

Lithium Batteries & Packs



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China manufacturer profiles

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LITHIUM BATTERIES & PACKS

Supplier capability in China

EXECUTIVE SUMMARY

China is consolidating its position as the biggest lithium battery manufacturer in the world. The recent spate of battery recalls has prompted China lithium battery suppliers to expand their production capacity, widen application range and develop better-quality products.

To strengthen their competitiveness, China suppliers need to improve product quality to rival the products offered by international suppliers. More than ever, China suppliers have to pay particular attention to product safety, higher energy density, lower cost and long service life.

Product safety, in particular, is one of the most important R&D priorities of many makers. Suppliers are trying to adopt more stable electrolytes and add nonflammable liquid as additive. They are also placing more emphasis on material selection, structural design, protection PCB, production process control and safety verification.

Mobile phones have long been the major application segment for lithium batteries from China. Although the segment remains one of the biggest applications, suppliers are expanding their capacity for batteries used in laptops, electric tools and hybrid electric vehicles. China's shipments of lithium batteries for laptops grew in the aftermath of the laptop battery recalls by Japan and South Korea suppliers.

Despite the optimistic outlook, China makers face a number of challenges that include rising raw material and labor costs, and declining profit margins due to the continued appreciation of the yuan and intense price competition. To cope with these challenges, many suppliers are investing in more cost-effective processes such as automation and quoting export prices with shorter validity terms to cushion the impact of currency fluctuations.

The following are some of the trends we see in China's lithium battery industry:

- The majority of suppliers will maintain their current export prices in the coming months. Some suppliers have plans to raise their price quotes but any increase will be at a minimum.
- Exports are expected to continue on an upward trend with the US and Europe as the leading markets. Makers project their export sales to grow by 10 to 20 percent.
- China's total production will continue to increase as the majority of suppliers plan to expand their capacity in the next six months in anticipation of growth in demand. This growth will be underpinned by the rising need for lithium batteries for use in laptops, digital cameras, power tools and electronic toys.
- Li-ion batteries will remain dominant but Li-polymer batteries are predicted to gain a larger share of the lithium battery market. Li-polymer batteries are increasingly being adopted in mobile phones, Bluetooth earphones and portable players.

This report covers Li-polymer, Li-ion and primary lithium batteries. These products are available in various configurations including button cells, quadrate and cylindrical. Lithium batteries with customized shapes for their intended applications are also available from China suppliers.

The Industry Overview section discusses China's positioning in the global lithium battery industry. It enumerates the factors affecting suppliers' capability and their R&D initiatives. It explains the likely direction of China's lithium battery industry in terms of market and application.

China's lithium battery industry has an active supplier base of about 100. The suppliers are mainly clustered in Shenzhen, Guangdong.

In this report

- 12 in-depth company profiles
- 57 top-selling export products
- Supplier demographics
- Supplier survey
- Industry statistics & charts

METHODOLOGY

To produce this report, Global Sources surveyed a wide range of suppliers. Rather than focus simply on high-profile makers, we compiled a representative sample of large, midsize and emerging manufacturers. All profiled companies are export-oriented professional suppliers that may or may not be clients of Global Sources.

The selection of suppliers is designed to reflect the composition of the industry in China in terms of geographic spread, business type and company ownership.

For each company profile, our research teams interviewed senior executives and export managers who discussed their recent performance and provided price, R&D, production and export forecasts for the next 12 months. The interviews were done in-person, by phone or email.

In each case, companies were required to answer specific questions designed to verify their manufacturing and export credentials, including their production and export statistics, and a breakdown of exports by product type and market. Our production checklist details the product-specific manufacturing capabilities of each supplier.

All suppliers participated in a survey designed to provide insight into product and price trends, and challenges facing the industry in the next 12 months. All survey questions are single choice. Results were calculated based on the actual number of valid responses to each question.

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Published by Publishers Representatives Limited (on behalf of Trade Media Limited)
4th Floor, Century Yard, Cricket Square, Elgin Avenue, P.O. Box 32322 SMB, George Town, Grand Cayman, Cayman Islands
c/o 22/F Vita Tower, 29 Wong Chuk Hang Road, Aberdeen, Hong Kong

ISBN 978-988-8004-45-4

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INDUSTRY OVERVIEW

China, currently the world's largest producer of lithium batteries, is consolidating efforts to further strengthen its global position, with makers leveraging the opportunities for overseas business provided by the recent spate of product recalls. China lithium battery suppliers are expanding their production capacity, diversifying applications and developing better-quality products, all to bolster their global competitiveness even as big-name battery makers in Japan and South Korea rebound from the crisis brought about by quality issues.

China Industrial Association of Power Sources (CIAPS) projects China's lithium battery production will grow by at least 20 percent annually in the next two to three years. This growth will be driven primarily by rising need for lithium batteries for use in more mobile phones, laptops, digital cameras, power tools and electronic toys. CIAPS data reveal China's output of lithium batteries in 2007 reached 1.35 billion units, accounting for more than 40 percent of global supply during the year.

Although the opening of the international market to China battery suppliers is generating market

momentum, China suppliers are feeling more pressure to improve their products' quality and offer batteries that are on a par with those from major international suppliers. Thus, greater attention is given to product safety, long recycle life, low self-discharge ratio, wide operating temperature range, high energy density and super pulse capability.

In addition to quality concerns, China suppliers are gearing up for rising material and labor costs and falling margins, the last despite rising shipment volumes. Inflation continues to push up battery production costs. The cost of LiCoO₂, which used to account for about 35 percent of the total product cost, has risen by more than twice in recent months. As material costs continue to fluctuate, makers are finding it difficult to control their cost and forecast end-product prices more accurately.

Higher material and labor outlays are forcing more suppliers to rechannel investments to more cost-effective processes, such as automation. Even though such alternatives could impact the size of the workforce in factories, many companies are starting to seriously review manpower cost with a

Supplier summary

Suppliers surveyed	12
Export sales	\$157.2mn
Export ratio	68%
OEM business	45%
Capacity utilized	74%
Annual R&D spending	\$15.8mn
Full-time employees	20,288

Data: All surveyed suppliers

bid to more effectively control this cost item. Monthly salaries in Guangdong, which amounted only to \$117 to \$176 in 2007, now reach \$205 to \$264.

To boost thinning profit margins partly because of the appreciation of the yuan, some companies are negotiating with their customers to shoulder some of the losses from the exchange rate. Many suppliers now also quote export prices with a shorter validity period to minimize the impact of currency fluctuations.

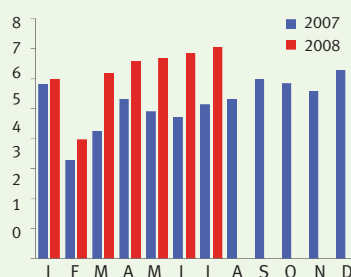
Li-polymer steadily winning market ground

Li-ion batteries secured their hold of the mainstream supply market in 2008, and will likely continue to be the dominant battery type this year. However, the flexibility and design of Li-polymer is making it a strong

Export statistics

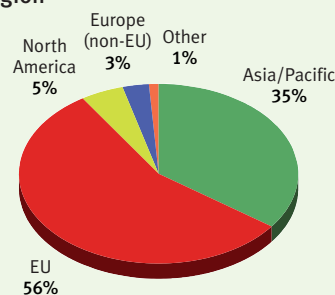
China's lithium battery industry continues to grow, driven by demand from the mobile phone, laptop, digital camera, power tool and electronic toy industries. Export volume during the first seven months of 2008 grew by 21 percent, compared with the same period last year.

By value \$mn

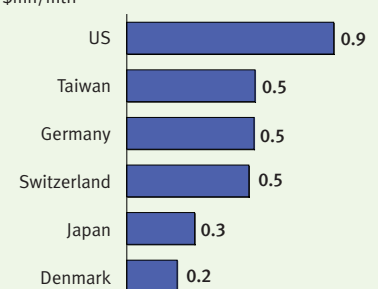


Source: China customs statistics Jan-July 2008

By region



By export market \$mn/mth



EEMB Co. Ltd

EEMB specializes in primary batteries, such as lithium and alkaline, as well as rechargeable batteries including lithium and nickel. With its headquarters in Hong Kong, the company has sales offices in the US and factories in Guangdong and Hubei.

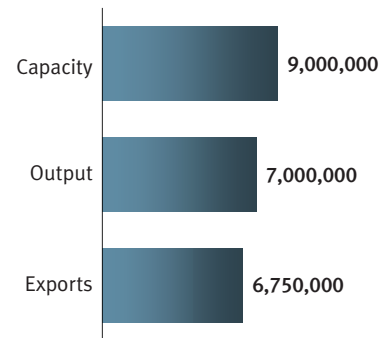
Using a combination of automated and semi-automated production equipment, EEMB's ISO 9001-certified factory can turn out 9 million lithium batteries per month. The factory has four major departments: battery production, molding, QC and

R&D. Its molding department enables the company to design battery packs based on various specifications of customers.

The QC team performs quality check throughout the production process, starting from inspection of raw materials and components up to the finished products. The majority of components used are from local suppliers but the company also sources some components from Taiwan, Germany, the UK and the US. All of the company's products are UL recognized.

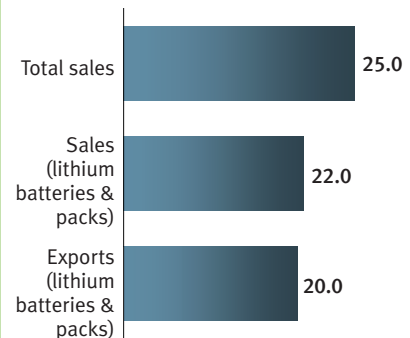
Production

units/mth



Sales

\$mn/year



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Company facts

Year established	1995
Business type	Manufacturer
Company ownership	Hong Kong-owned/invested
Head office location	Hong Kong
Factory location(s)	Shenzhen (Guangdong); Wuhan (Hubei)
Total factory area	20,000sqm
No. of full-time employees	1,000
Annual sales (all products)	\$25.0mn
Annual R&D spending	\$2.50mn
ISO certification	Yes

Sales & output: Lithium batteries & packs

Annual sales	\$22.0mn
Share of total sales	88%
Annual export sales	\$20.0mn
Total monthly capacity	9,000,000 units
Average monthly output	7,000,000 units
Capacity utilized	78%
Average monthly exports	6,750,000 units
Export ratio	96%
OEM % of exports	20%
ODM % of exports	10%
OEM % of exports	70%
Other products made	Nickel, zinc carbon and alkaline batteries, super capacitors, solar panels, battery holders, battery chargers

Capability

Production checklist

In-house R&D/design staff	30
Production line QC staff	45
Anode/metal parts production	
in-house	Yes
Electrode terminal construction/assembly in-house	Yes
Electrolyte injection/flooding	
in-house	Yes
Plate insertion in-house	Yes
QC testing in-house	Yes

Exports by product

Li-ion batteries/packs	20%
Li-polymer batteries/packs	20%
Primary lithium batteries	60%

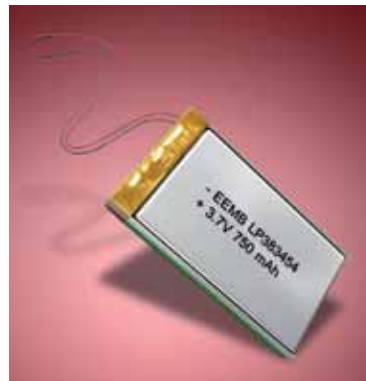
Exports by market

North America	30%
European Union	30%
Europe (non-EU)	10%
Asia/Pacific	20%
Middle East	5%
Other	5%

Outlook

- **Export prices**
Increase
- **Export price increase**
Less than 5%
- **Export sales**
Increase more than 20%
- **Target market**
North America
- **Production capacity**
Increase 20-50%
- **Major challenge**
Stricter overseas standards
- **Export capability**
Shorten design/development time
- **Major product trend**
Improved safety & stability

Popular export models



Li-polymer battery/pack

Model	LP383454
Minimum order	None
Packaging type	Carton
Delivery time	Depends on orders
Indicated price	•

Description: 3.7V nominal voltage; 750mAh nominal capacity; 375mA nominal current; 150mA discharge current; 1.5A pulse current; 14.5g; 3.8x34x54mm



Primary lithium battery

Model	CR2032
Minimum order	None
Packaging type	Carton
Delivery time	Depends on orders
Indicated price	•

Description: 3V nominal voltage; 210mAh nominal capacity; 0.4mA nominal current; 3mA discharge current; 15mA pulse current; 3.1g; 20(ø)x3.2mm



Li-polymer battery/pack

Model	LP502030
Minimum order	None
Packaging type	Carton
Delivery time	Depends on orders
Indicated price	•

Description: 3.7V nominal voltage; 270mAh nominal capacity; 125mA nominal current; 50mA discharge current; 500mA pulse current; 5.4g; 5x20x30mm

• Information not disclosed

PRODUCT GALLERY

Li-ion batteries/packs



EEMB

(profile page 20)

Model: CR2032

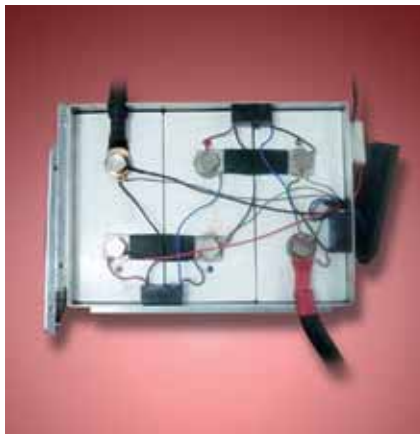
Minimum order: None

Packaging type: Carton

Delivery time: Depends on order

Indicated price: •

Description: 3V nominal voltage; 210mAh nominal capacity; 0.4mA nominal current; 3mA discharge current; 15mA pulse current; 3.1g; 20(ø)x3.2mm



Huanyu

(profile page 22)

Model: battery pack2

Minimum order: 1,000 units

Packaging type: Buyer-specified

Delivery time: 12 days

Indicated price: •

Description: 19.2V nominal voltage; 100Ah nominal capacity; 1C nominal current; 3C discharge current; 10C pulse current; 300x282x191mm



Huanyu

(profile page 22)

Model: HLCF26650P

Minimum order: 1,000 units

Packaging type: Buyer-specified

Delivery time: 12 days

Indicated price: •

Description: 3.2V nominal voltage; 3.1Ah nominal capacity; 1C nominal current; 20C discharge current; 40C pulse current; 80g; 26.3x65.5mm



Huanyu

(profile page 22)

Model: HLCN18650P

Minimum order: 1,000 units

Packaging type: Buyer-specified

Delivery time: 12 days

Indicated price: •

Description: 3.7V nominal voltage; 3.1Ah nominal capacity; 1C nominal current; 15C discharge current; 35C pulse current; 45g; 18.3x65.5mm



Huanyu

(profile page 22)

Model: HLCF18650P

Minimum order: 1,000 units

Packaging type: Buyer-specified

Delivery time: 12 days

Indicated price: •

Description: 3.2V nominal voltage; 1.1Ah nominal capacity; 1C nominal current; 15C discharge current; 35C pulse current; 45g; 18.3x65.5mm



Huanyu

(profile page 22)

Model: HPPF70173248

Minimum order: 1,000 units

Packaging type: Buyer-specified

Delivery time: 12 days

Indicated price: •

Description: 3.2V nominal voltage; 2Ah nominal capacity; 1C nominal current; 3C discharge current; 10C pulse current; 565g; 7.2x173x248.3mm

• Information not disclosed

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