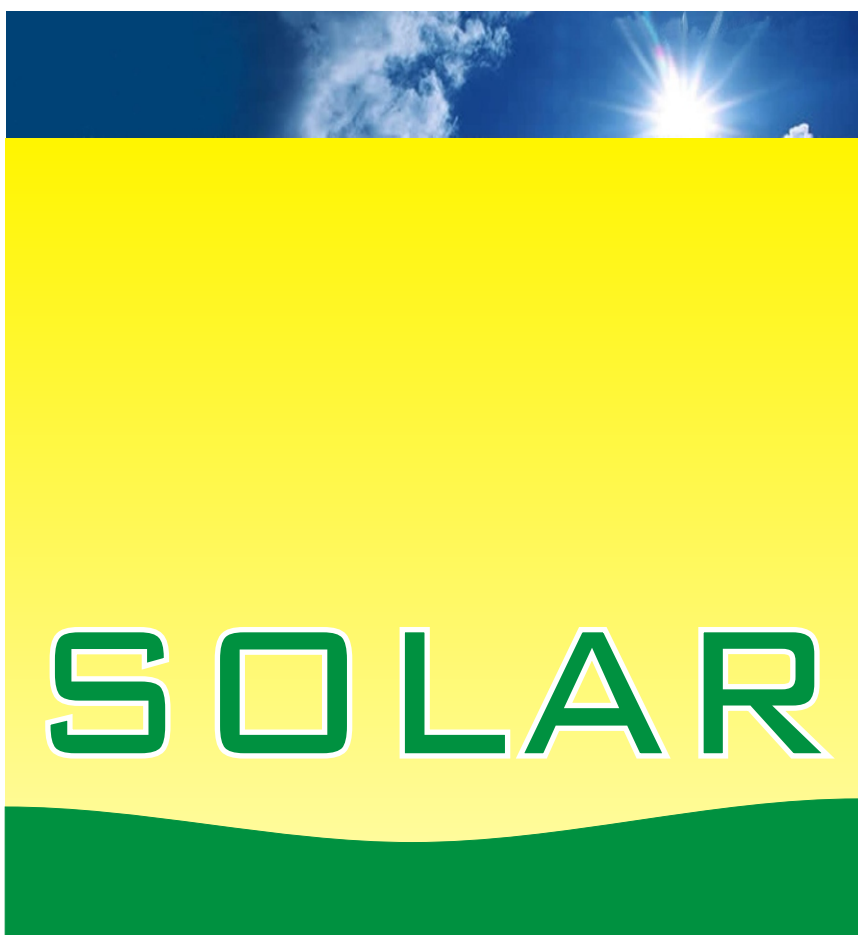
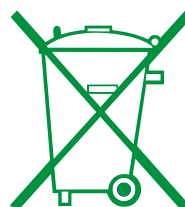




***HÄZC***



**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.



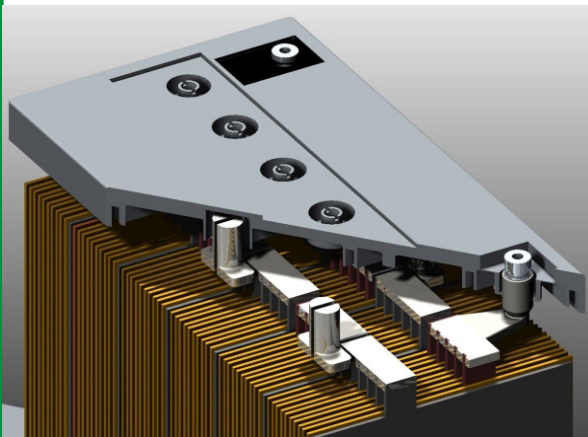
**CONSTRUCTION - SOLAR** Gel battery construction is as shown in the diagram. The positive and negative grids are cast from a calcium/tin lead alloy to reduce grid growth and corrosion. The active material is manufactured from a high purity lead (99.9999%) to minimize the negative effects of impurities.

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

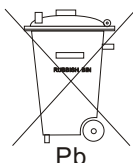
#### Advantages of AGM Batteries:

- 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

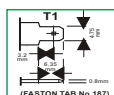
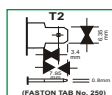
Discharge Time	-30 °C	-20 °C	-10 °C	0 °C	5 °C	10 °C	15 °C	20-25 °C	30 °C	35 °C	40 °C	50 °C
5 minutes to 59 minutes	3%	8%	48%	77%	84%	89%	94%	100%	105%	107%	108%	110%
1 Hour to 100 Hours	45%	65%	77%	89%	91%	94%	96%	100%	104%	106%	107%	108%



**Website: [www.hazebattery.com](http://www.hazebattery.com)**  
**E mail : [sales@hazebattery.com](mailto:sales@hazebattery.com)**

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

#### TERMINAL OPTIONS



T3 Insert M6

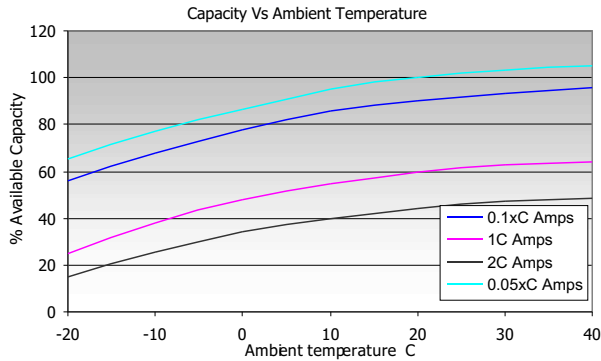
T4 Cu Flag

T5 Lead Flag

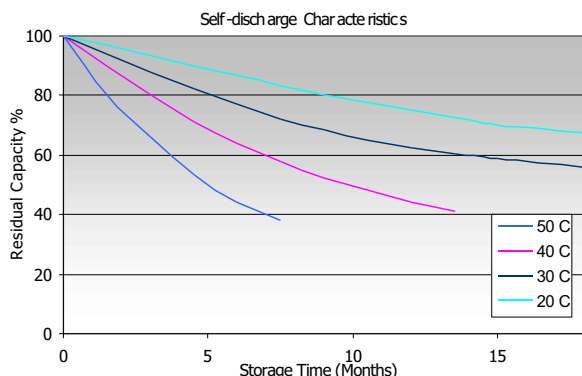
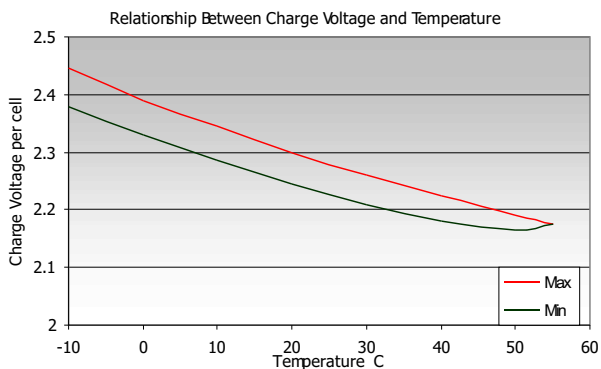
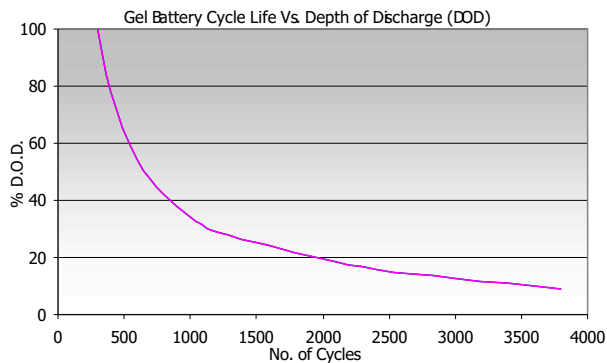
T6 J Type

T7 Automotive





# HAZE



## Innovative Features

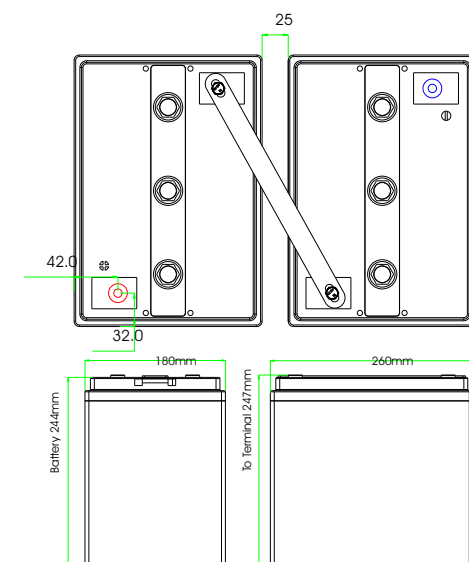
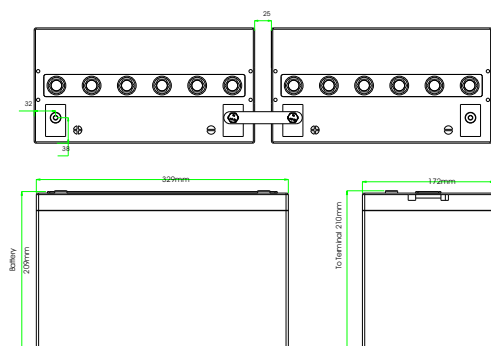
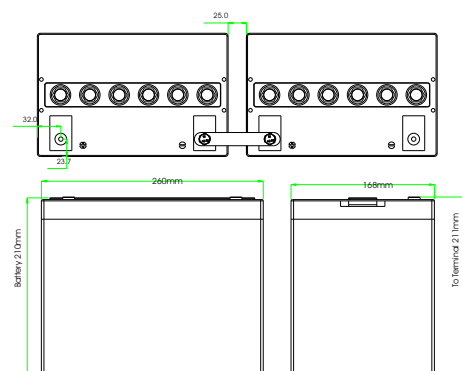
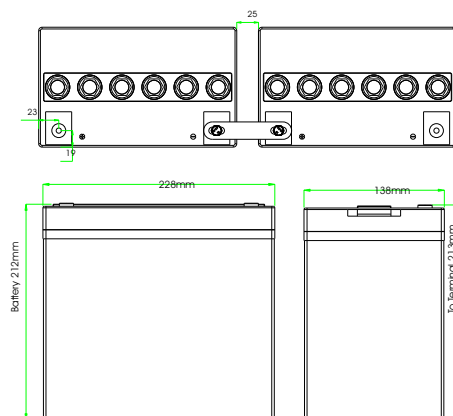
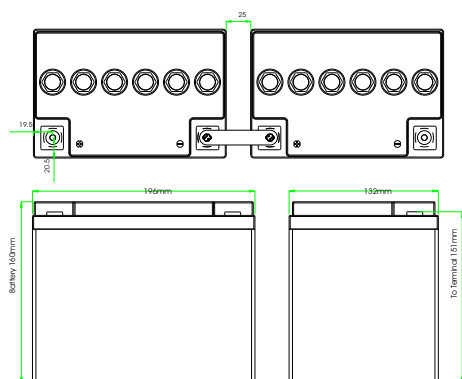
- Completely maintenance free, sealed construction eliminates the need for watering
- Spill proof / leak proof
- Valve regulated Max internal pressure 2.5 psi
- Multi-position usage
- Analytical Grade electrolyte
- Multi-cell container
- ABS Case and cover - V0 on request
- Low self discharge
- FAA and 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 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

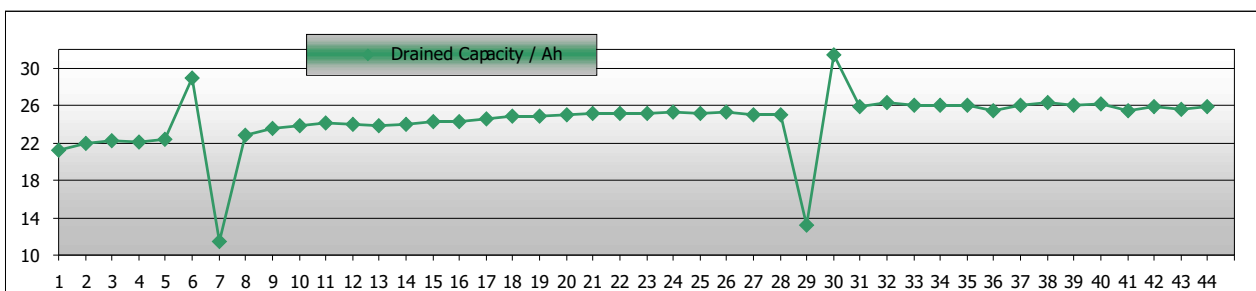
ModelNo	Volts	Capacity - Ampere Hour to 1.8 VPC @20 °C								Dimensions & Weight mm & inches							
		100 Hr	72 Hr	48 Hr	20 Hr	10 Hr	5 Hr	3 Hr	1 Hr	L	W	H	Kg	lbs			
HZY-SL12-7.5	12	8.6	8.4	8.1	7.5	6.9	6.1	5.6	4.6	151	5.94	65	2.6	94	3.7	2.4	5.3
HZY-SL12-12	12	13.8	13.4	13.0	12.0	11.0	9.8	9.0	7.4	151	5.94	98	3.9	98	3.9	3.7	8.2
HZY-SL12-18	12	20.4	19.7	19.1	17.7	16.4	14.7	13.3	11.0	181	7.13	76	3.0	167	6.6	5.5	12.2
HZY-SL12-26	12	29.6	28.7	27.8	25.7	23.5	21.7	20.0	15.9	168	6.61	178	7.0	124	4.9	8.8	19.4
HZY-SL12-33	12	41.9	40.6	39.3	36.4	32.5	28.3	25.1	20.0	195	7.68	130	5.1	160	6.3	10.2	22.5
HZY-SL12-44	12	52.2	50.6	49.0	45.4	41.1	36.8	33.5	26.8	198	7.80	167	6.6	157	6.2	13.5	29.8
HZY-SL12-55	12	68.7	66.6	64.5	59.7	54.9	49.7	44.9	37.0	229	9.02	138	5.4	213	8.4	16.8	37.1
HZY-SL12-60	12	84.5	82.0	80.8	74.8	67.6	59.5	50.2	38.5	260	10.24	168	6.6	179	7.0	21.5	47.5
HZY-SL12-70J	12	82.2	79.8	77.2	71.5	62.9	57.3	51.8	44.3	349	13.74	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	279	10.98	175	6.9	190	7.5	21.5	47.5
HZY-SL12-80	12	97.0	94.1	91.1	87.9	79.0	71.0	64.1	53.0	260	10.24	168	6.6	211	8.3	24.0	53.0
HZY-SL12-100	12	121	117	114	105	92.6	80.9	72.6	59.8	306	12.05	168	6.6	211	8.3	28.3	62.5
HZY-SL12-110	12	136	132	128	119	106	94.0	83.3	66.4	329	12.95	173	6.8	209	8.2	30.9	68.3
HZY-SL12-120	12	140	136	131	122	108	96.5	88.3	72.0	408	16.06	176	6.9	227	8.9	34.5	76.2
HZY-SL12-135	12	186	180	174	162	146	133	119	94.8	340	13.39	173	6.8	283	11.1	41.9	92.6
HZY-SL12-150	12	183	177	172	159	145	130	119	97.9	482	18.98	170	6.7	242	9.5	45.0	99.5
HZY-SL12-160	12	220	213	206	191	175	158	141	108	530	20.87	209	8.2	214	8.4	54.9	121.3
HZY-SL12-200	12	282	274	265	246	228	205	182	131	520	18.98	240	8.8	220	8.0	63.3	139.9
HZY-SL12-230	12	302	293	284	263	243	216	194	149	521	20.51	269	10.6	203	8.0	74.5	164.6
HZY-SL6-180	6	213	206	200	185	169	151	139	115	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	9.61	188	7.4	275	10.8	31.9	70.5
HZY-SL6-335	6	360	350	345	320	284	259	234	194	295	11.61	178	7.0	345	13.6	41.0	90.6

ModelNo	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	8.89	40
HZY-SL12-12	12	27.6	26.7	25.7	23.6	21.4	18.9	17.4	14.2	24
HZY-SL12-18	12	40.6	39.4	38.0	34.8	32.0	28.4	25.6	21.0	16
HZY-SL12-26	12	59.0	57.1	55.1	50.5	45.9	42.0	38.5	30.5	9.5
HZY-SL12-33	12	83.6	80.9	78.1	71.5	63.4	54.8	48.3	38.3	10.6
HZY-SL12-44	12	104	101	97.4	89.2	80.2	71.2	64.5	51.3	8.0
HZY-SL12-55	12	137	133	128	117	107	96.2	86.5	70.8	7.0
HZY-SL12-60	12	169	163	160	147	132	115	96.7	73.7	6.5
HZY-SL12-70J	12	164	159	153	141	123	111	99.8	84.8	5.3
HZY-SL12-65	12	172	167	161	147	134	118	109	88.9	5.5
HZY-SL12-80	12	194	188	181	173	154	137	123	102	5.7
HZY-SL12-100	12	242	234	226	207	181	157	140	115	4.7
HZY-SL12-110	12	272	264	254	233	206	182	160	127	4.4
HZY-SL12-120	12	279	270	261	239	211	187	170	138	3.7
HZY-SL12-135	12	371	359	346	317	285	257	229	182	4.0
HZY-SL12-150	12	365	354	341	312	283	252	229	188	3.3
HZY-SL12-160	12	439	425	410	375	340	306	272	207	3.1
HZY-SL12-200	12	564	546	527	483	444	397	350	252	2.9
HZY-SL12-230	12	603	584	563	516	473	418	374	285	2.3
HZY-SL6-180	6	425	411	397	364	330	291	268	219	1.5
HZY-SL6-225	6	505	489	472	432	393	346	319	261	1.4
HZY-SL6-335	6	719	697	685	628	554	501	452	371	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