OUR COMMITMENT TO GREEN MANUFACTURING

Chee Yuen commits to be
an industry leader in protecting the environment

ISO 14001 | ISO 9001 | UL | CE | OHSAS 18001

More information with us

Chee Yuen Industrial Co Ltd **CASIL Electronic Products Ltd**
Tel: 852-2389 3368
Fax: 852-2389 3378
E-mail: sales1@casil-cheeyuen.com
www.casil-cheeyuen.com
18/F., China Aerospace Center, 143 Hoi Bun Road,
Kwun Tong, Kowloon, Hong Kong

CHEE YUEN INDUSTRIAL CO LTD
CASIL ELECTRONIC PRODUCTS LTD

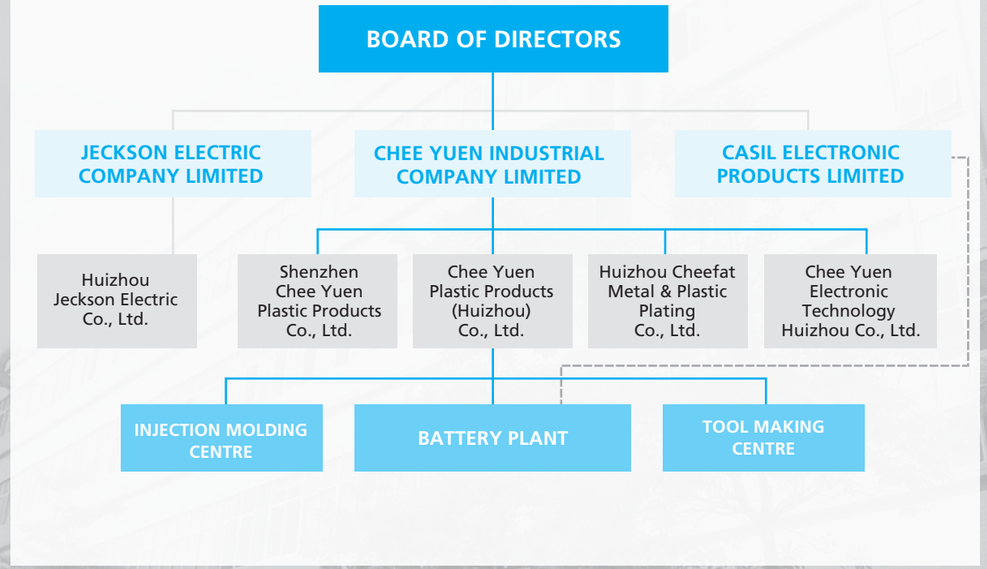
Subsidiaries of China Aerospace International Holdings Limited

SEALED LEAD-ACID BATTERIES

| Standby Use | Cycle Use | Solar Cell Generation |

www.casil-cheeyuen.com

Chee Yuen Industrial Company Limited ("Chee Yuen") was setup in 1965, is one of the large-scale and well developed manufacturers in Hong Kong, and we have the capacity of complete design, processing, and manufacturing for the series of core products from tool making to injection molding, electroplating, metal stamping, electronic assembly, painting and so on. Our main production factories include Chee Yuen Plastic Products (Huizhou) Co., Ltd., Huizhou Chee Yuen Mold Factory, Huizhou Chee Yuen Battery Factory, Shenzhen Chee Yuen Plastic Products Co., Ltd., Huizhou Cheefat Metal Product & Plastic Plating Co., Ltd., Chee Yuen Electronic Technology Huizhou Co., Ltd. Chee Yuen Industrial Co., Ltd. is a subsidiary of China Aerospace International Holdings Limited, which is listed in Hong Kong stock exchange (HKSE: 00031, "CASIL").



OUR HISTORY

MILESTONES AT A GLANCE

1965
Setup tooling and injection molding in Hong Kong as a private company

1969
Established as a limited company in Hong Kong

1975
Becoming a subsidiary of Conic group
(Conic - one of the largest electronic products manufacturers in Hong Kong)

Established plants in Tai Po Industrial Estate, Hong Kong

1981
Conic listed in Hong Kong (Stock code: 00031)

1989
Setup tooling and injection molding plants, Huizhou

1993
China Aerospace Corporation acquired Conic group and renamed it as China Aerospace International Holdings Limited ("CASIL")

1994
Setup Shenzhen office and injection molding plant

1995
Chee Yuen Hong Kong: ISO 9001 Certified

Conic Group, Hong Kong

2000
Setup battery plant, Huizhou

Setup electroplating plant, Huizhou

2001
Chee Yuen group production plants relocated to Huizhou (Phase I)

2003
Huizhou & Shenzhen plants ISO 9001, ISO 14001 Certifed

2004
ISO/TS 16949/ QS 9000 certificated for molding and electroplating plants

2005
Setup electric products plant, Huizhou (Phase II)

2010
Setup injection molding plant, Huizhou (Phase II)

2012
Expanded battery plant to 4 stores' building

2013
OHSAS 18001 for Battery Plant

2014
New surface treatment plant, Boluo

Setup 2 sets of robotic arms of spray painting

Exhibited ISC West Security Expo, Las Vegas

2015
Setup 10 sets dual shot molding machines

Exhibited ISC West Security Expo

2016
Invested 3 sets of dual shot molding machines

Exhibited ISC West Security Expo

2017
Setup new full auto gantry plating production line at surface treatment plant, Boluo

Exhibited IFSEC Security Show, London

IATF 16949:2016

Injection Molding Plant, Huizhou

Electric Products Plant, Huizhou


Chee Yuen Office, Hong Kong

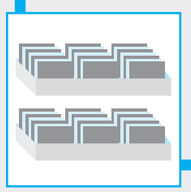

CASIL Industrial Park, Huizhou


Chee Yuen Battery Plant, Huizhou

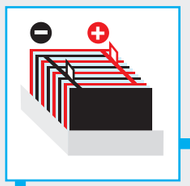
PRODUCTION FLOW CHART

STRICT REQUIREMENTS & HIGH EFFICIENCY MANUFACTURING

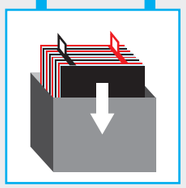
Setup battery plate pack with separator



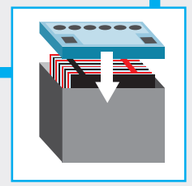
Set battery plate pack



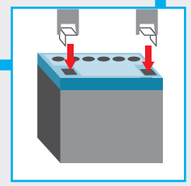
Weld connectors



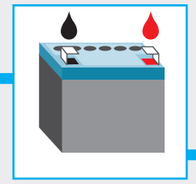
Insert battery plate packs into plastic case



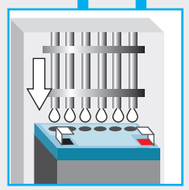
Assemble battery middle cover with case



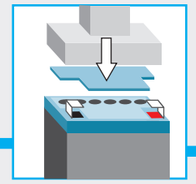
Weld terminals



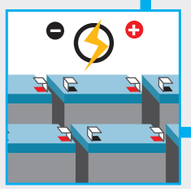
Indicate positive and negative terminals



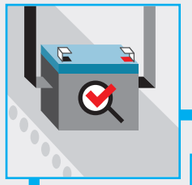
Infuse electrolyte (acid) with vacuum acid filler



Ultrasonic welding safety valve and top lid

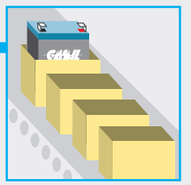


Charge & discharge



Testing

Silk screening



Packing & export

BATTERY DESCRIPTION

BATTERY PROPERTIES

"**CASIL**" Sealed Lead Acid Battery (SLA battery) is an advanced and economic rechargeable battery. It has several properties that differs from other types of batteries:

- **MAINTENANCE FREE** as it is valve-regulated, sealed and glass-mat is utilized, acid is trapped inside. So, refilling is not needed and is also leak proof.
- **HIGH POWER-TO-WEIGHT RATIO** "CASIL" (SLA) 2V, 4V 6V and 12V battery ranges from 0.6AH to 1000AH. Weight ranges from approximately 0.3 to 82.5 kg. So it can provide more power in comparison to its weight.
- **NO MEMORY EFFECT** Some batteries, such as nickel-cadmium batteries, will become conditioned to provide small power after repetitive short usage/discharge.
- **LOW SELF-DISCHARGE** The self-discharge rate for "CASIL" SLA battery is about 2-3% per month at room temperature compared with 20-30% for other common battery systems.
- **LONG SERVICE LIFE** Utilized thick and massive calcium grids cause "CASIL" SLA battery has a long service life.
- **HIGH DISCHARGE RATE** Since the internal resistance is low, the battery can provide high rate of discharge.
- **WIDE OPERATING TEMPERATURE RANGE** "CASIL" SLA battery is rated at 20°C (68°F) and operates from -60°C to +60°C when it is fully charged.
- **EASE OF SHIPMENT** It is classified as dry battery and is acceptable shipment on passenger and cargo aircraft.

SCOPE OF APPLICATION

Many kinds of products will use "CASIL" SLA battery as it is convenient, reliable and has an outstanding service life and capacity. Applications can be classified as cycle use standby use and solar cell generation. Here are some examples:

Standby use

- UPS (Uninterruptible Power Supply)
- Telecommunications system
- Security system
- Electronic equipment
- Office/medical equipment
- Emergency lighting system
- Currency detector
- Burglar/fire alarm

Cycle use

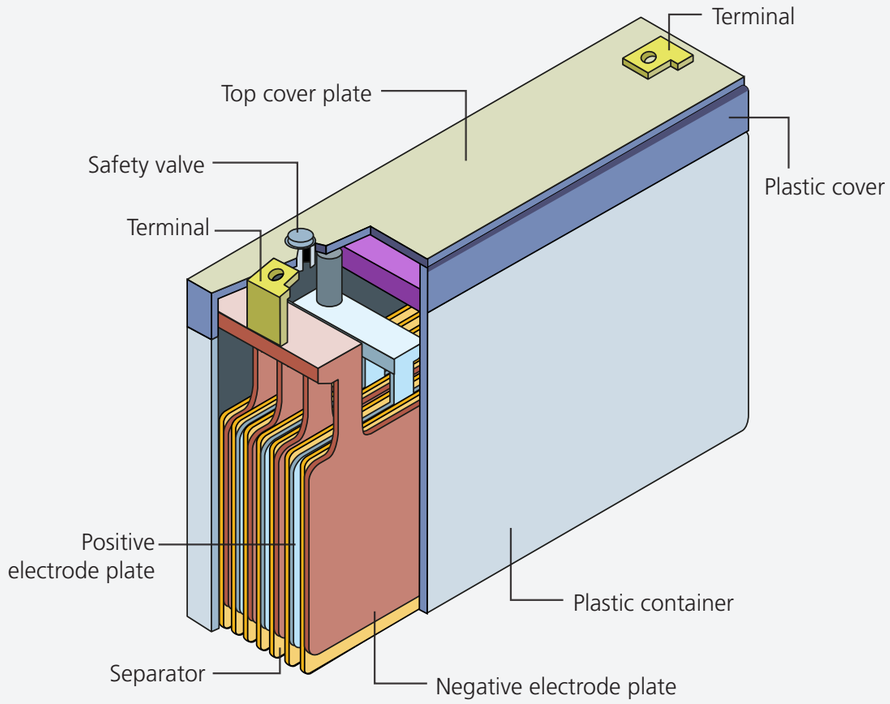
- Testing equipment
- Portable lamp
- Medical device
- LED light equipment
- Lawn mowers/vaccum cleaner
- Hi-fi system
- Electric wheelchair/toy

Solar cell generation

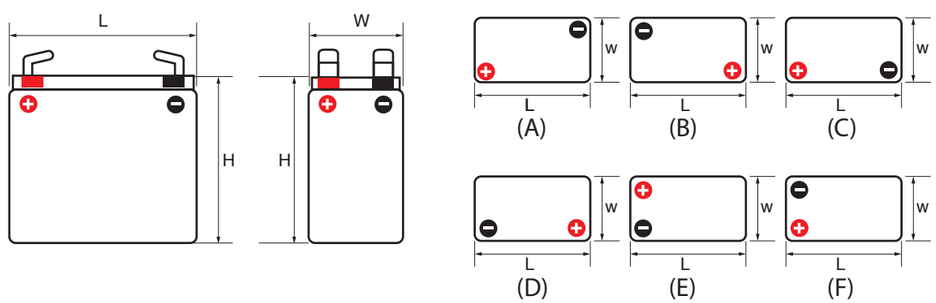
- Solar power equipment
- Garden light system

Alarm and security systems · Emergency lighting system · Medical equipment · Telecommunication system · UPS

BATTERY CONSTRUCTION

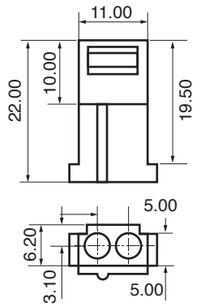


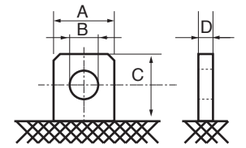
Terminal positions



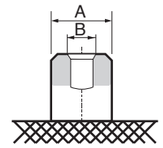
BATTERY TERMINAL TYPE

Cable



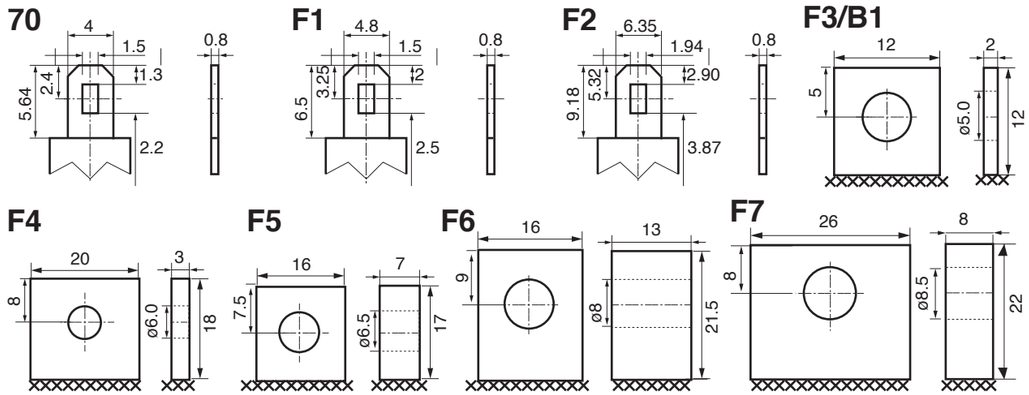


Type	A	B	C	D
L1	12.0	ø5.0	11.0	2.0
B2	16.0	ø6.3	12.5	7.5

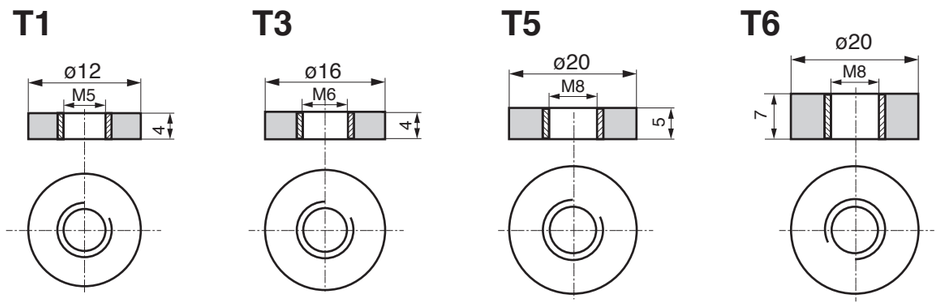


Type	A	B
B1	ø16	M5

Terminal type (F)



Terminal type (T)



CHARGING CHARACTERISTICS

CHARGING APPLCATION TIPS

Battery life is affected by the charger's performance and the battery's operating conditions. Charger selection depends on the battery usage, which may be cycle use or standby use (either under trickle charge or float charge operation). Please refer to Table 1.

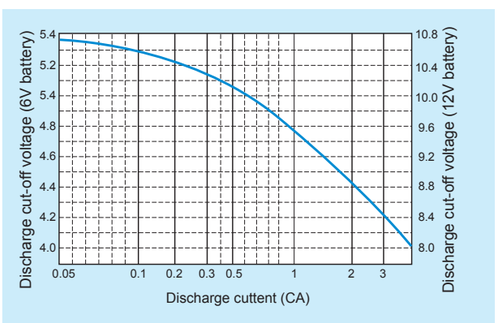
Table 1: Charging method & battery application

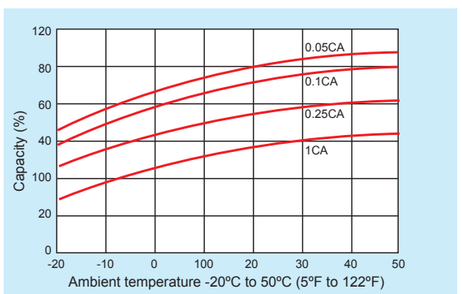
Application / Charging Method	Standby / Backup Use — Float / Trickle Charge Operation	Cyclic Charge Operation	Refresh Charge During Storage
	Regulation range of controlled voltage: 4V Batteries: 4.5V to 4.6V 6V Batteries: 6.8V to 6.9V 12V Batteries: 13.6V to 13.8V Initial Current: 0.3C or less	Regulation range of controlled voltage: 4V Batteries: 4.8V to 5.0V 6V Batteries: 7.3V to 7.5V 12V Batteries: 14.6V to 15.0V Initial Current: 0.3C or less	
Constant Voltage Charging	The charger's current capacity must be big enough to maintain the specified charging voltage during float.		some model batteries, under the same storage, can be charged in series. Otherwise, they should be recharged in separate groups.
	The charge voltage must be stabilized. Otherwise, battery may be undercharged or overcharged. The charge should be temperature compensated when using battery in a wide range of ambient temperature.		
Constant Current Charging	Not applicable	Not Recommended	Charging current: * approx: 0.1C Charging time control is strictly recommended because an overcharge is more to occur. No temperature compensation is needed.

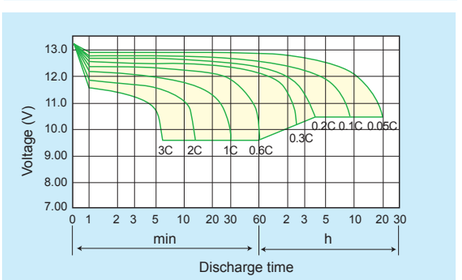
(Note: All at 20˚C, 68˚F)

*Note: C rate in the table refer to current as a percentage of nominal capacity.
Example: For model CA1270 (7Ah), 0.3C=0.3×7Ah=2.1 Amp.

DISCHARGE CURRENT AND DISCHARGE CUT-OFF VOLTAGE



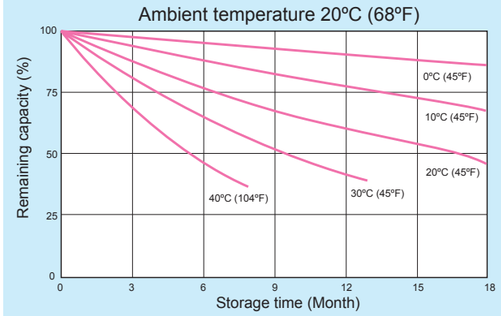




SELF DISCHARGE

Table 2: Self discharge various temperatures

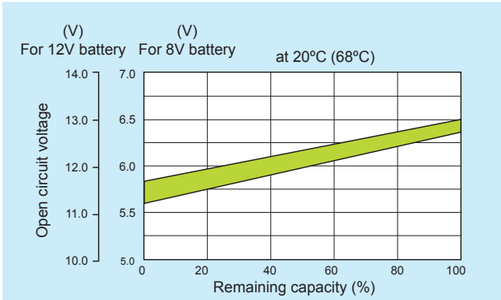
Temperature	Shelf life
0˚C (32)˚F to 20˚C (68)˚F	12 months
21˚C (70)˚F to 30˚C (86)˚F	9 months
31˚C (88)˚F to 40˚C (104)˚F	5 months
41˚C (106)˚F to 50˚C (122)˚F	2.5 months



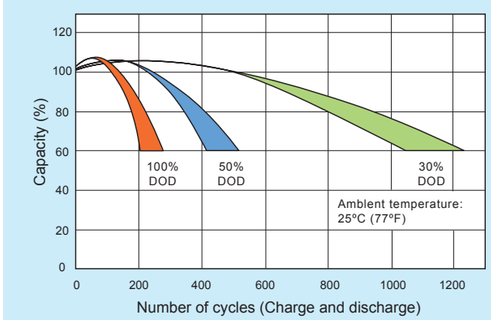
CAPACITY MEASUREMENT IN OPEN CIRCUIT VOLTAGE

Table 3: Supplementary charge interval and refresh charge method

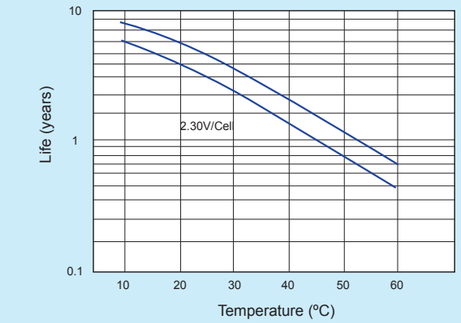
Storage temperature	Recommended supplementary charge interval	Supplementary charge method
Below 20˚C (<68˚F)	Every six months	16-24 hours with a constant voltage of 2.275 V/cell
20˚C to 30˚C (68˚F to 86˚F)	Every three months	5-8 hours with a constant voltage of 2.34 V/cell
Over 30˚C (>86˚F)	Storage to be avoided	5-8 hours with a constant current of $0.05C_{20}$



CYCLE LIFE ON DEPTH OF DISCHARGE (DOD)



FLOATING LIFE ON TEMPERATURE



BATTERY LIST AND SELECTION GUIDE

Items	Model	Type	Dimension (L*W*H) +/-2mm	Approx. Net Weight (g) ±3%	Terminal Type
1	CA23000	2V300AH	172*152*340	19000	T6
2	CA26000	2V600AH	302*175*340	40000	T6
3	CA28000	2V800AH	410*176*340	49500	T6
4	CA210000	2V1000AH	475*175*338	63000	T6
5	CA406	4V0.6AH	35*22*55.4	80	-
6	CA407	4V0.7AH	35*22*64.4	93	-
7	CA409	4V0.9AH	35*22*64.4	104	-
8	CA420	4V2.0AH	45*33*74	235	F1
9	CA423	4V2.3AH	45*33*74	250	F1
10	CA430	4V3.0AH	66*33*75	335	F1
11	CA435	4V3.5AH	90*34*60	434	F1
12	CA440	4V4.0AH	66*33*96	470	F1
13	CA445	4V4.5AH	47*47*100	460	F1
14	CA465	4V6.5AH	70*47*115	650	F1
15	CA613	6V1.3AH	97*24*51	280	F1
16	CA620	6V2.0AH	66*33*75	350	F1
17	CA623	6V2.3AH	44*40*90	378	F1
18	CA625	6V2.5AH	70*47*100	450	F1/F2
19	CA626	6V2.6AH	60*55*48	405	F1/F2
20	CA628	6V2.8AH	66*33*96	480	F1/F2
21	CA632	6V3.2AH	66*33*118	615	F1/F2
22	CA630	6V3.0AH	125*34*60	575	F1/F2
23	CA635	6V3.5AH	70*47*100	620	F1/F2
24	CA640	6V4.0AH	70*47*100	620	F1/F2
25	CA665	6V6.5AH	70*47*115	980	F1
26	CA670	6V7.0AH	151*35*93	1210	F1/F2
27	CA690	6V9.0AH	151*35*93	1280	F1/F2
28	CA6100	6V10AH	151*50*94	1570	F1/F2
29	CA6120	6V12AH	151*50*94	1840	F1/F2
30	CA1208	12V0.8AH	96.4*25*62.3	325	WIRE
31	CA1212	12V1.2AH	97*43*52	495	F1
32	CA1213	12V1.3AH	97*43*52	520	F1
33	CA1222	12V2.2AH	178*34*60	895	F1
34	CA1224	12V2.4AH	70*47*100	785	F1
35	CA1232	12V3.2AH	79.5*55.5*100	1140	F1
36	CA1233	12V3.3AH	134*67*60	1220	F1
37	CA1235	12V3.5AH	90*70*101	1200	F1
38	CA1240	12V4.0AH	90*70*101	1200	F1/F2
39	CA1245	12V4.5AH	90*70*101	1300	F1/F2
40	CA1250	12V5.0AH	151*50*95	1680	F1/F2
41	CA1255	12V5.5AH	151*65*94	1700	F1/F2
42	CA1260	12V6.0AH	151*65*94	1900	F1/F2
43	CA1265	12V6.5AH	151*65*94	1880	F1/F2
44	CA1270	12V7.0AH	151*65*94	1950	F1/F2
45	CA1272	12V7.2AH	151*65*94	2200	F1/F2
46	CA1275	12V7.5AH	151*65*94	2550	F1/F2
47	CA1280	12V8.0AH	151*65*94	2140	F1/F2
48	CA1290	12V9.0AH	151*65*94	2340	F1/F2
49	CA12100	12V10AH	151*99*95	3220	F1/F2
50	CA12120	12V12AH	151*99*95	3690	F1/F2
51	CA12150	12V15AH	181*76*167	4000	F2/B1
52	CA12160	12V16AH	181*76*167	5070	F2/B1
53	CA12170	12V17AH	181*76*167	6050	F2/B1
54	CA12180	12V18AH	181*76*167	5800	F2/B1
55	CA12220	12V22AH	181*76*167	5980	B1/T1
56	CA12240	12V24AH	166*175*125	8150	F2/B1/T1
57	CA12260	12V26AH	166*175*125	8000	B1/T1
58	CA12270	12V27AH	195*130*163	8650	F5
59	CA12280	12V28AH	166*175*125	8600	T1
60	CA12330	12V33AH	195*130*163	10707	F2/T2
61	CA12380	12V38AH	197*165*170	11200	F3/T3
62	CA12400	12V40AH	197*165*170	13800	T3/T5/F5
63	CA12500	12V50AH	228*138*208	16700	T3/F4/F6
64	CA12650	12V65AH	350*165*173	22500	T3/F5
65	CA12700	12V70AH	259*168*208	23000	T5
66	CA12900	12V90AH	305*168*210	27000	T3/T5
67	CA121000	12V100AH	330*171*216	29000	T5/F7
68	CA121100	12V110AH	281*267*207	33000	T11
69	CA121200	12V120AH	405*172*237	37500	T5/F7
70	CA121500	12V150AH	484*170*242	44000	T5/F7
71	CA122000	12V200AH	522*240*219	60500	T5/F7
72	CA122500	12V250AH	520*268*220	71500	T5

GEL BATTERY

73	CA12650GEL	12V65AH	350*165*173	22500	T3/F5
74	CA121000GEL	12V100AH	330*171*216	29000	T5/F7
75	CA121200GEL	12V120AH	405*172*237	37500	T5/F7

BATTERY APPLICATION

2V AND 4V SERIES (300AH TO 1000AH, 0.6AH TO 5.5AH)

FM SERIES (24AH AND BELOW)

FT SERIES (55AH TO 180AH)

GFM SERIES (25AH TO 250AH)

DEEP CYCLE SERIES (2.8AH TO 33AH)

HR SERIES (HIGH RATE 5AH TO 18AH)

RIGOROUS QUALITY CONTROL AND CAUTIOUS TESTING PROCEDURES

PRODUCT EDGES

Our "CASIL" brand lead-acid batteries are maintenance free, eco-friendly and have low internal resistance. The batteries are widely applied to emergency lights, portable lamps, electric scooters, electronic instruments, UPS systems, GPS systems, etc. The brand new 4V series in smaller sizes, superior performance and a wider scope of application (such as LED lighting equipment). The products are not only supplied to well-known domestic enterprises, but also exported to the United States, Europe, Russia, and the like.

We produce maintenance-free small sealed lead-acid batteries for uninterruptible power supply of security system and emergency lighting system. The plant is equipped with 7 testers for battery parameters, 9 automatic testers for finished batteries, 5 production lines, 7 automatic acid-adding machines, and 22 microcomputer-controlled charging/discharging machines. Our annual production capacity is up to 600,000 KVAH, or in equivalent to production of 20 million pieces of 6V4AH batteries.