

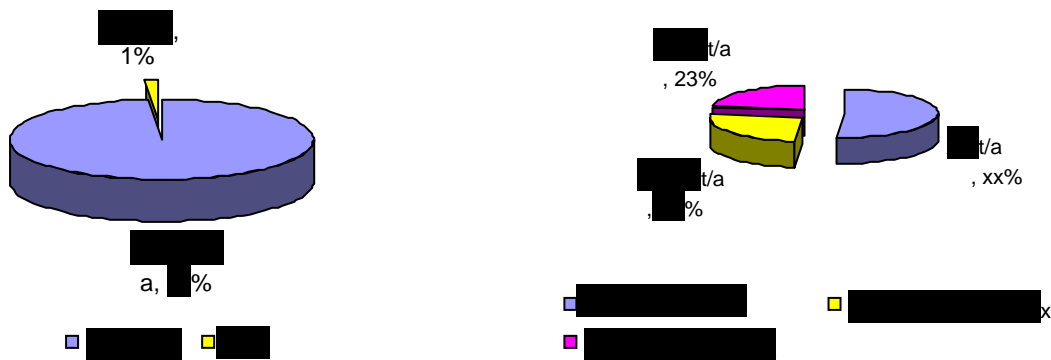
I-2 Current Production Structure of Pentaerythritol in China

I-2.1 Product Species of Pentaerythritol in China

The pentaerythritol produced by local manufacturers in 2008 can be classified as follows:

- Low grade monopentaerythritol: [redacted] max.
- Middle grade monopentaerythritol: [redacted] %
- High grade monopentaerythritol: [redacted].
- Dipentaerythritol: [redacted] % or [redacted] %

Figure I-1-1 The product structure in 2008, by capacity



- Monopentaerythritol

According to research in 2007, The production of monopentaerythritol ([redacted]) still dominated the industry. Four manufacturers could produce monopentaerythritol ([redacted] % min.), including Hubei Yihua, [redacted] [redacted] and [redacted] [redacted] whose total capacity reached [redacted] t/a. Compared with 2005, there is no new producers claiming to have grasped the production technology of [redacted] % pentaerythritol, but the total capacity increased greatly. According to CCM's investigation, the total capacity of [redacted] % pentaerythritol kept increasing since 2005, which is caused by the following reasons. First, with the improvement of production technology, Chinese manufacturers are able to produce high quality pentaerythritol. Second, the market demand for high grade paint increases largely, leading to a rapid consumption increase of [redacted] % pentaerythritol. To meet the growing market demand, many producers enlarge their capacity of [redacted] % pentaerythritol.

During 2008, some new penta installations were put into production and more and more producers became capable of producing monopendtaerythritol ([redacted] %min), thus the capacity of monopendtaerythritol ([redacted] %min) grew rapidly, up to [redacted] t/a, with the annual growth rate of about [redacted] %.

In 2009, the capacity of monopendtaerythritol ([redacted] %min) further increased to [redacted] t/a, with the annual growth rate of about [redacted] %. According to CCM's investigation, Bazhou Shengfang is planning to put its new penta installation into production in July 2009, which is expected to

achieve the monopentaerythritol (10%min) capacity of [REDACTED] t/a, and Chifeng Ruiyang is building a new production line with the capacity of [REDACTED] t/a, which is planned to launch in 2010.

- Monopentaerythritol

Since two new enterprises, namely Anhui Jinhe and Shandong Golden Yimeng, began to produce dipentaerythritol respectively in April and June 2008, which expanded China's capacity of dipentaerythritol significantly to [REDACTED] t/a. Moreover, Jiangsu Sanmu built a [REDACTED] t/a dipentaerythritol production line in 2008 to produce resin of certain special types, as well as to meet the demand from overseas market, which further expanded China's dipentaerythritol capacity to [REDACTED] t/a.

In 2009, Shandong Golden Yimeng has expanded its dipentaerythritol to [REDACTED] t/a, thus China's total capacity of dipentaerythritol reached up to [REDACTED] t/a currently.

I-2.2 Summary of Chinese Manufacturers

[REDACTED] companies/factories are reported to have engaged in pentaerythritol business, compared with [REDACTED] companies/factories in 2008's investigation, cited from various sources by May 2009. Extensive telephone interviews have been conducted to verify the actual situation of these companies.

Based on CCM's investigation, up to May 2009, there have been [REDACTED] active manufacturers of pentaerythritol in China. With the launch of the [REDACTED] t/a production line by the end of 2008 in Guizhou, Hubei Yihua remains the largest manufacturer with the total capacity up to [REDACTED] t/a. Hubei Yihua's newly launched a production plant, known as Guizhou Jinjiang Chem., is only the first stage of the pentaerythritol project in Guizhou, with the second stage designed to be [REDACTED] t/a, which is estimated not to start in the near future, due to the current low price of penta. As some new producers have emerged in recent two years and some existing producers also have expanded their capacity, this has led to a significant change of producer ranking list compared with that in 2007.

Table I -2.2-1 Numbers and status of local pentaerythritol manufacturers

Status	Total		Active		Stopped	
	2009	2008	2009	2008	2009	2008
Manufacturer numbers	[REDACTED]					3

I-2.3 Summary of Production

- About capacity and output of pentaerythritol

Figure I-2.3-1 Production capacity and output of pentaerythritol in 2002-2008

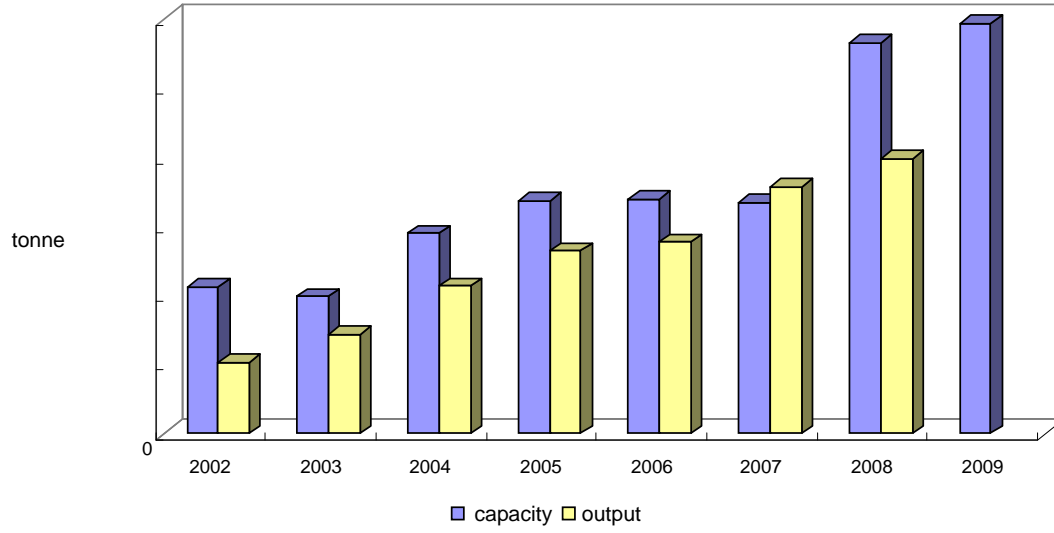
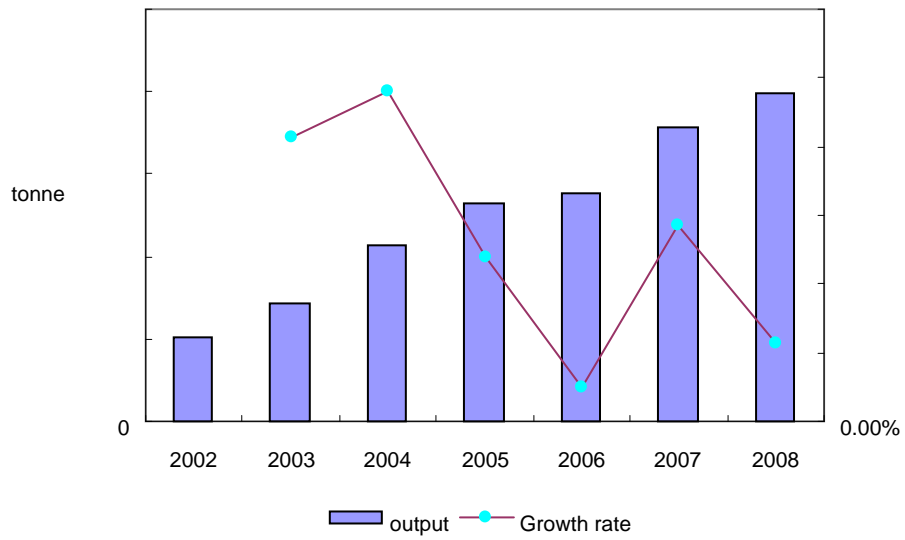


Figure I-2.3-2 Pentaerythritol output and annual rate of growth



The price of pentaerythritol kept stable in the first half of 2008, but has sharply decreased since the financial crisis in Aug. 2008. The decreasing demand from downstream industries and falling price of raw material, especially the methanol, have greatly brought down the price of pentaerythritol.

Figure I-4-1 The price change of low grade (■■% max.) and high grade monopenta (■■%min.) in 2004~May 2009

