

Market Research of Acesulfame Potassium in China

The Third Edition

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Introduction and scope of study

➤ Introduction

Aiming to disclose the latest production, analyse the price and market of China's acesulfame potassium industry, this report mainly focuses on China's acesulfame potassium industry from 2019 to 2021, as well as forecasts its development trend in the future.

This report is based on a detailed interviewing program, supported by extensive desk research including comprehensive searches of CCM's database, a wide variety of publications and Internet sites worldwide. Wherever possible, information obtained has been incorporated in the report.

➤ Scope of study

Region scope: China

Time scope: primarily 2019 to 2021 unless otherwise stated

Methodology and source

- Telephone interview

The purposes of conducting telephone interviews are:

- To find out the latest updated information and accurate status of each producer in China.
- To gather information not available in published sources.
- To ensure information used in the report is based on real data.

The interviewees include producers, research institutes & researchers and end users.

- Desk research

The sources of desk research are various, including published magazines, journals, patent documentation, industrial statistics, customs statistics, as well as information from the Internet. A lot of work went into compiling and analysing the information obtained. Some crosschecks were also made with Chinese suppliers of acesulfame potassium regarding market information such as production, consumption and price.

- Data processing and presentation

The data collected and compiled was variously sourced from:

- CCM's database
- Third party
- Statistics from governments and international institutes
- Telephone interviews with domestic producers, service suppliers and government agencies

- Customs statistics
- Information from the Internet

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 analyse the data and draw appropriate conclusions.

- Units

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

RMB: currency unit in China, also called Yuan

t: tonne, equals to metric tonne in this report

t/a: tonne per year, tonne per annual

/t: per tonne

/d: per day

- Abbreviations

HFCS: high fructose corn syrup

The US: the United States of America

The UK: the United Kingdom

ADI: acceptable daily intake

COVID-19: Corona Virus Disease 2019

HIS: High intensity sweetener

Table Exchange rate USD/CNY, Jan. 2018–June 2022

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	-	-	-	-	-	-	-

Source: The People's Bank of China

1 Introduction of acesulfame potassium in China

1.1 Historical development of acesulfame potassium industry

Table 1.1-1 Industry classification of sweeteners

Classification		Product
Sugar sweeteners		Sucrose, glucose, fructose, maltose, lactose
Sugar alcohol sweeteners		Sorbitol, xylitol, maltitol, mannitol, erythritol
Functional sweeteners	Artificial sweeteners	Saccharin, cyclamate, aspartame, acesulfame potassium, sucralose, neotame
	Natural extractives	Stevia sweetener, monk fruit sweetener

Artificial sweeteners with high sweetness have gone through six generations: saccharin, cyclamate, aspartame, acesulfame potassium, sucralose and neotame. The first three generations (saccharin, cyclamate and aspartame) are regarded as traditional sweeteners, while the later ones are treated as new sweeteners. Broad development prospects of new artificial sweeteners come from rapid growth of low-sugar demand on one hand, and the replacement of traditional sweeteners on the other hand.

Synthesized by Hoechst AG in 1967, acesulfame potassium was first approved in the UK in 1983 and then used widely as a food additive around the globe since 2000. In May 1992, the Chinese government approved its application in food and beverage. Currently, it is used in some 4,000 products (in food, beverages, oral hygiene products, cosmetics and pharmaceuticals) in over 100 countries.

The fourth-generation artificial sweetener acesulfame potassium has sweetness 200 times over that of sucrose. Considered to be one of the most stable sweeteners, acesulfame potassium has a good taste with no calorie. It is safe to people, and will not be metabolized or accumulated in human body. Thanks to the safeness, reasonable price, and better overall performance compared with traditional sweeteners, acesulfame potassium has witnessed increasing demand in recent years.

Using acesulfame potassium in combination with other sweeteners can produce a strong synergistic effect. For example, when one part acesulfame potassium is mixed with one part aspartame or five parts of cyclamate, 20%–40% more sweetness can be achieved and production cost be saved.

Table 1.1-2 Comparison between artificial sweeteners of different generations

Item	1st Generation	2nd Generation	3rd Generation	4th Generation	5th Generation	6th Generation
	Saccharin	Cyclamate	Aspartame	Acesulfame potassium	Sucralose	Neotame
Sweetness	450	40-60	200	200	600	8,000
ADI value (mg/kg-d)	0-5	0-1	0-40	0-15	0-15	0-15
Equivalent sugar intake of a sixty-kg adult (g/d)	240	150	480	180	540	540
Domestic approval time	N/A	1996	1986	1992	1997	2003
Main limitations	<ul style="list-style-type: none"> - With strong post-bitter taste - Difficult to mix - Risk of cancer - Banned in some countries 	<ul style="list-style-type: none"> - Risk of multiple diseases - Banned in some countries 	<ul style="list-style-type: none"> - Unfit for patients with phenylketonuria - Instable in alkaline environment or in heat 	<ul style="list-style-type: none"> With strong metallic flavor 	<ul style="list-style-type: none"> - Relatively high cost - Application constrained by price 	<ul style="list-style-type: none"> - High sweetness in small volume makes it difficult to weigh - Application constrained by price

Note: The sweetness is a relative value. Usually take sucrose as the reference (generally with 10% or 15% sucrose aqueous solution at 20 °C, the sweetness is 1.0).

Source: CCM

1.2 Raw materials of acesulfame potassium

Main raw materials for acesulfame potassium production are diketene, sulfur trioxide, sulfamic acid and triethylamine. Among them, diketene and sulfur trioxide are of greater importance, as unit cost of these two materials takes the top two places. Their supplies and price fluctuations have a huge impact on acesulfame potassium production.

As over 50% production cost of acesulfame potassium comes from raw material cost, producers with capacity of upstream materials are expected to avoid the risk of raw material price fluctuation and create a cost advantage.

➤ Diketene

Diketene is a dangerous chemical and not suitable for long distance transportation.

Diketene is mainly produced as the supporting product for its derivatives such as ethyl acetoacetate, methyl acetoacetate and acesulfame potassium. For example, about 90% of Nantong Acetic Acid Chemical Co., Ltd.'s diketene output is consumed by itself to produce ethyl acetoacetate and methyl acetoacetate, and the rest about 10% is sold.

Major acesulfame potassium producers tend to produce it themselves. It can not only ensure a stable supply of this raw material, but also improve profits.

Anhui Jinhe Industrial Co., Ltd. (Anhui Jinhe) has 10,000 t/a diketene capacity, which not only meets the company's raw material demand for acesulfame potassium production, also helps to reduce production cost and then improve its competitiveness. Another acesulfame potassium producer Shandong Yabang Chemical Technology Co., Ltd. (Shandong Yabang) owns 5,000 t/a diketene capacity and 1,000 t/a methyl acetoacetate capacity.

Table 1.2-1 Key producers of diketene in China, 2021

No.	Producer	Capacity 2021, t/a	Remark
1	Ningbo Wanglong Tech Co., Ltd.	67,000	Less than 28,000 tonnes per year is for sale
2	Nantong Acetic Acid Chemical Co., Ltd.	40,000	Less than 10% of the output is for sale
3	Anhui Tiancheng New Materials Co., Ltd.	36,000	About 9,000 tonnes per year is for sale
4	Qingdao Haiwan Specialty Chemicals Co., Ltd.	35,000	Less than 40% of the output is for sale
5	Xinhua Pharmaceutical (Shouguang) Co., Ltd.	30,000	All for sale
6	Shandong Kunda Biotechnology Co., Ltd.	20,000	less than 5,000 tonnes per year is for sale
7	Anhui Jinhe Industrial Co., Ltd.	10,000	About 2,000 tonnes per year is for sale
8	Guangxi Jinyuan Biochemical Industrial Co., Ltd.	10,000	For self-use only
9	Shandong Yabang Chemical Technology Co., Ltd.	5,000	For self-use only

Source: CCM

Since 2016, some diketene producers have shut down or suspended production due to

environmental protection and safety issues. In April 2016, Jiangsu Tiancheng Biochemical Products Co., Ltd. stopped production for rectification due to environmental protection failure. In July 2016, Ningbo Wanglong Tech Co., Ltd. suspended production due to pipeline leakage. Thus the supply of diketene tightened in 2016, and the yearly market price increased to USD2,258/t from previous year USD1,265/t. Affected by rising raw material price, the average market price of acesulfame potassium in 2016 increased to USD6,172/t from USD5,892/t in 2015.

The price of diketene has increased significantly in 2017, which pushed the price of acesulfame potassium further up. And production contraction of diketene made due contributions to a relatively high market price of acesulfame potassium in 2019. The price decreased a little in 2020, so the price of acesulfame potassium reduced correspondingly.

The price of diketene rose sharply in 2021; it peaked in April at USD2,897/t (RMB19,000/t), and the annual average in 2021 was over 30% higher than that in 2020. The price of acesulfame potassium also increased rapidly in 2021.

➤ **Sulfur trioxide**

There are many sulfur trioxide producers in China. Generally, the market price of sulfur trioxide was relatively stable in 2017–2019, which was between USD110/t–USD180/t. The price rose greatly in 2021, up about 50% year on year, affected by rising commodity prices.

Since sulfur trioxide is a hazardous chemical and the cost of long-distance transportation is high, acesulfame potassium producers usually purchase sulfur trioxide nearby. Of course, some existing acesulfame potassium producers choose to produce the raw material by themselves. For instance, Anhui Jinhe produces sulfur trioxide from sulfur (outsourced).

1.3 Governmental policies and market dynamics

- Governmental policies

According to the *Standard for the Use of Food Additives (GB2760-2014)*, acesulfame potassium can be used in ready-to-eat flavor foods or prepared products with milk as the main ingredient (only for milk-based canned desserts, excluding ice cream and flavored fermented milk), frozen drinks (except for edible ice), canned fruits, jams, fruit preserves, pickled vegetables, processed edible fungi and algae, canned grains, black sesame paste, canned cereal sweets, baked food, beverages (excluding packaged drinking water), jelly, table sweets, condiments, sauce, candy, gum-based candy, etc., but it is not allowed in fruit preserves processed with *Glycyrrhiza uralensis*.

The national standard GB25540-2010 on food additive acesulfame potassium has rules on the quality and specification of the product. In addition, the national standard *General Principles the Label of Prepackaged Food (GB7718-2011)* rules that as long as acesulfame potassium is used in food (including mixed use with other sweeteners), it must be identified on the food label.

In July 2019, the State Council issued the Healthy China Program (2019–2030), which takes balanced diet as one of the 15 major initiatives. It defines the scope of "Three Reductions" (reduction of salt, oil and sugar). The National Health Commission encourages people to reduce sucrose intake and prompts urban dwellers with high sugar intake to choose drinks and desserts with natural sweet substance and sweeteners instead of those with sucrose.

The Healthy China Program also urges to speed up the revision of *General Principles the Label of Prepackaged Food*, imposes compulsory labelling of sweeteners, and encourages enterprises to claim "low sugar" or "sugar-free" and adopt the use of front-of-package (FOP) labelling. Thus consumers can quickly pick out healthy foods, and related administrators can strengthen the supervision and management on nutrition labelling in prepackaged foods.

In Sept. 2019, China's State Administration for Market Regulation issued the *Guidance on Standardizing the Use of Food Additives (Guidance)*. It requires that food producers should try their best to reduce the use of food additives or stop using them to reduce salt, oil and sugar contents. It also advocates a proper decrease in the volume of sucrose in processed foods and the replacement of sucrose with natural sweet substance and sweeteners allowed in food safety standards.

The Guidance clearly states that local market regulatory departments shall urge food producers and traders to follow the requirements set out in this Guidance, as well as the principles, allowed varieties, use scope, maximum dosage or residue stipulated in the *Standard for the Use of Food Additives (GB2760-2014)*. These departments shall also strengthen supervision and sample testing, focusing on product standards or producing formula, procurement management and feeding modes of raw materials and food additives,

quality control results and labelling, etc. Entities using food additives beyond the scope and maximum amount prescribed will be punished in accordance with the rules and regulations.

- Market dynamics

With increasing health awareness and rising demand for low-sugar and low-calorie foods, sweetener industry will see great growth. China's sweetener market is expected to grow faster, prompted by policy advocacy for sweeteners over sucrose and traditional sweeteners. New sweeteners as acesulfame potassium and sucralose are likely to become mainstream sweeteners in the future.

2 Supply and demand of acesulfame potassium in China in 2021

2.1 Overview of production of acesulfame potassium in China

At present, the capacity of acesulfame potassium in China is concentrated in a few producers. The industry is in sound development, and a basically balanced supply and demand relation can be seen. In general, some 80% of China's acesulfame potassium output is for export.

In 2021, China's acesulfame potassium capacity kept unchanged at 21,000 t/a, accounting for more than 85% of the world's total.

The operating rate of acesulfame potassium in China was relatively high, rising from about 64% in 2019 to about 78% in 2020 and about 82% in 2021, and the output of acesulfame potassium in 2021 was about 17,300 tonnes, 3,900 tonnes more than that in 2019. The higher operating rate and more output of acesulfame potassium in 2020–2021 is mainly attributed to rapid growth in export volume.

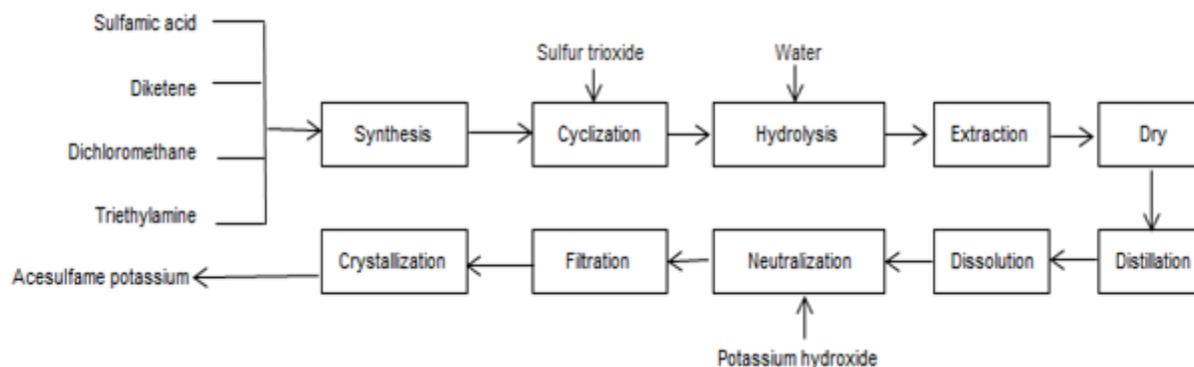
Anhui Jinhe Industrial Co., Ltd. is the biggest acesulfame potassium producer in China, with 12,000 t/a capacity since 2016, over 55% of domestic total capacity in 2021. Since 2016, China's acesulfame potassium has been in an oligopoly market dominated by Anhui Jinhe. As the world's largest producer, Anhui Jinhe has a strong say on the price.

Globally, the capacity of acesulfame potassium was about 24,500 t/a in 2021. Except the Germany-based Nutrinova Nutrition Specialties & Food Ingredients GmbH, all other acesulfame potassium capacity is located in China.

2.2 Production cost

Chinese acesulfame potassium producers adopt reduction method (synthesis of diketene and sulfur trioxide). In the production process, sulfamic acid, triethylamine, diketene and sulfur trioxide are used as main raw materials, and acesulfame potassium is obtained through cyclization, hydrolysis and neutralization.

Figure 2.2-1 Flowchart of processes involved in acesulfame potassium production



Source: CCM

The production cost mainly consists of cost of raw materials, and diketene is the most important raw material. In terms of share to the raw material cost, diketene and sulfur trioxide take the lead. Fluctuations in the prices of diketene and sulfur trioxide will have a great impact on the price of acesulfame potassium.

Table 2.2-1 Raw material cost for acesulfame potassium production in China, 2021

Item	Unit consumption, t/t	Price, USD/t	Unit cost, USD/t
Sulfamic acid 99.5%	0.71	666	475
Diketene 97%	0.62	2,477	1,536
Triethylamine 99.5%	0.03	2,663	91
Sulphur trioxide 99.9%	3.13	228	712
Potassium hydroxide 40%	0.74	557	411
Dichloromethane 99.5%	0.07	700	52
Others	/	/	25
Total	/	/	3,301

Note: The unit price is based on not only the ordinary market price but also the degree of economic scale, operating rate and backward integration of acesulfame potassium manufacturers.

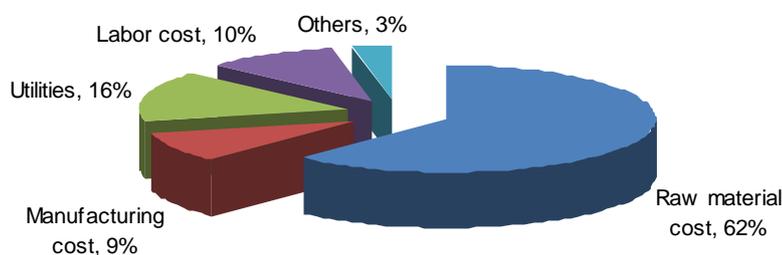
Source: CCM

Table 2.2-2 General production cost for acesulfame potassium in China, 2021

Item	Unit cost, USD/t
Raw material cost	3,301
Manufacturing cost	500
Utilities	825
Labor cost	540
Others	170
Total	5,336

Source: CCM

Figure 2.2-2 Cost structure of acesulfame potassium in China, 2021



Source: CCM

2.3 Key manufacturers

As of June 2022, there were three active acesulfame potassium producers in China.

Anhui Jinhe is the largest producer and it plays a dominant role in the industry. Its acesulfame potassium in capacity has maintained at 12,000 t/a since 2016, accounting for over 50% of the national total.

Shandong Yabang's 3,000 t/a acesulfame potassium project was completed and put into commercial production in 2019.

Table 2.3-1 Situation of major acesulfame potassium producers in China, 2021

No.	Producer	Abbreviation	Plant location	Launch time	Company type
1	Anhui Jinhe Industrial Co., Ltd.	Anhui Jinhe	Anhui	2005	Listed (stock code: 002597)
2	VitaSweet Co., Ltd.	VitaSweet	Anhui	2007	Private
3	Shandong Yabang Chemical Technology Co., Ltd.	Shandong Yabang	Shandong	2019	Private
4	Hangzhou Sanhe Food Co., Ltd.	Hangzhou Sanhe	Zhejiang	2009	Private

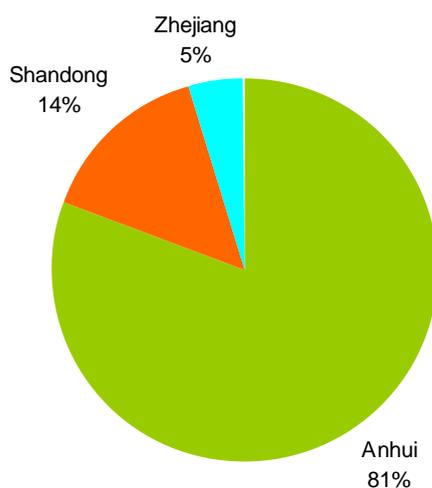
Source: CCM

Table 2.3-2 Capacity and output of acesulfame potassium by producer in China, 2019–2021

No.	Producer	Status 2021	Capacity 2021, t/a	Output, tonne		
				2021	2020	2019
1	Anhui Jinhe	Active	12,000	11,700	11,600	10,000
2	VitaSweet	Active	5,000	2,900	2,800	2,700
3	Shandong Yabang	Active	3,000	2,700	2,000	700
4	Hangzhou Sanhe	Idle	1,000	0	0	0
Total		/	21,000	17,300	16,400	13,400

Source: CCM

Figure 2.3-1 Capacity distribution of acesulfame potassium in China, 2021



Source: CCM

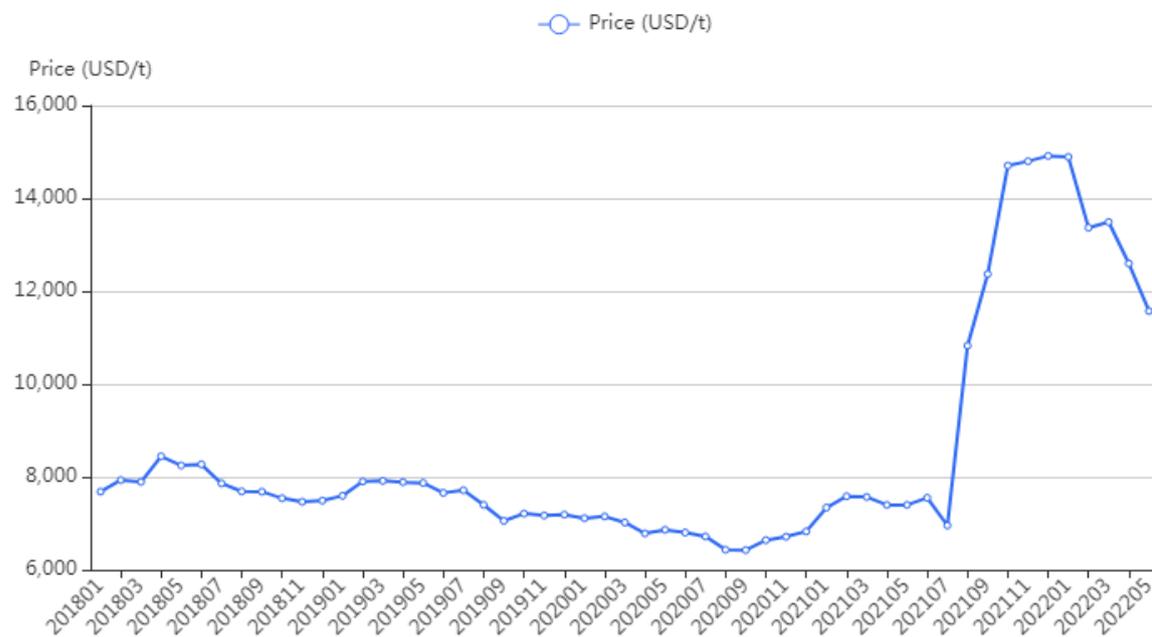
There are two potential producers of acesulfame potassium in China.

Nantong Hongxin Chemical Co., Ltd.'s 15,000 t/a acesulfame potassium and 63,000 t/a ammonium sulfate project with an investment of RMB280 million is in trial production in June 2022.

Jiangsu Shuangchang Biotechnology Co., Ltd.'s 6,000 t/a acesulfame potassium production line technical transformation project was approved by Yancheng Environmental Protection Bureau in May 2017, but the project has not been constructed yet.

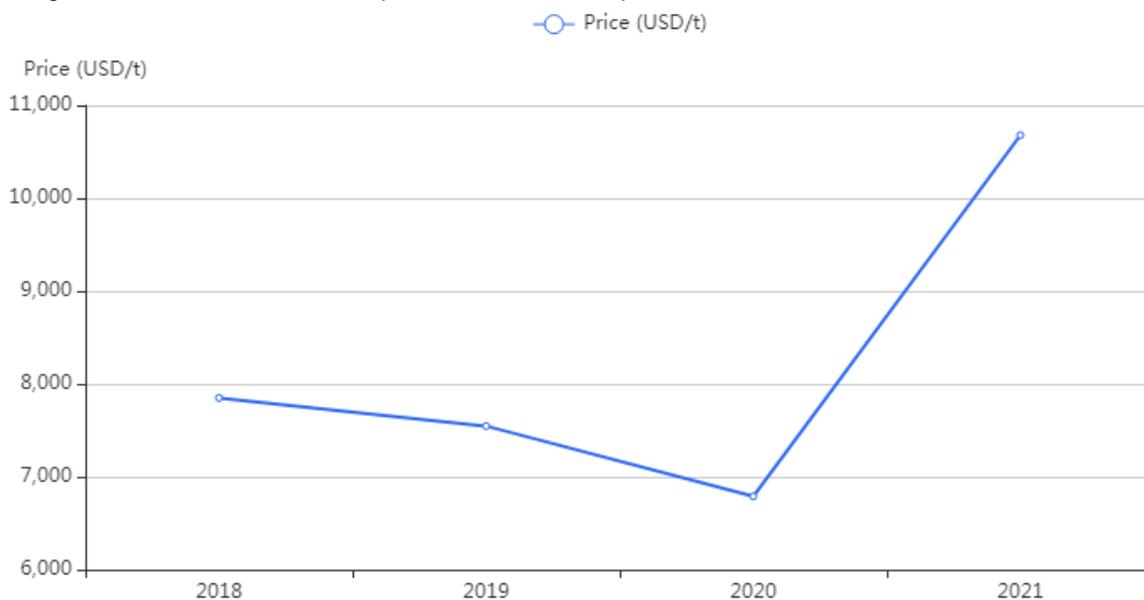
2.4 Price 2018–2021

Figure 2.4-1 Monthly average ex-works prices of acesulfame potassium in China, Jan. 2018–May 2022



Source: CCM

Figure 2.4-2 Annual ex-works price of acesulfame potassium in China, 2018–2021



Source: CCM

Generally speaking, since 2016, China's acesulfame potassium has been in an oligopoly market, which is dominated by Anhui Jinhe. As the world's largest producer, Anhui Jinhe has a strong say on the price.

The USD-denominated ex-works price of acesulfame potassium rose significantly in 2018. Yet in fact, the RMB price was quite stable between RMB50,000/t and RMB53,000/t. Compared with 2017, demand for acesulfame potassium in 2018 was on the rise but supply was tight since Suzhou Hope was in production suspension and Anhui Jinhe had no plan to expand production. Meanwhile, the increasingly stricter environmental policies and the subsequent production restriction made it hard for producers to achieve full production. Besides, there was a tight supply of diketene.

The ex-works price of acesulfame potassium rose quickly from USD7,265/t in Dec. 2017 to USD7,683/t in Jan. 2018, up by 5.8%. Between Feb. and April, big increases were also witnessed, and the April price peaked at USD8,444/t. From May to Dec., the price remained high but showed a downward trend; it ended up at USD7,489/t in Dec.

In 2019, due to the relatively concentrated production capacity of acesulfame potassium and relatively stable price of raw materials, the ex-works price of acesulfame potassium was stable with slight fluctuation, which was between USD7,054/t (RMB50,000/t) and USD7,916/t (RMB53,000/t).

The ex-works price of acesulfame potassium decreased to USD6,424/t (RMB44,000/t)–USD7,148/t (RMB49,500/t) in 2020, mainly influenced by the COVID-19 outbreak and subsequent price fall in most chemicals including some basic chemicals such as caustic soda, sulfuric acid, acetic acid, etc.

The prices recovered in H1 2021 and skyrocketed in Aug.–Oct. as a result of rising raw material costs and "dual control" on energy consumption and energy intensity. It maintained at RMB95,000/t from Oct. 2021 to Jan. 2022. Main contributors to the jumping price are:

- Firstly, the US and other countries adopted a stimulative monetary policy to fight against economic recession caused by the coronavirus pandemic, which pushed up inflation around the world. Consequently, many manufacturers raised product price to reduce their pressures since prices of raw materials and commodity goods kept surging.
- Secondly, the "dual control" policy was implemented in H2 2021. Essentials for production, steam and electricity, had witnessed soaring prices. Manufacturers had to raise price because of high production costs.

The price of acesulfame potassium decreased in March–May 2022 but remained high; the price in May 2022 was about USD11,573/t.

2.5 Consumption

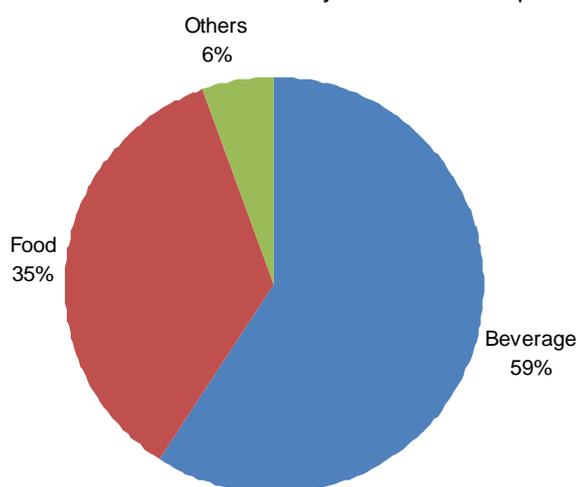
- Consumption situation

China, as a major sweetener producer in the world, has achieved stable growth in artificial sweetener production since 2010, thanks to the increasing demand for artificial sweeteners. With ever-growing consumption preference for low-sugar and low-calorie products, artificial sweetener market will see great development. Stability and safety are two pursuits in artificial sweetener development.

- Consumption pattern

Acesulfame potassium is mainly used in beverage and food industries. The consumption of acesulfame potassium in China was 2,700 tonnes in 2020 and 2,900 tonnes in 2021.

Figure 2.5-1 Downstream industry of acesulfame potassium in China, 2021



Source: CCM

Table 2.5-1 Consumption pattern of acesulfame potassium in China, 2021

Downstream segment		Consumption, tonne	Consumption share
Beverage	Carbonated beverages	1,100	37.9%
	Milk beverages	285	9.8%
	Vinegar beverages	130	4.5%
	Tea beverages	115	4.0%
	Other beverages	85	2.9%
Food	Roasted seeds and nuts	430	14.8%
	Sugar-free chewing gum	185	6.4%
	Canned foods	195	6.7%
	Other foods	214	7.4%
Others		161	5.6%
Total		2,900	100.0%

Source: CCM

In 2021, carbonated beverages, roasted seeds and nuts, and milk beverages were the top three consumption segments of acesulfame potassium in China.

In 2018–2021, the consumption of acesulfame potassium in China increased steadily.

With growing population of diabetes patients in the world and increasing health awareness among the public, food and beverage industries have explored ways to reduce sugar while maintain the tastes. Instead of traditional sugar and fructose with high calories, more people have started to choose functional sweeteners. In addition, many countries have levied sugar tax on drinks companies. Therefore, using new sweeteners to produce low-sugar and sugar-free products has become the main development goal for food and beverage industries globally.

- End user

Table 2.5-2 Main end users of acesulfame potassium for carbonated beverages, 2021

No.	Company	Product
1	Coca Cola (China) Beverage Co., Ltd.	Coke Zero, Coca-Cola Fiber+, Coke Light, Sprite Zero, Sprite Fiber+, Sugar free Sprite
2	PepsiCo (China) Limited	Pepsi-cola Max, Diet Pepsi, 7-UP, Marinda
3	Guangdong Jianlibao Group Co., Ltd.	Jianlibao sports drink
4	Jinmailang Beverage Corporate Ltd.	Jinmailang soda water
5	Jiaozuo Mingren Natural Medicine Co., Ltd.	Mingren soda water
6	Hangzhou Wahaha Group Co., Ltd.	Wahaha soda water
7	Danone (China) Food and Beverage Co., Ltd.	Mizone sugar free sparkling water
8	Beijing Spring & Mountains Beverages Co., Ltd.	Qingting soda sparkling water

Source: CCM

Table 2.5-3 Main end users of acesulfame potassium for roasted seeds and nuts, 2021

No.	Company	Product
1	Hangzhou Haomusi Foodstuff Co., Ltd.	Pistachio nut, pecan nuts, macadamias, watermelon seeds, sunflower seeds, almonds, small white almonds
2	Bestore Co., Ltd.	Dried horsebeans, pecan nuts, macadamias, watermelon seeds, sunflower seeds, almonds, milk flavored walnuts
3	Three Squirrels Inc.	Dried horsebeans, pistachio nuts, pecan nuts, macadamias, sunflower seeds, multi taste peanuts
4	Chacha Food Co., Ltd.	Melon seeds, peanuts, dried horsebeans, macadamias
5	Shanghai Laiyifen Co., Ltd.	Pecan nuts, macadamias, watermelon seeds, sunflower seeds, pumpkin seeds, almonds

Source: CCM

Table 2.5-4 Main end users of acesulfame potassium for milk beverages, 2021

No.	Company	Product
1	Inner Mongolia Mengniu Dairy (Group) Co., Ltd.	Formulated milk-containing beverages
2	Inner Mongolia Yili Industrial Group Co., Ltd.	Formulated milk-containing beverages
3	Coca Cola (China) Beverage Co., Ltd.	Minute Maid Pulpy Super Milky
4	Hangzhou Wahaha Group Co., Ltd.	Wahaha AD calcium milk drink, Nutrition Express milk beverage
5	Hebei Yangyuan Zhihui Beverage Co., Ltd.	Sugar free walnut milk beverage

Source: CCM

The consumption of acesulfame potassium in beverages has increased stably in recent years due to the following two reasons:

Firstly, with changes in people's diet structure and lifestyle, demand for functional sugar substitutes in beverages has increased rapidly since such substitutes contain no calorie and will not go through metabolism. After adding acesulfame potassium, or the mixture of acesulfame potassium with other sweeteners in beverages, a strong sweetening effect can be produced and the calories be kept at low level. Take coke as an example, which has the largest share in the beverage market. In recent years, the output of conventional sweet coke has declined at a rate of nearly 3% per year, while the output of low-sugar coke has increased significantly. Particularly, sugar-free soda water/sparkling water containing erythritol, sucralose, or acesulfame potassium is accepted by more and more people, and its output increased rapidly in China.

Secondly, the share of acesulfame potassium price to the cost of downstream products is very small, about 0.1%. Therefore, beverage industry is less sensitive to the price fluctuation of acesulfame potassium, so the demand has grown steadily. For instance, in non-alcoholic beverages, the maximum addition of acesulfame potassium is 350mg/L. If the price of acesulfame potassium increases by RMB10,000/t, the cost will climb by well below RMB0.01/L.

Table 2.5-5 Main end users of acesulfame potassium for other applications, 2021

No.	Company	Product
1	Wrigley Chewing Gum Company Limited	Wrigley sugarless gum
2	Chongqing Fuling Zhacai Group Co., Ltd.	Wujiang pickled mustard
3	Jinguan (China) Food Co., Ltd.	Jelly
4	Hebei Madajie Foodstuff Co., Ltd.	Jelly
5	Huanlejia Food Group Co., Ltd.	Canned fruit
6	Dalian Zhenxin Canned Food Co., Ltd.	Canned fruit
7	Hangzhou Wahaha Group Co., Ltd.	Eight-treasure congee
8	Dali Foods Group Company Limited	Eight-treasure congee
9	Qianhe Condiment and Food Co., Ltd.	Soy sauce

Source: CCM

3 Forecast

3.1 Factors influencing China's acesulfame potassium industry

➤ Drivers

In the next few years, the following factors will drive the development of acesulfame potassium industry.

- Trend to replace traditional artificial sweeteners

Capacity expansion and application scope of traditional sweeteners as saccharin, cyclamate have been restricted by the Chinese government or even around the globe. In contrast, new artificial sweeteners as acesulfame potassium have better cost performance and see their application scope expand. It is believed that acesulfame potassium will be more favored by the market in future.

- Growing health awareness and preference for low-calorie diet

More and more people suffer from obesity and diabetes in China. Growing number of consumers consciously choose non-sugar sweeteners. Acesulfame potassium, a good substitute for sucrose, is expected to occupy more market share and develop at an accelerating pace.

- Stronger demand from booming downstream food processing sector

Rapid development of food and beverage industries is expected to drive up the demand for acesulfame potassium. The booming food processing sector provides acesulfame potassium industry with large room for further development.

- Stronger overseas demand

The export volume of acesulfame potassium increased a lot in 2020–2021, and it is estimated to keep increasing in the coming few years.

➤ Barriers

- Relatively high entry threshold

Production process of acesulfame potassium is complicated and may take several years to master. In addition, it takes at least one to two years for a new project to be approved and put into operation. To acquire national certification and be accepted by downstream manufacturers, more years would slip away. For new entrants, the time and efforts mean a lot.

Besides, the main raw materials sulfur trioxide and diketene are hazardous chemicals with high transportation cost and storage difficulty. New capacity of diketene and sulfur trioxide is restricted by the government, which makes it difficult for acesulfame potassium producers to obtain approval to extend to the upstream. Optimization of industrial chain is essential to reduce production cost and increase profits for new entrants.

- Competition from other new sweeteners

Some other new sweeteners such as sucralose, neotame and erythritol will pose great challenges to acesulfame potassium.

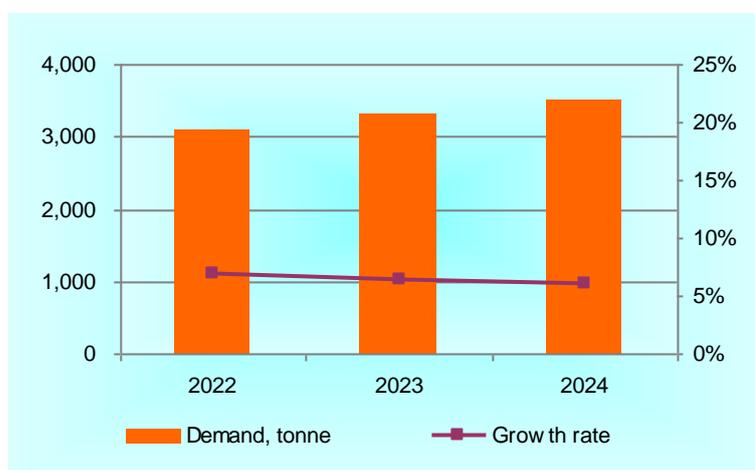
3.2 Supply & demand forecast 2022–2024

Influenced by increasing demand for low-sugar diet in recent years, the demand for new sweeteners including acesulfame potassium is predicted to grow fast in the future, as they gradually replace traditional sweeteners. With advantages in safeness, taste and price, acesulfame potassium sees a bright future.

Currently, supply and demand are relatively balanced and stable in China.

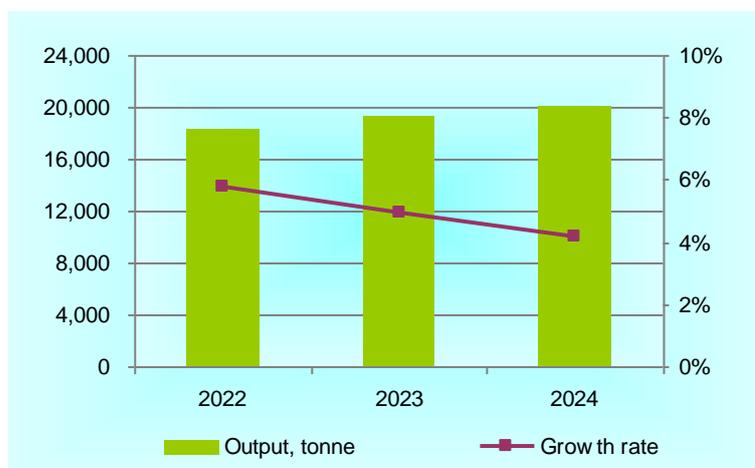
- The capacity will see a jump, along with the launch of Nantong Hongxin Chemical Co., Ltd.'s 15,000 t/a acesulfame potassium project, which will be put into operation by the second half of 2022.
- More output in China can be expected, driven by steadily growing domestic demand and overseas demand.

Figure 3.2-1 Forecast on demand for acesulfame potassium in China, 2022–2024



Source: CCM

Figure 3.2-2 Forecast on output for acesulfame potassium in China, 2022–2024



Source: CCM

It's estimated that rapid growth in domestic demand for acesulfame potassium will take place in the coming years, reaching about 3,500 tonnes in 2024 with a CAGR of 6.3% in 2022–2024. Meanwhile, the supply of acesulfame potassium will reach about 20,000 tonnes in 2024 with a CAGR of 4.5% in 2022–2024.

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