

Glyphosate Market Research in China

The First Edition

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1. Introduction

Glyphosate Market Research in China is a preliminary report on China's glyphosate market finished by CCM in Nov. 2016. This report attaches importance to the following parts:

- Development trend of glyphosate production technology in China;
- Development trend of glyphosate by three routes in China;
- Supply and demand of glyphosate technical by volume in China;
- Key producers of glyphosate technical in China;
- Supply of glyphosate formulation by specification in China;
- China's export of glyphosate to Kazakhstan, Russian Federation, the Republic of Belarus, 2011-2015

2. Approach for the report

This report has been drafted by diverse methods which are as follows:

✓ Desk research

There are various sources of desk research, including published magazines, journals, Through desk research, basic information such as production, producers, trade, supply & demand, and consumption by region/country is collected, mainly from the internet, magazines and periodicals. Third party data were also purchased to deepen and approve our understanding.

✓ Telephone interview

Extensive telephone interviews were carried out, through which CCM gets expert opinions, including forecast on average growth rate of the glyphosate demand in 2016-2025, factors influencing the demand, new production routes, comparison of three production routes, etc. Such information helps us better understand the development trend of glyphosate in the future.

✓ Import & export analysis

Analysis of export data (HS code 29310000, 38089311 and 38089319) from Chinese Customs helps work out flow chart of Chinese glyphosate (glyphosate technical, glyphosate formulations) by producer, trader and destination.

✓ Report generation

Logical analysis and scientific ratiocination were conducted to generate the report, such as supply & demand analysis and cross-checking of all data. All the data and findings obtained through the above methods will be presented in the report clearly.

3. Executive summary

There are three production routes of glyphosate technical in China, namely the aminoacetic acid (AEA) route, the diethanolamine (DEA) route and the iminodiacetonitrile (IDAN) route. The AEA route has kept playing the dominant role in China, with the output taking up over XX% of the total output in 2015. Glyphosate production by the IDAN route also has been developing at a high speed, and it took up about XX%-XX% of the total output in the past five years (2011-2015). The output share of glyphosate by the DEA route has kept decreasing from over XX% in 2004-2007 to about XX% in 2012-2013 and XX% in 2015.

The AEA route will still keep developing rapidly because of its low production cost and mature technology in China. The IDAN route, though facing great pressure from increasing natural gas price but still showing strong competitiveness over the DEA route, will also have a fast development. The DEA route will be less advantageous in the future competition.

China's glyphosate technical capacity has kept increasing in 2012-2015, but it decreased a little in 2016 to about XX t/a, since some companies have stopped glyphosate technical production and won't resume production any more.

Though China's glyphosate technical supply has exceeded the demand greatly, some domestic companies still planned to expand their capacity. Due to the sluggish glyphosate market, and stricter and more stringent environmental protection requirements, almost all these projects were suspended.

The domestic consumption of glyphosate has kept increasing in the past few years, and glyphosate 30% SL (41% IPA mainly) is the most popular formulation consumed in the domestic market, whose consumption volume accounts for over XX% of total consumption volume of glyphosate (converted to and calculated by glyphosate technical).

China mainly exports glyphosate formulations to Kazakhstan, with the volume reaching XX tonnes in 2015 (converted to 95% technical). SL form plays the dominant role with 41% IPA being the leading specification.

Russian Federation has become an important destination of China's glyphosate, with its import volume of China's glyphosate reaching over XX tonnes in 2015 (converted to 95% technical).

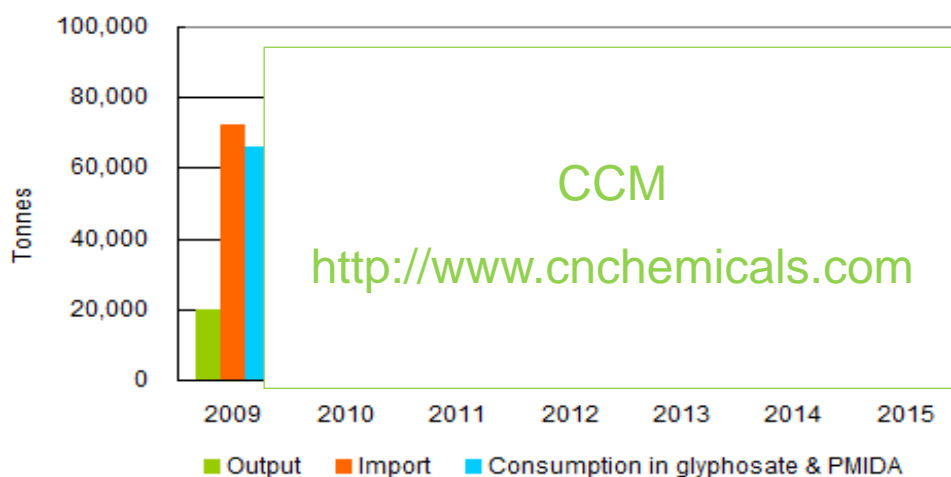
China mainly exports glyphosate formulations to the Republic of Belarus, with 62% IPA being the leading specification. Belarus' import volume of China's glyphosate was about XX tonnes in 2015 (converted to 95% technical).

Table 1.3-1 Comparison of the three production routes of glyphosate technical in China

Route	AEA	DEA	IDAN
Strong point	XXXXXXXX	XXXXXXXX	XXXXXXXX
Shortcoming	XXXXXXXX	XXXXXXXX	XXXXXXXX
Raw material supply	XXXXXXXX	XXXXXXXX	XXXXXXXX
Wastewater	XXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	
		XXXXXXXXXXXXXXXXXXXXXXXXXXXX	
Product quality	XXXXXXXX	XXXXXXXX	XXXXXXXX
Recyclable by-products	XXXXXXXX	XXXXXXXX	XXXXXXXX
Initial application time in China	XXXXXXXX	XXXXXXXX	XXXXXXXX
Cost	XXXXXXXX	XXXXXXXX	XXXXXXXX
Typical company	XXXXXXXX	XXXXXXXX	XXXXXXXX
Development trend	XXXXXXXX	XXXXXXXX	XXXXXXXX

Source: CCM

Figure 1.3.1-1 DEA's output, import and consumption in glyphosate & PMIDA in China, 2009-2015



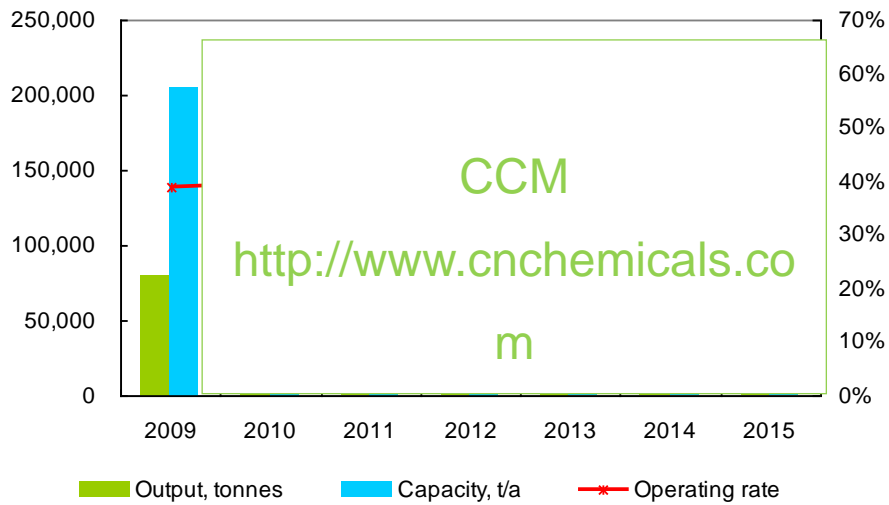
Source: CCM

Table 1.3.2-1 Name list of four glyphosate (PMIDA) producers passing the environmental protection verification launched by the Ministry of Environmental Protection of China, 2014

No.	Manufacturer	Production route	Main product	Major method to dispose mother liquid
1	XXXXXXXXXXXX	XXXX	XXXX	XXXXXXXXXX
2	XXXXXXXXXXXX	XXXX	XXXX	XXXXXXXXXX
3	XXXXXXXXXXXX	XXXX	XXXX	XXXXXXXXXX
4	XXXXXXXXXXXX	XXXX	XXXX	XXXXXXXXXX

Source: The Ministry of Environmental Protection of China

Figure 1.3.1-2 Capacity and output of IDAN in China, 2009-2015



Source: CCM

Table 1.3.3-1 Cost comparison of three different routes for glyphosate technical production in China, June 2016, USD/t glyphosate

Item	AEA	DEA	IDAN
Raw material cost	XXX	XXX	XXX
Production cost	XXX	XXX	XXX
Waste water treatment fee	XXX	XXX	XXX
By-product recovery income	XXX	XXX	XXX
Real cost	XXX	XXX	XXX

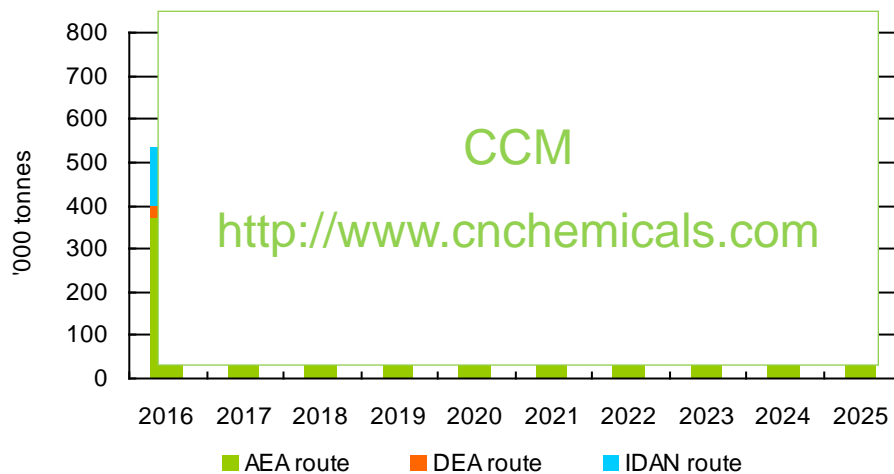
Source: CCM

Table 1.3.3-2 Raw material cost of AEA route for glyphosate technical production in China, June 2016

Raw material	Unit consumption, t/t	Unit price*, USD/t	Unit cost, USD/t
Glycine (Industrial grade)	XXX	XXX	XXX
Paraformaldehyde (37%)	XXX	XXX	XXX
Triethylamine (99.5%)	XXX	XXX	XXX
Methanol (95%)	XXX	XXX	XXX
DMP	XXX	XXX	XXX
Hydrochloric acid (30%)	XXX	XXX	XXX
Total			XXX

Source: CCM

Figure 1.4-1 Predicted output of glyphosate technical by different routes in China, 2016-2025



Source: CCM

Table 2.1-1 China's annual export of glyphosate to Kazakhstan, 2011-2015

Year	Glyphosate technical			41% IPA			62% IPA			75.7% WSG		
	Volume, tonne	Value, USD	Price, USD/t	Volume, tonne	Value, USD	Price, USD/t	Volume, tonne	Value, USD	Price, USD/t	Volume, tonne	Value, USD	Price, USD/t
2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2012	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2013	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2014	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2015	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Source: China Customs & CCM

Table 2.2-2 Key suppliers of glyphosate additives in China, Nov. 2016

No.	Company	Glyphosate surfactants
1	XXXXXXXXXX	XXXXXXXXXX
2	XXXXXXXXXX	XXXXXXXXXX
3	XXXXXXXXXX	XXXXXXXXXX
...	XXXXXXXXXX	XXXXXXXXXX
...	XXXXXXXXXX	XXXXXXXXXX
...	XXXXXXXXXX	XXXXXXXXXX
...	XXXXXXXXXX	XXXXXXXXXX

Source: CCM

Table 2.3.1 Capacity and output of glyphosate technical in China, 2012-H1 2016

Item	2012	2013	2014	2015	H1 2016
Capacity, t/a	XXXX	XXXX	XXXX	XXXX	XXXX
Output, tonne	XXXX	XXXX	XXXX	XXXX	XXXX

Source: CCM



Table 2.3.3 Expansion plan of glyphosate technical in China, as of Nov. 2016

No.	Company	Designed capacity, t/a	Detail	Status, Nov. 2016
1	XXXXXX	XXXXXX	XXXXXX	XXXXXX
2	XXXXXX	XXXXXX	XXXXXX	XXXXXX
3	XXXXXX	XXXXXX	XXXXXX	XXXXXX
...	XXXXXX	XXXXXX	XXXXXX	XXXXXX
...	XXXXXX	XXXXXX	XXXXXX	XXXXXX
...	XXXXXX	XXXXXX	XXXXXX	XXXXXX
...	XXXXXX	XXXXXX	XXXXXX	XXXXXX

Source: CCM

Table 2.4.1-2 Output of key glyphosate formulations in China, 2013-H1 2016, tonne

Year	30% SL (41% IPA mainly)	62% SL (62% IPA)	68% SG (75.7% WSG)	51% SL (51% IPA)	Others
2013	XXXX	XXXX	XXXX	XXXX	XXXX
2014	XXXX	XXXX	XXXX	XXXX	XXXX
2015	XXXX	XXXX	XXXX	XXXX	XXXX
H1 2016	XXXX	XXXX	XXXX	XXXX	XXXX

Source: CCM

Table 2.4.1-4 Glyphosate consumption in main crops in China, 2013-2015, tonne

No.	Crop	2013	2014	2015
1	Orchards	XXXX	XXXX	XXXX
2	Corn	XXXX	XXXX	XXXX
3	Wheat	XXXX	XXXX	XXXX
4	Rice	XXXX	XXXX	XXXX
5	Rubber	XXXX	XXXX	XXXX
6	Beans	XXXX	XXXX	XXXX
7	Tea	XXXX	XXXX	XXXX
8	Cotton	XXXX	XXXX	XXXX
9	Sugarcane	XXXX	XXXX	XXXX
Others (mainly no-tillage)		XXXX	XXXX	XXXX
Total		XXXX	XXXX	XXXX

Note: calculated by glyphosate 95% technical

Source: CCM

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