

### I-3 Development of citric acid in China

#### I-3.1 Summary

Table I-3.1-1 Summary of Chinese citric acid industry in recent years (1990~1999)

Year	Production (MTs)	Annual growth rate	Export amount (MTs)	Annual growth rate	Export income (USD, million)	Export percentage
1990						
1991	57,400	6.40%	54,700	38.00%	45.00	95.30%
1992	117,600	105.00%	85,700	57.00%	84.19	72.87%
1993						
1994						
1995						
1996						
1997						
1998						
1999						

#### I-4.1 Price of citric acid in the past

Situation about the price of citric acid in China from 1989 to 2004 is as follow.

Table I-4.1-1 Domestic and export price of citric acid in China in recent years

Year	Price in domestic (RMB/MT)	Export Price (USD/MT)
1989	6,500-7,000	
1990	5,800-6,300	
1991		
1992		
1993		
1994		
1995		
1996		1035
1997		935
1998		
1999		
2000		
2001		
2002		
2003		
2004		

#### I-5.2 Production nowadays

##### I-5.2.1 Summary of Chinese manufacturers

From the various sources for more than one month, 45 companies/factories have been reported to engage in the business of citric acid or citrate or both. After telephone interview, it is found that:

- 26 active factories produce citric acid, 8 of which produce citrate as well.
- 19 active factories only produce citrate.
- 5 factories stopped.

In the investigation, all active factories producing citric acid in China are contained, and more than 90.00% factories producing citrate are contained. The 5 stopped factories are representative enterprises in citric acid industry of China.

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Table I-5.2.1-1 Capacity end 2005 of Chinese manufacturers of citric acid and citrate-1

Report No.	Company	Meets environmental protection standard	Capacity 2005 (MTs/a)						
			CAM	CAA	TSC	TPC	MSC	TCC	Total
II-1.1		Yes	150,000	50,000	15,000	0	0	5,000	220,000
II-1.2		Yes	60,000	40,000	5,000	0	0	0	105,000
II-1.3		Yes	40,000	30,000	15,000	1,000	0	0	86,000
II-1.4		Yes	25,000	35,000	6,000	0	0	0	66,000
II-1.5		Yes							
II-1.6		Yes							
II-1.7		Yes							
II-1.8		Yes							
II-1.9		Yes							
II-1.10		Yes							
II-1.11		Yes							
II-1.12		Yes							
II-1.13		Yes							
II-1.14		Yes							
II-1.15		Yes							
II-1.16		Yes							
II-1.17		Yes							
II-1.18		No							
II-1.19		Yes							
II-1.20		No							
II-1.21		Yes							
II-1.22		No							
II-1.23		Yes							
II-1.24		No							
II-1.25		No							
II-1.26		No							
<b>Total</b>									

## I-6 Competitiveness of Chinese citric acid

### I-6.1 Overview

Chinese citric acid industry entered into global market very early. After years' development, China has been both the largest producer and exporter of citric acid in the world. Experienced times of serious competitions and integrations, the whole citric acid industry, including technology and production, has been improved a lots in China. However, Chinese citric acid producers are still far less advanced than multinational corporations in the aspects of managements, products quality and brand effects, etc. Meanwhile, heavy overproduction has come for Chinese citric acid industry. Average equipments' operating factor is only about 60.00%.

### I-6.2 Detailed competitiveness of Chinese citric acid

#### - Total production

Total output of Chinese citric acid has been growing steadily in recent years. Products species has also been extending continuously; concentrating degree has also been improving greatly in China.

#### - Production process

Comparatively with developed countries, the characters of Chinese citric acid process are:

- ✓ The production scale of single line is still smaller;
- ✓ The operating level is lower;
- ✓ The automation level is lower;
- ✓ The labor cost is lower;
- ✓ The level of multipurpose use of resources is lower;
- ✓ The level of clean production level is lower.

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## I-7 Import & export situation

Figure I-7-1 Citric acid export in China in recent years (2000~2005)

