II-1.2 Summary of production

Currently, the production of ethanolamines is mainly located in Liaoning province, Jiangsu province, Guangdong Province and Shanghai City, which are not far away from production base of Epoxy ethane (EO).

Promoted by the increasing demand of ethanolamines in China, the domestic output of ethanolamines has increased rapidly. For example, the output of ethanolamines in 2007 was nearly three times as much as that in 2003, amounting to tonnes.

By April 2008, domestic supply of ethanolamines has failed to meet the market demand, which resulted from the following reasons.

•••••

Year	Capacity	Operating rate		Output		Total	Growth rate	
			MEA	DEA	TEA	TOLAI		
2000							-26.1%	
2001							71.6%	
2002							-28.0%	
2003							73.0%	
2004							9.5%	
2005							30.4%	
2006							20.0%	
2007							60.3%	

Table II-1.2-1 Capacity and output of ethanolamines in China in the past few years (Unit: tonne)

Table II-1.2-2 Potential projects of ethanolamines

Company	Location	Property	Launch time	Capacity, t/a	
		New			
		Enlarge			
		Enlarge			
		Enlarge			
Total					

II-2 Raw materials supply status

Epoxy ethane (EO) is the major raw material for the production of ethanolamines in China. The supply and price of epoxy ethane has great impact on ethanolamines industry.

II-2.1 Production

EO and ethylene glycol (EG) are joint products. In China most manufacturers produce both EO and EG in the same production line. Currently there are 15 active producers of EO/EG in China, and the total capacity of EO/EG reached **active** kt/a in 2007 among which over 70% of the production capacity was for EG production. The actual output of EO was about tonnes in 2007. Of the 15 producers, three companies,

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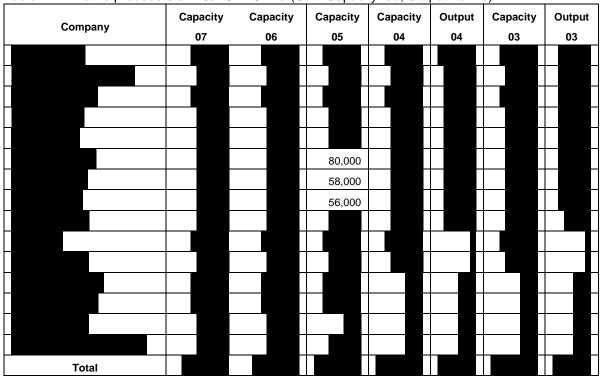


Table II-2.1 Active producers of EO/EG in China (Unit: Capacity: t/a, Output: tonne)

II-4 Historic import and export analysis in recent years

Domestic ethanolamines supply fail to self-support, thus large quantities of ethanolamines are imported to satisfy the market demand. The import quantity of ethanolamines has kept increasing in the past several years especially since 2002.

Table II-4-1 Import situation of ethanolamines in China in the past eight years (Quantity: tonne, Price: USD/t)

	/				0		0	
	MEA		DEA		TEA		Total	
Year	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
2000	25,853.87	652.23	22,909.46	877.57	1,840.95	1014.75	50,604.28	767.43
2001	24,871.15	686.2	18,717.48	786.55	1,579.75	920.08	45,168.39	735.97
2002	24,122.50	639.74	33,973.50	690.69	3,771.66	743.09	61,867.66	674.02
2003	27,809.61	705.39	48,300.92	851.77	12,806.28	679.23	88,916.81	781.14
2004								
2005								



The import price of MEA and DEA changed a little from 2000 to 2003, and the price difference of DEA in 2000 and 2003 was the maximal, about USD160/t. After 2003 the price of ethanolamines rose drastically because China started antidumping investigations of imported ethanolamines in May 2003, and in November 2004 China started collecting countervailing duty of 9-74% to the imported ethanolamines from Japan, USA, Iran, Mexico and Taiwan and so on in the coming 5 years.

II-5 Consumption patterns of ethanolamines

- Summary

Ethanolamines, a viscous compound that smells like ammonia, are commonly found in biological tissues, and it also has numerous industrial applications. It is widely applied to surfactant, emulsifier, and plasticizer, accelerant, curing ingredient and vesicant, and it could remove H_2S and CO_2 from refinery and natural gas streams. Ethanolamine is also important in the manufacture of herbicides, detergents, cosmetics, metal cleaners, and textiles.

Ethanolamines consumption in China has been increasing very rapidly in the past few years with CAGR of 16.2% in 2000-2007. In 2007, China consumed tonnes of ethanolamines while the consumption volume in 2000 was only tonnes. The quick development of its downstream industry such as agrochemical and polyurethane contributed a lot to Chinese ethanolamines consumption.

Figure II-5-1 Consumption of ethanolamines in China in the past few years