



Application Areas of Castor Oil in China

23rd Feb 2024

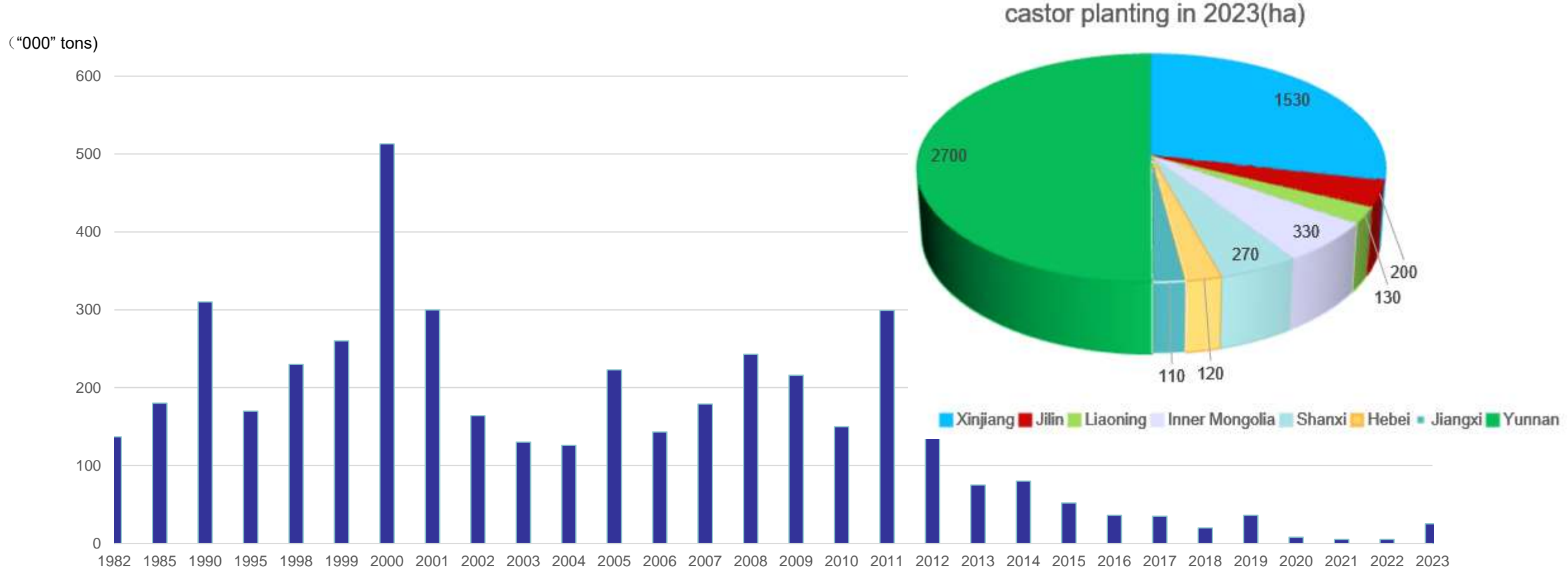


- China's economy has rebounded for the better, with GDP growing by 5.3% in 2023 , higher than the global expected growth rate.
- 2024 is the 75th anniversary of the founding of the People's Republic of China.
- It is a critical year for the implementation of the "14th Five-Year Plan" and it is crucial to do a good job in economic work.
- However, growth is likely to slow to 4.7% in 2024. due to a weakening real estate sector, weakening external demand and trade tensions. The Chinese government has stepped up policy support to stabilize and stimulate growth, lowering mortgage rates and increasing public sector investment financed with new bonds.

Low Carbon Environmental Trends in China



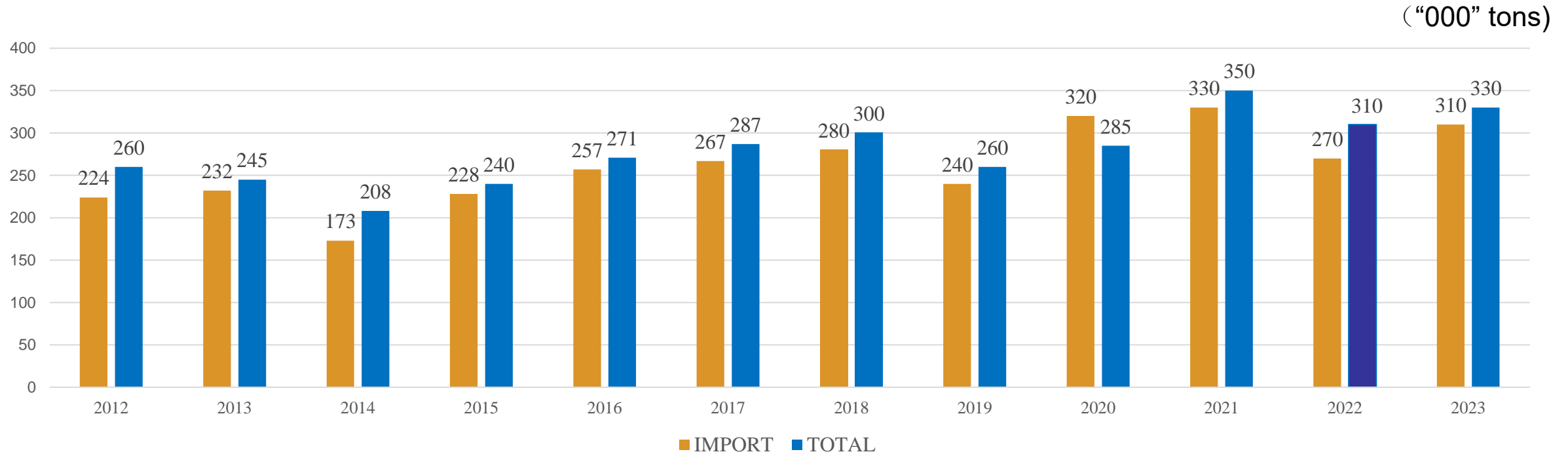
- National level: The "double carbon" policy has been introduced. The country encourages clean energy to replace petroleum and bio-based materials to replace petroleum products.
- Enterprise level: In line with the requirements of sustainable development strategic concepts, corporate social responsibility and other requirements, enterprises actively increase the use of clean energy and bio-based raw materials, thereby reducing carbon emissions.
- Consumer level: Increasingly concerned about the impact of chemicals on personal health and the environment, they have higher requirements for the naturalness and greenness of product raw materials.



- China's castor planting area exceeded 5,000 hectares in 2023.
- China's castor seed productions was about 20,000 tons in 2023.



- Castor plant varieties suitable for mechanized harvesting in China, mainly Israel Kayima 9 and China's Shanxi Jingcuo Castor Science and Technology Co., Ltd. Jingcuo 1, 2 and other improved varieties, the plant height is about 1.2-1.8 m, the yield is expected to be 3500 kg / ha.
- There are two types of castor mechanical harvester, namely, roller brush type and cutting type, the width of the cutting table is about 2-2.5 meters. Large-area harvesting trials have shown that the fruit drop rate is below 5- 6%, and the harvesting efficiency is relatively high.



- In 2023, China imports of castor oil was 310,000 tons, an increase of 15% compare to 2022.
- China's castor oil consumption in 2023 about 330,000 tons, slightly higher than 2022.
- Industry change: traditional industry usage declines, emerging industry usage increases.

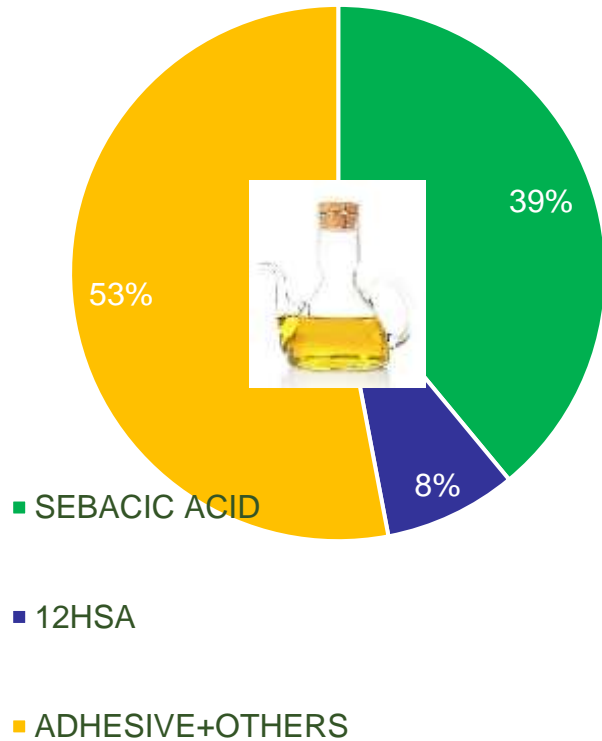
Usage of Castor Oil in China

■ Castor oil is mainly used in chemical industry, pharmaceuticals, food, cosmetics and other fields in China, among which the chemical industry has a relatively high demand.

■ The usage in emerging industries is increasing year by year.

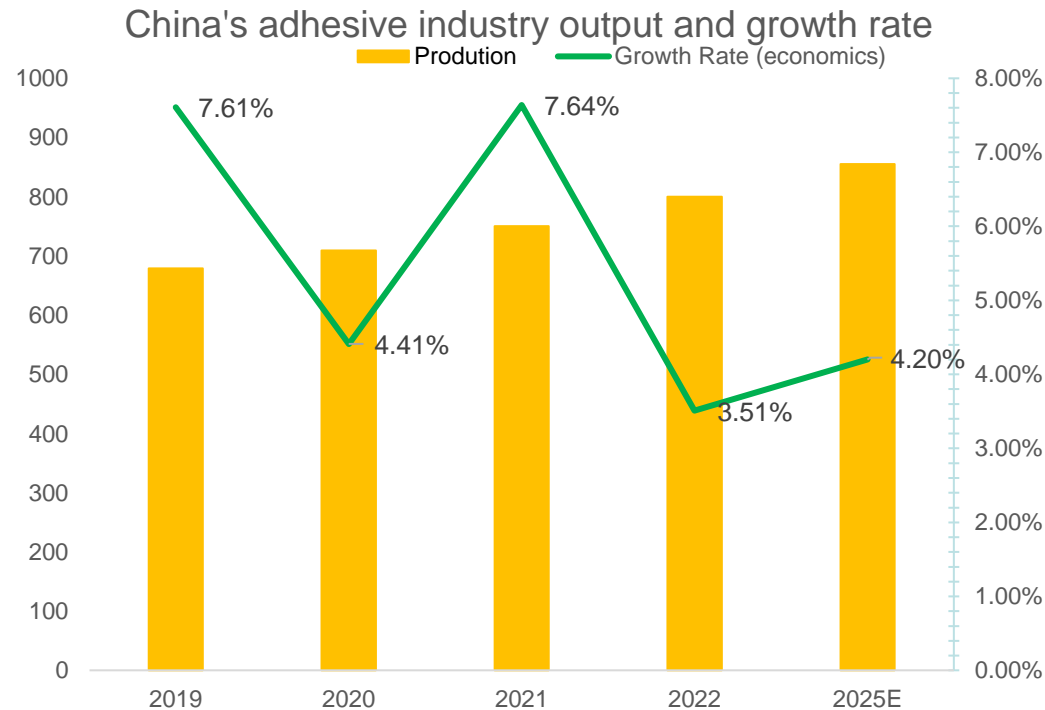
(“000” tons)

USAGE	2020		2021		2022		2023		2024 Estimate
SEBACIC ACID	160	56%	190	54%	130	42%	130	39%	150
12HSA	35	12%	30	9%	30	10%	26	8%	26
ADHESIVE	55	19%	65	19%	150	48%	174	53%	184
OTHER	35	12%	65	19%					
TOTAL	285		350		310		330		360 ?



Application of castor oil in adhesive field

- In recent years, China's adhesive industry has shown sustained and stable development. According to statistics from the China Chemical Industry Information Center, China has become the world's largest adhesive production base, with output ranking first in the world.
- China's production and sales of adhesives have achieved sustained and steady growth.



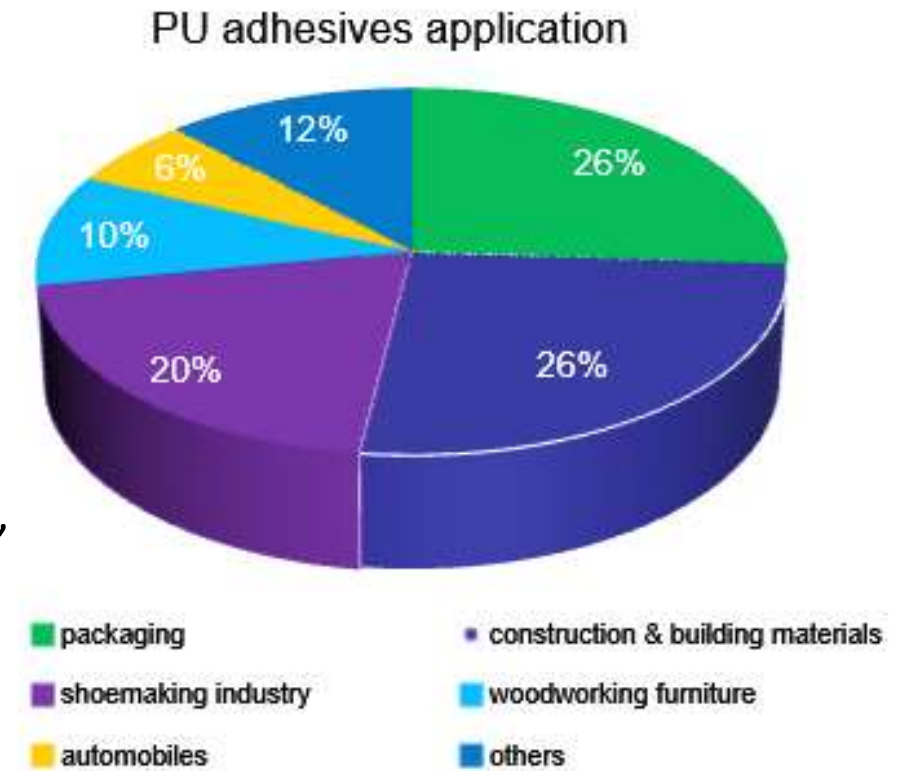
Chemistry by main ingredient Element

- Polyurethane adhesive (PU)
- Silicone adhesive
- Epoxy resin adhesive
- acrylic adhesive
- Synthetic rubber adhesive

- In 2023, the price advantage of polyurethane adhesives was higher, increasing the choices in the consumer market.

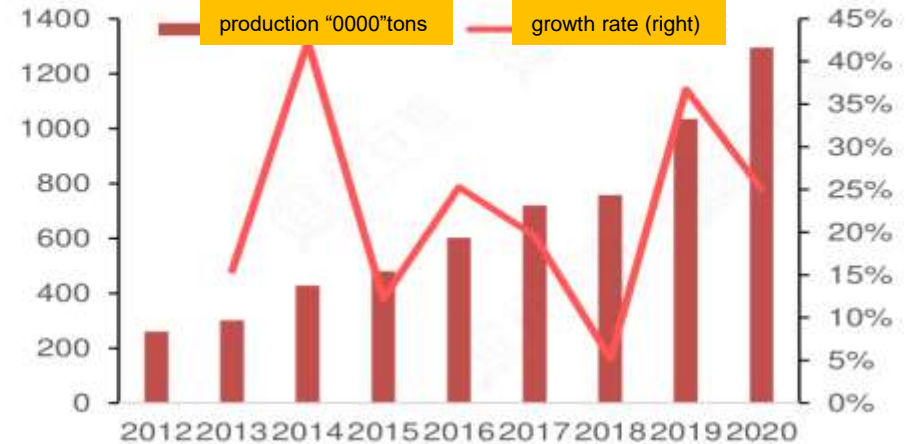
Application of castor oil in adhesive field

- Castor oil is an important raw material for **polyurethane adhesives (PU)**.
- PU do not contain organic solvents and have no environmental pollution. They are currently popular environment friendly adhesives.
- The application fields of polyurethane adhesives in China are extremely wide, ranging from **traditional consumer fields** such as **construction and building materials, shoemaking industry, packaging, and automobiles** to a series of **emerging fields** such as **electronic appliances, electric vehicle industry, aero space, and new energy fields**.
- New growth in the field of **building materials** - the entry of environment friendly **home decoration materials**
- **Packaging field-flexible packaging** penetration rate increases, solvent-free adhesives have huge potential。
- Emerging areas - **electronic potting adhesives; new energy vehicles** provide incremental space。



- New water-based paint
- Castor oil is used as an additive in water-based paint.
- By 2025, the market space for water-based coatings will reach 15 million tons.
- **Polyurethane floor** - environment friendly floor coating, leading the industry's green and low-carbon development transformation

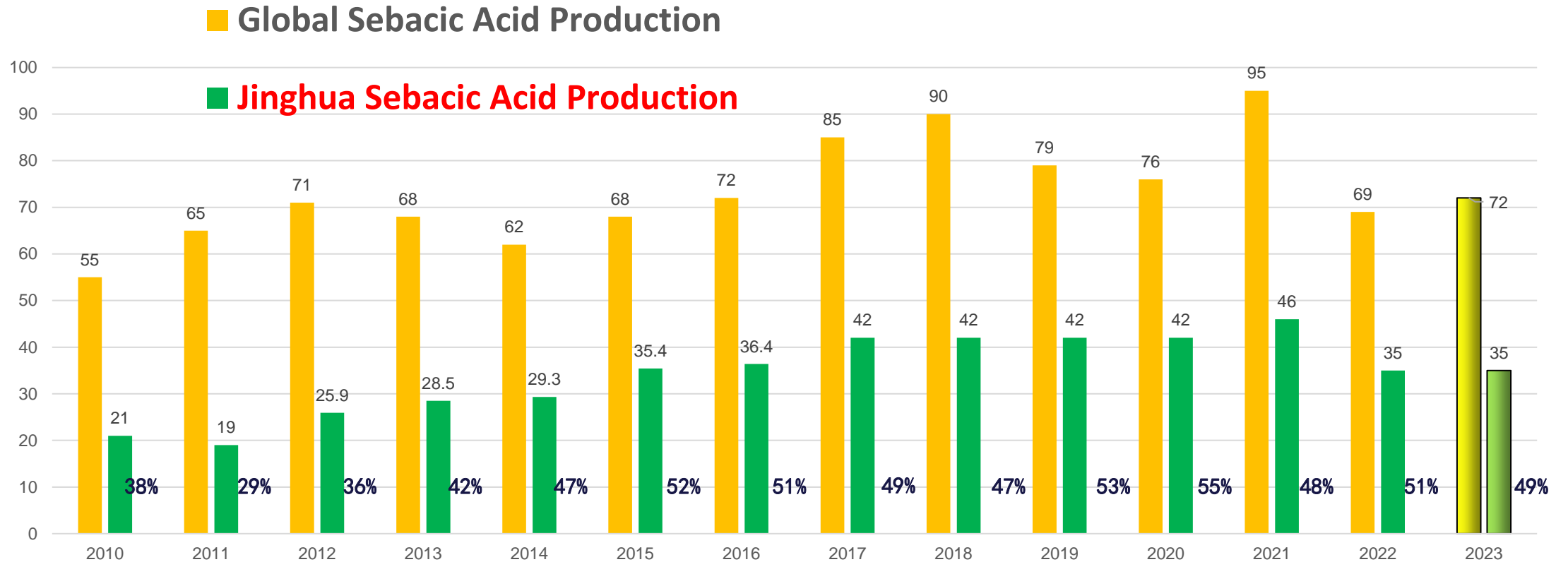
Waterborne Coatings



资料来源：中国知网、华安证券研究所



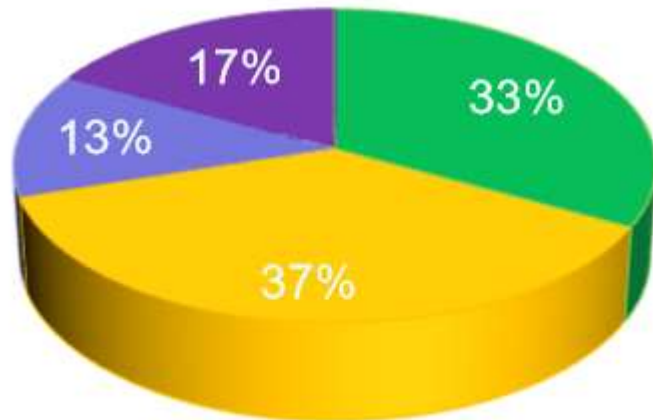
(“000” tons)



- In 2023, China's bio-based sebacic acid production was about 66,000 tons and castor oil consumption about 130,000 tons.
- Reasons for industry changes: market demand has not recovered and also there is impact of petroleum-based sebacic acid.
- The future of the industry: In the bio-based era, demand will grow steadily.

■ Bio-based sebacic acid market demand

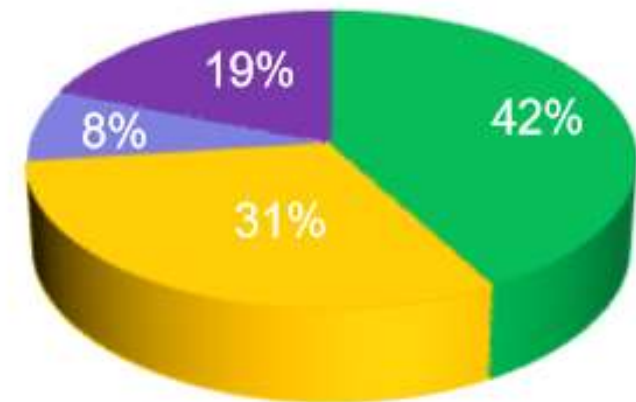
In 2022



China EUR. U.S.A. Others

VS

In 2023



China EUR. U.S.A. Others

Hengshui Jinghua Chemical Co., Ltd. is subordinate to Jinghua Rizhao Steel(holding)Group. Mr. Du Shuanghua, the president of the group has established more than ten companies since 1993 which includes Jinghua Rizhao Steel (Holding) Group, Yingkou Jinghua Group and Jinghua Innovation Group. The group also has branches in Singapore and Australia. Its main business is steel, investment, real estate, chemicals etc. **Hengshui Jinghua Chemical Co., Ltd.** is a chemical company in the group. Hengshui Jinghua Chemical Co., Ltd. is one of the world's major producers of sebacic acid. **In 2023, it has produce and sold 35,000 tons of sebacic acid, accounting for 49% of the global market. The annual consumption of castor oil is nearly 70,000 tons.**



Jinghua Rizhao Steel(Holding)Group



Minmetals Yingkou Medium Plate Co.,Ltd.



Hengshui Jinghua Steel Pipe Co.,Ltd.



Tangshan Jinghua Steel Pipe Co.,Ltd.



Rizhao Jinghua Steel Pipe Co.,Ltd.



Beijing Golf Course



Guangzhou Jinghua Steel Pipe Co.,Ltd.



Hengshui Jinghua Real Estate Development Co. Ltd



Zhenzhou Jinghua Steel Pipe Co.,Ltd.



Jilin Jinghua Steel Pipe Co.,Ltd.



Chengdu Jinghua Steel Pipe Co.,Ltd.



Hengshui Jinghua Chemical Co.,Ltd.

THANK YOU !

