

IDAN Survey in China 2022

The Seventh Edition

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Researched & Prepared by:

Kcomber Inc.

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1. Introduction

Iminodiacetonitrile (IDAN), an important fine chemical intermediate, takes an important role in the production of PMIDA & glyphosate. This report has carried on the analysis of IDAN from its production to its consumption in China, including production technology, production, producers, consumption, and price change of IDAN, as well as influencing factor analysis for IDAN industry. So, this report can be a guide for the players who pay close attention to IDAN industry.

China started commercial production of IDAN in 2005. At that time, the output was only several hundred tonnes because of limited market size. Since 2006, IDAN has been gradually known by more and more domestic glyphosate technical producers. They made attempts to use it as raw material, and the experiment has made progress. Since then, the domestic IDAN industry has been growing rapidly. In 2013–2014, the national output of IDAN has kept increasing because of the increasing output of PMIDA & glyphosate technical (made via the IDAN route) during the same period. But in the following years, it decreased.

In China, the output of IDAN is mainly affected by environmental policy and glyphosate market. Environmental policy is expected to be more stringent in the future, which will lead to rising raw materials cost from upstream and lower operating rates in manufacturers, downstream manufacturers also want to purchase PMIDA instead of IDAN to reduce their production waste and environmental protection pressure. In the short term, the oversupply of another route for the production of glyphosate—the glycine route leads to a lower price of glycine, which causes glyphosate producers to choose the glycine route. In the long term, demand for glyphosate is expected to remain at a high level for the lack of good substitutes and the bright future of GM crops. It is estimated that the output of IDAN will decline slightly in 2023 and a small increase is expected between 2024 and 2027.

Scope of the report

Region scope: China

Time scope: primarily 2013 to 2022 To enquire about this report, please email econtact@cnchemicals.com or call +86-20-37616606.

2. Approach for this report

- Desk research

Sources of desk research are various including published magazines, journals, government statistics, industrial statistics, customs statistics, association seminars as well as information from the internet. A lot of work has been done to compile and analyse the information obtained. When necessary, checks would be made with Chinese market players regarding market information such as production, demand and consumption.

- Telephone interview

The interviewees cover:

- IDAN manufacturers
- Experts
- Traders
- Local governments
- Researchers
- Industrial associations

CCM carried out extensive telephone interviews with almost all IDAN manufacturers. From those active manufacturers and manufacturers that have suspended or stopped production, CCM sourced and verified the detailed production and market information as well as industry insiders' comments on IDAN.

In a bid to better understand the application of IDAN in China, CCM also made contact with domestic traders and distributors as well.

- Data processing and presentation

The data collected and compiled are sourced from:

- Published articles from Chinese periodicals, magazines, journals and third-party databases
- Government statistics & customs statistics
- Telephone interviews with Chinese manufacturers, traders
- Comments from industrial experts
- CCM's innovative database
- Information from the internet

The data from various channels have been combined to make this report as precise and scientific as possible. Throughout the process, a series of internal discussions have been held in order to analyse the data and draw conclusions from it.

- Glossary

IDAN: Iminodiacetonitrile

IDA: Iminodiacetic acid

DEA: Diethanolamine

EA: Ethanolamine

PMIDA: N-(Phosphonomethyl) iminodiacetic acid

HCN: Hydrocyanic acid

- Unit

Tonne: equals to metric ton in this report

/t: per tonne

t/a: tonne/annual, tonne per year

USD: US dollar, currency unit in the US

RMB: currency unit in China, also named yuan

Source: The People's Bank of China

3. Executive summary

In China, IDAN supply can satisfy domestic glyphosate production currently. Compared with the DEA route, the IDAN route has an advantage in production cost, and it will remain so in a long period of time.

In XXXX, IDAN capacity remained in line with XXXX at XXX,XXX t/a, with only three active producers which mainly concentrated in Southwest China, where there is an easy access to natural gas resources. The total capacity shrank a bit from over-XXX,XXX t/a during XXXX–XXXX. Regarding the output, compared to XXXX, IDAN output reduced a bit from XXX,XXX tonnes to XXX,XXX tonnes in XXXX.

In XXXX, the annual average price of XX% IDAN suffered a decrease from USDX,XXX/t in XXXX to USDX,XXX/t in China.

4. What is in the report?

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

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1.2 Capacity and output of IDAN

During XXXX–XXXX, the capacity of IDAN kept over XXX,XXX t/a, but due to oversupply, it began to decline in XXXX. By XXXX, the capacity reduced to XXX,XXX t/a, with only X producers operating in China.

As for output, IDAN's output in China peaked at XXX,XXX tonnes in XXXX, but in the following years, IDAN's output decreased and kept stable at around XXX,XXX–XXX,XXX tonnes (except for XXXX).

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1.3 Major producers of IDAN

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Table 1.3-1 Capacity and output of IDAN producers in China, 2018–2022

No.	Producer	Status in 2022	Capacity in 2022, t/a	Output, tonne				
				2018	2019	2020	2021	2022
X	XXXXXX XXXXXX XXXXXXXXXXXX X XXXXXXX XXX XXXXXXXXXXXX XXXX XXXX	XXXXXX X	XXXXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXXXX	XXXXXXXX
X	XXXXXXXXXX XXXXXXXXXXXX X XXXXXXX XXXX XXXX	XXXXXX X	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
X	XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXX XXXX	XXXXXX X	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
XXXXX			XXXXXXXX	XXXXXXXX	XXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX

Source:CCM

2 IDAN price in China

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Figure 2-1 Annual average ex-works price of 95% glyphosate technical in China, 2016–2022



Source:CCM

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3.1 Glyphosate production

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Figure 3.1-1 Brief pathway of IDAN route for glyphosate technical production in China



Source:CCM

Figure 3.1-2 Flowchart of IDAN route for glyphosate technical production in China



Source:CCM

The IDAN route was a new production route developed in China in XXXX. This route will have a bright future in China for the following factors:

- **Low production cost:** The production cost of IDAN route is lower than the DEA route in most of the times. Though the price of natural gas (raw material of IDAN), under regulation by the Chinese government, has increased slightly in recent years, the price of IDAN is hardly influenced. Domestic glyphosate producers are in a strong bargaining position compared with the IDAN producers, because the consumption field of IDAN is limited.
- **Balanced supply:** By now, the IDAN supply and demand have come to balance.
- **Moderate accessibility of raw materials for the IDAN route:** Based on the cost analysis, IDAN and phosphorus trichloride are two major raw materials for the IDAN route. At present, some of the glyphosate/PMIDA producers are adopting the IDAN route and establishing their phosphorus trichloride plants to reduce the cost.

- Key glyphosate technical producers by IDAN route

In XXXX, there were seven key glyphosate technical producers adopting IDAN route in China with a total capacity of XXX,XXX t/a.

Table 3.1-1 Key glyphosate technical producers adopting IDAN pathway in China, 2022

No.	Company	Capacity, t/a
X	XXXXXXXX XXXX XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXX XXXX XXXX	XXXXXX
X	XXXXXX XXXXXX XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXX XXXX XXXX	XXXXXX
X	XXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXXXXXX X XXXXXXXXXXXX XXXX XXXX	XXXXXX
X	XXXXXX XXXX	XXXXXX
X	XXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXX XXXX XXXX	XXXXXX
X	XXXXXX XXXXXXXXXXX XXXX XXXX	XXXXXX
X	XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX	XXXXXX
XXXXX		XXXXXXX

Source:CCM

3.2 Influencing factor analysis

- Influences from other routes for glyphosate production

Routes for glyphosate technical production compete with each other. China's ever stricter environmental policies will force enterprises to choose a production pathway with relatively small pollution.

- Glycine route

The glycine route remains dominant in producing glyphosate, accounting for XX%–XX% of the total glyphosate output in China in XXXX–XXXX. Chinese glycine industry has always witnessed overcapacity in the past few years, and this situation will not change much in the coming few years. Positively, some glycine producers may transform their glycine installations to produce other amino acids. Stricter environmental governance will be implemented on glycine manufacturers as glycine is a polluting chemical, which will limit further capacity expansion.

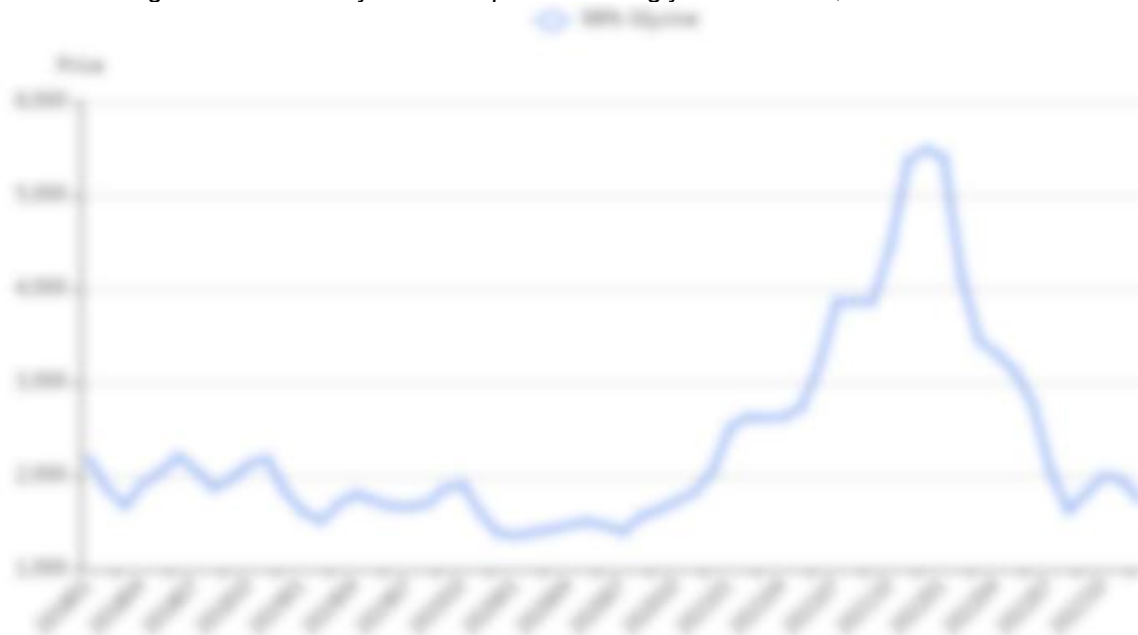
As for price, there is a great oversupply in glycine in China, and in most cases, glycine price won't change much. And due to some environmental policies, supply of and demand for glycine and enterprises' operating profits in China are limited, affecting the price of glycine.

- **DEA route**

This route has not been widely chosen by manufacturers in China, because investment and production cost in the route is relatively high. The output of glyphosate technical taking DEA as raw material in China was XX,XXX tonnes in XXXX–XXXX, and XX,XXX tonnes in XXXX–XXXX.

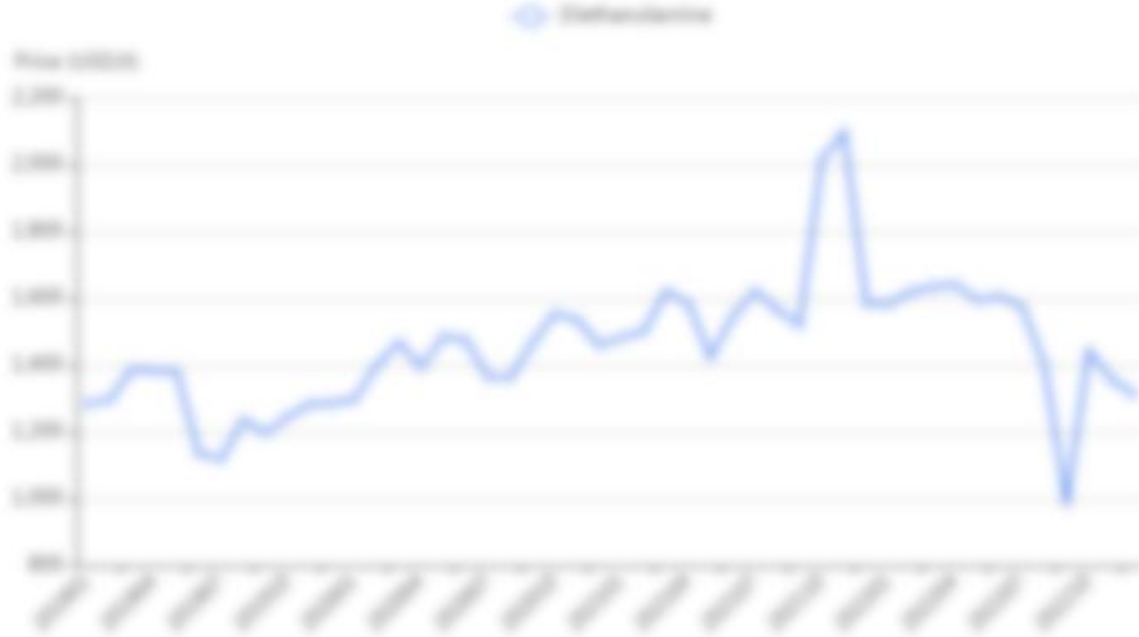
DEA and IDAN routes have the same intermediate, IDA, but the production cost of glyphosate in IDAN route is less than the cost in DEA route. It is difficult to prepare the catalyst for this route, and DEA needs to be imported, so this method is limited to large-scale industrial production. The Ministry of Commerce of the People's Republic of China imposed anti-dumping duties on EA imported from the US, Saudi Arabia, Malaysia and Thailand on XX Oct., XXXX, which would last for five years. Many glyphosate producers switched to IDAN route to produce their products.

Figure 3.2-1 Monthly ex-works price of 98% glycine in China, Jan. 2018–Dec. 2022



Source:CCM

Figure 3.2-2 Monthly ex-works price of DEA in China, Jan. 2019–Dec. 2022



Source:CCM

- Supporting PMIDA production line

Instead of selling IDAN, some producers sell PMIDA directly for more profit.

More IDAN producers have built supporting PMIDA production lines. What's more, domestic glyphosate technical producers prefer purchasing PMIDA rather than IDAN in order to reduce pollution in their factories.

- Influence from natural gas

The production cost of IDAN in China is affected by the price of natural gas to some extent. It is estimated that the supply of natural gas in China will be tight in the future for the following two reasons:

- Firstly, in order to reduce haze pollution, China promotes fuel switching project, from coal to natural gas. If there is a shortage of natural gas, the government will give priority to civilian heating instead of industrial use. The production of many chemicals that requires natural gas as raw material, including the production of IDAN, will be affected as a result.
- Secondly, the increase of natural gas output in China could not catch up with its consumption, which leads to high dependence on imports. According to statistics released by China's National Bureau of Statistics, in XXXX–XXXX, more than XX% of natural gas used in China was imported, with the highest ratio of XX.XX% in XXXX.

What's more, the Russia-Ukraine conflict that broke out in XXXX affected the normal operation of the international natural gas market. Europe gradually reduced natural gas imports from Russia and increased imports from other international markets, while Russian natural gas is difficult to quickly switch to other demand markets, and the global natural gas market is tightening, which in turn has led to a sharp increase in the price of imported natural gas in China. In addition, natural gas prices have also been affected by rising oil prices, with exorbitant prices suppressing demand for natural gas in China.

Table 3.2-1 Supply and demand of natural gas in China, 2016–2022

Year	2016	2017	2018	2019	2020	2021	2022
XXXXXXXX XXXXXXXX m ³	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXXXXXXX XXXXXXXX m ³	XX	XX	XXX	XXX	XXX	XXX	XXX
XXXXXXXXXXXXXX XXXXXXXX m ³	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Source:China's National Bureau of Statistics & CCM

Figure 3.2-3 Quarterly transaction price of pipeline natural gas in China, Q1 2018–Q4 2022



Source:CCM

4 Forecast on IDAN market in China in 2023–2027

It is estimated that the output of IDAN will decline slightly in XXXX and a small increase is expected between XXXX and XXXX.

In the short term, the output of IDAN will decline slightly in XXXX.

In China, there are two ways to produce PMIDA, the DEA route and the IDAN route, of which the vast majority of PMIDA is produced using the IDAN route due to the lower cost. On one hand, the output of PMIDA, one of the downstream products of IDAN, has declined from XXX,XXX tonnes in XXXX to XXX,XXX tonnes in XXXX, and downstream demand is weak. On the other hand, in XXXX, the output and monthly price of glyphosate, which is downstream of IDAN, are declining, and terminal demand is sluggish. Since XXXX, the operating rate of manufacturers using the IDAN route has been dwindling, and this situation is likely to continue for some time without significant positive news. In addition, we need to consider another route for the production of glyphosate—the glycine route. Currently, the domestic supply of glycine greatly exceeds the domestic demand. The oversupply leads to a lower price of glycine, which causes glyphosate producers to choose the glycine route.

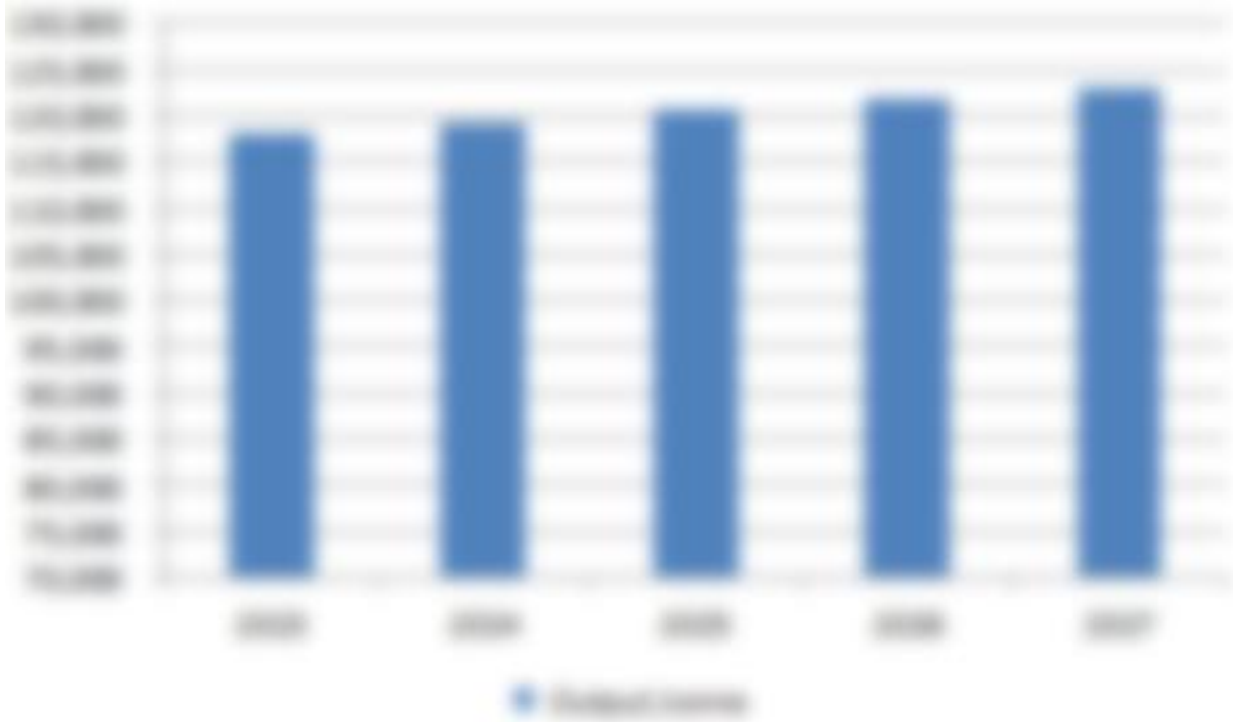
In the long term, a small increase is expected between XXXX and XXXX.

The output is mainly affected by environmental policy and glyphosate market. Environmental policy is expected to be more stringent. Therefore, more downstream manufacturers will want to purchase PMIDA instead of IDAN or DEA to reduce their production waste and environmental protection pressure. Against this backdrop, there is a trend that IDAN manufacturers use self-made IDAN to produce PMIDA themselves, and sell PMIDA directly. The industrial concentration of IDAN is relatively high (only three producers), and it will be further heightened in the future, because Leshan Hebang has played a dominant role in IDAN & PMIDA industrial chain. Leshan Hebang also publicised that it proposed a XXX,XXX t/a PMIDA expansion plan in April XXXX. This project will be completed in XX months from the date the conditions for commencement of construction were met.

Glyphosate is a restricted investment project by the National Development and Reform Commission, and the main reason for the restriction on production of glyphosate is pollution. The IDAN route emits fewer wastes, so some manufacturers may switch their production routes in the future to increase IDAN's output.

On the other hand, demand for glyphosate is expected to remain at a high level for the lack of good substitutes and the bright future of GM crops, the domestic approval of GM products has been significantly accelerated in recent years. It is expected that the output of glyphosate technical in China will further increase. Therefore, this may lead to an increase in the output of IDAN.

Figure 4-1 Forecast on IDAN output in China, 2023–2027



Source:CCM

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If you want more information, please feel free to contact us

Tel: +86-20-37616606 Fax: +86-20-37616968

Email:econtact@cnchemicals.com