CCM Data & Business Intelligence

Production and Market of Fructose Oligosaccharide in China 2023

The First Edition

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Executive summary

In the past five years, the large-scale production of fructose oligosaccharide (FOS, also called fructooligosaccharides) in China has been increasing, and downstream applications of FOS have become more extensive and diversified.

From 2018 to 2022, although the FOS supply was excessive, domestic producers still had great motivations to expand capacity due to expectations of high demand for FOS. As of 2022, there were nine active domestic FOS producers with a total capacity of 108,340 t/a.

With the growth of market demand, the output of FOS increased rapidly from 15,480 tonnes in 2018 to 22,150 tonnes in 2022.

In the future, as people are becoming increasingly health-conscious and their preferences are shifting towards health-oriented consumption, the domestic FOS market is expected to continue to grow with the accelerated development of the health supplement industry.

Methodology

In China, the industrial production of fructose oligosaccharide (FOS, also called fructooligosaccharides) generally uses cane sugar as the raw material. Usually, domestic FOS is divided into two categories, liquid (content ≥50%) and powder (content ≥50%). The main specifications of FOS are powdered 95%, liquid 55% and liquid 50%. In this report, FOS is calculated on the basis of actual volume.

The report is drafted by diverse methods as follows:

1) Desk research

The sources of desk research are various, including published magazines, journals, government statistics, industrial statistics, Customs statistics, association seminars as well as information from the Internet. A lot of work has gone into compilation and analysis of the obtained information. When necessary, checks were made with Chinese FOS suppliers regarding market information such as key producers, key end-users, production and export and so on.

2) Telephone interview

CCM has carried out extensive telephone interviews in order to grasp the actual market situation of FOS in China. Interviewees cover:

- Producers
- End users
- Traders
- Associations

3) Internet

CCM contacted players in this industry through B2B websites.

- Data processing and presentation

The data collected and compiled were sourced from:

- CCM's own database
- Published articles from periodicals, magazines and journals
- Statistics from governments and international institutes
- Telephone interviews with domestic suppliers, end users, government and industrial experts
- Third-party data providers
- Information from the Internet

The data from various sources have been combined and cross-checked to make this report as precise and scientific as possible. Throughout the process, a series of internal discussions

were made in order to analyze the data and have conclusions drawn.

- Unit

Tonne: equals to metric ton in this report
/t: per tonne
t/a: tonne/annual, tonne per year
USD: US dollar, currency unit in the US
RMB: currency unit in China, also named yuan
CAGR: compound annual growth rate

Table USD/CNY exchange rate, Jan. 2021–June 2023

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly Average
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	-	-	-	-	-	-	-

Source: The People's Bank of China

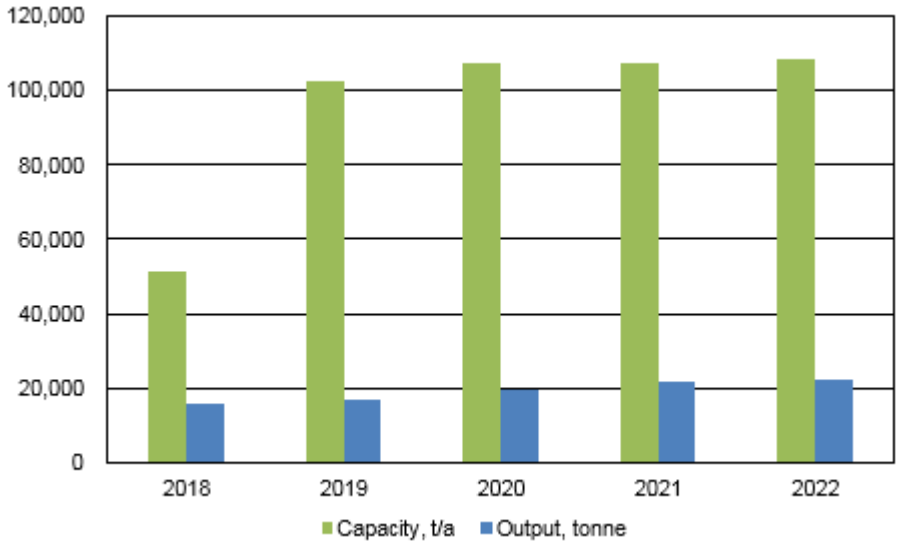
1 Production of FOS in China, 2018–2022

In the past five years, the large-scale production of fructose oligosaccharide (FOS) in China has been increasing, and downstream applications of FOS have become more extensive and diversified, widely used in food, beverage, medicine, feed, etc.

In 2018, the domestic production capacity of FOS reached 51,340 t/a. In 2019, the capacity surged to 102,340 t/a, mainly due to the entry of the big player Shandong Fullsail Biotechnology Co., Ltd. (Fullsail Biotech). In 2020, the capacity increased by 5,000 t/a to 107,340 t/a and remained at that level in 2021. In 2022, the domestic FOS capacity climbed by 1,000 t/a to 108,340 t/a.

With the growth of market demand, the output of FOS increased rapidly in 2018–2022. The output was 15,480 tonnes in 2018 and increased by 6,670 tonnes to 22,150 tonnes in 2022. In 2020–2021, the health supplement market recovered as consumers turned to immunity-boosting products amid the COVID-19 pandemic, resulting in a significant increase of 2,670 tonnes and 2,070 tonnes in the output of FOS, respectively.

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



Source: CCM

2 Producer

There were nine active FOS producers in China in 2022. From 2018 to 2022, the market concentration of the domestic FOS industry gradually decreased as the profits of FOS prompted some starch-based sugar producers to invest in the business in order to optimize their product mix and seize market share.

In 2022, Quantum High Tech (Guangdong) Biological Co., Ltd. (QHT Guangdong), which has the second largest capacity of 25,000 t/a, occupied the largest market share of China's FOS industry, and it is worth mentioning that it was acquired by Tate & Lyle PLC (Tate & Lyle) in June 2022. While Shandong Bailong Chuangyuan Bio-Tech Co., Ltd. (Bailong Chuangyuan), capable of producing 10,000 t/a, took up the second largest market share, and it announced on 28 April 2023 the addition of a new capacity of 8,000 t/a of powdered FOS. Both of their capacity utilization rates of FOS in 2022 were above 40%. In the same year, Gansu Lierkang Biology Co., Ltd. (Gansu Lierkang) completed the construction of its 1,000 t/a FOS production line, while Fengning Ping'an High-Tech Industry Co., Ltd. (Fengning Ping'an) suspended its 1,000 t/a FOS production line (from chicory) due to continued poor sales.

In 2020, Shandong Starlight So True Biological Technology Co., Ltd. (Starlight So True) built a 5,000 t/a FOS production line. In 2019, Fullsail Biotechnology completed its new project of 49,000 t/a of liquid FOS, becoming the largest domestic producer. But its utilization rate was very low during these years. Also in 2019, New Francisco (Yunfu City) Biotechnology Co., Ltd. (New Francisco)'s 2,000 t/a FOS production line was put into operation.

Table 2-1 Capacity and output of FOS producers in China, 2018–2022

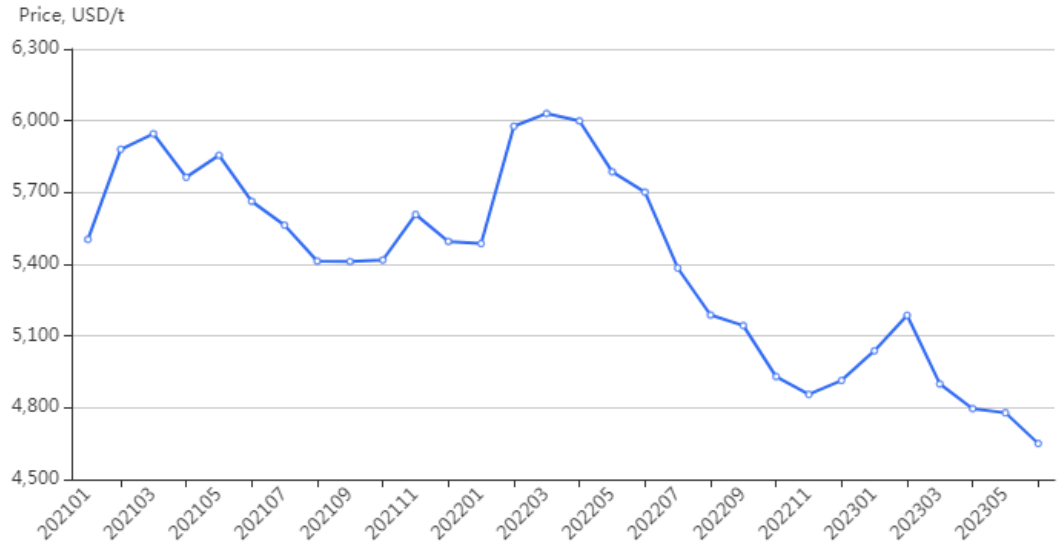
No.	Producer	Abbreviation	Location	Status, 2022	Capacity, t/a					Output, tonne				
					2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
1	Shandong Fullsail Biotechnology Co., Ltd.	Fullsail Biotech	Shandong Province	Active	49,000	49,000	49,000	49,000	/	1,000	1,100	800	600	/
2	Quantum High Tech (Guangdong) Biological Co., Ltd.	QHT Guangdong	Guangdong Province	Active	25,000	25,000	25,000	25,000	25,000	10,400	10,500	9,500	8,150	8,600
3	Shandong Bailong Chuangyuan Bio-Tech Co., Ltd.	Bailong Chuangyuan	Shandong Province	Active	10,000	10,000	10,000	10,000	10,000	4,900	5,000	4,800	4,100	3,100
4	Baolingbao Biology Co., Ltd.	BLB	Shandong Province	Active	10,000	10,000	10,000	10,000	10,000	3,100	3,000	2,900	3,250	3,300
5	Shandong Starlight So True Biological Technology Co., Ltd.	Starlight So True	Shandong Province	Active	5,000	5,000	5,000	/	/	1,850	900	400	/	/
6	New Francisco (Yunfu City) Biotechnology Co., Ltd.	New Francisco	Guangdong Province	Active	2,000	2,000	2,000	2,000	/	500	600	650	200	/
7	Jiangsu OGO Biotech Co., Ltd.	Jiangsu OGO	Jiangsu Province	Active	1,000	1,000	1,000	1,000	1,000	180	220	200	180	150
8	Gansu Lierkang Biology Co., Ltd.	Gansu Lierkang	Gansu Province	Active	1,000	/	/	/	/	130	/	/	/	/
9	Zhuhai Gaoxin Weideli Biology Engineering Co., Ltd.	Weideli Biology	Guangdong Province	Active	340	340	340	340	340	90	90	90	80	80
10	Fengning Ping'an High-Tech Industry Co., Ltd.	Fengning Ping'an	Hebei Province	Idle	5,000	5,000	5,000	5,000	5,000	0	100	100	210	250
Total					**108,340**	**107,340**	**107,340**	**102,340**	**51,340**	**22,150**	**21,510**	**19,440**	**16,770**	**15,480**

Source: CCM

Note: FOS is calculated on the basis of actual volume.

3 Price change of FOS in China, 2021–2023

Figure 3-1 Monthly ex-works price of FOS (FOS type P (95%) S) in China, Jan. 2021–June 2023



Source: CCM

Despite the impact of raw material prices and COVID-19, the ex-works price of FOS remained at a high level from Jan. 2021 to Feb. 2022 due to strong market demand, ranging from USD5,411/t–USD5,977/t. However, the peak of USD6,030/t it reached in March 2022 was followed by a significant decrease from April to Nov. 2022 as a result of the declined market demand.

After a brief pick-up from Dec. 2022 to Feb. 2023 driven by the increased sales of two important downstream products, health supplements and dairy products during the Spring Festival, the ex-works price of FOS fell again from March to June 2023.

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