1	7.5	6.9	6.1	5.6	4.6	150	5.89	63	2.5	95	3.7	2.4	5.3
HZY-SL12-12	12	13.8	13.4	13.0	12.0	11.0	9.8	9.0	7.4	152	5.98	99	3.9	96	3.8	3.7	8.2
HZY-SL12-18	12	19.6	19.0	18.4	17.0	15.6	13.8	12.8	10.5	181	7.13	76	3.0	167	6.6	5.5	12.2
HZY-SL12-26	12	28.8	27.9	27.0	25.0	22.9	20.4	18.8	15.5	168	6.59	178	7.0	124	4.9	8.8	19.4
HZY-SL12-33	12	34.2	33.2	32.3	29.3	28.0	24.7	23.3	18.6	196	7.70	131	5.2	160	6.3	10.2	22.5
HZY-SL12-44	12	45.3	43.9	41.6	39.0	37.0	33.1	29.4	24.3	198	7.80	167	6.6	157	6.2	13.5	29.8
HZY-SL12-55	12	61.0	59.1	57.2	53.0	48.5	43.1	39.9	32.8	229	9.02	138	5.4	213	8.4	16.8	37.1
HZY-SL12-60	12	72.0	70.0	68.0	64.0	60.0	55.0	50.0	38.0	260	10.24	168	6.6	180	7.1	21.5	47.5
HZY-SL12-70J	12	78.2	75.9	73.4	68.0	62.2	55.4	51.1	42.1	349	13.72	168	6.6	175	6.9	22.6	49.9
HZY-SL12-65	12	86.3	83.7	81.0	75.0	68.6	61.1	56.4	46.4	272	10.71	165	6.5	188	7.4	21.5	47.5
HZY-SL12-80	12	90.7	88.0	85.4	80.0	72.8	66.1	60.6	49.9	260	10.24	168	6.6	211	8.3	24.0	53.0
HZY-SL12-100	12	110	107	104	96.0	87.8	78.1	72.2	59.4	306	12.03	168	6.6	211	8.3	28.3	62.5
HZY-SL12-110	12	118	114	112	104	95.8	85.9	78.7	64.4	329	12.95	173	6.8	209	8.2	30.9	68.3
HZY-SL12-120	12	138	134	130	120	110	97.7	90.2	74.3	409	16.10	177	7.0	225	8.9	34.5	76.2
HZY-SL12-135	12	167	162	157	145	133	118	109	89.8	342	13.46	173	6.8	282	11.1	41.9	92.6
HZY-SL12-150	12	173	167	162	150	137	122	113	92.9	483	19.02	170	6.7	242	9.5	45.0	99.5
HZY-SL12-160	12	184	178	173	160	146	130	120	99.0	530	20.87	209	8.2	214	8.4	54.9	121.3
HZY-SL12-200	12	239	232	227	214	196	171	161	131	522	20.55	242	9.5	220	8.7	63.3	139.9
HZY-SL12-230	12	282	273	265	245	224	199	184	152	521	20.51	270	10.6	205	8.1	74.5	164.6
HZY-SL6-180	6	207	201	194	180	165	147	135	111	260	10.24	181	7.1	246	9.7	28.9	63.9
HZY-SL6-225	6	253	245	238	220	201	179	165	136	244	9.59	188	7.4	275	10.8	31.9	70.5
HZY-SL6-335	6	370	359	340	320	300	280	250	180	295	11.61	178	7.0	350	13.8	48.0	106.1

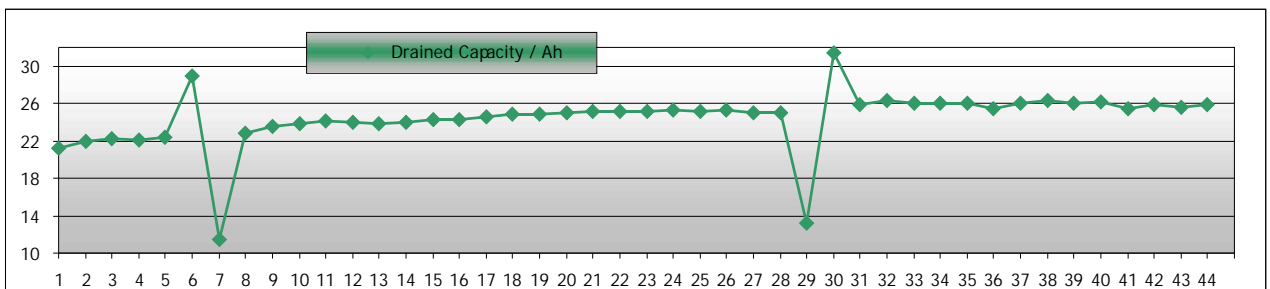
Model No	Volts	Capacity - Watt Hour Per Cell to 1.8 VPC @20 °C								IR m Ohms
		100 Hr	72 Hr	48 Hr	20 Hr	10 Hr	5 Hr	3 Hr	1 Hr	
HZY-SL12-7.5	12	17.2	16.7	16.1	14.7	13.4	11.8	10.9	8.9	35
HZY-SL12-12	12	27.6	26.7	25.7	23.6	21.4	18.9	17.4	14.2	22
HZY-SL12-18	12	39.0	37.8	36.5	33.4	30.3	26.8	24.6	20.2	15
HZY-SL12-26	12	57.4	55.6	53.6	49.1	44.6	39.4	36.2	29.6	9.1
HZY-SL12-33	12	68.3	66.1	64.1	57.6	54.6	47.8	44.9	35.6	10.3
HZY-SL12-44	12	90.4	87.5	82.7	76.6	72.2	63.9	56.7	46.6	7.9
HZY-SL12-55	12	122	118	114	104	94.6	83.5	76.8	62.8	6.8
HZY-SL12-60	12	144	140	135	126	117.0	106.4	96.3	72.8	5.8
HZY-SL12-70J	12	156	151	146	134	121	107	98.5	80.6	5.3
HZY-SL12-65	12	172	167	161	147	134	118	108.6	88.9	5.5
HZY-SL12-80	12	181	175	170	157	142	128	117	95.6	5.4
HZY-SL12-100	12	220	213	206	189	171	151	139	114	4.7
HZY-SL12-110	12	235	228	223	204	187	166	152	123	4.2
HZY-SL12-120	12	276	267	257	236	214	189	174	142	3.8
HZY-SL12-135	12	333	322	311	285	259	228	210	172	3.9
HZY-SL12-150	12	344	333	322	295	268	236	217	178	3.4
HZY-SL12-160	12	367	356	343	314	286	252	232	190	3.0
HZY-SL12-200	12	478	463	450	420	382	330	310	252	2.8
HZY-SL12-230	12	563	545	525	481	437	386	355	290	2.2
HZY-SL6-180	6	413	400	386	354	321	283	261	213	1.5
HZY-SL6-225	6	505	489	472	432	393	346	319	261	1.4
HZY-SL6-335	6	739	715	675	629	585	542	481	345	1.3



Drawings: Full battery and layout drawings are available - Please ask for the relevant drawing. Insulated Cable or Busbar connectors can also be supplied with the batteries.



CAPACITY The cycling characteristics are due in part to a beneficial tetra basic crystal structure and increased paste density, this however has a negative effect on the capacity of the battery for the first 20-25 cycles. For SOLAR applications the capacity will therefore increase to full capacity over the first month after the installation. The Ah graph for an HZY-SL 12-33 is shown below, the 2 spikes shown are 20h & 15 min tests respectively.





Product Range

4, 6 & 12 Volt AGM 1.3 to 230AH

6 & 12 Volt Gel 7.5 to 230AH

12 Volt Front Access AGM

12 Volt Front Access Gel

2 Volt AGM & Gel 50 to 3850AH

EV Gel

EV AGM

Marine Gel

Solar

OPzV

OPzS