


2022 GLOBAL TRENDS

EXECUTIVE SUMMARY

The background features a grid of white hexagons on a dark blue field. A bar chart with glowing blue bars is visible through the hexagons. A white line graph trends upwards from the bottom left, and a red line graph trends upwards from the bottom right. The overall aesthetic is futuristic and data-oriented.

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PLASTICS

INDUSTRY ASSOCIATION

2021 U.S. PLASTICS INDUSTRY EXPORT MARKETS



2021 U.S. PLASTICS INDUSTRY TRADE SURPLUSES



2021 U.S. RESINS TRADE SURPLUS

\$19.6B

APPARENT CONSUMPTION OF
PLASTICS INDUSTRY GOODS

22.6% INCREASE
FROM 2020
TO 2021

APPARENT CONSUMPTION OF
PLASTICS PRODUCTS

16.9% GROWTH
FROM 2020
TO 2021

PLASTICS MACHINERY
EXPORTS

19.7% INCREASE
FROM 2020
TO 2021



Executive Summary

The U.S. plastics industry is a major player in world trade. This edition of the Plastics Industry Association's annual Global Trends study analyzes U.S. trade data on an industry-wide and segment-specific basis for 2021.¹ It also provides a peek at 2022 and beyond.

The report is divided into six sections. Section I describes exports, imports, and the trade balance for the industry and its five segments: resins, plastic products, molds, machinery and "other plastics." Section I also measures trade flows as a percentage of domestic shipments. Section II analyzes apparent consumption and market shares for the industry and its segments. Section III discusses trade in goods that contain resins and plastic products, labeled "contained trade" in this study. Section III also measures the "true" consumption of resins and plastic products, which includes plastics that are contained, or associated with, other products and services that are consumed. Section IV presents forecasts of world trade, U.S. general trade, U.S. plastics trade, and the shipments and apparent consumption of plastics in the U.S. through the year 2029. Section V highlights U.S. plastics trade in the first half of 2022. Finally, Section VI provides a world perspective on plastics production, consumption and trade,

including snapshots of five important U.S. trading partners.

The study's key findings are:

INDUSTRY-WIDE TRENDS

1. The U.S. plastics industry's trade deficit grew to \$10.1 billion in 2021 from \$5.4 billion in 2020.
2. Industry exports rose 23.3%, and imports rose 28.9%. Inflation was a big factor in those rises.
3. Mexico and Canada remained the U.S. plastics industry's largest export markets. In 2021, the industry exported \$18.0 billion to Mexico and \$15.0 billion to Canada.
4. The industry had its largest trade surplus with Mexico in 2021—\$10.8 billion.
5. China is the industry's third largest export market. However, the industry, overall, had its largest trade deficit with China—\$18.2 billion in 2021.
6. The estimated value of domestic shipments rose 21.3% in 2021, to \$338.7 billion. Shipments figures were inflated by higher raw material costs.
7. Exports amounted to 21.1% of domestic shipments in 2021, up from 20.7% in 2020.
8. Apparent consumption of plastics industry goods rose 22.6%, from \$284.6 billion in 2020 to \$348.9 billion in 2021. This included a lot of inflation.
9. "True" consumption includes all the resins and plastic products that U.S. residents consume, including

¹ The methodologies and data used to estimate the value of domestic shipments and contained trade values were provided by Probe Economics LLC.

those that are contained in imported goods. The “true” consumption growth rates computed in this study show that underlying U.S. plastics demand remains solid. They also show that the U.S. market for plastics is larger and growing faster than the market being addressed by domestic producers.

RESIN TRENDS

1. The U.S. resin industry had a \$19.6 billion surplus in 2021, which was up 5.1% from the \$18.6 billion surplus in 2020.
2. Thanks to growing new supplies of low-cost feedstocks, made possible by unconventional, shale-related drilling techniques, U.S. resin producers continued to enjoy a cost advantage over most foreign producers.
3. U.S. resin exports increased 27.6% in dollar terms from 2020 to 2021, while imports increased 58.2%. Higher resin prices were a key driver.
4. The resin industry had an \$8.1 billion surplus with Mexico, followed by a \$2.6 billion surplus with China.
5. The resin industry had its largest trade deficit with Germany, at \$1.4 billion.
6. Resin exports accounted for 39.9% of domestic shipments, while imports were 21.0%.
7. Apparent consumption of resins rose 45.3%, from \$57.6 billion in 2020 to \$83.7 billion in 2021. Resin prices realized by U.S. producers rose 33.4%, as measured by the Producer Price Index, which suggests that apparent consumption increased 11.9% in real, tonnage terms.
8. U.S. resin producers held a 74.1% market share (percent of apparent consumption) in 2021, down from 76.2% in 2020.
9. The estimated value of resins contained in exported goods was \$22.9 billion, and the estimated value of resins contained in imported goods was \$64.4 billion, which meant that the segment had a \$41.5 billion deficit in contained resin trade.

PLASTICS PRODUCTS TRENDS

1. The country’s deficit in plastic products increased from \$20.8 billion in 2020 to \$26.0 billion in 2021, an increase of 25.1%.
2. Exports of plastic products rose 18.3%, while imports rose 21.4%.
3. The U.S. had its largest plastic products surplus with Mexico—at \$2.2 billion.
4. China accounted for the largest plastic products trade deficit, at \$20.3 billion, up 14.2% from 2020. Countries like Taiwan, South Korea and Vietnam are starting to bite into China’s market share.
5. Exports of plastic products were 12.4% of domestic shipments, and imports were 23.8%.
6. Apparent consumption of plastic products grew 16.9%, from \$217.2 billion in 2020 to \$253.9 billion in 2021. As measured by the Producer Price Index, plastic products prices realized by U.S. producers rose 13.6% in 2021, suggesting that apparent consumption growth was 3.3% in real terms.
7. U.S. producers of plastic products held a 78.6% market share (percent of apparent consumption), down from 79.4% in 2020.
8. The estimated value of plastic products contained in exports was \$26.0 billion in 2021, and the estimated value contained in imports was \$63.7 billion, giving the U.S. a \$37.7 billion deficit in contained plastic products trade.

MOLDS TRENDS

1. The U.S. moldmaking industry had a \$1.5 billion trade deficit in 2021, which was 21.8% more than the deficit in 2020.
2. Mold exports fell 2.7%, while imports rose 14.3%.
3. The U.S. moldmaking industry had its largest surplus with Mexico, at \$297 million. It had its largest deficit with Canada, at \$834 million.
4. Exports of molds were 16.7% of domestic shipments, and imports were 63.8%.

5. Apparent consumption of molds for plastics rose 18.3%, from \$4.0 billion in 2020 to \$4.7 billion in 2021.
6. U.S. moldmakers held a 55.5% market share (percent of apparent consumption) in 2021, up from 52.4% in 2020.

MACHINERY TRENDS

1. The U.S. plastics machinery industry registered a \$2.2 billion trade deficit in 2021, an increase from \$2.0 billion in 2020.
2. Exports rose 19.7%, and imports rose 15.5%.
3. The industry had its largest surplus with Mexico at \$213 million, and its largest deficit with Germany at \$708 million.
4. Exports of machinery were 28.6% of domestic shipments, and imports were 79.6%.
5. Apparent consumption of plastics machinery rose 14.4%, from \$5.8 billion in 2020 to \$6.6 billion in 2021. Domestic shipments rose 15.0%.
6. U.S. machinery producers held a 47.3% market share (percent of apparent consumption) in 2021, down from 47.8% in 2020.

FORECASTS

1. The world economy has mostly recovered from the deep coronavirus-related recession. All aspects of the plastics industry were affected.
2. World trade volumes grew rapidly from 2001 to 2008, dipped and recovered from the 2008-09 recession, and, in real terms, have oscillated around a flat trend since then. Trade dropped off during the COVID-19 recession and then bounced back. Trade is unlikely to resume the trend of increased globalization that existed up to 2011.
3. U.S. manufacturers have steadily lost share in their own domestic market to imports. That trend appears to be continuing into 2022. Restoration of the domestic share would take a concerted effort by the government to bring manufacturing back to the U.S. – lots of money and incentives. Deadlock appears likely to be the mode of government until after the 2024

elections, so at least another couple of years of share loss seems likely.

4. The U.S. plastics industry trade balance went from positive to negative in 2020, and it became even more negative in 2021. Data through the first half of 2022 suggest further deepening of the deficit, and the authors project a continued deepening through 2023. After that, some improvement is likely, but not certain.
5. U.S. plastics industry apparent consumption correlates well with gross domestic product (GDP), down during recessions and up during recoveries. Because of the economic recovery that is now underway, and because of inflation, the authors expect a significant increase in apparent consumption. Specifically, they expect U.S. plastics industry apparent consumption, nominally, before correction for inflation, to grow 33.0% between 2021 and 2029, for an annualized increase of 3.6% per year.

U.S. PLASTICS TRADE IN FIRST SIX MONTHS OF 2022

1. U.S. plastics industry trade volume (exports plus imports) increased 17.0% in the first six months of 2022, compared to the same period in 2021. Inflation played a role in this.
2. Plastics industry exports rose 16.9% in the first six months, and imports rose 17.0%. As a result, the industry's trade balance went from a \$4.4 billion deficit in the first six months of 2021 to a \$5.2 billion deficit in the first six months of 2022.
3. Resin exports increased 20.9% in the first six months of 2022 compared to a year earlier. Imports increased 33.4%, from a smaller base, resulting in a 9.5% increase in the country's resin trade surplus.
4. The country's plastics products trade deficit continued to grow in the first six months of 2022, up 12.5% from the comparable 2021 period. Exports were up 12.3%, and imports were up 12.4%.
5. Exports of molds for plastics were up 1.6% in the first half of 2022. Imports were up 5.3%. The molds trade deficit grew 6.6%.

6. Plastics machinery exports were up 0.5% in the first six months of 2022. Imports were up 5.5%. The country's trade deficit in plastics machinery grew 8.2%.

INTERNATIONAL PLASTICS INDUSTRY

1. The large and growing plastics industry outside the U.S. will continue to compete with the U.S. for overseas markets as well as for its own domestic markets.
2. The U.S. was the world's top plastics and rubber producer up until 2005. In 2021, Chinese plastics and rubber production was 2.8 times that of the U.S.
3. Plastic and rubber consumption in a country is determined by its population, level of development and focus on manufacturing. Mature, industrialized countries like France, Germany and the U.S. have apparent consumption of plastic and rubber between \$700 and \$1,100 per capita.
4. India, a developing country, consumed only \$53 of plastic and rubber per capita in 2021.
5. China, which consumed only \$86 of plastic and rubber per capita in 2005, shot up to \$566 per capita in 2021. That wasn't all domestic consumption. A lot of it went into the manufacture of goods that were exported.
6. The biggest exporter of resin in 2020 was the U.S., followed by Germany, South Korea, China, and Saudi Arabia.
7. China was by far the biggest exporter of plastic products in 2020, followed by Germany, and the U.S.
8. China's growth is slowing, but its dominance as a manufacturer, and therefore, as a consumer of plastic and rubber, is nearly unshakeable.
9. India is one of the great markets of the future, but it does not appear destined to duplicate China's success with manufacturing, nor its consumption of plastic and rubber. Its success is more likely to come in services, which do not involve a lot of plastics.
10. South Korea is much smaller than China, but it has had similar successes in manufacturing and economic development, with similar emphasis on plastic and rubber. South Korea was highly successful at battling COVID-19, managing to experience only a 1% drop in GDP during 2020.
11. Brazil, South America's biggest economy, is struggling to realize its potential as a plastic and rubber market of the future. It continues to be plagued by political turmoil and periodic economic downturns.
12. For the fifth year, PLASTICS releases an annual Global Plastics Ranking™. The ranking is based on trade volume estimates—the sum of exports and imports of four general classification of plastics, which altogether is referred to as the plastics industry: plastics machinery, molds for plastics, materials and resins, and plastics products. China, the U.S., and Germany remained the top three players in the global plastics trade in 2021.