

Note: Key data/information in this sample page is hidden, while in the report it is not.

1 Technology introduction

In general, the raw material of L-Cysteine base and L-Cysteine hydrochloride is L-Cystine. There are three major ways of producing L-Cysteine base and L-Cysteine hydrochloride in China at present, namely reduction method, chemical synthesis method and biological method.

Meanwhile, the raw material of N-Acetyl-L-Cysteine and S-Carboxymethyl-L-Cysteine is L-Cysteine hydrochloride monohydrate. The major production method of the two products in China is chemical synthesis.

1.1.4 Relevant patents in China

There were a few new patents of L-Cysteine in China in the past few years, mainly concentrating on biological method to produce L-Cysteine base. For example, Hangzhou Bioking Biochemical Engineering Co., Ltd. uses a new kind of *E. coli* to produce L-Cysteine base in 2010. Meanwhile, some patents also focus on producing new L-Cysteine derivatives. For example, GL Biochem (Shanghai) Ltd. invented a new method of producing S-Methoxybenzylidene-Cysteine hydrochloride in 2008.

Table 1.1.4-1 Some L-Cysteine patents in China, 2007-2010

No.	Company	Application date	Patent number	Title
1	Hangzhou Bioking Biochemical Engineering Co., Ltd.	■	■	A method of using a kind of <i>E. coli</i> to extract L-Cysteine base
2	Nanjing University of Technology	■	■	■
3	GL Biochem (Shanghai) Ltd.	■	■	■
4	Shantou Ziguang Guhan Amino Acid Co., Ltd.	■	■	■
5	Tianjin University of Science & Technology	■	■	■
6	Tianjin University of Science & Technology	■	■	■
7	Shantou Ziguang Guhan Amino Acid Co., Ltd.	■	■	Using L-Cysteine liquid waste to retrieve L-Cystine

Source: CCM International

3 Production cost and profitability of L-Cysteine in China

3.1 Production cost and profitability of L-Cysteine hydrochloride monohydrate

In 2010, the top three producers of L-Cysteine hydrochloride monohydrate in China are Shine Star (Hubei) Biological Engineering Co., Ltd., Wuhan Grand Hoyo Co., Ltd. and Ningbo Zhenhai Haide Biochem Co., Ltd., with output of ■ tonnes, xx tonnes and ■ tonnes respectively. The total output of them accounts for ■% of the national output in 2010.

2.1.1 Shine Star (Hubei) Biological Engineering Co., Ltd.

2.1.1.1 Estimation on production cost of L-Cysteine hydrochloride monohydrate

Table 2.1.1.1-1 Estimation on production cost of L-Cysteine hydrochloride monohydrate in Shine Star, Sept. 2011

Item	Cost, USD/t
Manufacturing cost	■
Management cost	■
Total	■

Source: CCM International

2.1.1.2 Estimation on manufacturing cost

Table 2.1.1.2-1 Estimation on manufacturing cost of L-Cysteine hydrochloride monohydrate in Shine Star, Sept. 2011

No.	Item	Unit cost, USD/t
1	Raw materials	■
2	Utilities	■
3	Labor ①	■
4	Packing	■
5	Depreciation ②	■
Total		■

Note: ① There are totally ■ ordinary operators for L-Cysteine hydrochloride monohydrate production in Shine Star. Average salary is USD ■ per month.

② Theoretically, the fixed assets per tonne L-Cystine are about USD ■ and are paid in equal installments in ■ years. The fixed assets per tonne L-Cysteine hydrochloride monohydrate are about USD ■ and are paid in equal installments in ■ years. Shine Star's operating rates of L-Cystine and L-Cysteine hydrochloride monohydrate are about ■% and ■% respectively. Thus, the actual depreciation is USD ■/t in 2011.

Source: CCM International