

Production of Sugar Alcohols in China

**The Fifth Edition
November 2023**

Researched & Prepared by:

Kcomber Inc.

Copyright by Kcomber Inc.

Any publication, distribution or copying of the content in this report is prohibited.

Contents

Executive summary	1
Introduction and methodology	2
1 Overview	4
2 Hot spots of sugar alcohol industry in China, 2020–2022	5
3 Sorbitol	8
3.1 Capacity and output of sorbitol in China, 2018–2022.....	8
3.2 Major producers and distribution of sorbitol in China, 2018–2022	8
3.3 Monthly ex-works price of sorbitol in China, Jan. 2018–Oct. 2023.....	12
4 Maltitol	14
4.1 Capacity and output of maltitol in China, 2018–2022.....	14
4.2 Major producers and distribution of maltitol in China, 2018–2022	14
4.3 Monthly ex-works price of maltitol in China, Jan. 2018–Oct. 2023.....	17
5 Xylitol	19
5.1 Capacity and output of xylitol in China, 2018–2022.....	19
5.2 Major producers and distribution of xylitol in China, 2018–2022.....	19
5.3 Monthly ex-works price of xylitol in China, Jan. 2018–Oct. 2023.....	22
6 Mannitol	23
6.1 Capacity and output of mannitol in China, 2018–2022.....	23
6.2 Major producers and distribution of mannitol in China, 2018–2022	23
6.3 Monthly ex-works price of mannitol in China, Jan. 2018–Oct. 2023.....	26
7 Erythritol	27
7.1 Capacity and output of erythritol in China, 2018–2022	27
7.2 Major producers and distribution of erythritol in China, 2018–2022	28
7.3 Monthly ex-works price of erythritol in China, Jan. 2018–Oct. 2023	32

LIST OF TABLES

Table 3.2-1 Capacity and output of sorbitol producers in China, 2018–2022
Table 4.2-1 Capacity and output of maltitol producers in China, 2018–2022
Table 5.2-1 Capacity and output of xylitol producers in China, 2018–2022
Table 6.2-1 Capacity and output of mannitol producers in China, 2018–2022
Table 7.2-1 Capacity and output of erythritol producers in China, 2018–2022

LIST OF FIGURES

Figure 3.1-1 Capacity and output of sorbitol in China, 2018–2022
Figure 3.2-1 Capacity distribution of the top ten sorbitol producers in China, 2022
Figure 3.2-2 Shares of sorbitol capacity in China by region, 2022
Figure 3.3-1 Monthly ex-works price of 70% syrup sorbitol in China, Jan. 2018–Oct. 2023
Figure 3.3-2 Monthly ex-works price of crystalline sorbitol in China, Jan. 2018–Oct. 2023
Figure 4.1-1 Capacity and output of maltitol in China, 2018–2022
Figure 4.2-1 Capacity distribution of maltitol producers in China, 2022
Figure 4.2-2 Shares of maltitol capacity in China by region, 2022
Figure 4.3-1 Monthly ex-works price of 75% liquid maltitol in China, Jan. 2018–Oct. 2023
Figure 4.3-2 Monthly ex-works price of crystalline maltitol in China, Jan. 2018–Oct. 2023
Figure 5.1-1 Capacity and output of xylitol in China, 2018–2022
Figure 5.2-1 Capacity distribution of xylitol producers in China, 2022
Figure 5.2-2 Shares of xylitol capacity in China by region, 2022
Figure 5.3-1 Monthly ex-works price of xylitol in China, Jan. 2018–Oct. 2023
Figure 6.1-1 Capacity and output of mannitol in China, 2018–2022

Figure 6.2-1 Capacity distribution of mannitol producers in China, 2022
Figure 6.2-2 Shares of mannitol capacity in China by region, 2022
Figure 6.3-1 Monthly ex-works price of food-grade mannitol in China, Jan. 2018–Oct. 2023
Figure 7.1-1 Capacity and its growth rate of erythritol in China, 2018–2022
Figure 7.1-2 Capacity and output of erythritol in China, 2018–2022
Figure 7.2-1 Capacity distribution of erythritol producers in China, 2022
Figure 7.2-2 Shares of erythritol capacity in China by region, 2022
Figure 7.3-1 Monthly ex-works price of erythritol in China, Jan. 2018–Oct. 2023

Executive summary

The sugar alcohol industry is a branch of the corn deep processing industry. With the advantages of high safety, low calories and low GI (glycemic index) value, sugar alcohols have become more and more popular.

Generally speaking, the sugar alcohol industry in China has been performing well in the past five years, with higher recognition and wider applications.

Production

In 2018–2022, different changes were recorded in the capacity of the five products:

- Erythritol enjoyed rapid growth, with a CAGR of 62.1%.
- Sorbitol witnessed a continuous rise with a CAGR of 15.0%.
- Xylitol experienced an increase with a CAGR of 13.6%.
- Maltitol capacity grew from 231,000 t/a in 2018 to 288,000 t/a in 2022, an increase of 24.7%.
- Mannitol climbed steadily from 67,500 t/a in 2018 to 80,500 t/a in 2022.

The total output of these major sugar alcohols increased from 1,153,300 tonnes in 2018 to 1,695,500 tonnes in 2022.

Price

In 2018–2019, prices of most sugar alcohols witnessed fluctuations, attributed to the changing supply-demand dynamics.

Affected by shrinking demand amid the COVID-19 pandemic, prices declined in H1 2020. Since H2 2020, they rebounded and continued to go up, driven by higher corn prices and increasing downstream demand.

In 2021–2022, the prices of erythritol and xylitol first increased and then decreased; while prices of the other three sugar alcohols fluctuated from 2021 to H1 2022, then kept declining in H2 2022.

From Jan. to Oct. 2023, the prices of sorbitol and maltitol fluctuated; while the prices of xylitol, erythritol and mannitol showed a downward trend.

Introduction and methodology

Introduction

This report presents the development of sugar alcohols in China from 2018 to 2022, together with the production situations of sorbitol, maltitol, xylitol, mannitol and erythritol. It attaches importance to the following parts.

- Annual review of hot spots in China's sugar alcohols industry in 2020–2022
- Capacity and output in China, 2018–2022
- Major producers and distribution in China, 2018–2022
- Monthly ex-works price, Jan. 2018–Oct. 2023

Methodology and source

The report is based on data sourced by diverse methods, which are listed as follows:

- Desk research

Desk research includes access to published magazines, journals, government statistics, industry statistics, customs statistics, association seminars as well as information on the Internet. Much work has gone into the compilation and analysis of the information obtained. When necessary, information has been checked and discussed internally related to market structure and performance characteristics, such as key producers, key end users, production levels and demand from end users.

- Telephone interview

CCM has conducted extensive telephone interviews with major participants in the industry in order to research the sugar alcohol market in China.

The interviewees include the following groups:

- Key producers
- Key traders
- Associations involved
- Industry experts

- Network search

CCM employs networks to contact industry participants by using B2B websites and software.

- Data processing and presentation

The data collected and compiled was variously sourced from:

- CCM's database
- Published articles from periodicals, magazines, journals and third-party databases
- Statistics from governments and international institutes
- Telephone interviews with domestic producers, joint ventures, service suppliers and government agencies
- Third-party data providers
- Customs statistics

The data has been combined and cross-checked to ensure that this report is as accurate and methodologically sound as possible. Throughout the process, a series of discussions were held within CCM to systematically analyze the data and draw appropriate conclusions.

- Unit and abbreviation

RMB: currency unit in China, also called Yuan

USD: currency unit in the US, also called US dollar

Tonne: equals to metric ton in this report

t/a: tonne/annual or tonne/year

/t: per tonne

CAGR: compound annual growth rate

Table USD/CNY exchange rate, Jan. 2018–Oct. 2023

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
2018	6.5079	6.3045	6.3352	6.2764	6.3670	6.4078	6.6157	6.8293	6.8347	6.8957	6.9670	6.9431	6.6070
2019	6.8482	6.7081	6.6957	6.7193	6.7344	6.8896	6.8716	6.8938	7.0883	7.0726	7.0437	7.0262	6.8826
2020	6.9614	6.9249	6.9811	7.0771	7.0690	7.1315	7.0710	6.9980	6.8498	6.7796	6.7050	6.5921	6.9284
2021	6.5408	6.4623	6.4754	6.5584	6.4895	6.3572	6.4709	6.4660	6.4680	6.4604	6.4192	6.3693	6.4615
2022	6.3794	6.3580	6.3014	6.3509	6.5672	6.6651	6.6863	6.7467	6.8821	7.0992	7.2081	7.1225	6.6972
2023	6.9475	6.7492	6.9400	6.8805	6.9054	7.0965	7.2157	7.1283	7.1788	7.1789	/	/	7.0221

Source: The People's Bank of China

1 Overview

As natural and low-calorie sweeteners, sugar alcohols are highly recognized and widely used in the food, pharmaceutical and chemical industries. In recent years, the sugar alcohol industry has maintained a good momentum, with improved production technology and expanded application fields. However, there were still some problems during its development, such as excess capacity and low capacity utilization.

From 2018 to 2022, the concentration of the sugar alcohol industry first increased and then decreased. On one hand, some small producers left the industry due to rising costs, rigorous environmental inspection and sometimes poor operation. On the other hand, in spite of overcapacity, some large-scale producers expanded their capacity and newcomers joined the market seeing a promising future.

In the past five years, the development of sorbitol, xylitol, mannitol and maltitol slowed down, while erythritol, a zero-calorie sweetener, witnessed a rapid development stimulated by the rising demand for sugar-free beverages in recent years.

Opportunities and challenges coexist in the future market of sugar alcohols. For one thing, driven by the global trend of sugar reduction, demand from downstream sectors is expected to increase further. For another, the sugar alcohol industry is still facing the challenge of overcapacity. In addition, other natural sweeteners, such as stevia and mogroside, also enjoy fast growth benefiting from the increasing popularity of a low-sugar diet. In this context, it is necessary for sugar alcohol producers to improve competitiveness through technical innovation and cost reduction.

2 Hot spots of sugar alcohol industry in China, 2020–2022

Governmental direction

On 1 Jan., 2022, the Regional Comprehensive Economic Partnership Agreement (RCEP) officially came into effect. It is a free trade agreement among countries such as China, Brunei, Cambodia, Laos, Singapore, Thailand, Vietnam, Japan, New Zealand and Australia. According to the agreement, China will eventually achieve zero tariffs on some sugar alcohols imported from the following countries.

- The conventional tariff rates for mannitol (HS 29054300) imported from Japan will be reduced by 1.2%–1.3% each year, to 0% in the 11th year; the conventional tariff rates for sorbitol (HS 29054400) and sorbitol (HS 38246000, other than the specific item 29054400) will be reduced by 0.7%–0.8% each year, to 0% in the 11th year.
- The conventional tariff rates for sorbitol (HS 29054400) and sorbitol (HS 38246000, other than the specific item 29054400) imported from Korea will be reduced by 1.4% each year, to 0% in the 10th year.

From 1 Jan., 2021, the conventional tariff rates under China's bilateral trade agreements with New Zealand, Peru, Costa Rica, Switzerland, Iceland, Australia, South Korea, Chile, Georgia and Pakistan and the Asia-Pacific Trade Agreement (APTA) will be further reduced. The conventional tariff rate for mannitol (HS 29054300) imported from Pakistan will be reduced by 1%. The conventional tariff rates for sorbitol (HS 29054400) and sorbitol (HS 38246000, other than the specific item 29054400) imported from Korea and Sweden will be lowered by 1.40%.

On 12 May 2020, the Customs Tariff Commission of the State Council issued the Notice Concerning the Second Exclusion from the Second Batch of Additional Tariffs on US Imports. From 19 May 2020 to 18 May 2021, China excluded 79 products from additional tariffs imposed on US imports as countermeasures to US Section 301 measures. Among them, sorbitol (HS code 29054400) was included.

Market dynamics

On 10 April, 2020, Hubei HIYEE Biotechnology Co., Ltd. publicized the environmental impact assessment information of the 4,000 t/a erythritol technological transformation project for the first time. The project is to transform the 4,000 t/a production capacity of yeast into erythritol.

On 15 July, 2020, Shandong Longlive Bio-technology Co., Ltd. (Shandong Longlive) was delisted from the Shenzhen Stock Exchange. In recent years, Shandong Longlive was in a financial quagmire and reported negative audited net assets for three consecutive fiscal years in 2017–2019.

In Sept. 2020, Baolingbao Biology Co., Ltd. (Baolingbao Biology) started the construction of an expansion project with an annual output of 13,000 t/a erythritol. After 10 months of construction & commissioning, the project was completed and put into production at the end of July 2021.

On 28 Sept., 2020, Zhejiang Huakang Pharmaceutical Co., Ltd. was approved by the China Securities Regulatory Commission (CSRC) for its Initial Public Offering (IPO) application and was listed on the Shanghai Stock Exchange on 9 Feb., 2021.

On 21 Dec., 2020, the environmental impact (EI) report of Rizhao Puli Biotechnology Co., Ltd.'s 100,000 t/a erythritol project was publicized. With a total investment of USD0.22 billion (RMB1.50 billion), this project is one of the key projects in Shandong Province in 2021 and is expected to be completed and put into operation in Dec. 2023.

On 8 April, 2021, Shandong Bailong Chuangyuan Bio-tech Co., Ltd. officially released its IPO prospectus, and it was successfully listed on the Shanghai Stock Exchange on 9 April. The company will raise USD61.94 million (RMB406.22 million) for a 30,000 t/a soluble dietary fiber project, a 10,000 t/a isomaltitol oligosaccharides project, a 6,000 t/a crystalline maltitol project, and repayment of bank loans and supplement of working capital.

On 14 July, 2021, Baolingbao Biology released its non-public offering plan placing no more than 90 million private shares of up to USD110.02 million (RMB711.90 million), and all funds raised go to 30,000 t/a crystalline erythritol project, 30,000 t/a allulose (dry state) project, application solution research center project and supplementary working capital project.

On 21 June, 2021, Shandong Jianyihong Biological Pharmaceutical Co., Ltd. announced that its 5,000 t/a crystalline lactitol project and 20,000 t/a crystalline xylitol project have completed construction.

On 6 Aug., 2021, the acceptance inspection report of Shandong Sanyuan's 20,000 t/a erythritol technological upgrading project was publicized. This project was built in May 2021.

On 2 Sept., 2021, the local government announced the acceptance of the EI report of Zhaoqing Huanfa Biotechnology Co., Ltd. (Zhaoqing Huanfa)'s expansion project and publicized it on its website. The project will expand the company's liquid sorbitol capacity by 60,000 t/a.

On 20 Oct., 2021 and 27 Oct., 2021, the draft EI reports of Zhucheng Dongxiao's 30,000 t/a premium erythritol intelligence reconstruction project and 30,000 t/a premium erythritol production project were made public. The former project was completed and put into production in H2 2022.

On 25 Nov., 2021, the second round of information announcement on the EI report of Shandong Starlight So True Biological Technology Co., Ltd.'s project of 50,000 t/a functional sugars (alcohol) was made. On 9 Aug., the EI report was first publicized. Products include 10,000 t/a galacto-oligosaccharide (GOS), 10,000 t/a isomalto-oligosaccharide (IMO) and 30,000 t/a erythritol.

On 29 Nov., 2021, the EI report of Hebei Yuxing Bio-Engineering Co., Ltd.'s 160,000 t/a erythritol project was publicized. The project is divided into three phases (40,000 t/a, 40,000 t/a and 80,000 t/a respectively). The first phase of this project was built and put into operation in Aug. 2021.

On 12 March, 2022, the completion and acceptance inspection report of completed environmental protection facilities of Ningxia Eppen Biotech Co., Ltd.'s 20,000 t/a food-grade erythritol project was publicized. The project transformed the discontinued equipment originally for the production of 80,000 t/a lysine to produce 20,000 t/a of food-grade erythritol. The project started construction in Oct. 2021 and was put into the trial run in Jan. 2022.

On 6 April, 2022, the EI report of Dezhou Heyang Biotechnology Co., Ltd.'s 50,000 t/a erythritol project was publicized for the second time. This USD49.08 million (RMB328.70 million) project is estimated to be completed in Jan. 2024.

On 23 May, 2022, Jinan Shengquan Healtang Biotech Co., Ltd.'s 15,000 t/a xylitol project was put into production. This project is designed to produce 15,000 t/a of xylitol using 16,500 t/a of purchased xylose; the original 8,000 t/a xylose project was discontinued.

On 27 June, 2022, the EI report of Yusweet Co., Ltd. (Yusweet)'s 140,000 t/a functional sugar alcohol project was approved. Yusweet invested 194.11 million (RMB1.3 billion) in this project. After the completion of the project, it will have new capacities of 40,000 t/a of VC-grade sorbitol syrup (dry basis: 70%), 35,000 t/a of daily chemical-grade sorbitol syrup (dry basis: 70%), 10,000 t/a of FCCIV-grade xylitol, 40,000 t/a of liquid glucose (dry basis), 10,000 t/a of maltitol and 5,000 t/a of allulose.

On 4 Nov., 2022, the EI report of Mengzhou Jinyumi Co., Ltd.'s 200,000 t/a starch-based sugar (including functional starch-based sugar) production line expansion project was approved. The total investment of the project is USD158.28 million (RMB1.06 billion), and the construction contents are as follows:

- One glucose syrup and high maltose syrup production line that can produce 30,000 t/a of glucose syrup and 30,000 t/a of high maltose syrup
- One functional oligosaccharides and ultra-high maltose syrup production line that can produce 25,000 t/a of functional oligosaccharides mainly isomaltose syrup, and 25,000 t/a of ultra-high maltose syrup
- One functional fermented product production line that can produce trehalose, erythritol, crystalline maltose and dietary fiber (resistant dextrin), 12,500 t/a for each product
- One fat powder production line that can produce 40,000 t/a of fat powder

On 25 Nov., 2022, Shandong Sanyuan Biotechnology Co., Ltd. issued an announcement stating that after the trial production of the 50,000 t/a erythritol production line was conducted in Aug., the company completed the installation and commissioning of the production process and equipment and officially put this production line into operation.

On 12 Dec., 2022, the completion and acceptance inspection report of completed environmental protection facilities of Yusweet's 20,000 t/a erythritol project was made public. The EI report of this project was

approved in June 2021, and the commissioning of this project was conducted in Dec. 2021.

On 14 Dec., 2022, the EI report of Zhoushan Huakang Biotechnology Co., Ltd. (Zhoushan Huakang)'s 1 million t/a corn deep-processing health food ingredients project was publicized. Zhoushan Huakang is a wholly-owned subsidiary of Zhejiang Huakang Pharmaceutical Co., Ltd. (Huakang Pharma). This project is the first phase of Huakang Pharma's 2 million t/a corn deep-processing project to be constructed in Dinghai District, Zhoushan City, and it will be constructed over two stages:

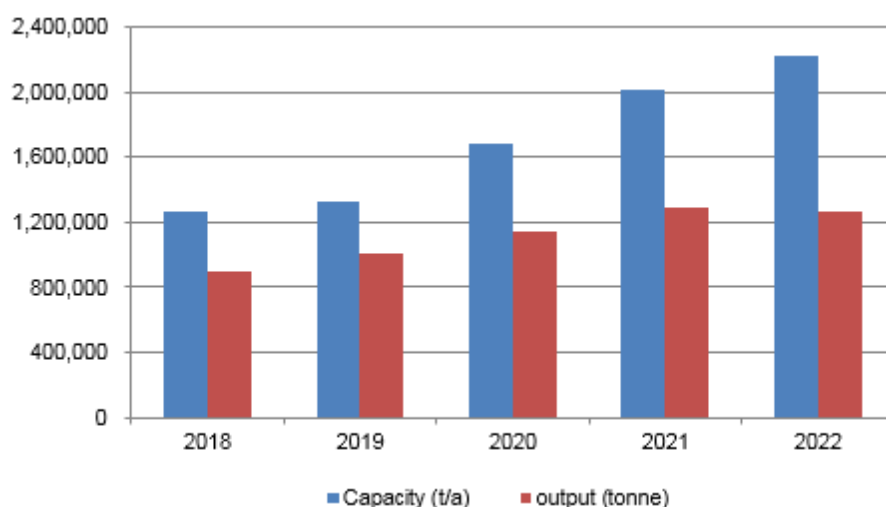
- Build a starch slurry production line, a liquid sugar (sugar alcohols) production line, a crystalline sorbitol production line in Stage I
- Build a modified starch production line, a resistant dextrin production line, a polydextrose production line, a crystalline sugar alcohols (maltitol and mannitol) production line and a crystalline allulose production line in Stage II

On 28 Dec., 2022, Zhaoqing Huanfa's project of 30,000 t/a erythritol (functional sugar-free food ingredient) and 10,000 t/a β -cyclodextrin for medical use was approved by the Zhaoqing Municipal Ecology and Environment Bureau.

3 Sorbitol

3.1 Capacity and output of sorbitol in China, 2018–2022

Figure 3.1-1 Capacity and output of sorbitol in China, 2018–2022



Source: CCM

China's sorbitol production capacity decreased from 1,473,000 t/a in 2017 to 1,268,000 t/a in 2018 but increased slightly to 1,322,000 t/a in 2019. In 2020–2022, mainly owing to expansion projects of Zhaoqing Huanfa Bio-technology Co., Ltd., Zhejiang Huakang Pharmaceutical Co., Ltd. and Shandong Tianli Pharmaceutical Co., Ltd., and newly-established projects of Heilongjiang NHU Biotechnology Co., Ltd., Yufeng Industry Group Co., Ltd. and Shandong Jianyihong Biotechnology Co., Ltd., China's sorbitol capacity increased to 2,217,000 t/a in 2022.

The output of sorbitol declined a lot from 936,000 tonnes in 2016 to 780,500 tonnes in 2017. The decline was mainly triggered by stringent environmental inspections. The output then rebounded in 2018 and reached 1,012,500 tonnes in 2019, thanks to the increasing consumption in vitamin C production and overseas demand. Growing demand drove the output further up, to 1,135,600 tonnes in 2020 and 1,286,000 tonnes in 2021. In 2022, despite a surge in sorbitol exports, domestic downstream demand as a whole was affected by the COVID-19 pandemic, resulting in a decline in production to 1,263,800 tonnes.

3.2 Major producers and distribution of sorbitol in China, 2018–2022

There were 19 active producers of sorbitol in China in 2022, and nearly half of them maintained an operating rate of or above 60%. Shandong Tianli Pharmaceutical Co., Ltd. (Shandong Tianli), Roquette (China) Co., Ltd., Zhaoqing Huanfa Bio-technology Co., Ltd. and Chiping Detong Biology Co., Ltd. were the top four producers in terms of output in 2022, their output accounting for 71.1% of the total.

Sorbitol production is highly concentrated in the eastern parts of China. Among all regions in China, Shandong Province took the lead, capturing over 52% of the total capacity in 2022, mainly thanks to Shandong Tianli, the largest sorbitol producer in China. Hebei Province ranked second as a big player Yufeng Industrial Group joined the industry, followed by Jiangsu Province and Guangdong Province, each of them having one active producer.

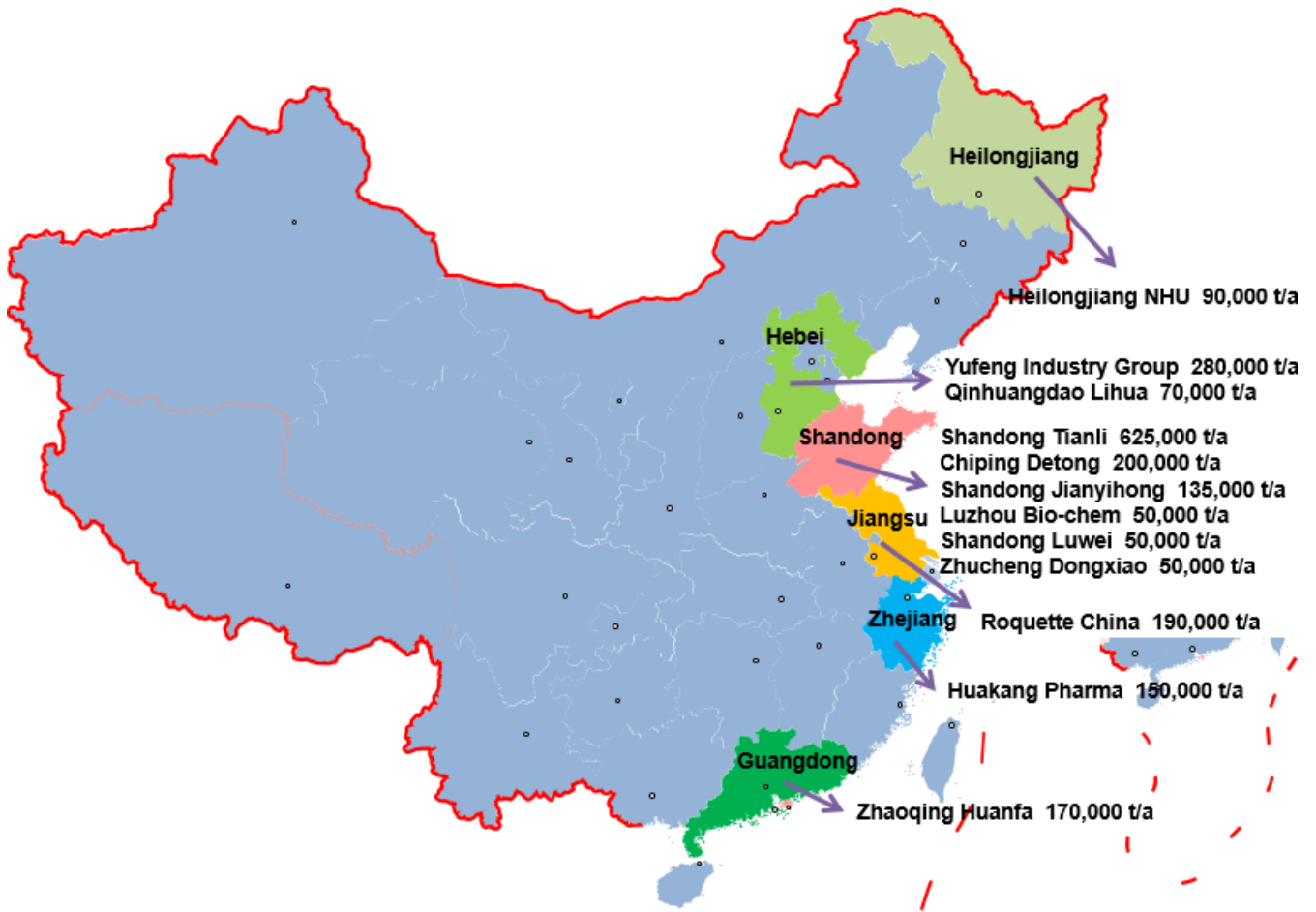
Table 3.2-1 Capacity and output of sorbitol producers in China, 2018–2022

No.	Company name	Abbreviation	Location	Status 2022	Capacity, t/a					Output, tonne				
					2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
1	Shandong Tianli Pharmaceutical Co., Ltd.	Shandong Tianli	Shandong	Active	625,000	600,000	600,000	400,000	400,000	492,000	510,000	400,000	375,000	380,000
2	Yufeng Industry Group Co., Ltd.	Yufeng Industrial Group	Hebei	Active	280,000	280,000	/	/	/	68,000	30,000	/	/	/
3	Chiping Detong Biology Co., Ltd.	Chiping Detong	Shandong	Active	200,000	200,000	200,000	200,000	200,000	94,000	120,000	172,000	87,000	65,000
4	Roquette (China) Co., Ltd.	Roquette China	Jiangsu	Active	190,000	190,000	190,000	190,000	190,000	166,000	185,000	180,000	170,000	160,000
5	Zhaoqing Huanfa Biotechnology Co., Ltd.	Zhaoqing Huanfa	Guangdong	Active	170,000	170,000	150,000	150,000	100,000	146,000	145,000	138,000	135,000	85,000
6	Zhejiang Huakang Pharmaceutical Co., Ltd.	Huakang Pharma	Zhejiang	Active	150,000	150,000	120,000	20,000	20,000	85,000	49,000	26,000	25,000	20,500
7	Shandong Jianyihong Biotechnology Co., Ltd.	Shandong Jianyihong	Shandong	Active	135,000	/	/	/	/	12,000	/	/	/	/
8	Qinhuangdao Lihua Starch Co., Ltd.	Qinhuangdao Lihua	Hebei	Active	70,000	70,000	70,000	70,000	70,000	51,000	62,000	59,000	60,000	50,000
9	Heilongjiang NHU Biotechnology Co., Ltd.	Heilongjiang NHU	Heilongjiang	Active	90,000	60,000	60,000	/	/	20,000	19,600	1,000	/	/
10	Luzhou Bio-chem Technology (Shandong) Co., Ltd.	Luzhou Bio-chem	Shandong	Active	50,000	50,000	50,000	50,000	50,000	38,600	47,000	46,000	45,000	45,000
11	Shandong Luwei Pharmaceutical Co., Ltd.	Shandong Luwei	Shandong	Active	50,000	50,000	50,000	50,000	50,000	32,400	44,000	41,000	42,000	30,000
12	Zhucheng Dongxiao Biotechnology Co., Ltd.	Zhucheng Dongxiao	Shandong	Active	50,000	50,000	50,000	50,000	50,000	34,000	45,000	43,000	42,000	30,000
13	Shandong Xinlong Group Co., Ltd.	Shandong Xinlong Group	Shandong	Active	20,000	10,000	10,000	10,000	10,000	7,800	9,700	7,500	6,600	5,000

No.	Company name	Abbreviation	Location	Status 2022	Capacity, t/a					Output, tonne				
					2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
14	Qingdao Brightmoon Seaweed Group Co., Ltd.	Shandong Brightmoon	Shandong	Active	10,000	10,000	10,000	10,000	10,000	4,700	6,000	6,800	7,000	6,000
15	Shouguang Zhongrui Biotechnology Co., Ltd	Zhongrui Biotechnology	Shandong	Active	10,000	/	/	/	/	1,400	/	/	/	/
16	Shandong Jintian Biotechnology Co., Ltd.	Shandong Jintian	Shandong	Active	6,000	6,000	6,000	6,000	6,000	2,800	3,000	4,300	4,500	4,000
17	Shouguang Golden Sun Sugar Alcohol Co., Ltd.	Shouguang Golden Sun	Shandong	Active	6,000	6,000	6,000	6,000	6,000	1,100	2,000	4,200	4,500	3,500
18	Shijiazhuang Huaxu Pharmaceutical Co., Ltd.	Huaxu Pharma	Hebei	Active	6,000	6,000	6,000	6,000	6,000	3,600	4,000	3,900	4,000	3,000
19	Guangxi Nanning Chemical Pharmaceutical Co., Ltd.	Nanning Chemical	Guangxi	Active	5,000	5,000	5,000	5,000	5,000	3,100	4,000	2,400	2,500	1,500
20	Shandong Lvjian Biological Technology Co., Ltd.	Shandong Lvjian	Shandong	stopped	/	/	/	5,000	5,000	/	/	/	2,000	3,000
Others					94,000	94,000	94,000	94,000	90,000	300	700	500	400	0
Total					2,217,000	2,007,000	1,677,000	1,322,000	1,268,000	1,263,800	1,286,000	1,135,600	1,012,500	891,500

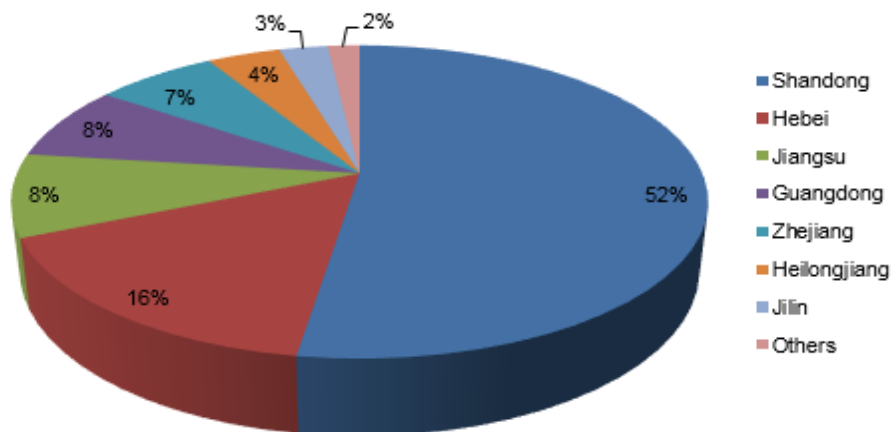
Source: CCM

Figure 3.2-1 Capacity distribution of the top ten sorbitol producers in China, 2022



Source: CCM

Figure 3.2-2 Shares of sorbitol capacity in China by region, 2022



Source: CCM

3.3 Monthly ex-works price of sorbitol in China, Jan. 2018–Oct. 2023

From Jan. 2018 to April 2018, the overall price of 70% syrup sorbitol increased, maintaining the upward trend of that in Q4 2017, and reached USD566/t in April 2018. However, oversupply drove the price down from May 2018 to Nov. 2018; it then rebounded in Dec. 2018 and experienced a small peak in Feb. 2019 thanks to increasing downstream demand. After that, the price went down in March 2019 and then fluctuated between USD382/t and USD424/t during H2 2019 and H1 2020.

Since July 2020, the price had gone up, driven by the higher corn price and stronger downstream demand. But the price started to drop in March 2021 due to the price cut of corn, the June 2021 price registered at USD476/t.

In the second half of 2021, driven by global inflation and rising raw material and energy prices, syrup sorbitol prices rose to USD654/t in Nov. 2021, a five-year high. In the Spring Festival of 2022, the COVID-19 pandemic again broke out. As a result, demand for liquid sorbitol weakened in early 2022, and the price dropped to USD475/t in Feb. 2022. In March, April and May, prices recovered as the outbreak was contained and production resumed, but then weak consumption and demand pulled prices down again.

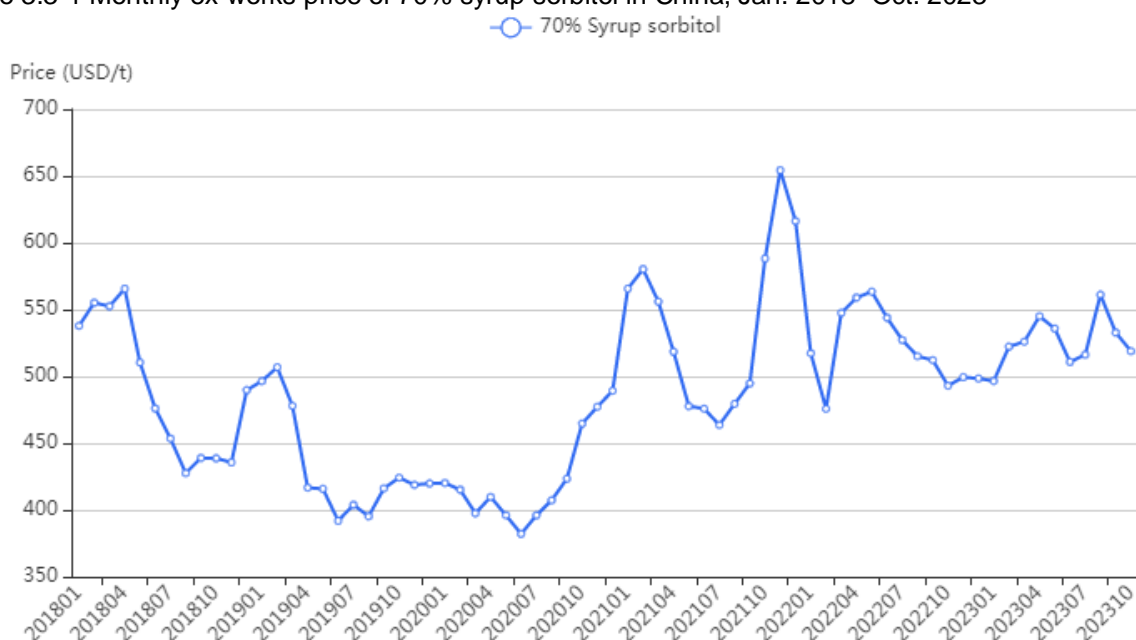
From Nov. 2022 to Jan. 2023, there was not much downstream demand for restocking before the Spring Festival, but with the support of rising corn prices, the syrup sorbitol price stopped falling and stabilized. From Feb. to April, the recovery of demand led to a rebound in prices. In May–Oct., the price fluctuated between USD511/t and USD562/t, consistent with the changes in corn prices.

As for the ex-works price of crystalline sorbitol, it had a slight decline from USD1,199/t in Jan. 2018 to USD1,178/t in May 2018. Then up to H1 2019, the price of crystalline sorbitol witnessed a similar change as syrup sorbitol. In H2 2019, the price climbed up in growing demand.

Affected by the sluggish demand under COVID-19, the price saw a general downtrend in H1 2020. Then, as the economy recovered, the price rebounded; the price reached a new peak in Feb. 2021, and then it dropped slightly and hovered around USD1,250/t. In the second half of 2021, the price of crystal sorbitol rose to a 5-year high of USD1,355/t in Nov. 2021 due to the impact of inflation.

But due to the factory shutdown during the Spring Festival, as well as the epidemic, the price then kept dropping and reached USD1,203/t in Feb. 2022. In the following three months, the price edged up, rising to USD1,279/t in May 2022 as the outbreak was brought under control and production resumed. However, as demand weakened, prices fell all the way down to USD1,127/t in Oct. From Nov. 2022 to Aug. 2023, the price swung between USD1,074/t–USD1,174/t, in line with the changes in syrup sorbitol prices. But later in Sept. and Oct., the price declined drastically on sluggish weak demand.

Figure 3.3-1 Monthly ex-works price of 70% syrup sorbitol in China, Jan. 2018–Oct. 2023



Source: CCM

Figure 3.3-2 Monthly ex-works price of crystalline sorbitol in China, Jan. 2018–Oct. 2023

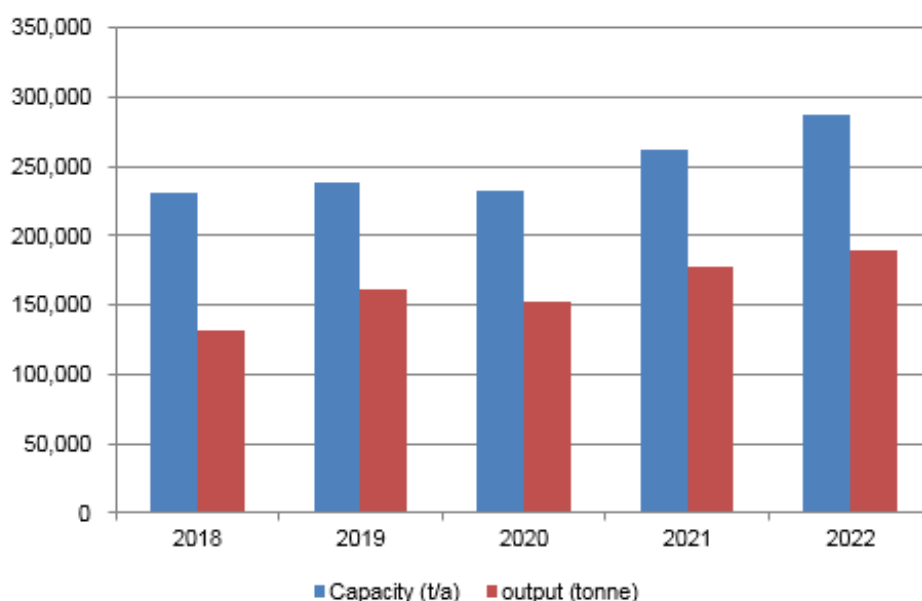


Source: CCM

4 Maltitol

4.1 Capacity and output of maltitol in China, 2018–2022

Figure 4.1-1 Capacity and output of maltitol in China, 2018–2022



Source: CCM

The capacity of maltitol in China was 238,000 t/a in 2017, unchanged from 2016. Notably, in 2018, due to overcapacity and low profit, Khalista (Liuzhou) Chemical Industries Ltd. stopped production and Zhejiang Huakang Pharmaceutical Co., Ltd. (Huakang Pharma) changed part of its maltitol production lines to produce xylitol. Therefore, the capacity of maltitol dropped to 231,000 t/a in 2018. However, Huakang Pharma restored its maltitol production lines in 2019. As a result, the capacity of maltitol went back up to 238,000 t/a. In 2020, due to poor management, Shandong Lvjian Biological Technology Co., Ltd. stopped maltitol production, so China's maltitol capacity dropped to 232,000 t/a. Nevertheless, as Yufeng Industrial Group completed its new maltitol production line in 2021, as well as Huakang Pharma's expansion project and Shandong Jianyihong's new maltitol project were put into operation in 2022, the capacity reached 288,000 t/a in 2022.

In terms of output, it increased to 146,500 tonnes in 2017, driven by increasing demand, but declined by 9.8% year on year to 132,100 tonnes in 2018, triggered by the fierce competition in the sugar alcohol market. With the low-sugar diet getting popular, demand from downstream sectors increased, which led to the rapid growth of maltitol production. The output came to 160,900 tonnes in 2019, with an operating rate of 67.6%. In 2020, due to the aftermath of COVID-19, the demand for maltitol decreased, and the output of maltitol dropped to 151,700 tonnes, down 5.7% year on year. In 2021–2022, the output increased to 177,000 tonnes and 189,400 tonnes, up 16.7% and 7.0%, respectively, along with economic recovery.

4.2 Major producers and distribution of maltitol in China, 2018–2022

In 2022, there were 11 active maltitol producers in China. Among them, in terms of output in 2022, Shandong Tianli Pharmaceutical Co., Ltd. was the largest producer, followed by Zhucheng Dongxiao Biotechnology Co., Ltd., their production together accounting for about 47.8% of the country's total.

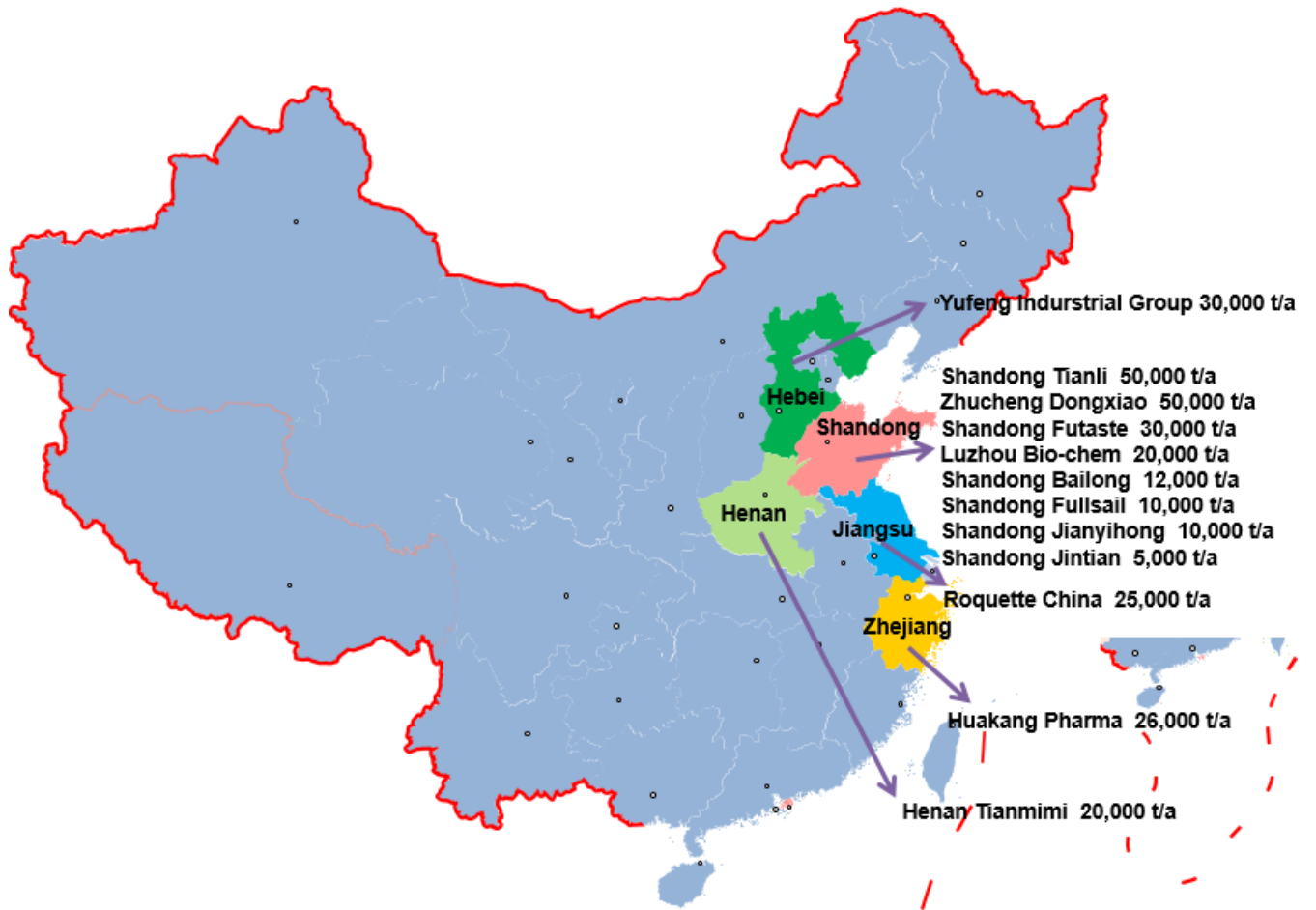
Domestic maltitol manufacturers are highly concentrated in the eastern part of China. In 2021, the capacity in Shandong Province accounted for about 65% of the country's total, since 8 active producers are located there; Jiangsu, Hebei and Zhejiang provinces all had one active producer.

Table 4.2-1 Capacity and output of maltitol producers in China, 2018–2022

No.	Producer	Abbreviation	Location	Status	Capacity, t/a					Output, tonne				
					2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
1	Shandong Tianli Pharmaceutical Co., Ltd.	Shandong Tianli	Shandong	Active	50,000	50,000	50,000	50,000	50,000	46,500	48,000	41,000	39,000	36,000
2	Zhucheng Dongxiao Biotechnology Co., Ltd.	Zhucheng Dongxiao	Shandong	Active	50,000	50,000	50,000	50,000	50,000	44,000	45,000	31,000	32,000	28,000
3	Roquette (China) Co., Ltd.	Roquette China	Jiangsu	Active	25,000	25,000	25,000	25,000	25,000	21,800	23,000	21,500	22,000	19,000
4	Shandong Futaste Pharmaceutical Co., Ltd.	Shandong Futaste	Shandong	Active	30,000	30,000	30,000	30,000	30,000	19,000	18,000	17,500	18,000	9,000
5	Yufeng Industry Group Co., Ltd.	Yufeng Industry Group	Hebei	Active	30,000	30,000	/	/	/	10,000	4,000	/	/	/
6	Luzhou Bio-chem Technology Co., Ltd.	Luzhou Bio-chem	Shandong	Active	20,000	20,000	20,000	20,000	20,000	17,600	17,000	12,000	13,000	8,000
7	Zhejiang Huakang Pharmaceutical Co., Ltd.	Huakang Pharma	Zhejiang	Active	26,000	10,000	10,000	10,000	3,000	13,500	9,500	7,200	8,200	3,100
8	Shandong Bailong Chuangyuan Bio-tech Co., Ltd.	Shandong Bailong	Shandong	Active	12,000	12,000	12,000	6,000	6,000	7,000	3,000	3,600	3,800	3,000
9	Shandong Fullsail Biotechnology Co., Ltd.	Shandong Fullsail	Shandong	Active	10,000	10,000	10,000	10,000	10,000	7,700	8,500	6,300	6,500	5,000
10	Shandong Jianyihong Biotechnology Co., Ltd.	Shandong Jianyihong	Shandong	Active	10,000	/	/	/	/	800	/	/	/	/
11	Shandong Jintian Bio-technology Co., Ltd.	Shandong Jintian	Shandong	Active	5,000	5,000	5,000	5,000	5,000	1,500	1,000	3,100	3,200	3,000
12	Henan Tianmimi Sugar Industry Co., Ltd.	Henan Tianmimi	Henan	Idle	20,000	20,000	20,000	20,000	20,000	0	0	8,500	10,200	9,000
13	Shandong Lvjian Biological Technology Co., Ltd.	Shandong Lvjian	Shandong	Stopped	/	/	/	12,000	12,000	/	/	/	5,000	9,000
Total					288,000	262,000	232,000	238,000	231,000	189,400	177,000	151,700	160,900	132,100

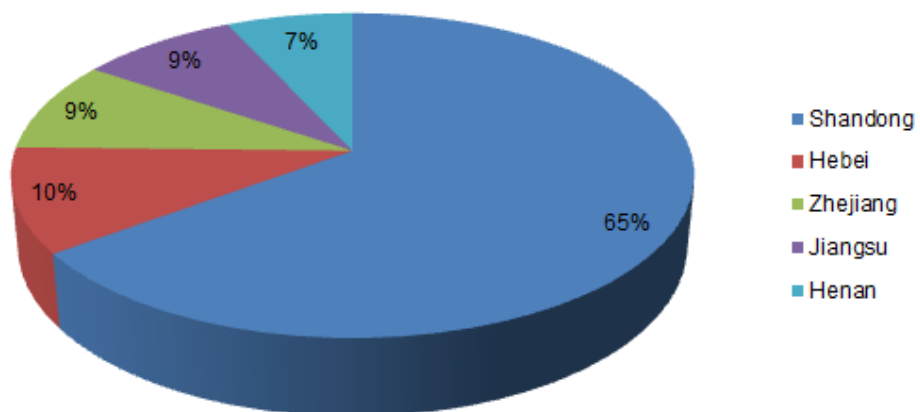
Source: CCM

Figure 4.2-1 Capacity distribution of maltitol producers in China, 2022



Source: CCM

Figure 4.2-2 Shares of maltitol capacity in China by region, 2022



Source: CCM

4.3 Monthly ex-works price of maltitol in China, Jan. 2018–Oct. 2023

In May 2018, the ex-works price of 75% liquid maltitol in China climbed up to a small peak of USD660/t underpinned by its reduced output nationwide. Then the price fluctuated between USD605/t and USD648/t during June 2018 and Feb. 2019 but plummeted to USD537/t in June 2019. The decline was attributed to the increasing supply and shrinking demand. Thereafter, due to the sluggish market, the price stayed below USD550/t all the way to July 2020, though the price of corn was quite stable.

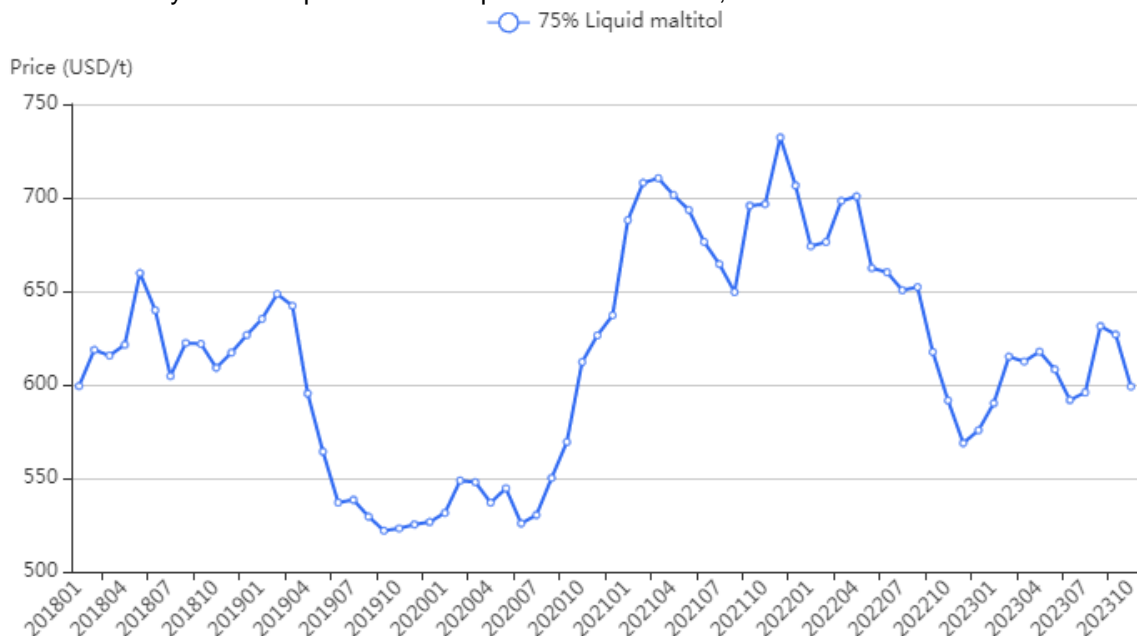
Then, with the price of corn and demand increasing, the price shot up. It rose to a historical high in March 2021 at USD710/t. Later, due to the downward adjustment of raw material prices, the price slipped to USD650/t in Aug. From Sept. to Dec. 2021, prices rose again to USD707/t in Dec., influenced by global inflation and rising raw material prices. Subsequently, due to the Spring Festival and the epidemic control, the price fell and then rebounded to USD701/t in April 2022. In the following 7 months, due to the decreasing corn price and lack of demand momentum, the price fell all the way to USD569/t in Nov.

From Dec. 2022 to April 2023, the price rebounded on the back of corn prices and recovering demand. But then from May to Oct., the price swung between USD592/t and USD631/t, mainly influenced by the price of corn.

As for the price of crystalline maltitol, it fluctuated between USD1,801/t and USD1,974/t from Jan. 2018 to Dec. 2019. However, it headed south further and hit the bottom at USD1,697/t in July 2020; the fall was triggered by shrinking demand under COVID-19. Since Aug. 2020, supported by increasing demand and corn price, it climbed up quickly and reached USD2,281/t in June 2021. In the second half of 2021, due to global inflation and rising raw material prices, prices continued their upward march to USD2,648/t in Nov., a 5-year high.

From Dec. 2021 to April 2022, prices fluctuated between USD2,508/t to USD2,539/t, and from May to Dec, as demand weakened, prices down all the way to USD1,825/t in Dec., which was already below 2021 levels and even close to the price lows of 2018 and 2019. The price rose slightly in Jan. and Feb. 2023 due to short-term growing demand but hovered between USD1,829/t to USD1,894/t from March to Oct., on account of oversupply and sluggish demand.

Figure 4.3-1 Monthly ex-works price of 75% liquid maltitol in China, Jan. 2018–Oct. 2023



Source: CCM

Figure 4.3-2 Monthly ex-works price of crystalline maltitol in China, Jan. 2018–Oct. 2023

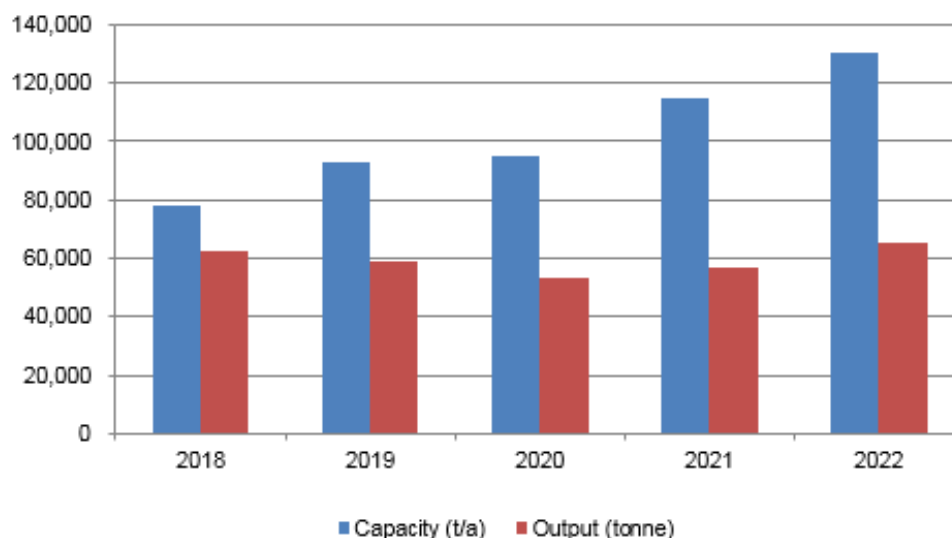


Source: CCM

5 Xylitol

5.1 Capacity and output of xylitol in China, 2018–2022

Figure 5.1-1 Capacity and output of xylitol in China, 2018–2022



Source: CCM

The capacity of xylitol in China increased from 78,000 t/a in 2018 to 130,000 t/a in 2022, with a CAGR of 13.6%. It is worth noting that Shandong Jianyihong Biotechnology Co., Ltd. (Shandong Jianyihong) and Jinan Shengquan Healtang Biotech Co., Ltd. (Shengquan Healtang) entered the xylitol industry in 2021 and 2022, respectively.

The output of xylitol decreased from 62,500 tonnes in 2018 to 53,000 tonnes in 2020 but increased to 57,000 tonnes in 2021 and 65,000 tonnes in 2022.

5.2 Major producers and distribution of xylitol in China, 2018–2022

From 2017 to 2019, Zhejiang Huakang Pharmaceutical Co., Ltd. (Huakang Pharma) expanded its capacity from 20,000 t/a to 35,000 t/a. There also came a new entrant in 2019—Harbin Yimei Bioengineering Technology Co., Ltd. joining the industry with a capacity of 10,000 t/a.

There were six active xylitol producers in China in 2022.

- Huakang Pharma, with a capacity of 35,000 t/a, was still the biggest xylitol manufacturer in China in 2022.
- Shengquan Healtang's 15,000 t/a xylitol project was put into operation in 2022.
- Shandong Jianyihong put its 20,000 t/a xylitol production line into production at the end of 2021.
- Yusweet Co., Ltd. (formerly known as Anyang Yuxin Xylitol Technology Co., Ltd.) expanded its capacity to 20,000 t/a in 2020.
- Shandong Lvjian Biological Technology Co., Ltd. stopped xylitol production in 2020 due to poor business operations.

Table 5.2-1 Capacity and output of xylitol producers in China, 2018–2022

No.	Producer	Abbreviation	Location	Status, 2022	Capacity, t/a					Output, tonne				
					2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
1	Zhejiang Huakang Pharmaceutical Co., Ltd.	Huakang Pharma	Zhejiang	Active	35,000	35,000	35,000	35,000	30,000	34,000	34,000	32,000	34,000	34,000
2	Yusweet Co., Ltd.	Yusweet	Henan	Active	20,000	20,000	20,000	10,000	10,000	14,000	10,000	9,000	9,000	7,700
3	Shandong Futaste Pharmaceutical Co., Ltd.	Shandong Futaste	Shandong	Active	20,000	20,000	20,000	20,000	20,000	9,000	9,000	9,000	9,000	9,000
4	Shandong Jianyihong Biotechnology Co., Ltd.	Shandong Jianyihong	Shandong	Active	20,000	20,000	/	/	/	4,000	1,000	/	/	/
5	Jinan Shengquan Healtang Biotech Co., Ltd.	Shengquan Healtang	Shandong	Active	15,000	/	/	/	/	1,000	/	/	/	/
6	Harbin Yimei Bioengineering Technology Co., Ltd.	Harbin Yimei	Heilongjiang	Active	10,000	10,000	10,000	10,000	/	3,000	3,000	3,000	200	/
7	Shandong Longlive Bio-technology Co., Ltd.	Shandong Longlive	Shandong	Idle	10,000	10,000	10,000	10,000	10,000	0	0	0	2,300	7,300
8	Shandong Lvjian Biological Technology Co., Ltd.	Shandong Lvjian	Shandong	Stopped	/	/	/	8,000	8,000	/	/	/	4,500	4,500
Total					130,000	115,000	95,000	93,000	78,000	65,000	57,000	53,000	59,000	62,500

Source: CCM

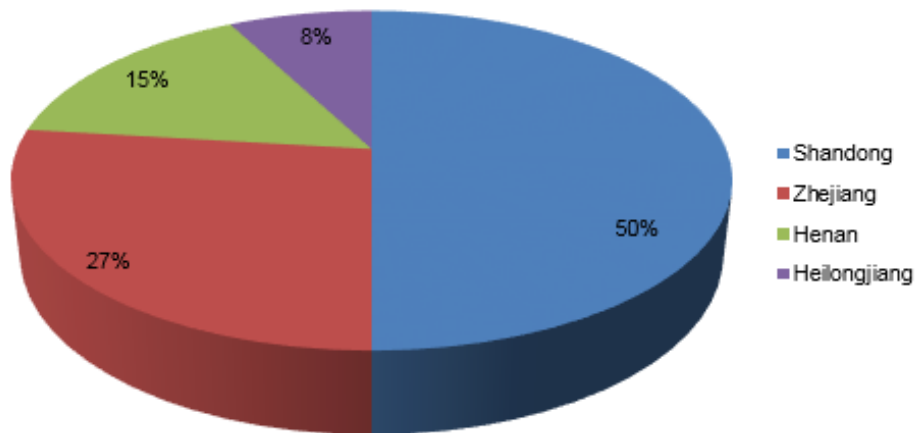
Domestic xylitol manufacturers are mainly located in Shandong, Zhejiang, Henan and Heilongjiang provinces. The capacity in Shandong Province accounted for around 50% of the total in 2022.

Figure 5.2-1 Capacity distribution of xylitol producers in China, 2022



Source: CCM

Figure 5.2-2 Shares of xylitol capacity in China by region, 2022



Source: CCM

5.3 Monthly ex-works price of xylitol in China, Jan. 2018–Oct. 2023

From Jan. 2017 to May 2018, the xylitol price in China went up rapidly and saw a record high of USD5,340/t in May 2018, which was mainly attributed to the surges in exports and domestic downstream demand.

Since then, the price fell back until July 2020 when the price was USD3,323/t, 37.4% lower than that in June 2018, due to abundant supply and poor demand abroad. According to customs data, the export volume of xylitol was 43,935 tonnes in 2019, down by 5.1% year on year; however, in H1 2020, due to sluggish overseas demand under the COVID-19 pandemic, the figure was only 20,502 tonnes, down by 2.9% year on year.

As the domestic economy started to recover from H2 2020, both the demand for xylitol and the price of corn witnessed increases, leading the price of xylitol to rise slowly and reach USD3,791/t in Feb. 2021. From April 2021 to March 2022, the price rose to USD4,443/t with an increase of about 27%, which was influenced by various factors, such as the increase in raw material prices and higher demand. And then the price kept dropping and reached USD3,510/t in Dec. 2022, due to the weak demand.

In 2023, the price of xylitol first increased slightly but then showed a downward trend from USD3,704/t in Feb. to USD3,413/t in Oct., primarily explained by sluggish domestic demand.

Figure 5.3-1 Monthly ex-works price of xylitol in China, Jan. 2018–Oct. 2023

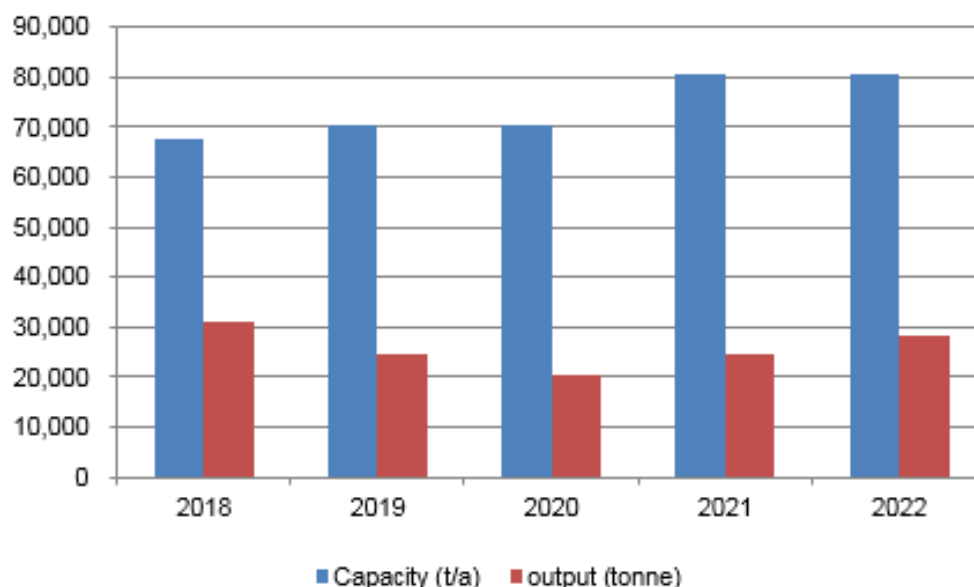


Source: CCM

6 Mannitol

6.1 Capacity and output of mannitol in China, 2018–2022

Figure 6.1-1 Capacity and output of mannitol in China, 2018–2022



Source: CCM

The capacity of mannitol in China remained stable at 67,500 t/a in 2018 compared with that in 2017. The domestic capacity increased to 70,500 t/a in 2019 and 2020 and increased to 80,500 t/a in 2021 as Zhaoqing Huanfa entered the industry. In 2022, the capacity remained unchanged.

As for the output of mannitol, it increased from 24,100 tonnes in 2017 to 31,200 tonnes in 2018, up 29.5% year on year, due to strong domestic demand. However, it declined by 20.5% year on year to 24,800 tonnes in 2019, with a relatively low operating rate of about 35.2%. The output figure reduced further to some 20,600 tonnes in 2020, experiencing a yearly decrease of 16.9% due to the aftermath of the COVID-19 pandemic. The output in 2021 recovered to 24,600 tonnes; it further increased to 28,300 tonnes in 2022 with the rapid growth of demand abroad.

6.2 Major producers and distribution of mannitol in China, 2018–2022

There were six active mannitol producers in China in 2022. Among these producers, Shandong Tianli Pharmaceutical Co., Ltd. ranked first, with a capacity of 30,000 t/a. Harbin Yimei Bioengineering Technology Co., Ltd. started to produce mannitol in 2019, with a capacity of 3,000 t/a. Zhaoqing Huanfa Bio-technology Co., Ltd. started to produce mannitol in 2021. Shandong Jiejing Group Co., Ltd. and Jiangsu Zhongda Biotechnology Group Co., Ltd. has suspended production since 2015.

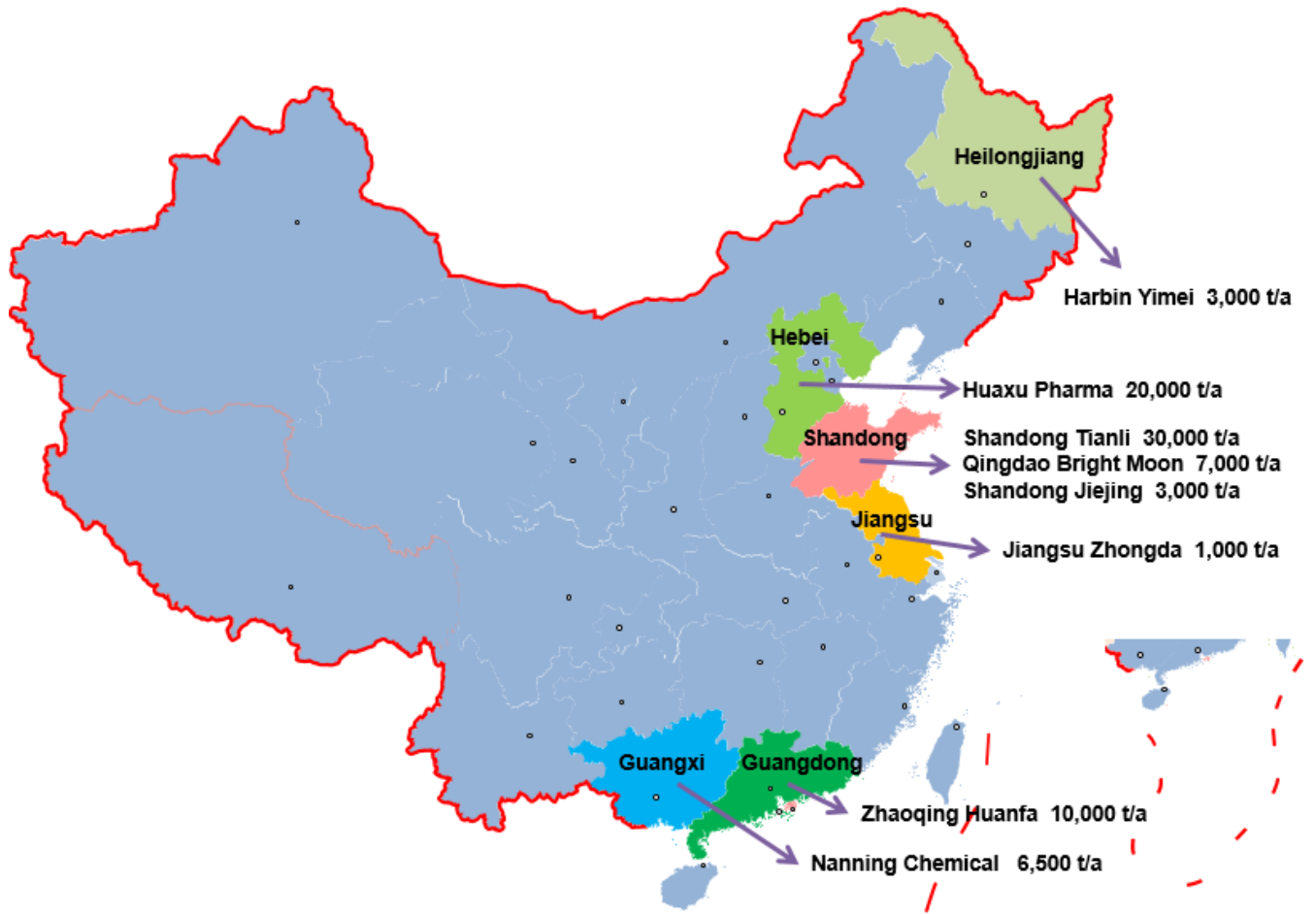
Table 6.2-1 Capacity and output of mannitol producers in China, 2018–2022

No.	Company	Abbreviation	Location	Status 2022	Capacity, t/a					Output, tonne				
					2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
1	Shandong Tianli Pharmaceutical Co., Ltd.	Shandong Tianli	Shandong	Active	30,000	30,000	30,000	30,000	30,000	11,000	10,000	7,600	9,800	15,000
2	Shijiazhuang Huaxu Pharmaceutical Co., Ltd.	Huaxu Pharma	Hebei	Active	20,000	20,000	20,000	20,000	20,000	6,400	5,500	5,400	6,200	7,200
3	Zhaoqing Huanfa Bio-technology Co., Ltd.	Zhaoqing Huanfa	Guangdong	Active	10,000	10,000	/	/	/	1,200	800	/	/	/
4	Qingdao Bright Moon Seaweed Group Co., Ltd.	Qingdao Bright Moon	Shandong	Active	7,000	7,000	7,000	7,000	7,000	4,500	4,000	3,900	6,000	6,500
5	Guangxi Nanning Chemical Pharmaceutical Co., Ltd.	Nanning Chemical	Guangxi	Active	6,500	6,500	6,500	6,500	6,500	4,400	3,800	3,400	2,500	2,500
6	Harbin Yimei Bioengineering Technology Co., Ltd.	Harbin Yimei	Heilongjiang	Active	3,000	3,000	3,000	3,000	/	800	500	300	300	/
7	Shandong Jiejing Group Co., Ltd.	Shandong Jiejing	Shandong	Idle	3,000	3,000	3,000	3,000	3,000	0	0	0	0	0
8	Jiangsu Zhongda Biotechnology Group Co., Ltd.	Jiangsu Zhongda	Jiangsu	Idle	1,000	1,000	1,000	1,000	1,000	0	0	0	0	0
Total					80,500	80,500	70,500	70,500	67,500	28,300	24,600	20,600	24,800	31,200

Source: CCM

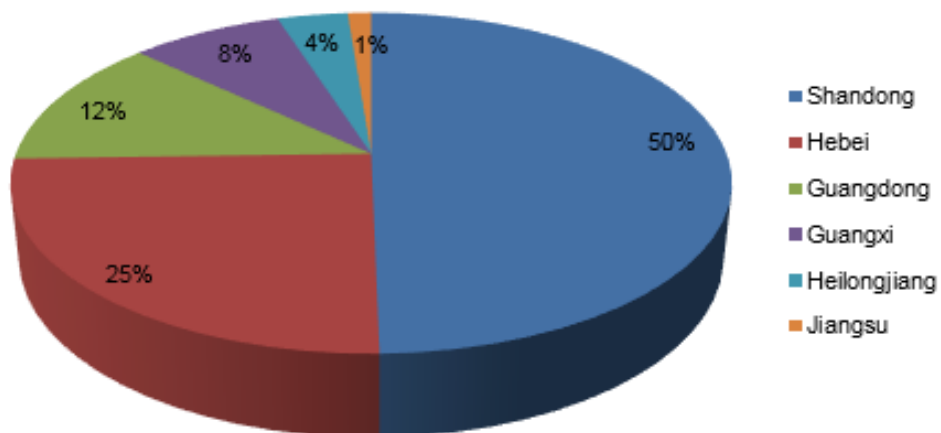
There are three mannitol producers in Shandong Province, with a combined capacity of 40,000 t/a in 2022 which accounted for about 50% of the total in China.

Figure 6.2-1 Capacity distribution of mannitol producers in China, 2022



Source: CCM

Figure 6.2-2 Shares of mannitol capacity in China by region, 2022



Source: CCM

6.3 Monthly ex-works price of mannitol in China, Jan. 2018–Oct. 2023

During Jan. 2018–Dec. 2019, encouraged by growing demand, the price of mannitol showed an upward trend on the whole and peaked at USD4,981/t in Dec. 2019.

In 2020, the price stood above USD5,000/t in Q1 but then dropped quite steadily to USD3,858/t in Aug. due to sluggish demand and fierce competition under COVID-19. Later, with the economy perking up and demand increasing, the price of mannitol recovered slightly and remained hovering around USD4,300/t till May 2021. However, as the prices of raw materials declined since May 2021, the price of mannitol fell to USD3,556/t in Sept. From Oct. 2021 to April 2022, the price rose to USD4,094/t in April, because of global inflation. Subsequently, the price dropped to USD3,330/t in Nov. 2022 as the pandemic was brought under control and demand fell. From Dec. 2022 to Feb. 2023, the price rose due to growing demand, but then it kept falling, reaching USD3,065/t in Oct. 2023 as demand weakened again.

Figure 6.3-1 Monthly ex-works price of food-grade mannitol in China, Jan. 2018–Oct. 2023

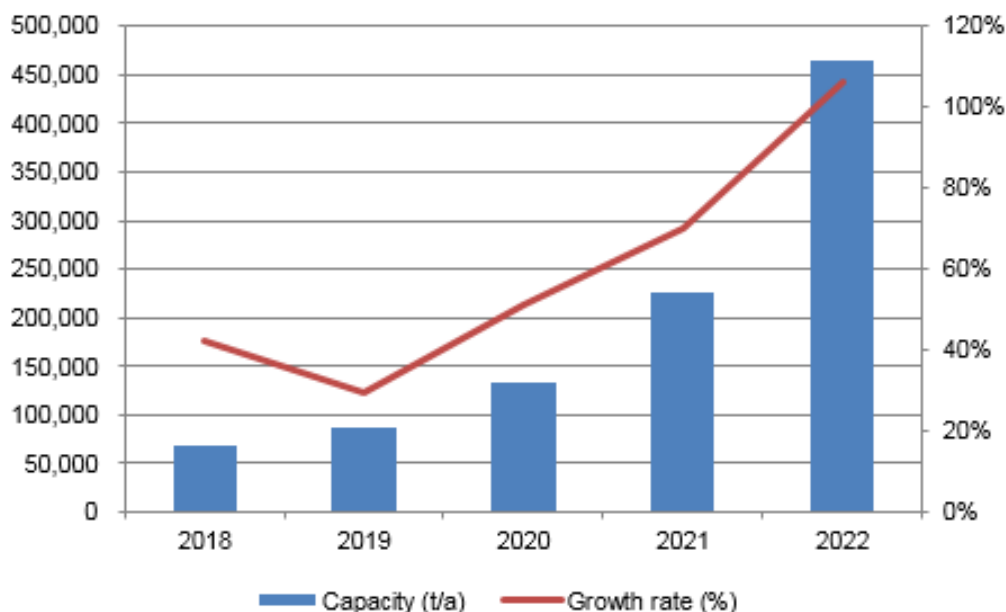


Source: CCM

7 Erythritol

7.1 Capacity and output of erythritol in China, 2018–2022

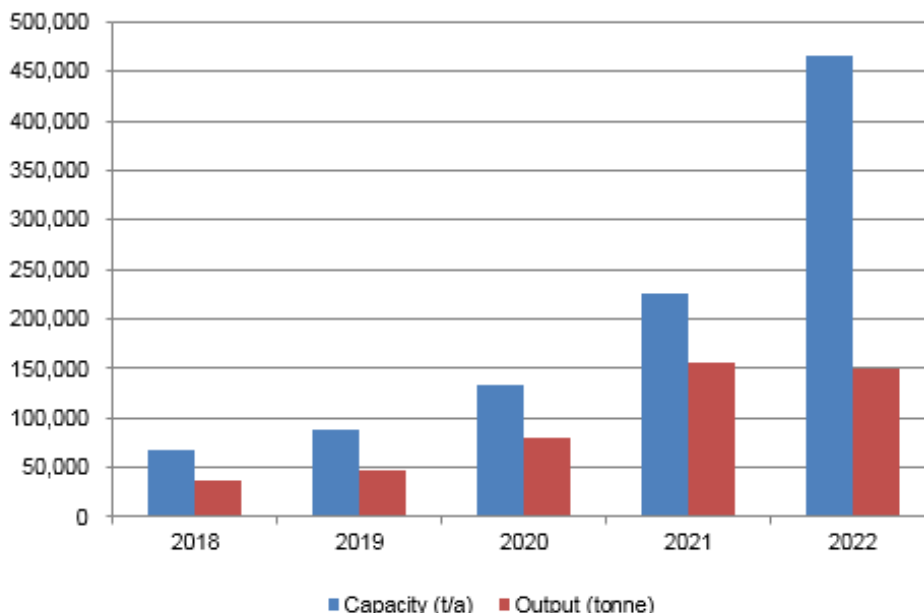
Figure 7.1-1 Capacity and its growth rate of erythritol in China, 2018–2022



Source: CCM

The capacity of erythritol rose from 67,500 t/a in 2018 to 465,500 t/a in 2022, growing at a CAGR of 62.1%, as the rising demand in the market has driven major producers to expand their erythritol capacity over the past few years.

Figure 7.1-2 Capacity and output of erythritol in China, 2018–2022



Source: CCM

Erythritol has become more popular, due to its low hygroscopicity, anti-cavity effect and low calories, which allows it to be used as a functional condiment. The output of erythritol grew rapidly to 155,000 tonnes in 2021, over 7 times that in 2017. In 2022, the output dropped slightly to 149,000 tonnes.

The operating rate of the erythritol industry in China climbed from around 53% in 2018 to about 69% in 2021. However, the operating rate fell sharply to 32% in 2022, as the domestic capacity was more than double from the previous year, while demand instead saw a small decline.

7.2 Major producers and distribution of erythritol in China, 2018–2022

There were 12 active erythritol producers in China in 2022, 6 of which are located in Shandong Province.

Upon completion of a series of technical transformation projects on erythritol production since 2018, Shandong Sanyuan Biotechnology Co., Ltd. (Shandong Sanyuan) has become the largest erythritol producer in China, with 135,000 t/a capacity in 2022. Zhucheng Dongxiao Biotechnology Co., Ltd. and Baolingbao Biology Co., Ltd. (Baolingbao Biology) also expanded production capacity in 2020–2022.

However, Shandong Futaste Pharmaceutical Co., Ltd. and Zibo Zhongshi Green Biotech Co., Ltd. ceased production in 2020 (the latter resumed small production in 2021), and Sichuan Anyi Biotechnology Co., Ltd. has suspended production since 2018.

Table 7.2-1 Capacity and output of erythritol producers in China, 2018–2022

No.	Producer	Abbreviation	Location	Status 2022	Capacity, t/a					Output, tonne				
					2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
1	Shandong Sanyuan Biotechnology Co., Ltd.	Shandong Sanyuan	Shandong	Active	135,000	85,000	65,000	50,000	30,000	46,000	82,000	49,000	26,600	17,000
2	Baolingbao Biology Co., Ltd.	Baolingbao Biology	Shandong	Active	63,000	33,000	20,000	10,000	10,000	30,000	25,000	15,000	9,800	9,500
3	Zhucheng Dongxiao Biotechnology Co., Ltd.	Zhucheng Dongxiao	Shandong	Active	60,000	30,000	30,000	10,000	10,000	35,000	27,000	16,000	9,000	7,700
4	Zhejiang Huakang Pharmaceutical Co., Ltd.	Huakang Pharma	Zhejiang	Active	30,000	/	/	/	/	10,000	/	/	/	/
5	Hebei Yuxing Bio-Engineering Co., Ltd.	Hebei Yuxing	Hebei	Active	20,000	20,000	/	/	/	13,000	10,000	/	/	/
6	Shandong Fuyang Biotechnology Co., Ltd.	Shandong Fuyang	Shandong	Active	20,000	20,000	/	/	/	8,000	8,000	/	/	/
7	Shandong Chiping Chunrui Bio-Food Co., Ltd.	Shandong Chunrui	Shandong	Active	20,000	20,000	/	/	/	2,000	2,000	/	/	/
8	Ningxia Eppen Biotech Co., Ltd.	Ningxia Eppen	Ningxia	Active	20,000	/	/	/	/	1,000	/	/	/	/
9	Binzhou Zhongyu Food Co., Ltd.	Binzhou Zhongyu	Shandong	Active	20,000	/	/	/	/	1,000	/	/	/	/
10	Yusweet Co., Ltd.	Yusweet	Henan	Active	20,000	/	/	/	/	1,000	/	/	/	/
11	Heilongjiang Longfeng Corn Development Co., Ltd.	Heilongjiang Longfeng	Heilongjiang	Active	20,000	/	/	/	/	1,000	/	/	/	/
12	Jilin Jia'ao Biotechnology Co., Ltd.	Jilin Jia'ao	Jilin	Active	20,000	/	/	/	/	1,000	/	/	/	/
13	Zibo Zhongshi Green Biotech Co., Ltd.	Zhongshi Green	Shandong	Idle	4,500	4,500	4,500	4,500	4,500	0	1,000	0	500	1,000

14	Shandong Futaste Pharmaceutical Co., Ltd.	Shandong Futaste	Shandong	Idle	3,000	3,000	3,000	3,000	3,000	0	0	0	700	800
15	Sichuan Anyi Biotechnology Co., Ltd.	Sichuan Anyi	Sichuan	Idle	10,000	10,000	10,000	10,000	10,000	0	0	0	0	0
Total					465,500	225,500	132,500	87,500	67,500	149,000	155,000	80,000	46,600	36,000

Source: CCM

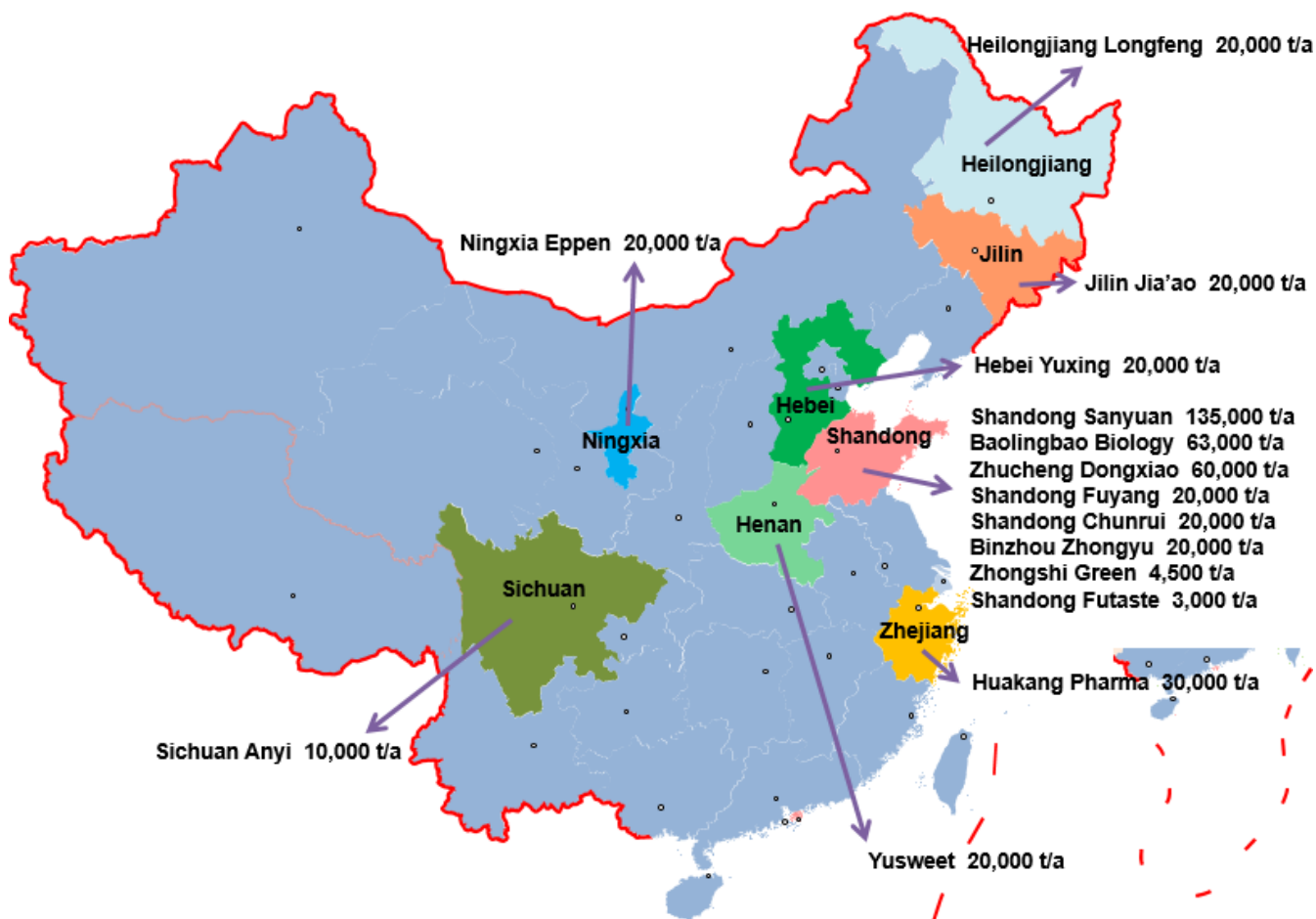
Erythritol has witnessed a spike in demand as it is increasingly popular among consumers. In order to seize more market shares in the booming sector, many companies planned to establish new erythritol projects and accelerated the construction of new projects in the past two years.

In 2022, there were nine new erythritol projects built and put into production, including three expansion projects by Shandong Sanyuan, Baolingbao Biology and Zhucheng Dongxiao, and six new constructions in newcomers.

- Shandong Sanyuan's 50,000 t/a and Baolingbao Biology's 30,000 t/a erythritol expansion projects were put into production in Nov. and Oct., respectively; Zhucheng Dongxiao's 30,000 t/a expansion project was completed and put into operation in mid-2022.
- Huakang Pharma's new project with an annual output of 30,000 t/a erythritol began trial operation in May.
- Ningxia Eppen put its 20,000 t/a production line into operation in Jan.
- Binzhou Zhongyu's 20,000 t/a production line was commissioned at the end of Jan. and put into production in Feb.
- Yusweet's 20,000 t/a new project was completed construction in Dec. 2021 and put into operation in early 2022.
- Heilongjiang Longfeng's 20,000 t/a project was built and put into commissioning in Aug.
- Jilin Jia'ao's 20,000 t/a new production line completed the environmental self-inspection acceptance in Aug. but has suspended production since 30 Sept. due to changes in market demand and production costs.

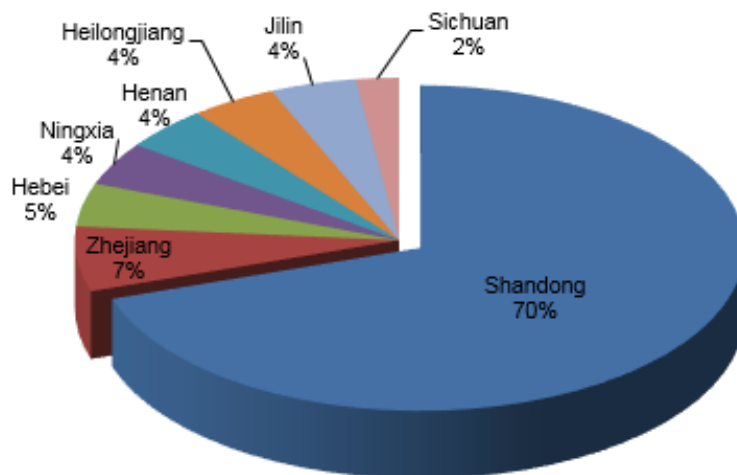
In addition, Anhui BBCA Likang Pharmaceutical Co., Ltd.'s 30,000 t/a erythritol project was built in Oct. 2020, but the project has not yet been put into production as of Dec. 2022; the company plans to reduce the erythritol capacity of this project to 5,000 t/a in 2023.

Figure 7.2-1 Capacity distribution of erythritol producers in China, 2022



Source: CCM

Figure 7.2-2 Shares of erythritol capacity in China by region, 2022



Source: CCM

7.3 Monthly ex-works price of erythritol in China, Jan. 2018–Oct. 2023

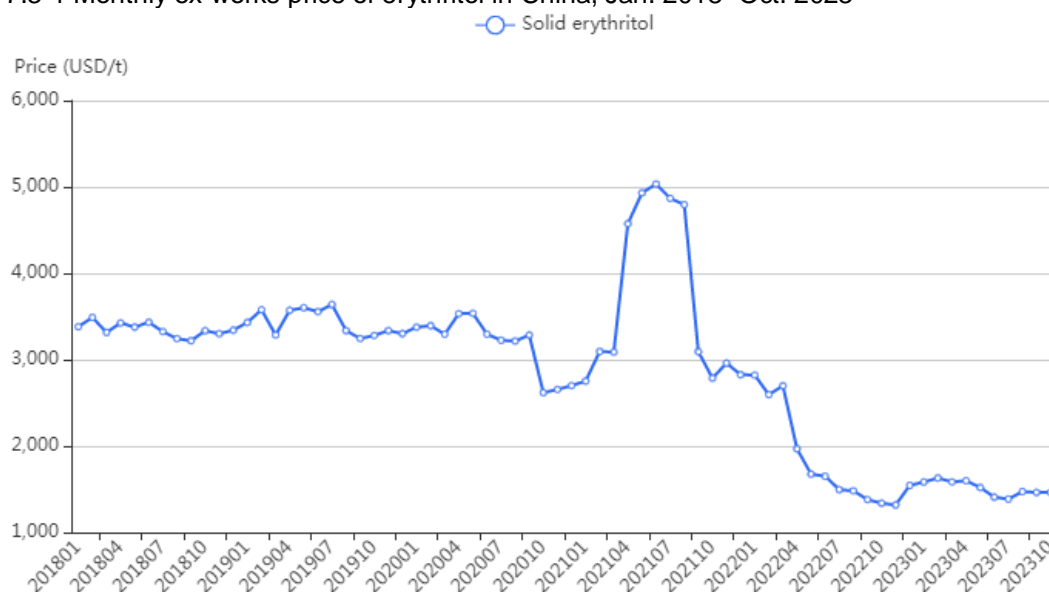
During 2018–2019, due to surges in erythritol exports and domestic downstream demand, the price of erythritol rose slightly compared with that in 2017. The annual average ex-works price increased from USD2,512/t in 2017 to USD2,649/t in 2018 and to USD2,730/t in 2019.

In H1 2020, against the backdrop of the COVID-19 outbreak, the price climbed generally due to an increase in the price of its raw material corn starch and rising downstream demand. In H2, the price first went down as new capacity came on stream, but it soon edged up with the raw material prices mounting.

In April 2021, with the demand growing rapidly, erythritol was in short supply and its price soared to USD4,574/t. The price stayed at such a level for several months. As new erythritol capacity in several enterprises was put into production, the shortage eased and the price plummeted in Sept. and sunk further in Oct. to USD2,786/t.

As a large number of producers rushed to put new projects into production, the erythritol market fell into vicious competition, leading the price of erythritol to fall from USD2,960/t in Nov. 2021 to USD1,318/t in Nov. 2022. Subsequently, the price saw a slight increase to USD1,544/t in Dec. but then fluctuated between USD1,386/t to USD1,630/t due to persistent oversupply and slow growth in demand.

Figure 7.3-1 Monthly ex-works price of erythritol in China, Jan. 2018–Oct. 2023



Source: CCM

Kcomber's legal disclaimers

1. Kcomber guarantees that the information in the report is accurate and reliable to the best of its knowledge and experience. Kcomber defines the report as a consulting product providing information and does not guarantee its information is completely in accordance with the fact. Kcomber shall not have any obligations to assume any possible damage or consequences caused by subscribers' any corporate decisions based upon subscribers' own understanding and utilization of the report.

2. The complete copyright of the report is and will be held by Kcomber. Subscribers shall not acquire, or be deemed to acquire the copyright of the report.

3. The report provided by Kcomber shall be only used as source of subscriber's internal business decisions and shall not be used for any other purposes without Kcomber's prior written consent, unless stated and approved in license contract signed by both parties. Subscribers shall not distribute, resell and disclose the whole report or any part of the report to third parties and shall not publish any article or report by largely or directly copying or citing the information or data based on Kcomber's report without the prior written consent of Kcomber.

4. "Single User License" means that there shall be only ONE person to receive access and utilize the report. Subscriber can present the content of the report that marked the source from Kcomber to their internal colleagues for their internal communication and utilization, but cannot share the whole report to other individuals. Any citation, distribution, reselling and disclosure of the report as well as its partial content to any third party are prohibited, including but not limited to their parent companies or subsidiaries.

5. "Corporate License" means that subscriber shall not cite, distribute, resell the report or disclose information of the report to any third party without Kcomber's prior written consent, except subscribers' affiliates controlled with ownership of more than 50% of shares.

17th Floor, Huihua Commercial & Trade Building, No. 80 Xianlie Zhong Road Guangzhou,
510070, P.R.China

Website: <http://www.cnchemicals.com>

Tel: +86-20-37616606

Fax: +86-20-37616968

Email: econtact@cnchemicals.com