OHIO EXPORT TREND ANALYSIS

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Table of Contents

Overview

This report provides a comprehensive analysis of Ohio's export performance to its Top 10 international trading partners between 2018 and 2024, focusing on the Top 15 Harmonized System (HS) codes exported to each market based on the 2024 Ohio export rankings. All quantitative data used in this report is sourced directly from the Ohio Export Reports (2018–2024), which are prepared by the Office of Research at the Ohio Department of Development, a State Affiliate of the U.S. Census Bureau.

Across the seven-year period reviewed (2018-2024), Ohio's export activity demonstrates remarkable resilience, maintaining strong international demand despite significant global disruptions, including the COVID-19 pandemic, supply chain volatility, and shifting trade policy environments. While individual HS codes experienced temporary fluctuations, Ohio's overall export profile remained stable and adaptable, supported by the state's diversified manufacturing base and ability to respond quickly to global market conditions.

For each country and HS code combination, the report includes annual export values, visual charts, and structured commentary framed through three analytical dimensions:

- Policy and Trade Environment- examining how tariffs, trade agreements, regulatory changes, and diplomatic relations influenced export flows.
- Economic Forces- analyzing market demand shifts, currency dynamics, inflation pressures, and broader macroeconomic conditions affecting trade volumes.
- Industry Dynamics- highlighting sector-specific factors such as production cycles, supply chain constraints, input costs, and technological or competitive positioning.

This report is designed to serve as a clear, data-driven resource for policymakers, industry stakeholders, trade organizations, and economic development leaders seeking to better understand Ohio's evolving international trade footprint and identify future opportunities for strategic export growth.

Thank you,

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Executive Summary

Ohio's export performance from 2018–2024 reflects a structurally strong and diversified economy driven by advanced manufacturing, medical technologies, aerospace, and high-value materials.

Six major industry clusters: industrial machinery, electrical machinery, optical and medical instruments, pharmaceuticals, cosmetics and essential oils, and aircraft/spacecraft, trended upward and now account for 42.7% of all state exports, while five declining clusters represent only 8.96%. The 2020–2021 pandemic reshaped global demand, creating an inflection point in which six sectors, representing 35.6% of Ohio exports, carried the state's momentum and lifted Ohio to a #7 national ranking. Only a small group of industries saw partial declines during this period (7.89%), and 2021 marked a strong industrial resurgence driven by pent-up global demand.

Ohio's export relationships highlight its adaptability to both advanced and cyclical markets: Japan and the U.K. each account for 3.3% of exports with distinct high-tech and aerospace/commercial mixes, while Germany and Brazil each represent 2.7% with significant differences between high-value industrial systems and more volatile, cycle-driven industries. High-performance materials form a growing competitive edge, Ohio shipped $60 million in cermets (Ceramic & Metal Composite) to major manufacturing nations and expanded inorganic chemical (rare earth element) exports to China from $64M to $108M over seven years. Six core clusters (machinery, electronics, transportation equipment, aerospace, plastics, and steel products) were consistently sold to all top 10 partners, underscoring Ohio's global reliability.

Copper exports strengthened across Mexico, China, Germany, and Taiwan, supporting automotive production, clean energy and EV systems, industrial wiring, and semiconductor manufacturing. Vehicle exports (HS 87) remain heavily North America centered, with Canada and Mexico accounting for nearly 80% of 2024 sales, while exports to Europe and China sharply declined after 2019 and Japan held steady; Australia emerged as a fast-growing market for military and specialty vehicles. Strong domestic correlations across vehicles, machinery, electronics, and plastics (up to 95%) contrast with varied international linkages, tight with Canada and Mexico, moderate with Germany, and weakest with China. Aircraft and parts (HS 88) continue to be one of Ohio's most resilient sectors, with steady recovery in North America, stable European defense demand, mixed but strengthening Asian markets, a major 2020–2022 surge in Brazil, and rapid growth in Australia driven by defense procurement. Additionally, nine of Ohio's top 10 partners import its essential oils, perfumery, cosmetics, and toiletries (HS 33), reflecting the state's competitive position in chemicals and consumer formulation, with Canada, Mexico, France, and Australia leading strong post-pandemic growth.

Top Destinations

In 2024, Canada remained Ohio's dominant export market at $19.9 billion (35.2% of total exports), followed by Mexico at $9.6 billion, which saw a 15.5% year-over-year increase. Asia accounted for 12.3% of Ohio's export activity, led by China ($3B), Japan ($1.9B), and Taiwan ($1.2B), while Europe captured 15.3% with strong demand from the U.K. ($1.8B), Germany ($1.5B), and France ($1.2B), contributing to a 4.8% regional increase. Southeast Asia grew 12.7% to $4.2B, and (Brazil #6) and (Australia #10) also ranked among the top destinations. Industrial machinery led Ohio's export portfolio at $9.8B, placing the state 5th nationally, and the six largest product categories (Industrial Machinery, Vehicles & Parts, Aircraft & Parts, Electrical Machinery, Plastics, & Optic & Medical Instruments) together made up 58.1% of total exports. Ohio ranked first in the U.S. for soaps/cleaning products and for paints/dyes, while electrical machinery surged 22.3%, driven by energy-storage batteries.

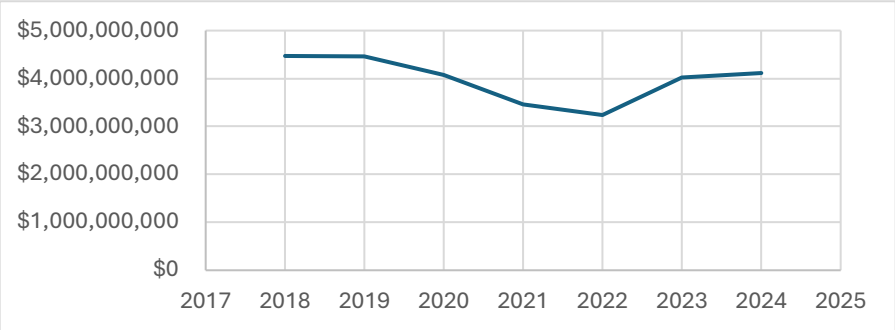
Methodology

This analysis uses export data from the Ohio Department of Development's Office of Research, covering seven years of trade activity from 2018 to 2024. It focuses on Ohio's Top 10 foreign trading partners and Top 15 export commodities, together representing 75.6% of all state exports, classified using Harmonized System (HS) codes to capture major industrial clusters such as machinery, electronics, medical instruments, aerospace, vehicles, plastics, chemicals, and steel products. The study assesses trends across growing and declining sectors, shifts in export destinations, pandemic-driven disruptions and recoveries, and industries that rebounded most quickly. It includes correlation analysis between the auto industry and related machinery, electronics, and plastics sectors to identify shared export patterns, and comparative evaluations of vehicle (HS 87) and aircraft (HS 88) trade performance across leading global markets. Special attention is given to copper (HS 74) and rare earth inorganic chemicals (HS 28) due to their strategic importance in global supply chains. Notably, only six core commodities: HS 84, HS 85, HS 87, HS 88, HS 39, and HS 73 were exported to all top 10 partners, illustrating Ohio's foundational industrial strengths.

Canada

HS 84 - Industrial Machinery, Including Computers

Industrial Machinery, Including Computers	84



Year	$ Amount
2018	$4,470,688,002
2019	$4,465,249,094
2020	$4,078,258,434
2021	$3,458,585,001
2022	$3,238,553,697
2023	$4,023,791,356
2024	$4,117,004,568

Trend Narrative

From 2018–2019, exports of industrial machinery (HS 84) remained steady near $4.5 billion. In 2020, values declined slightly to $4.08 billion, before dropping further in 2021 ($3.46 billion) and bottoming out in 2022 ($3.24 billion). This contraction reflected the combined impact of the COVID-19 pandemic, global supply-chain bottlenecks, and delayed capital investment. A rebound followed in 2023 ($4.02 billion) and 2024 ($4.12 billion), as North American manufacturing stabilized under USMCA, and firms renewed investments in equipment and automation.

Key Drivers & Context

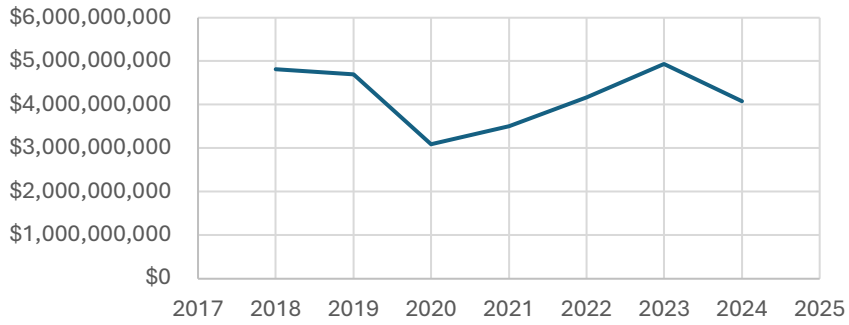
- **Policy/Trade Agreements:** Transition from NAFTA to USMCA (2020) added trade certainty.
- **Economic Forces:** Pandemic downturns depressed industrial demand; recovery boosted investment.
- **Industry Dynamics:** Global supply-chain shortages and rising automation demand shaped trade volumes.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Machinery*
- Connect2Canada – *Ohio Fact Sheet*
- Government of Canada – *CUSMA/USMCA Economic Impact Assessment*
- Ohio Economic Development Association – *Ohio Export Report*

HS 87 - Vehicles and Parts

Vehicles and Parts **87**



Year	$ Amount
2018	$4,809,037,550
2019	$4,698,142,709
2020	$3,092,209,547
2021	$3,505,371,866
2022	$4,174,490,626
2023	$4,936,669,768
2024	$4,077,469,768

Trend Narrative

Ohio's HS 87 exports to Canada stood at $4.81 billion in 2018 and $4.70 billion in 2019, before plunging to $3.09 billion in 2020. The sharp decline reflected pandemic-driven plant shutdowns and cross-border supply-chain disruptions. Exports began to recover in 2021 ($3.51 billion) and strengthened further in 2022 ($4.17 billion), though recovery was slowed by semiconductor shortages. Exports peaked in 2023 ($4.94 billion) as supply bottlenecks eased, and North American auto trade normalized under USMCA rules. In 2024, exports dipped to $4.08 billion, reflecting softer Canadian auto demand amid higher interest rates and tighter consumer conditions.

Key Drivers & Context

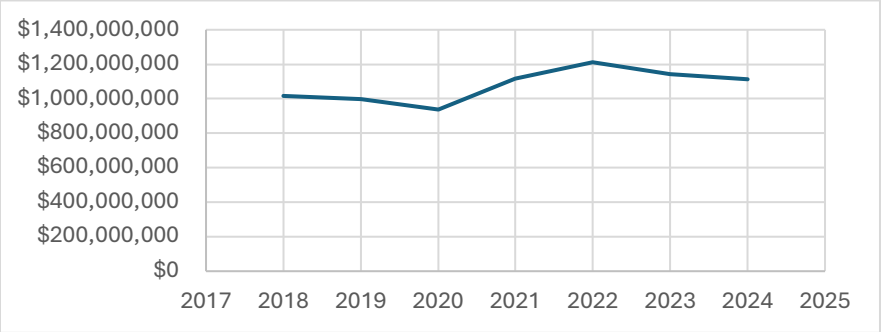
- **Policy/Trade Agreements:** USMCA's auto rules of origin phased in 2020.
- **Economic Forces:** COVID-19 shutdowns in 2020 and rate-driven demand cooling in 2024.
- **Industry Dynamics:** Semiconductor shortages constrained vehicle production in 2021–2022.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Transportation Equipment*
- Brookings – *USMCA and North American Auto Trade*
- Canadian Automotive Outlook reports – demand impacts of interest rate hikes (2023–2024)
- Connect2Canada – *Ohio Fact Sheet*

HS 39 - Plastics and Articles Thereof

Plastics and Articles Thereof	39



Year	$ Amount
2018	$1,016,873,263
2019	$997,473,570
2020	$937,398,278
2021	$1,115,105,288
2022	$1,211,736,466
2023	$1,143,647,599
2024	$1,113,751,526

Trend Narrative

Exports of plastics and related articles from Ohio to Canada remained near $1.0 billion in 2018 ($1.02B) and 2019 ($0.99B), before dipping to $0.94B in 2020 amid pandemic-driven slowdowns in automotive, packaging, and construction sectors. A strong rebound followed in 2021 ($1.12B) and peaked in 2022 ($1.21B), reflecting both recovering industrial demand and higher resin prices tied to global petrochemical supply constraints. In 2023, exports moderated to $1.14B, followed by a slight decline in 2024 ($1.11B) as resin prices eased and downstream demand stabilized at post-pandemic levels.

Key Drivers & Context

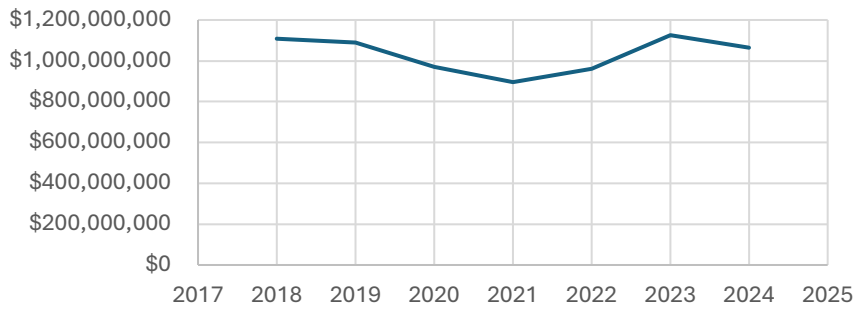
- **Policy/Trade Agreements:** Plastics trade flows remained tariff-free under NAFTA/USMCA, supporting stable long-term demand.
- **Economic Forces:** Pandemic disruptions (2020) and subsequent commodity price spikes (2021–2022) drove volatility.
- **Industry Dynamics:** Plastics are heavily tied to auto parts, packaging, and construction materials - demand shifted as these industries contracted in 2020, then rebounded strongly before normalizing.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals & Plastics*
- American Chemistry Council – *Plastics Industry Resins & Trade Reports*
- Brookings – *North American Trade under USMCA*
- Connect2Canada – *Ohio Fact Sheet*

HS 85 – Electric Machinery; Sound Equip.; TV Equip

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$1,109,375,082
2019	$1,089,762,428
2020	$968,957,199
2021	$895,581,851
2022	$962,030,884
2023	$1,125,512,087
2024	$1,064,678,864

Trend Narrative

Exports of electrical machinery and related equipment began at $1.11 billion in 2018 and held relatively steady in 2019 ($1.09 billion). In 2020, exports fell to $0.97 billion, followed by another decline in 2021 ($0.90 billion), largely due to pandemic-related demand shocks, global supply-chain disruptions, and electronic component shortages. A rebound began in 2022 ($0.96 billion) and accelerated in 2023 ($1.13 billion), reflecting renewed investment in electronics, communications equipment, and manufacturing automation. By 2024, exports eased slightly to $1.06 billion, suggesting stabilization after two years of strong recovery.

Key Drivers & Context

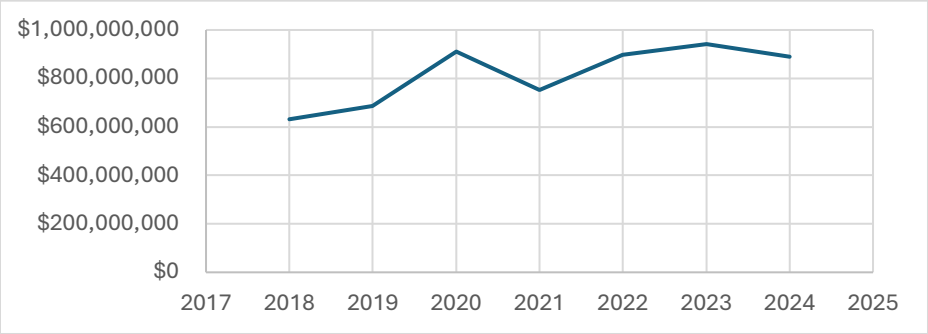
- **Policy/Trade Agreements:** NAFTA/USMCA continuity preserved tariff-free trade in electrical goods.
- **Economic Forces:** Pandemic disruptions and global semiconductor shortages hit exports hardest in 2020–2021.
- **Industry Dynamics:** Recovery driven by demand for communications technology, automation equipment, and consumer electronics.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Electrical Machinery*
- Semiconductor Industry Association – *Global Supply Chain & Chip Shortage Reports*
- Brookings – *USMCA and North American Trade Integration*
- Connect2Canada – *Ohio Fact Sheet*

HS 34 – Soap, Waxes, Lubricating Preparations, etc.

Soap, Waxes, Lubricating Preparations, etc.	34



Year	$ Amount
2018	$631,533,076
2019	$685,606,179
2020	$911,759,213
2021	$751,850,900
2022	$898,612,313
2023	$941,729,219
2024	$890,667,973

Trend Narrative

Exports of soaps, waxes, lubricants, and related products began at $631.5M in 2018 and rose to $685.6M in 2019. In 2020, exports spiked to $911.8M, reflecting heightened demand for cleaning and disinfectant products during the COVID-19 pandemic. By 2021, exports fell to $751.9M as demand normalized, before climbing again in 2022 ($898.6M) and peaking in 2023 ($941.7M). In 2024, exports eased slightly to $890.7M, suggesting stabilization after pandemic-driven volatility.

Key Drivers & Context

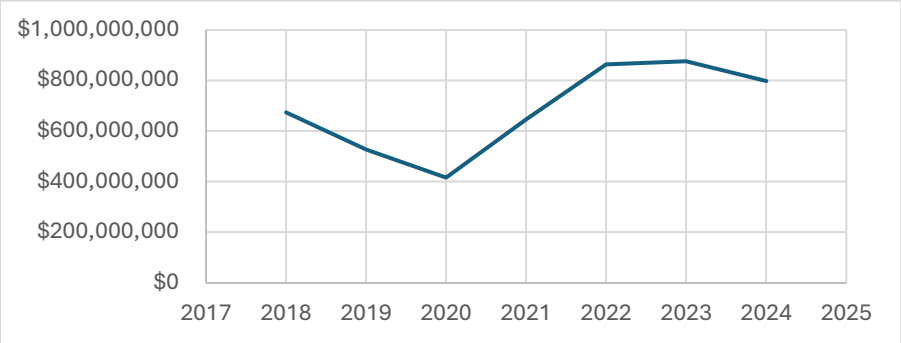
- **Policy/Trade Agreements:** USMCA maintained tariff-free movement of chemical and cleaning products.
- **Economic Forces:** Surge in 2020 tied to pandemic-driven demand for hygiene and cleaning agents.
- **Industry Dynamics:** Fluctuations linked to consumer cleaning products, industrial lubricants, and wax demand.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals*
- American Cleaning Institute – *COVID-19 Demand Surge Reports*
- Brookings – *USMCA Trade Stability*
- Connect2Canada – *Ohio Fact Sheet*

HS 72 – Iron and Steel

Iron and Steel **72**



Year	$ Amount
2018	$675,022,606
2019	$527,450,500
2020	$416,448,062
2021	$646,541,536
2022	$862,879,557
2023	$876,359,266
2024	$798,848,097

Trend Narrative

Ohio's exports of iron and steel to Canada totaled $675.0M in 2018 but fell sharply in 2019 ($527.5M) and bottomed out in 2020 at $416.4M. These declines were driven by U.S.–Canada steel tariff disputes in 2018–2019, compounded by reduced industrial demand during the COVID-19 pandemic in 2020. Exports rebounded strongly in 2021 ($646.5M) and surged to $862.9M in 2022 as tariffs were lifted and demand from automotive and construction sectors improved. The upward momentum continued in 2023 ($876.4M), before moderating slightly in 2024 ($798.8M) amid softer Canadian construction activity and global steel price normalization.

Key Drivers & Context

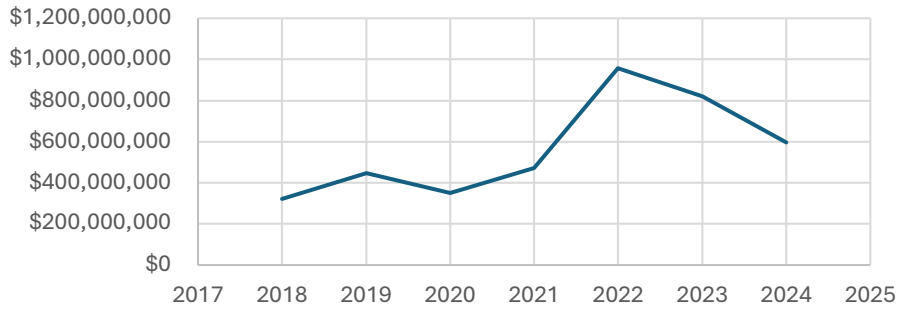
- **Policy/Trade Agreements:** 2018–2019 steel tariffs (Section 232) significantly disrupted exports; lifted mid-2019 under USMCA transition.
- **Economic Forces:** 2020 pandemic sharply reduced demand; subsequent recovery linked to construction and auto production.
- **Industry Dynamics:** Fluctuations tied closely to global steel prices, Canadian infrastructure spending, and automotive sector trends.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Metals*
- Brookings – *USMCA and Trade Policy Adjustments*
- Congressional Research Service – *Section 232 Tariffs and U.S.–Canada Trade*
- Connect2Canada – *Ohio Fact Sheet*

HS 27 – Mineral Fuel, Oil, etc.

Mineral Fuel, Oil, etc.	27



Year	$ Amount
2018	$321,648,880
2019	$446,073,201
2020	$349,819,101
2021	$470,567,887
2022	$957,239,361
2023	$819,189,003
2024	$595,406,215

Trend Narrative

Ohio's mineral fuel and oil exports to Canada rose from $321.6M in 2018 to $446.1M in 2019, before dipping to $349.8M in 2020 during the COVID-19 energy demand collapse. A rebound followed in 2021 ($470.6M), with a dramatic surge in 2022 to $957.2M, reflecting global oil price spikes and North American energy demand recovery. Exports remained high in 2023 ($819.2M), though lower than the 2022 peak, and declined further to $595.4M in 2024 as energy markets cooled and prices moderated.

Key Drivers & Context

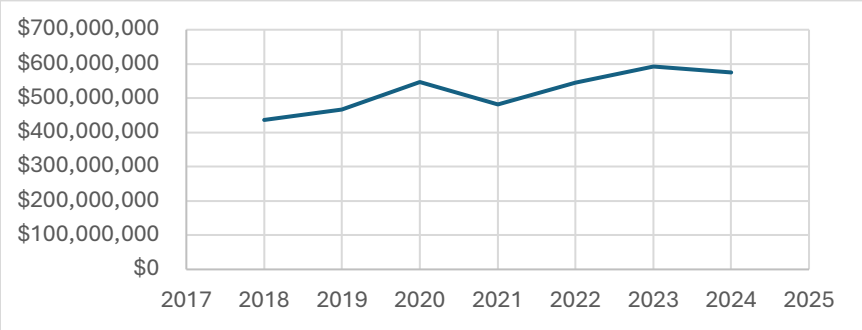
- **Policy/Trade Agreements:** Energy exports remained tariff-free under USMCA, ensuring stable access to the Canadian market.
- **Economic Forces:** 2020 demand collapsed during the pandemic, followed by 2022 oil/gas price spikes due to global supply disruptions.
- **Industry Dynamics:** Fluctuations closely tied to global crude oil prices, Canadian refining demand, and natural gas trade patterns.

Sources

- U.S. Energy Information Administration (EIA) – *U.S. Petroleum & Natural Gas Trade Data*
- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Mineral Fuels*
- Brookings – *Energy Trade under USMCA*
- Connect2Canada – *Ohio Fact Sheet*

HS 33 – Cosmetics, Perfumery, Essential Oils, etc.

Cosmetics, Perfumery, Essential Oils, etc.	33



Year	$ Amount
2018	$436,484,939
2019	$466,238,852
2020	$546,328,725
2021	$482,530,836
2022	$545,539,097
2023	$592,531,712
2024	$574,473,924

Trend Narrative

Ohio's exports of cosmetics, perfumery, and essential oils to Canada totaled $436.5M in 2018 and rose steadily to $466.2M in 2019. In 2020, exports surged to $546.3M as consumer demand for personal care and hygiene products increased during the pandemic. A dip occurred in 2021 ($482.5M), likely due to market normalization and reduced discretionary spending, but exports rebounded in 2022 ($545.5M). The category peaked in 2023 at $592.5M before easing slightly in 2024 to $574.5M, reflecting stable but plateauing demand.

Key Drivers & Context

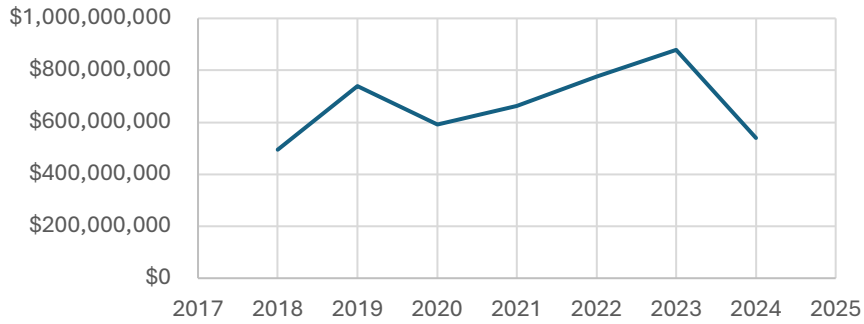
- **Policy/Trade Agreements:** USMCA preserved tariff-free trade for consumer goods, supporting consistent market access.
- **Economic Forces:** Pandemic-related demand in 2020 boosted exports; subsequent moderation followed broader consumer spending cycles.
- **Industry Dynamics:** Growth tied to personal care, hygiene, and fragrance consumption; cross-border brand supply chains supported resilience.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Consumer Goods*
- Euromonitor – *Canada Cosmetics & Personal Care Market Reports*
- Brookings – *USMCA and North American Trade Stability*
- Connect2Canada – *Ohio Fact Sheet*

HS 88 – Aircraft and Parts

Aircraft and Parts	88



Year	$ Amount
2018	$494,646,676
2019	$738,902,075
2020	$592,153,172
2021	$662,578,996
2022	$775,830,272
2023	$878,762,281
2024	$539,880,812

Trend Narrative

Ohio's aircraft and parts exports to Canada started at $494.6M in 2018 and jumped to $738.9M in 2019, reflecting strong aerospace demand prior to the pandemic. In 2020, exports fell to $592.2M as COVID-19 severely impacted aviation and aircraft orders. Recovery followed in 2021 ($662.6M) and 2022 ($775.8M), with exports peaking in 2023 at $878.8M amid fleet modernization and supply chain catch-up. However, 2024 saw a sharp decline to $539.9M, reflecting volatility in the aerospace sector, including order cycles, production bottlenecks, and slowing demand for new aircraft and parts.

Key Drivers & Context

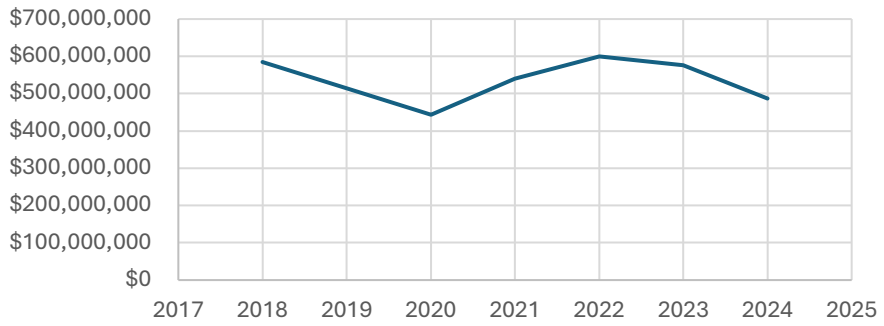
- **Policy/Trade Agreements:** USMCA preserved aerospace trade integration between the U.S. and Canada.
- **Economic Forces:** Aviation downturn in 2020 due to COVID-19 travel restrictions; recovery linked to resurgent air travel and defense procurement.
- **Industry Dynamics:** Aircraft and parts trade is cyclical, influenced by major contract timing, production backlogs, and shifts in airline investment.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Aerospace Products*
- International Air Transport Association (IATA) – *COVID-19 Impact on Aviation*
- Aerospace Industries Association – *U.S.–Canada Aerospace Integration Reports*
- Connect2Canada – *Ohio Fact Sheet*

HS 73 – Iron and Steel Products

Iron and Steel Products 73



Year	$ Amount
2018	$584,945,701
2019	$514,891,284
2020	$443,400,661
2021	$540,837,880
2022	$599,800,453
2023	$576,617,087
2024	$486,167,111

Trend Narrative

Exports of iron and steel products from Ohio to Canada totaled $584.9M in 2018 but fell in 2019 ($514.9M) and reached their lowest point in 2020 ($443.4M) during the pandemic slowdown. A rebound occurred in 2021 ($540.8M) and exports peaked in 2022 at $599.8M, driven by stronger demand from automotive and construction industries as well as higher steel prices. In 2023, exports eased slightly to $576.6M, before dropping more significantly in 2024 to $486.2M, reflecting weaker Canadian construction activity and global steel market corrections.

Key Drivers & Context

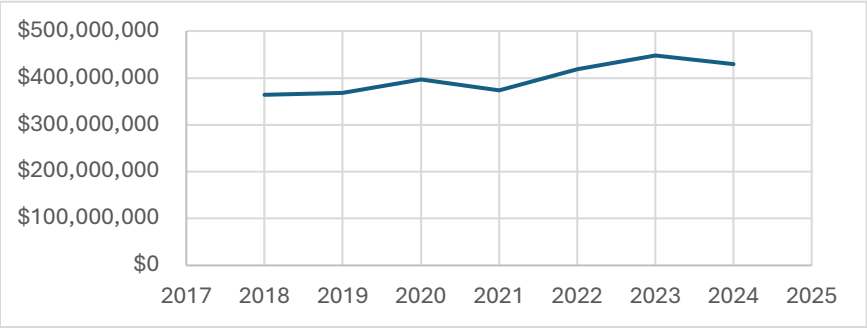
- **Policy/Trade Agreements:** U.S.–Canada Section 232 tariff disputes (2018–2019) disrupted trade; later lifted under USMCA framework.
- **Economic Forces:** 2020 demand contraction from COVID-19; recovery fueled by infrastructure and industrial investment in 2021–2022.
- **Industry Dynamics:** Fluctuations strongly tied to global steel prices, Canadian auto production, and construction sector trends.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Metals*
- Congressional Research Service – *Section 232 Tariffs and Steel Trade*
- Brookings – *USMCA and North American Trade*
- Connect2Canada – *Ohio Fact Sheet*

HS 48 – Paper, Paperboard, Articles of Paper Pulp

Paper, Paperboard, Articles of Paper Pulp	48



Year	$ Amount
2018	$364,025,171
2019	$368,482,733
2020	$397,153,173
2021	$373,553,029
2022	$418,610,688
2023	$447,837,258
2024	$430,000,872

Trend Narrative
Exports of paper and paperboard products from Ohio to Canada totaled $364.0M in 2018 and stayed relatively flat in 2019 ($368.5M). In 2020, exports rose to $397.2M as packaging demand increased during the pandemic, though 2021 saw a dip to $373.6M. Growth resumed in 2022 ($418.6M) and peaked in 2023 at $447.8M, supported by e-commerce packaging needs and higher pulp prices. In 2024, exports slipped modestly to $430.0M, reflecting stable but slightly softened demand as markets normalized.

Key Drivers & Context

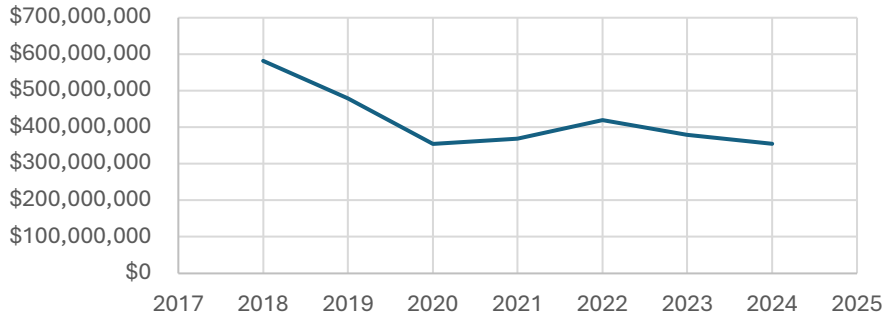
- **Policy/Trade Agreements:** USMCA ensured continued tariff-free trade for paper products.
- **Economic Forces:** Pandemic-driven e-commerce and shipping demand boosted packaging exports.
- **Industry Dynamics:** Fluctuations tied to packaging demand, pulp price volatility, and cross-border manufacturing needs.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Paper & Pulp*
- American Forest & Paper Association – *Trade and Market Outlook*
- Brookings – *USMCA and North American Trade Stability*
- Connect2Canada – *Ohio Fact Sheet*

HS 40 – Rubber and Articles Thereof

Rubber and Articles Thereof	40



Year	$ Amount
2018	$581,875,459
2019	$479,033,331
2020	$354,538,582
2021	$368,107,343
2022	$419,375,762
2023	$379,167,064
2024	$355,305,979

Trend Narrative

Ohio's rubber exports to Canada began at $581.9M in 2018 but dropped significantly in 2019 ($479.0M) and fell further in 2020 to $354.5M during the pandemic. While modest rebounds occurred in 2021 ($366.1M) and 2022 ($419.4M), exports slipped again in 2023 ($379.2M) and 2024 ($355.3M). This sustained downward trend reflects structural changes in the automotive supply chain (a major user of rubber products such as tires and belts), competition from alternative materials, and shifts in Canadian sourcing.

Key Drivers & Context

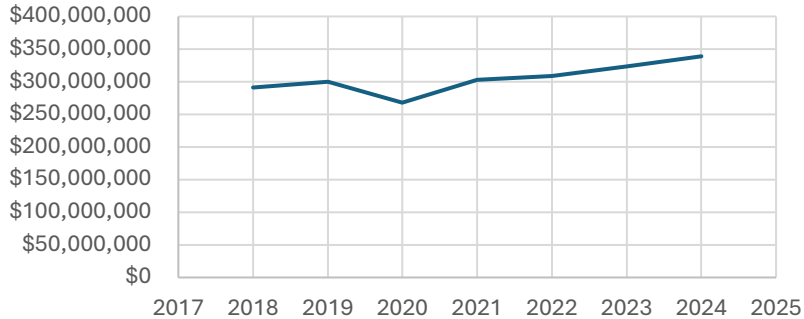
- **Policy/Trade Agreements:** USMCA maintained tariff-free access, but structural demand shifts outweighed trade policy stability.
- **Economic Forces:** Pandemic-era auto production declines reduced rubber demand; high costs and supply disruptions further constrained recovery.
- **Industry Dynamics:** Rubber exports are closely tied to automotive and industrial demand; increased competition and materials substitution have pressured long-term trends.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Rubber & Plastics*
- International Rubber Study Group (IRSG) – *Global Rubber Market Reports*
- Brookings – *North American Automotive Trade Under USMCA*
- Connect2Canada – *Ohio Fact Sheet*

HS 90 – Optic / Photo / Medical Instruments

Optic / Photo / Medical Instruments	90



Year	$ Amount
2018	$290,970,060
2019	$299,465,473
2020	$267,915,438
2021	$302,452,410
2022	$309,241,150
2023	$323,232,704
2024	$338,934,634

Trend Narrative

Exports of optical, photographic, and medical instruments from Ohio to Canada were stable around $291.0M in 2018 and $299.5M in 2019 before dipping to $267.9M in 2020, reflecting pandemic-related disruptions in elective medical procedures and supply chains. A recovery began in 2021 ($302.5M), and exports have grown steadily since, reaching $338.9M in 2024. This consistent upward trend highlights rising demand for medical devices, diagnostic equipment, and precision instruments across North America.

Key Drivers & Context

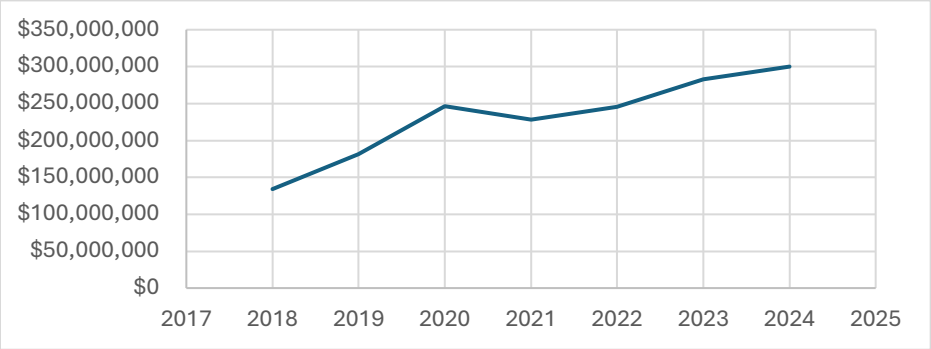
- **Policy/Trade Agreements:** USMCA preserved tariff-free flows of medical and optical devices, ensuring market stability.
- **Economic Forces:** Pandemic caused short-term dips, but long-term demand is supported by healthcare investment and aging populations.
- **Industry Dynamics:** Growth reflects strong U.S.–Canada integration in medical supply chains and increasing use of diagnostic and imaging technologies.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Medical & Optical Instruments*
- International Trade Administration (ITA) – *Medical Device Industry Reports*
- Brookings – *North American Healthcare Trade under USMCA*
- Connect2Canada – *Ohio Fact Sheet*

HS 21 – Miscellaneous Edible Preparations

Miscellaneous Edible Preparations	21



Year	$ Amount
2018	$134,083,549
2019	$181,272,577
2020	$246,656,578
2021	$227,786,161
2022	$245,690,263
2023	$283,172,749
2024	$300,041,314

Trend Narrative

Exports of miscellaneous edible preparations from Ohio to Canada have grown steadily since 2018, rising from $134.1M to $181.3M in 2019. In 2020, exports surged to $246.7M, reflecting pandemic-era shifts toward packaged, shelf-stable, and convenience foods. A dip followed in 2021 ($227.8M), but trade rebounded in 2022 ($245.7M) and accelerated through 2023 ($283.2M), reaching $300.0M in 2024. This growth highlights the resilience of food-related exports and sustained Canadian consumer demand for processed and specialty food products.

Key Drivers & Context

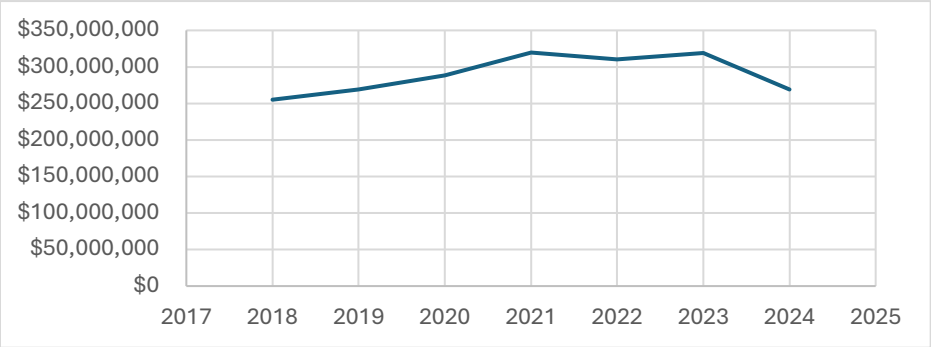
- **Policy/Trade Agreements:** USMCA ensures stable tariff-free trade for processed foods, supporting long-term growth.
- **Economic Forces:** Pandemic demand spike in 2020 for packaged and convenience foods; steady consumer-driven growth thereafter.
- **Industry Dynamics:** Rising Canadian demand for specialty, health-oriented, and convenience foods has supported consistent gains.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Agricultural & Food Products*
- U.S. Department of Agriculture (USDA) – *Processed Food Trade Reports*
- Brookings – *USMCA and Food Supply Chain Integration*
- Connect2Canada – *Ohio Fact Sheet*

HS 38 – Miscellaneous Chemical Products

Miscellaneous Chemical Products	38



Year	$ Amount
2018	$255,123,388
2019	$269,193,711
2020	$288,590,346
2021	$319,674,760
2022	$310,072,784
2023	$319,168,280
2024	$269,387,977

Trend Narrative

Exports of miscellaneous chemical products from Ohio to Canada rose gradually from $255.1M in 2018 to $288.6M in 2020, peaking in 2021 at $319.7M. This growth was supported by demand for specialized chemicals used in manufacturing, cleaning, and industrial applications. In 2022, exports slipped slightly to $310.1M, rebounded in 2023 ($319.2M), and then declined significantly in 2024 to $269.4M, suggesting softer Canadian industrial activity and possible shifts in sourcing for specialty chemicals.

Key Drivers & Context

- **Policy/Trade Agreements:** USMCA ensured continued tariff-free trade in chemical products, supporting sector stability.
- **Economic Forces:** Growth through 2021 tied to industrial rebound post-pandemic; decline in 2024 reflects cooling demand.
- **Industry Dynamics:** Includes a wide mix of chemical exports (industrial, cleaning, specialty formulations), making demand sensitive to manufacturing and consumer sectors alike.

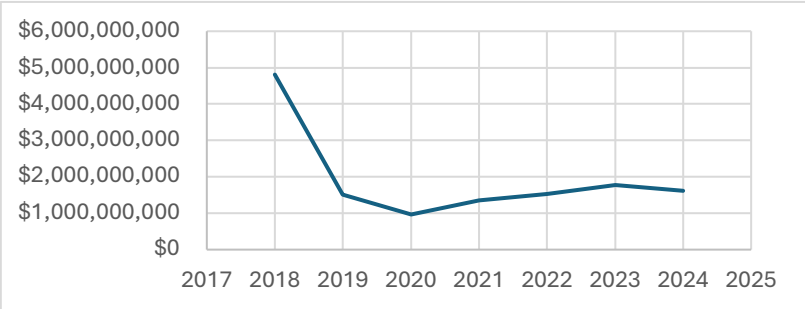
Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals*
- American Chemistry Council – *Specialty Chemicals Trade Reports*
- Brookings – *USMCA and North American Manufacturing*
- Connect2Canada – *Ohio Fact Sheet*

Mexico

HS 87 – Vehicles and Parts

Vehicles and Parts	87



Year	$ Amount
2018	$4,809,037,550
2019	$1,503,165,256
2020	$965,358,581
2021	$1,344,729,782
2022	$1,523,108,883
2023	$1,766,786,268
2024	$1,609,784,267

Trend Narrative:

Exports of vehicles and parts (HS 87) from Ohio to Mexico peaked in 2018 at $4.81 billion before dropping sharply in 2019 ($1.50 billion) and again in 2020 ($965 million). This decline reflects both a major structural adjustment in auto trade reporting and the severe COVID-19 disruptions that curtailed production and cross-border flows. By 2021, exports rebounded to $1.34 billion, growing steadily through 2022 ($1.52 billion) and reaching $1.77 billion in 2023. This recovery was fueled by Mexico's role as a hub in North American auto manufacturing supply chains, where U.S. parts feed into assembly plants. However, by 2024, exports softened slightly to $1.61 billion, reflecting demand headwinds from tighter credit markets, slower vehicle sales, and ongoing adjustments under USMCA's stricter auto content rules.

Key Drivers & Context:

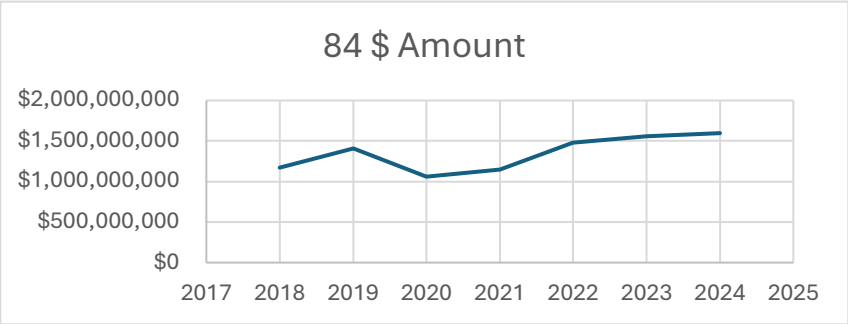
- **Policy/Trade Agreements:** USMCA (effective 2020) raised regional value content requirements for vehicles (75%) and imposed labor value content rules (40–45%), reshaping U.S.–Mexico auto trade.
- **Economic Forces:** Pandemic-driven plant closures and supply-chain shocks (2020) reduced exports, while rising Mexican assembly demand supported recovery from 2021 onward.
- **Industry Dynamics:** Semiconductor shortages (2021–2022) limited auto output; by 2023, pent-up demand and easing supply bottlenecks drove growth, though 2024 saw a slowdown as interest rates weighed on consumer demand.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Transportation Equipment*
- Brookings – *USMCA and Automotive Supply Chains*
- Scotiabank Economics – *North American Auto Market Outlook, 2023–2024*
- U.S. Department of Commerce – *Automotive Industry & USMCA Compliance Guidance*

HS 84 – Industrial Machinery, Including Computers

Industrial Machinery, Including Computers	84



Year	$ Amount
2018	1,170,787,147
2019	$1,408,762,387
2020	$1,060,474,270
2021	$1,148,873,396
2022	$1,481,029,217
2023	$1,560,642,651
2024	$1,597,377,583

Trend Narrative

Ohio's industrial machinery exports to Mexico have remained one of the state's largest and most stable trade categories, reflecting deep supply chain integration between U.S. and Mexican manufacturing. Exports rose from $1.17B in 2018 to a peak of $1.41B in 2019, dipped during the pandemic to $1.06B in 2020, and recovered quickly thereafter reaching $1.48B in 2022, $1.56B in 2023, and $1.60B in 2024. This steady growth trend highlights Mexico's critical role in U.S. manufacturing networks, especially within the automotive, aerospace, and electronics sectors that rely on Ohio's machinery and component exports.

Key Drivers & Context

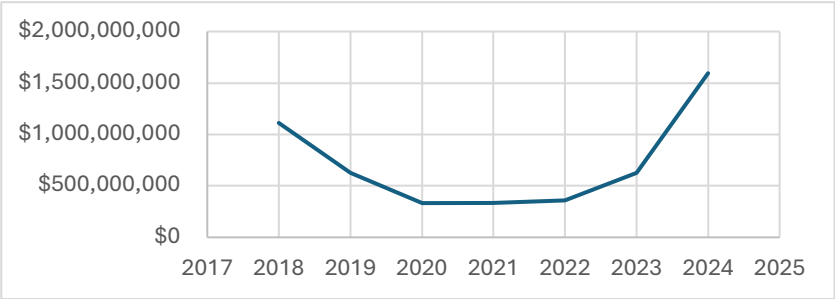
- **Policy/Trade Environment:** The U.S.-Mexico-Canada Agreement (USMCA) has reinforced North American manufacturing collaboration, reducing tariffs and providing stronger IP and digital trade protections. Stable trade policy encourages cross-border investment and machinery exports.
- **Economic Forces:** Mexico's growing industrial output and nearshoring trend have driven sustained demand for U.S. machinery. Rising wages in Asia and supply chain disruptions have accelerated Mexico's attractiveness as a production hub, boosting Ohio export volumes.
- **Industry Dynamics:** Ohio's machinery sector supports key industries in Mexico such as automotive assembly, electronics, and food processing. The state's advanced manufacturing base, especially in robotics and precision equipment, aligns with Mexico's modernization of factory systems.

Sources

- U.S. International Trade Administration - U.S.-Mexico Trade Data and Analysis
- U.S. Census Bureau – Foreign Trade Statistics (HS 84 Exports)
- Banco de México – Industrial Production and Manufacturing Reports
- Brookings Institution – U.S. Manufacturing Supply Chain Integration with Mexico
- U.S. Department of Commerce – Country Commercial Guide: Mexico Industrial Machinery Sector

HS 85 – Electric Machinery; Sound Equip.; TV Equip.

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$1,109,375,082
2019	$625,667,967
2020	$332,656,215
2021	$336,170,658
2022	$359,412,213
2023	$625,632,965
2024	$1,594,469,993

Trend Narrative:

In 2018, Ohio's HS 85 exports to Mexico totaled $1.11 billion, but by 2019 they had fallen significantly to $626 million. The decline deepened in 2020 ($333 million) as the COVID-19 pandemic disrupted electronics manufacturing and reduced demand for equipment across North America. Exports remained low through 2021 ($336 million) and 2022 ($359 million), reflecting both supply chain shortages and delayed industrial spending. A turning point came in 2023, when exports rebounded to $626 million, and by 2024 they surged to $1.59 billion - the highest level in the series. This dramatic rebound was driven by strong demand for electrical machinery in automotive electronics, renewable energy systems, and information technology equipment, as Mexico's manufacturing sector invested in advanced production capacity.

Key Drivers & Context:

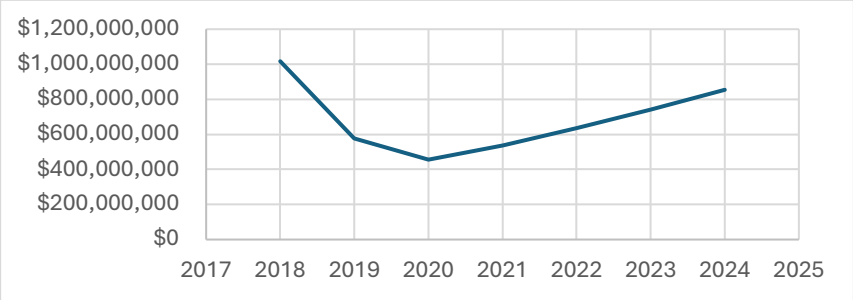
- **Policy/Trade Agreements:** USMCA ensured continued tariff-free access for electrical machinery and supported integration of U.S. suppliers into Mexico's electronics and automotive sectors.
- **Economic Forces:** Pandemic-era supply chain shocks (2020–2022) depressed exports; recovery aligned with rising investment in EV production and digital infrastructure.
- **Industry Dynamics:** Mexico's expanding automotive and electronics assembly industries increasingly relied on U.S. components, driving the sharp increase in 2023–2024.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Electronics & Machinery*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
  U.S. Department of Commerce – *USMCA Ohio Fact Sheet*
- Brookings – *North American Electronics & Automotive Trade Under USMCA*
  Brookings Trade Analysis

HS 39 – Plastics and Articles Thereof

Plastics and Articles Thereof	39



Year	$ Amount
2018	$1,016,873,263
2019	$578,520,300
2020	$455,820,969
2021	$535,520,128
2022	$636,331,143
2023	$740,385,585
2024	$855,735,412

Trend Narrative:

Ohio's plastics exports to Mexico reached $1.02 billion in 2018, then dropped sharply in 2019 ($579 million) and fell further in 2020 ($456 million), reflecting weakened demand in automotive and packaging industries alongside COVID-19 disruptions. A steady recovery began in 2021 ($536 million), continuing through 2022 ($636 million) and 2023 ($740 million), as Mexico's manufacturing sector increased demand for plastic resins and intermediate goods. By 2024, exports rose further to $856 million, marking a significant rebound though still below the 2018 peak. This trend highlights Mexico's reliance on U.S.-sourced plastics for its automotive, consumer goods, and construction industries, as well as broader recovery in North American trade integration.

Key Drivers & Context:

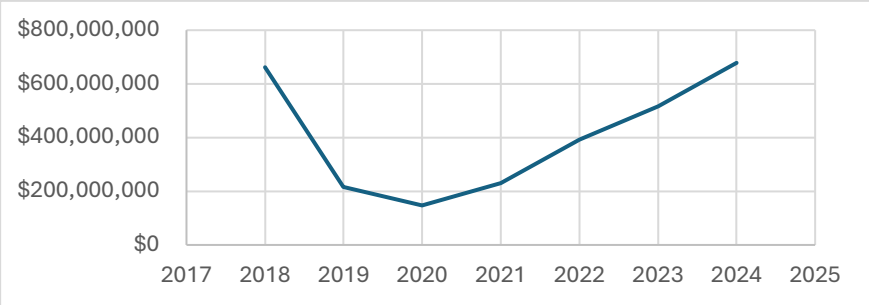
- **Policy/Trade Agreements:** USMCA preserved tariff-free trade in plastics and provided long-term certainty for cross-border supply chains.
- **Economic Forces:** Pandemic-driven declines in 2020 were followed by recovery linked to Mexico's industrial rebound.
- **Industry Dynamics:** Plastics are essential inputs for automotive, electronics, and consumer goods production in Mexico, helping drive steady growth post-2021. Rising resin demand and reshoring of manufacturing supported the sustained recovery into 2024.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals & Plastics*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- U.S. Department of Commerce – *USMCA Ohio State Fact Sheet*
- American Chemistry Council – *Plastics Industry Trade Reports*
  ACC Plastics Reports

HS 72 – Iron and Steel

Iron and Steel	72



Year	$ Amount
2018	$663,036,040
2019	$215,834,572
2020	$147,180,844
2021	$231,063,608
2022	$392,306,415
2023	$517,301,774
2024	$678,313,951

Trend Narrative:

Ohio's iron and steel exports to Mexico reached $663 million in 2018 but dropped sharply in 2019 ($216 million) and again in 2020 ($147 million). This decline reflected a combination of tariff-related trade tensions, lower industrial demand, and the broader disruptions caused by COVID-19. Recovery began in 2021 ($231 million) as cross-border automotive and construction industries increased consumption of steel inputs. Growth accelerated in 2022 ($392 million) and 2023 ($517 million), with 2024 seeing a further rise to $678 million, nearly returning to the 2018 peak. The upward trend highlights Mexico's increasing demand for U.S. steel to support its automotive, construction, and manufacturing sectors.

Key Drivers & Context:

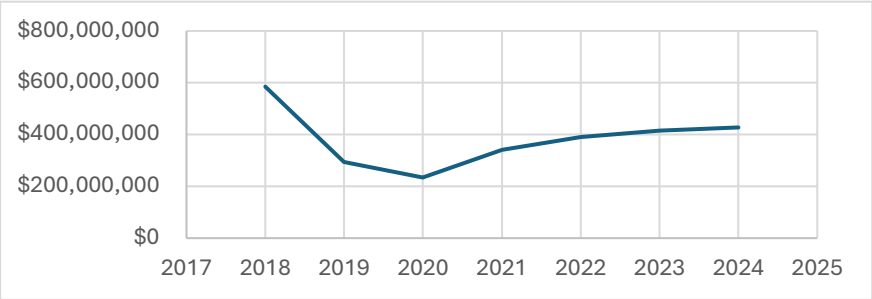
- **Policy/Trade Agreements:** U.S. steel and aluminum tariffs (Section 232, implemented in 2018) initially reduced export volumes, but their removal for Mexico under USMCA (2019) restored competitiveness.
- **Economic Forces:** COVID-19 caused a slump in steel demand in 2020; recovery tracked with Mexico's rebound in auto and construction production.
- **Industry Dynamics:** Steel remains a critical input for Mexico's growing manufacturing base, especially in autos and infrastructure, driving sustained growth in 2021–2024.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Metals and Materials*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- Congressional Research Service – *Section 232 Steel and Aluminum Tariffs*
  CRS Report on Section 232
- U.S. Department of Commerce – *USMCA Ohio Fact Sheet*

HS 73 – Iron and Steel Products

Iron and Steel Products **73**



Year	$ Amount
2018	$584,945,701
2019	$294,829,192
2020	$234,163,298
2021	$342,066,925
2022	$389,969,642
2023	$416,240,507
2024	$427,971,668

Trend Narrative:

Ohio's exports of iron and steel products to Mexico stood at $585 million in 2018 before falling sharply in 2019 ($295 million) and 2020 ($234 million). The downturn reflected a mix of tariff-related trade pressures and weakened industrial demand, compounded by pandemic disruptions. A recovery began in 2021 ($342 million) as Mexico's manufacturing and construction sectors began to rebound. Growth continued in 2022 ($390 million), 2023 ($416 million), and 2024 ($428 million), reflecting stable but moderate increases as demand normalized. While exports remain below the 2018 high, the consistent upward trajectory since 2020 suggests a steady rebuilding of U.S.–Mexico steel trade under USMCA's framework.

Key Drivers & Context:

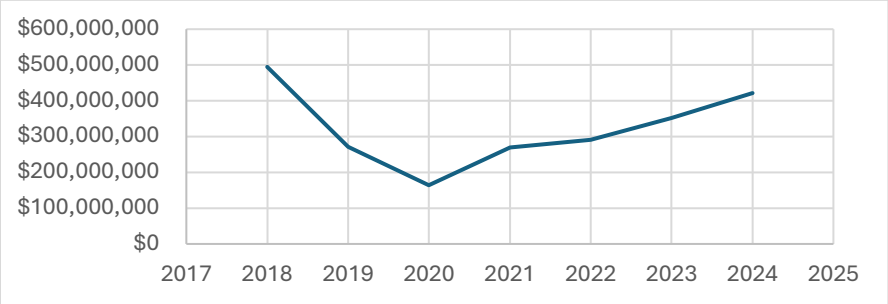
- **Policy/Trade Agreements:** Section 232 tariffs on steel products (2018) weighed heavily on trade flows but were lifted for Mexico in 2019, supporting recovery under USMCA.
- **Economic Forces:** COVID-19 caused demand disruptions in 2020, especially in auto parts, infrastructure, and equipment requiring fabricated steel.
- **Industry Dynamics:** Mexico's construction, automotive, and industrial equipment sectors drove recovery in 2021–2024, though growth has been moderate compared to the stronger rebound seen in raw steel (HS 72).

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Metals and Manufactured Products*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- Congressional Research Service – *Section 232 Steel and Aluminum Tariffs*
  CRS Report on Section 232
- U.S. Department of Commerce – *USMCA Ohio State Fact Sheet*

HS 88 – Aircraft and Parts

Aircraft and Parts	88



Year	$ Amount
2018	$494,646,676
2019	$270,759,802
2020	$164,071,576
2021	$269,724,955
2022	$290,400,652
2023	$352,509,032
2024	$422,253,862

Trend Narrative:

Exports of aircraft and parts from Ohio to Mexico totaled nearly $495 million in 2018, before dropping sharply in 2019 ($271 million) and reaching their lowest point in 2020 ($164 million). The 2020 decline reflected the severe pandemic-related downturn in global aviation, which reduced demand for aircraft production and maintenance. Recovery began in 2021 ($270 million) and continued in 2022 ($290 million) as aerospace manufacturing gradually resumed. Growth accelerated in 2023 ($353 million) and 2024 ($422 million), supported by Mexico's role as an aerospace manufacturing hub and the rebound of global airline orders. Still, exports have not yet returned to the pre-pandemic 2018 high.

Key Drivers & Context:

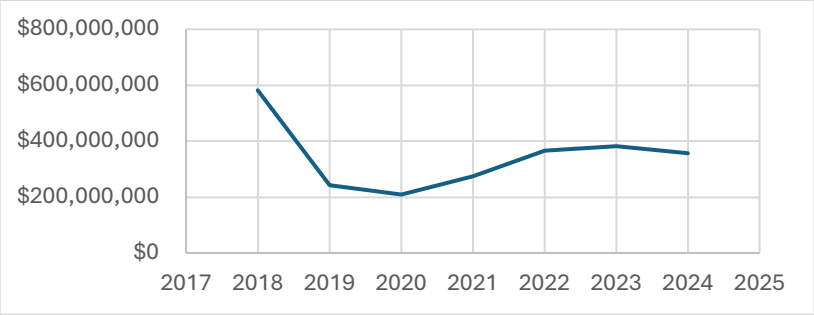
- **Policy/Trade Agreements:** USMCA preserved tariff-free trade in aerospace components, supporting U.S.–Mexico supply chain integration.
- **Economic Forces:** The COVID-19 pandemic severely disrupted aviation demand in 2020, leading to steep declines. Recovery has been gradual, tied to airline fleet renewals and increased aircraft production.
- **Industry Dynamics:** Mexico's aerospace sector is a growing supplier of assembly and parts manufacturing, drawing heavily on U.S. inputs from states like Ohio.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Transportation Equipment (Aerospace)*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- U.S. Department of Commerce – *USMCA Ohio Fact Sheet*
- Aerospace Industries Association – *U.S.–Mexico Aerospace Supply Chain Overview*
  AIA Aerospace Trade Analysis

HS 40 – Rubber and Articles Thereof

Rubber and Articles Thereof	40



Year	$ Amount
2018	$581,875,459
2019	$241,415,152
2020	$209,105,250
2021	$273,934,813
2022	$365,655,656
2023	$382,951,124
2024	$355,892,042

Trend Narrative:

Ohio's exports of rubber and related products to Mexico reached $582 million in 2018 but fell sharply in 2019 ($241 million) and 2020 ($209 million). The 2019 drop coincided with reduced auto production and tariff-related trade uncertainty, while the 2020 decline reflected pandemic-driven factory shutdowns in both the U.S. and Mexico. Recovery began in 2021 ($273 million) and accelerated through 2022 ($366 million) and 2023 ($383 million) as automotive and industrial manufacturing activity rebounded. By 2024, exports moderated slightly to $356 million, signaling stabilization but still below the 2018 peak. Rubber remains a core export tied closely to Mexico's automotive sector, especially in tires, seals, and industrial components.

Key Drivers & Context:

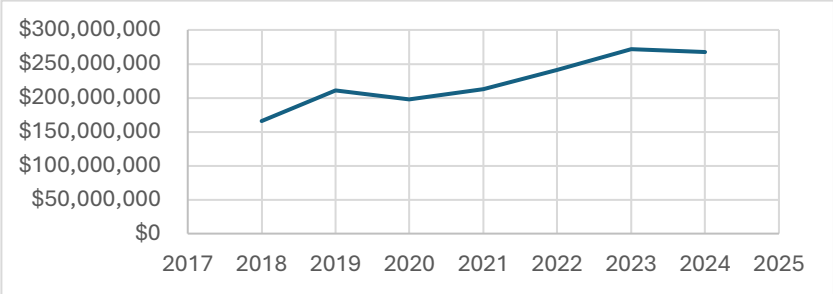
- **Policy/Trade Agreements:** USMCA ensured tariff-free trade and reinforced supply-chain integration between Ohio producers and Mexico's auto industry.
- **Economic Forces:** COVID-19 disruptions in 2020 depressed demand; the subsequent rebound was linked to recovering vehicle production and manufacturing demand.
- **Industry Dynamics:** Rubber exports are heavily tied to Mexico's role in auto assembly and parts production. Growth in EV manufacturing and industrial equipment has sustained demand, though cyclical slowdowns in 2024 tempered momentum.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Rubber & Related Products*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- U.S. Department of Commerce – *USMCA Ohio Fact Sheet*
- Rubber & Plastics News – *U.S.–Mexico Automotive Rubber Supply Chains*
  Rubber & Plastics Trade Analysis

HS 32 – Tanning, Dye, Paint, Putty

Tanning, Dye, Paint, Putty	32



Year	$ Amount
2018	$165,771,301
2019	$210,861,721
2020	$197,973,265
2021	$213,045,924
2022	$241,341,274
2023	$271,667,222
2024	$267,407,672

Trend Narrative:

Exports of HS 32 products from Ohio to Mexico totaled $166 million in 2018, then increased significantly in 2019 ($211 million). A modest dip occurred in 2020 ($198 million), reflecting pandemic-related disruptions, but trade quickly stabilized. Exports reached $213 million in 2021, climbed further to $241 million in 2022, and peaked at $272 million in 2023. By 2024, exports slipped slightly to $267 million, but overall levels remained strong. The steady upward trajectory over this period highlights Mexico's consistent demand for U.S.-sourced dyes, paints, and related chemical inputs, which support its automotive, construction, and manufacturing industries.

Key Drivers & Context:

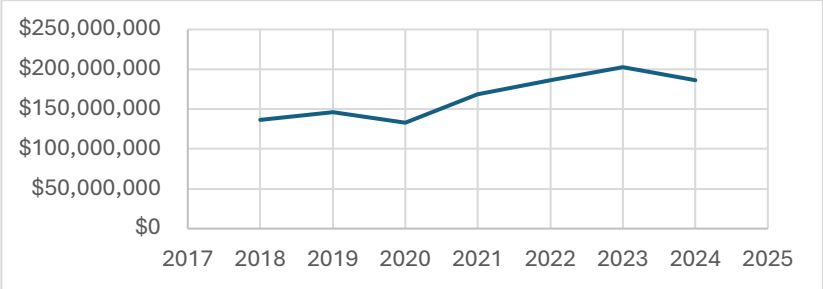
- **Policy/Trade Agreements:** USMCA ensured tariff-free trade, allowing continued integration of Ohio's chemical exports into Mexico's manufacturing supply chains.
- **Economic Forces:** Pandemic disruptions in 2020 slowed demand, but Mexico's post-COVID industrial rebound drove steady growth in subsequent years.
- **Industry Dynamics:** HS 32 products are essential for automotive coatings, construction finishes, and industrial processing. Growing auto production and infrastructure investment in Mexico sustained demand, though the slight 2024 dip may reflect cyclical slowdowns or inventory adjustments.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals & Coatings*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- U.S. Department of Commerce – *USMCA Ohio Fact Sheet*
- American Coatings Association – *Paints & Coatings in North America*
  ACA Coatings Market Reports

HS 38 – Miscellaneous Chemical Products

Miscellaneous Chemical Products	38



Year	$ Amount
2018	$136,402,430
2019	$146,078,626
2020	$132,949,461
2021	$168,326,819
2022	$185,997,396
2023	$202,636,293
2024	$185,923,600

Trend Narrative:

Ohio's exports of miscellaneous chemical products to Mexico started at $136 million in 2018 and climbed modestly in 2019 ($146 million). Exports dipped in 2020 ($133 million), largely due to pandemic-related demand disruptions in industrial chemicals. From 2021 onward, trade rebounded, reaching $168 million in 2021 and peaking at $203 million in 2023, supported by Mexico's recovery in manufacturing, automotive, and industrial processing. In 2024, exports softened slightly to $186 million, suggesting a stabilization rather than a downturn, with demand holding steady but easing off the 2023 high.

Key Drivers & Context:

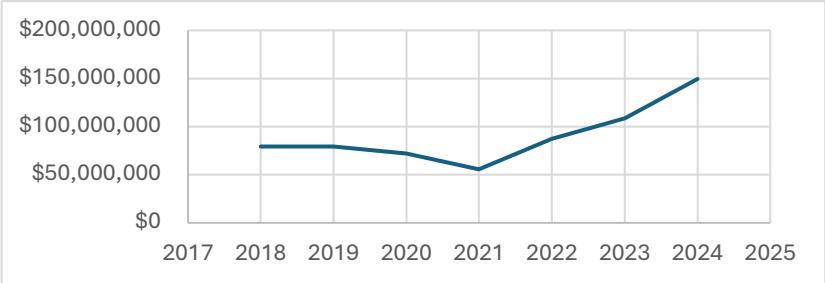
- **Policy/Trade Agreements:** USMCA provided continuity in tariff-free trade, which is essential for maintaining integrated chemical supply chains between Ohio producers and Mexican industries.
- **Economic Forces:** COVID-19 disruptions caused a decline in 2020, but subsequent growth followed the resurgence of industrial output in Mexico.
- **Industry Dynamics:** HS 38 includes a broad category of specialty chemicals, additives, and treatment agents used in automotive, plastics, and industrial applications - sectors that are heavily integrated between the U.S. and Mexico.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- U.S. Department of Commerce – *USMCA Ohio Fact Sheet*
- American Chemistry Council – *U.S. Chemical Exports*
  ACC Trade Reports

HS 33 – Cosmetics, Perfumery, Essential Oils, etc.

Cosmetics, Perfumery, Essential Oils, etc.	33



Year	$ Amount
2018	$79,344,749
2019	$79,362,054
2020	$71,858,665
2021	$55,647,367
2022	$87,495,067
2023	$108,476,952
2024	$149,476,119

Trend Narrative:

Ohio's exports of cosmetics, perfumery, and essential oils to Mexico totaled $79 million in both 2018 and 2019 before dipping to $72 million in 2020 and further to $56 million in 2021. These declines reflected pandemic-related disruptions, reduced consumer spending, and a slowdown in retail and luxury product demand. Recovery began in 2022 with exports rising to $87 million, followed by strong growth in 2023 ($108 million). By 2024, exports surged to $149 million - nearly double the pre-pandemic average - driven by Mexico's expanding middle class, rising consumer demand for personal care products, and the re-establishment of retail and distribution channels.

Key Drivers & Context:

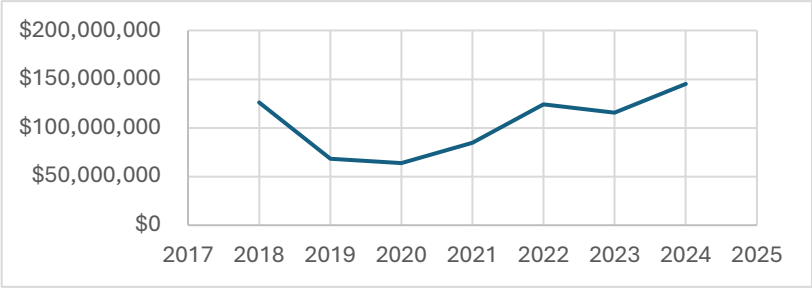
- **Policy/Trade Agreements:** USMCA maintained tariff-free access, supporting Ohio exporters in consumer and beauty supply chains.
- **Economic Forces:** The pandemic weighed heavily on non-essential consumer goods, but post-COVID recovery saw strong rebounds in lifestyle and personal care spending.
- **Industry Dynamics:** Growth reflects Mexico's expanding cosmetics and personal care market, supported by demographics (younger consumers, urban middle class), increased e-commerce penetration, and demand for U.S. and premium brands.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Consumer Goods*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- U.S. Department of Commerce – *USMCA Ohio Fact Sheet*
- Euromonitor – *Mexico Beauty and Personal Care Market Report*
  Euromonitor Report

HS 76 – Aluminum and Articles Thereof

Aluminum and Articles Thereof	76



Year	$ Amount
2018	$126,190,007
2019	$68,272,378
2020	$63,785,361
2021	$84,955,853
2022	$124,035,638
2023	$115,500,043
2024	$145,122,109

Trend Narrative:

Ohio's aluminum exports to Mexico totaled $126 million in 2018 before dropping sharply in 2019 ($68 million) and further in 2020 ($64 million). These declines were heavily influenced by U.S. Section 232 tariffs on aluminum imports/exports, as well as reduced industrial activity during the COVID-19 pandemic. Exports rebounded in 2021 ($85 million) and surged back near pre-2019 levels in 2022 ($124 million). After a slight dip in 2023 ($116 million), exports grew again in 2024, reaching $145 million - the strongest level of the past seven years. This upward trajectory reflects strong demand for aluminum in Mexico's automotive, aerospace, and packaging industries, which rely on Ohio's supply of processed aluminum products.

Key Drivers & Context:

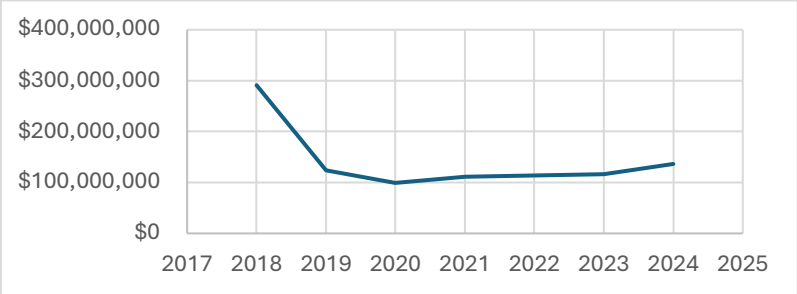
- **Policy/Trade Agreements:** Section 232 aluminum tariffs in 2018 disrupted trade but were lifted for Mexico under the USMCA framework in mid-2019, allowing recovery.
- **Economic Forces:** Pandemic-driven declines (2020) slowed demand, but subsequent growth reflected Mexico's manufacturing and construction rebound.
- **Industry Dynamics:** Mexico's auto and aerospace industries are major consumers of aluminum products. Lightweighting trends in autos (shift to EVs) further supported demand for Ohio's aluminum exports.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Metals & Materials*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- Congressional Research Service – *Section 232 Aluminum and Steel Tariffs*
  CRS Report on Section 232
- U.S. Department of Commerce – *USMCA Ohio Fact Sheet*

HS 90 – Optic / Photo / Medical Instruments

Optic / Photo / Medical Instruments	90



Year	$ Amount
2018	$290,970,060
2019	$123,227,542
2020	$99,161,027
2021	$110,809,786
2022	$113,931,566
2023	$116,780,329
2024	$136,445,480

Trend Narrative:

In 2018, Ohio's exports of optic, photo, and medical instruments to Mexico peaked at $291 million before dropping sharply in 2019 ($123 million) and 2020 ($99 million). The declines reflected both trade reclassifications and the pandemic's impact on medical device supply chains and elective healthcare demand. A gradual recovery followed, with exports reaching $111 million in 2021 and stabilizing in the $113–117 million range through 2022 and 2023. By 2024, exports grew to $136 million, signaling renewed demand as healthcare systems normalized post-pandemic and investment in medical technologies strengthened.

Key Drivers & Context:

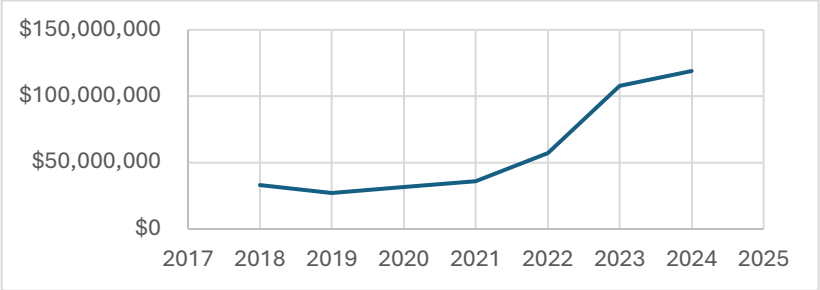
- **Policy/Trade Agreements:** USMCA maintained duty-free trade in medical devices and optical instruments, encouraging integration of U.S. and Mexican healthcare manufacturing supply chains.
- **Economic Forces:** The sharp 2019–2020 declines reflected a mix of reclassification effects and pandemic-related disruptions. Recovery aligned with resurgent medical demand and greater investment in diagnostic and surgical technologies.
- **Industry Dynamics:** Mexico is an important hub for medical device manufacturing, and Ohio exports of precision instruments, imaging devices, and components feed into this growing sector.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Medical Instruments*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- U.S. Department of Commerce – *USMCA Ohio Fact Sheet*
- MedTech Outlook – *Mexico's Role in North American Medical Device Manufacturing*
  MedTech Industry Reports

HS 74 – Copper and Articles Thereof

Copper and Articles Thereof	74



Year	$ Amount
2018	$33,200,674
2019	$27,127,945
2020	$31,465,455
2021	$36,077,665
2022	$57,180,686
2023	$107,583,182
2024	$119,004,268

Trend Narrative:

Ohio's copper exports to Mexico began at $33 million in 2018, dipped to $27 million in 2019, and rose modestly in 2020 ($31 million) and 2021 ($36 million). Growth accelerated in 2022 ($57 million), before surging in 2023 ($108 million) and climbing further in 2024 ($119 million). This dramatic increase in the last two years reflects Mexico's rising demand for copper in electrical equipment, automotive production (including EVs), and construction. The sharp upward trend from 2022 onward highlights copper's growing role as a critical input in energy infrastructure and green technologies, making Mexico an increasingly important market for Ohio's copper exports.

Key Drivers & Context:

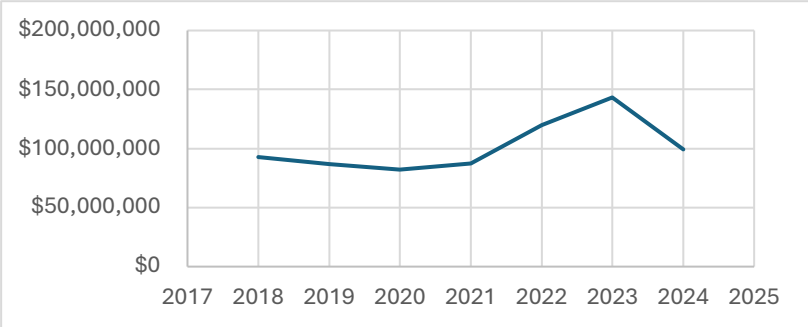
- **Policy/Trade Agreements:** USMCA facilitated integrated North American metals supply chains, supporting copper trade flows.
- **Economic Forces:** Copper demand grew significantly due to global electrification trends, including renewable energy expansion and electric vehicle production.
- **Industry Dynamics:** Mexico's auto industry, electronics sector, and infrastructure projects (e.g., power transmission and housing) boosted demand for copper products from U.S. suppliers like Ohio.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Metals & Minerals*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- Congressional Research Service – *USMCA and North American Metals Trade*
  CRS USMCA Overview
- International Copper Association – *Global Copper Demand in EVs and Infrastructure*

HS 34 – Soap, Waxes, Lubricating Preparations, etc.

Soap, Waxes, Lubricating Preparations, etc.	34



Year	$ Amount
2018	$92,676,842
2019	$86,769,427
2020	$82,173,003
2021	$87,541,239
2022	$119,878,097
2023	$143,301,109
2024	$99,552,146

Trend Narrative:

Ohio's exports of soap, waxes, and lubricating preparations to Mexico totaled $93 million in 2018 before declining slightly in 2019 ($87 million) and 2020 ($82 million). The modest drop in these years reflected lower industrial demand during global economic slowdowns and the pandemic. A gradual rebound began in 2021 ($88 million), followed by a sharp increase in 2022 ($120 million) and a peak in 2023 at $143 million, supported by renewed industrial activity and higher demand for lubricants and specialty chemicals. However, by 2024 exports fell back to $100 million, suggesting that the 2023 surge may have been driven by temporary factors such as inventory buildups, oil price volatility, or post-pandemic catch-up demand.

Key Drivers & Context:

- **Policy/Trade Agreements:** USMCA preserved tariff-free trade in lubricants and chemical preparations, ensuring stable cross-border supply.
- **Economic Forces:** Industrial slowdowns in 2019–2020 reduced demand, while the recovery in 2022–2023 reflected Mexico's rebound in automotive, transportation, and manufacturing.
- **Industry Dynamics:** These products are critical inputs in automotive and machinery maintenance, as well as industrial processes. The 2023 spike may be linked to higher energy-related demand and increased production activity, while the 2024 decline signals normalization.

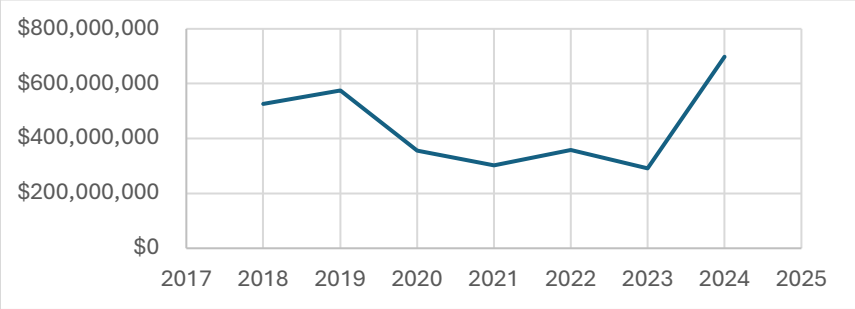
Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals*
- Ohio Development Services Agency – *Ohio Export Report*
- U.S. Department of Commerce – *USMCA Ohio Fact Sheet*
- Lubes'n'Greases Magazine – *Global Trends in Lubricants Trade*


China

HS 88 – Aircraft and Parts

Aircraft and Parts	88



Year	$ Amount
2018	$527,430,461
2019	$575,375,160
2020	$356,246,836
2021	$301,403,498
2022	$359,184,114
2023	$291,418,929
2024	$698,305,905

Trend Narrative:

Ohio's aircraft and parts exports to China were strong in 2018 ($527 million) and grew further in 2019 ($575 million), reflecting robust Chinese demand for aviation components and U.S. aerospace technology. However, exports declined in 2020 ($356 million) and 2021 ($301 million), coinciding with the COVID-19 pandemic's devastating impact on global air travel, supply chain slowdowns, and reduced aircraft orders. In 2022, exports recovered modestly to $359 million before slipping again in 2023 ($291 million). The sharp rebound in 2024 ($698 million) marked the highest level in the period, driven by renewed demand for aircraft parts as China's aviation sector rebounded post-pandemic and airlines resumed fleet modernization.

Key Drivers & Context:

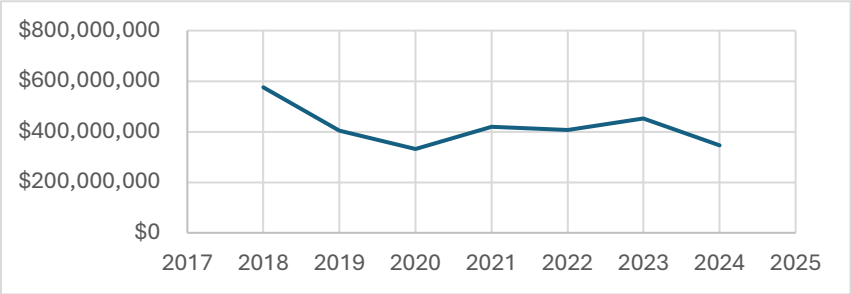
- **Policy/Trade Agreements:** U.S.–China trade tensions and tariffs during 2018–2020 disrupted aerospace trade flows. Despite this, critical aircraft components continued to move given China's dependence on U.S. aerospace technology.
- **Economic Forces:** The pandemic was the single largest factor suppressing exports in 2020–2021, with aviation among the hardest-hit global industries.
- **Industry Dynamics:** China has one of the fastest-growing aviation markets, and Ohio exporters benefit from supplying parts for both fleet expansion and maintenance. The 2024 surge reflects both pent-up demand and China's renewed investments in air transport capacity.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Transportation Equipment (Aerospace)*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
  U.S. Department of Commerce – *U.S.–China Trade Fact Sheets*
  Trade.gov China Resources
- Aerospace Industries Association – *U.S. Aerospace Exports and Global Demand*
  AIA Aerospace Trade Data

HS 84 – Industrial Machinery, Including Computers

Industrial Machinery, Including Computers	84



Year	$ Amount
2018	$575,418,809
2019	$404,550,518
2020	$331,518,532
2021	$418,479,356
2022	$407,224,538
2023	$453,128,661
2024	$345,448,915

Trend Narrative:

In 2018, Ohio's exports of industrial machinery and computers to China peaked at $575M before falling to $405M in 2019, reflecting escalating U.S.–China trade tensions and tariffs. Exports weakened further in 2020 ($332M) due to pandemic-driven supply chain disruptions. A recovery followed in 2021 ($418M), continuing into 2022 ($407M) and 2023 ($453M) as China restored industrial capacity in electronics, automotive, and manufacturing. However, exports declined again in 2024 ($345M), likely tied to renewed trade frictions, slower industrial growth, and China's diversification away from U.S. suppliers.

Key Drivers & Context:

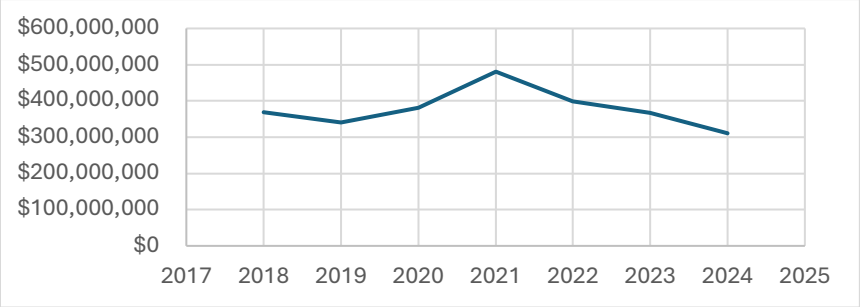
- **Policy/Trade Agreements:** The U.S.–China trade war (2018–2019) and resulting tariffs significantly reduced machinery trade volumes. Despite temporary relief under the "Phase One" trade deal (2020), structural tensions remained.
- **Economic Forces:** The pandemic in 2020 depressed exports globally, with China's demand for imported machinery falling alongside factory shutdowns.
- **Industry Dynamics:** Ohio's machinery exports are closely tied to advanced manufacturing, electronics, and computing, all of which faced volatility amid supply chain realignments and China's growing domestic manufacturing capacity.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Machinery*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- Congressional Research Service – *U.S.–China Trade Relations & Tariffs*
  CRS U.S.–China Trade Report
- U.S. Department of Commerce – *China Country Commercial Guide*
  Trade.gov China Guide

HS 39 – Plastics and Articles Thereof

Plastics and Articles Thereof	39



Year	$ Amount
2018	$368,226,517
2019	$341,354,928
2020	$380,385,272
2021	$480,744,010
2022	$399,605,593
2023	$367,193,522
2024	$310,743,629

Trend Narrative:

Ohio's plastics exports to China totaled $368 million in 2018 and dipped slightly in 2019 ($341 million), reflecting the early impact of U.S.–China trade tensions. Interestingly, exports grew in 2020 ($380 million), likely supported by pandemic-driven demand for plastics in packaging and medical supplies. In 2021, exports peaked at $481 million, the highest in the period, coinciding with global recovery and strong Chinese demand for plastics in industrial and consumer applications. However, exports declined again in 2022 ($400 million), 2023 ($367 million), and 2024 ($311 million), reflecting slowing Chinese industrial output, rising domestic plastic production, and ongoing supply chain diversification away from U.S. sources.

Key Drivers & Context:

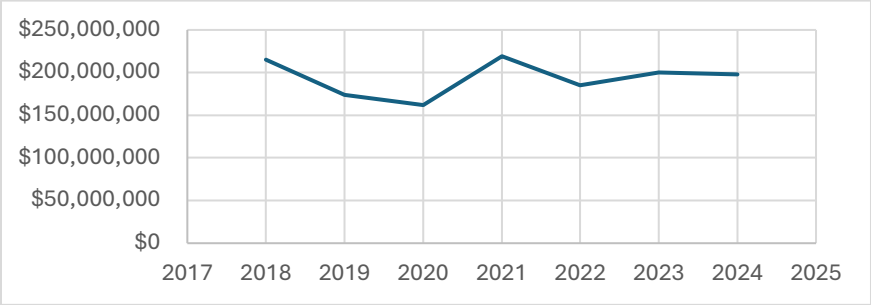
- **Policy/Trade Agreements:** U.S.–China tariff tensions from 2018 onward created volatility, with certain plastics facing retaliatory tariffs.
- **Economic Forces:** COVID-19 boosted demand for medical-grade and packaging plastics in 2020, temporarily supporting exports. The 2021 peak reflected post-pandemic industrial rebound, but declining exports since then highlight weakening demand in China and increased reliance on domestic or alternative suppliers.
- **Industry Dynamics:** Plastics are critical inputs in electronics, automotive, and consumer goods - all areas where China has sought to increase self-sufficiency, impacting imports from Ohio.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals & Plastics*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- Congressional Research Service – *U.S.–China Trade Disputes and Tariffs*
  CRS U.S.–China Trade Report
- American Chemistry Council – *Global Plastics Trade Outlook*
  ACC Plastics Trade Reports

HS 90 – Optic / Photo / Medical Instruments

Optic / Photo / Medical Instruments **90**



Year	$ Amount
2018	$215,280,406
2019	$173,922,082
2020	$161,914,530
2021	$219,150,384
2022	$185,300,678
2023	$199,946,944
2024	$198,126,145

Trend Narrative:

Exports of optical, photographic, and medical instruments from Ohio to China were $215M in 2018, then declined to $174M in 2019 and $162M in 2020 due to trade tensions and pandemic-related slowdowns. A sharp rebound followed in 2021 ($219M), the period's peak, driven by surging global demand for medical devices. Exports dipped in 2022 ($185M) but stabilized in 2023 ($200M) and 2024 ($198M), reflecting steady demand as China invests in healthcare and diagnostics infrastructure, though with cyclical fluctuations.

Key Drivers & Context:

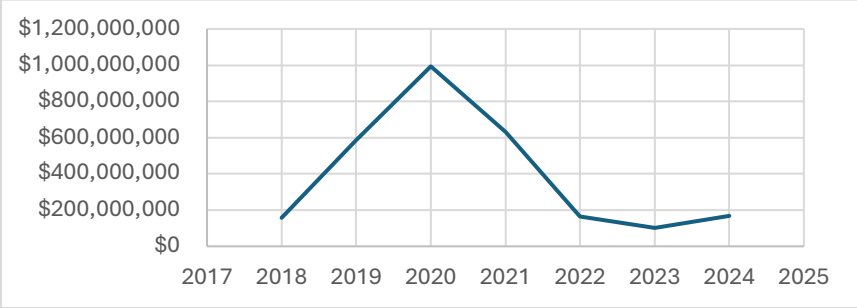
- **Policy/Trade Agreements:** U.S.–China trade disputes-imposed tariffs on certain medical and precision instruments in 2019–2020, impacting flows. However, exemptions for critical medical devices supported continued trade during the pandemic.
- **Economic Forces:** The 2020 decline coincided with China's temporary healthcare disruptions during COVID-19. By 2021, pandemic-driven demand for diagnostic and surgical instruments drove the export spike.
- **Industry Dynamics:** China remains a major importer of high-tech medical and optical devices. Ohio exporters benefit from supplying precision instruments and imaging technologies not easily substituted by domestic production, though China continues to push for self-sufficiency in MedTech.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Medical & Optical Instruments*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
  Congressional Research Service – *U.S.–China Trade and Tariffs in Medical Devices*
  CRS Report on U.S.–China Trade
- MedTech Outlook – *China's Growing Medical Device Market*
  MedTech Industry Reports

HS 12 – Oil Seed, Miscellaneous Grain

Oil Seed, Miscellaneous Grain	12



Year	$ Amount
2018	$157,677,213
2019	$586,164,098
2020	$993,370,688
2021	$630,607,150
2022	$166,161,115
2023	$101,710,891
2024	$168,926,031

Trend Narrative:

Ohio's oil seed and miscellaneous grain exports to China were relatively low in 2018 ($158 million) but surged to $586 million in 2019 and reached nearly $1 billion in 2020. This extraordinary spike aligned with China's commitments under the U.S.–China "Phase One" trade deal, which required expanded agricultural imports from the U.S. However, exports fell to $631 million in 2021 and collapsed further in 2022 ($166 million) and 2023 ($102 million) due to weakening trade relations, China's push to diversify agricultural suppliers (e.g., Brazil and Argentina), and domestic stockpiling strategies. By 2024, exports stabilized somewhat at $169 million but remained far below the 2019–2021 highs.

Key Drivers & Context:

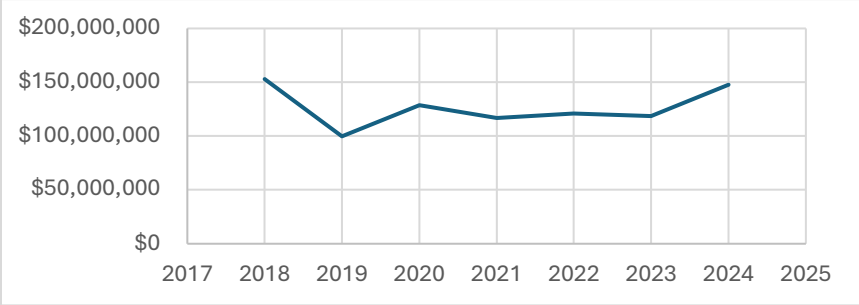
- **Policy/Trade Agreements:** The "Phase One" trade deal (2020–2021) drove a surge in U.S. agricultural exports, especially soybeans and oilseeds, to China. When the deal's momentum slowed and tensions resumed, exports fell sharply.
- **Economic Forces:** China is the world's largest consumer of soybeans and oilseeds, but sourcing increasingly shifted toward South American suppliers, undercutting U.S. exports despite competitive production in Ohio.
- **Industry Dynamics:** Agricultural exports to China remain highly volatile and policy driven. Ohio farmers benefit during periods of strong U.S.–China trade cooperation but are exposed to risks when China pivots to alternative suppliers.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Agriculture*
  USITC Trade Shifts Report
- U.S. Department of Agriculture (USDA) – *China Agricultural Trade Reports*
  USDA China Reports
- Ohio Development Services Agency – *Ohio Export Report*
- Congressional Research Service – *China's Agricultural Import Policies*
  CRS Report on U.S.–China Agriculture

HS 38 – Miscellaneous Chemical Products

Miscellaneous Chemical Products	38



Year	$ Amount
2018	$152,957,902
2019	$99,787,825
2020	$128,621,497
2021	$117,083,483
2022	$121,136,079
2023	$118,728,603
2024	$147,501,149

Trend Narrative:

Exports of miscellaneous chemical products from Ohio to China began at $153 million in 2018 before dropping significantly in 2019 to $100 million amid the escalation of U.S.–China tariff disputes. Recovery followed in 2020 ($129 million), aided by strong global demand for chemicals used in healthcare, industrial processes, and protective equipment during the pandemic. From 2021 through 2023, exports stabilized in the $117–122 million range, reflecting steady but restrained trade as supply chains adjusted and China increasingly relied on domestic production. In 2024, exports rose to $148 million, the strongest since 2018, suggesting improved trade flows and a rebound in Chinese demand for specialty and industrial chemical inputs.

Key Drivers & Context:

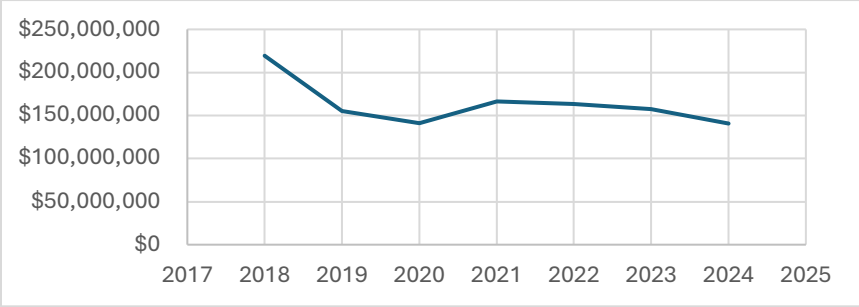
- **Policy/Trade Agreements:** Tariffs during the U.S.–China trade war directly reduced chemical trade in 2019, though certain categories were later exempted.
- **Economic Forces:** COVID-19 boosted demand for specific chemical inputs (e.g., disinfectants, coatings, additives) in 2020. More recently, global supply realignments and easing trade frictions allowed exports to rebound in 2024.
- **Industry Dynamics:** China's large manufacturing base requires specialty chemical imports for plastics, electronics, and industrial processes. Ohio exporters benefit from advanced formulations, though competition from Chinese chemical firms remains strong.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- Congressional Research Service – *U.S.–China Trade Disputes and Tariffs*
  CRS U.S.–China Trade Report
- American Chemistry Council – *Global Chemical Trade and U.S. Exports*
  ACC Trade Reports

HS 85 – Electric Machinery; Sound Equip., TV Equip.

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$219,398,493
2019	$154,990,145
2020	$140,772,213
2021	$166,048,187
2022	$163,417,250
2023	$157,582,423
2024	$140,672,298

Trend Narrative:

Ohio's exports of electrical machinery to China were $219M in 2018 but dropped to $155M in 2019 and $141M in 2020, reflecting U.S.–China trade tensions and tariffs. A partial recovery followed in 2021 ($166M) and 2022 ($163M), but exports slipped again in 2023 ($158M) and 2024 ($141M). Overall, the data shows a long-term downward trend as China expands its domestic electronics industry, while U.S. exports face ongoing trade restrictions, supply chain decoupling, and tighter tech transfer rules.

Key Drivers & Context:

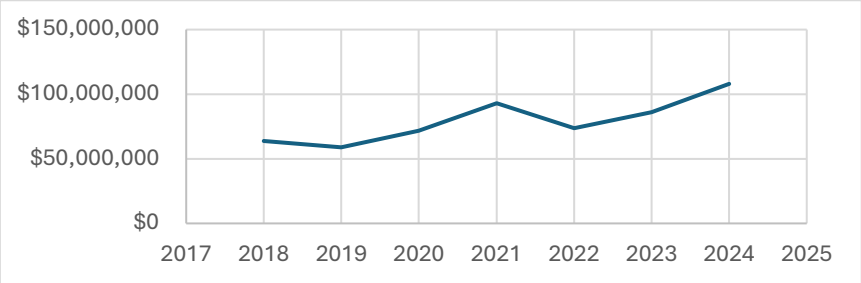
- **Policy/Trade Agreements:** The U.S.–China trade war led to tariffs on a range of electrical and electronic products beginning in 2018–2019, directly depressing exports. Recent restrictions on U.S. tech and semiconductor equipment exports have further limited growth potential.
- **Economic Forces:** China is a global leader in electronics manufacturing, meaning U.S. exports face competition from domestic production. Weakening demand in 2023–2024, alongside supply chain shifts, further pressured Ohio exports.
- **Industry Dynamics:** Electric machinery, semiconductors, and electronics-related goods are central to ongoing U.S.–China tensions, with Washington restricting technology transfer in areas like advanced computing and telecom equipment.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Electronics*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
  Congressional Research Service – *U.S.–China Technology and Trade Restrictions*
  CRS Report on U.S.–China Trade
- U.S. Department of Commerce – *China Country Commercial Guide*
  Trade.gov China Guide

HS 28 – Inorganic Chemicals; Rare-Earths

Inorganic Chemicals; Rare-Earths	28



Year	$ Amount
2018	$63,942,541
2019	$58,885,167
2020	$71,930,207
2021	$93,043,003
2022	$73,551,465
2023	$86,101,858
2024	$108,001,157

Trend Narrative:

Ohio's exports of inorganic chemicals and rare-earth materials to China were $64 million in 2018 and dipped slightly in 2019 ($59 million), before recovering to $72 million in 2020. The strongest growth occurred in 2021 ($93 million) as China's demand for rare-earth inputs and inorganic chemicals rose during its post-pandemic industrial expansion. After a modest pullback in 2022 ($74 million), exports rebounded in 2023 ($86 million) and surged to a record high of $108 million in 2024. This steady growth since 2020 reflects China's reliance on specialized U.S. chemical products to support advanced manufacturing, energy storage, and high-tech applications, despite efforts to localize supply.

Key Drivers & Context:

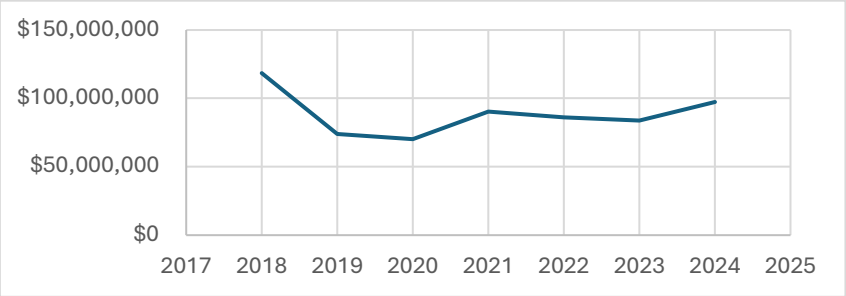
- **Policy/Trade Agreements:** While rare-earths have been a flashpoint in U.S.–China trade relations, certain inorganic chemicals and specialized rare-earth compounds remain strategically traded due to supply interdependence.
- **Economic Forces:** China's industrial growth, particularly in electronics, renewable energy, and battery manufacturing, has increased demand for U.S.-sourced inorganic chemicals despite broader decoupling trends.
- **Industry Dynamics:** Ohio exporters benefit from advanced formulations and niche chemical production not easily substituted by domestic Chinese suppliers, giving them a resilient market presence even amid geopolitical strains.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Chemicals & Rare Earths*
  USITC Trade Shifts Report
- Ohio Development Services Agency – *Ohio Export Report*
- Congressional Research Service – *Rare Earth Elements in U.S.–China Trade*
  CRS Rare Earths Report
- U.S. Geological Survey (USGS) – *Mineral Commodity Summaries: Rare Earths*
  USGS Rare Earth Elements

HS 44 – Wood and Articles of Wood; Wood Charcoal

Wood and Articles of Wood; Wood Charcoal	44



Year	$ Amount
2018	$118,473,534
2019	$73,778,839
2020	$70,185,878
2021	$90,396,950
2022	$85,983,456
2023	$83,615,043
2024	$97,345,357

Trend Narrative:

Ohio's wood and wood-related exports to China started strong in 2018 at $118 million but fell sharply in 2019 ($74 million) and 2020 ($70 million), reflecting the impact of the U.S.–China trade war and reduced Chinese demand amid domestic housing and construction slowdowns. A recovery took place in 2021 ($90 million), supported by China's post-pandemic infrastructure and construction spending, though values moderated slightly in 2022 ($86 million) and 2023 ($84 million). By 2024, exports grew again to $97 million, signaling renewed demand for high-quality hardwoods and wood products from the U.S.

Key Drivers & Context:

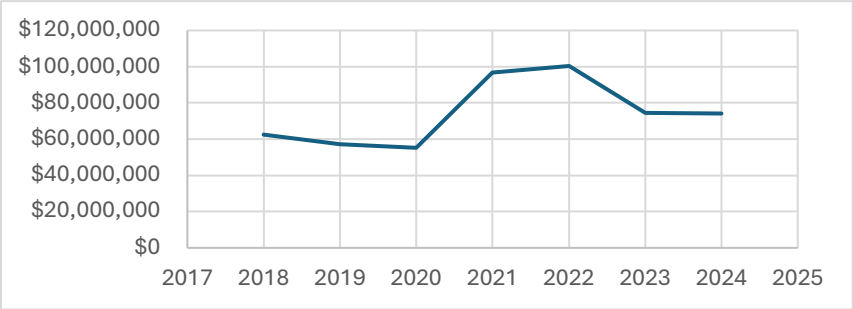
- **Policy/Trade Agreements:** Tariffs placed during the U.S.–China trade war significantly impacted wood exports in 2019–2020. However, subsequent easing and exemptions on certain lumber types allowed trade to partially recover.
- **Economic Forces:** Demand for U.S. hardwoods and specialty wood products fluctuates with China's real estate and construction cycles. The rebound in 2021–2024 reflects renewed housing and infrastructure activity despite China's broader economic challenges.
- **Industry Dynamics:** Ohio, a leading hardwood producer, exports wood products for furniture, flooring, and construction. These niche products are less easily substituted by domestic Chinese production, helping exports remain resilient in recent years.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Wood Products*
- Ohio Development Services Agency – *Ohio Export Report*
- USDA Foreign Agricultural Service – *China Wood Products Trade Reports*
- Hardwood Federation – *Impact of Trade Tariffs on U.S. Hardwood Exports* Hardwood Federation Trade Insights

HS 73 – Iron and Steel Products

Iron and Steel Products **73**



Year	$ Amount
2018	$62,502,254
2019	$57,067,549
2020	$55,224,337
2021	$96,609,741
2022	$100,389,138
2023	$74,364,658
2024	$74,140,976

Trend Narrative:

Ohio's exports of iron and steel products to China remained modest but steady from 2018 to 2020, averaging about $58 million annually. A sharp surge occurred in 2021 ($97 million) and 2022 ($100 million), coinciding with China's post-pandemic stimulus and construction push that boosted demand for foreign steel-related goods. However, exports fell back in 2023 ($74 million) and remained flat in 2024 ($74 million), as China's property sector weakened and the government prioritized domestic steel production.

Key Drivers & Context:

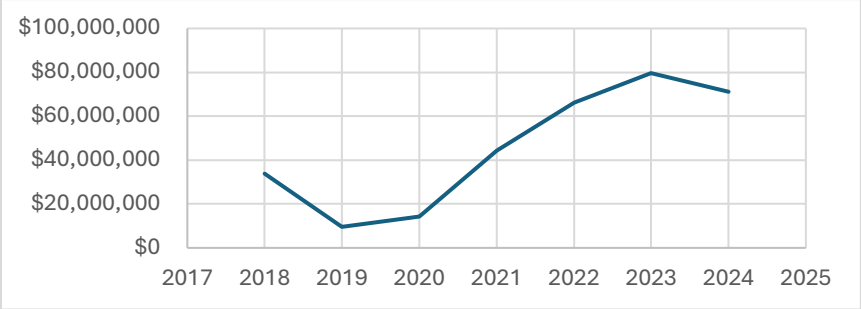
- **Policy/Trade Agreements:** U.S.–China tariffs during 2018–2019 limited trade flows, keeping exports subdued. Later recovery aligned with temporary easing of trade restrictions.
- **Economic Forces:** China is the world's largest steel producer, but imports rose in 2021–2022 due to infrastructure spending and demand for specialized products. The subsequent slowdown in China's real estate and construction sectors reduced imports.
- **Industry Dynamics:** Ohio exports include specialty and value-added iron and steel products that complement China's mass steel production. Despite competition, niche demand sustains a base level of exports, though volumes remain sensitive to China's cyclical construction industry.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Steel Products*
  USITC Trade Shifts Report
- World Steel Association – *Global Steel Demand Trends*
  World Steel Reports
- Congressional Research Service – *U.S.–China Trade Relations*
  CRS U.S.–China Trade Report
- Ohio Development Services Agency – *Ohio Export Report*

HS 74 – Copper and Articles Thereof

Copper and Articles Thereof	74



Year	$ Amount
2018	$33,822,088
2019	$9,581,187
2020	$14,417,852
2021	$44,398,028
2022	$66,115,206
2023	$79,646,189
2024	$71,152,706

Trend Narrative:

Ohio's copper exports to China have shown significant volatility over the 2018–2024 period. In 2018, exports were $34 million before collapsing to just $9.6 million in 2019 due to U.S.–China trade tensions and tariffs. A slow recovery began in 2020 ($14 million), followed by a sharp rise in 2021 ($44 million) as China increased copper imports to fuel post-pandemic infrastructure and manufacturing demand. The upward momentum continued into 2022 ($66 million) and peaked in 2023 ($80 million), before moderating slightly in 2024 to $71 million. Despite the volatility, the overall trajectory since 2019 highlights copper's critical role in China's industrial supply chain, particularly in electronics, construction, and renewable energy.

Key Drivers & Context:

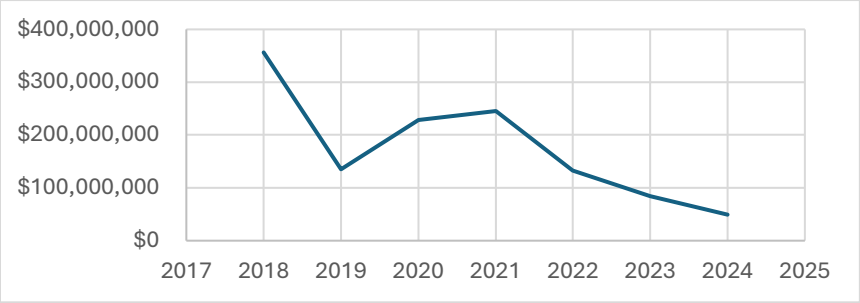
- **Policy/Trade Agreements:** The U.S.–China trade war drove the 2019 collapse. Later partial tariff exemptions and improved relations allowed exports to rebound.
- **Economic Forces:** Copper demand is closely tied to China's construction, power grid expansion, and clean energy industries. Global copper shortages and price spikes between 2021–2023 supported stronger export values.
- **Industry Dynamics:** Ohio exports primarily value-added copper articles rather than raw copper. These higher-grade products serve niche demand in electronics, automotive, and energy storage, which remain strategic growth areas in China.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Metals*
  USITC Trade Shifts Report
- World Bank – *Commodity Markets Outlook: Copper Demand*
- Congressional Research Service – *U.S.–China Trade and Commodities*
  CRS Report on U.S.–China Trade
- International Copper Association – *Copper in Energy and Manufacturing*
  ICA Copper Reports

HS 87 – Vehicles and Parts

Vehicles and Parts	87



Year	$ Amount
2018	$356,338,701
2019	$135,707,503
2020	$228,720,214
2021	$244,848,030
2022	$133,123,950
2023	$84,191,089
2024	$49,279,477

Trend Narrative:

Ohio's exports of vehicles and parts to China peaked at $356M in 2018 but dropped sharply in 2019 ($136M) with the onset of the U.S.–China trade war and tariffs on autos. A partial rebound came in 2020 ($229M) and 2021 ($245M), supported by Chinese demand for U.S. auto technology and parts. Exports then fell again in 2022 ($133M) and plunged to $84M in 2023 and $49M in 2024, the lowest level of the period. This contraction reflects escalating trade tensions and China's push to strengthen domestic automotive supply chains, particularly in EVs, reducing reliance on U.S. imports.

Key Drivers & Context:

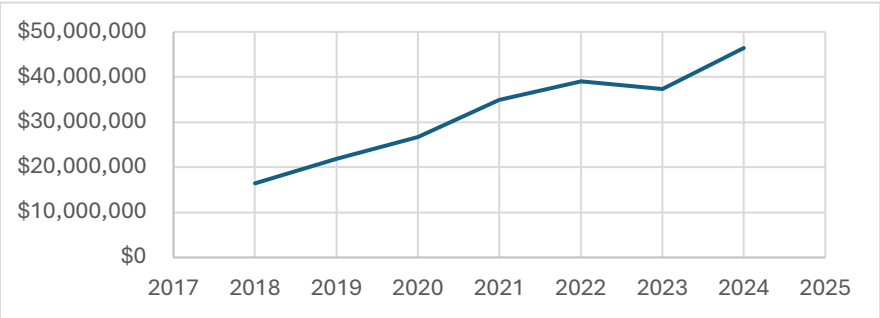
- **Policy/Trade Agreements:** U.S.–China tariffs beginning in 2018 heavily affected auto exports. While some exemptions and rebounds occurred, the sector has faced persistent barriers.
- **Economic Forces:** China's domestic auto industry-especially EVs-has rapidly expanded, limiting demand for imported U.S. vehicles and parts. Slower consumer demand in 2022–2024 further reduced imports.
- **Industry Dynamics:** Ohio is a hub for auto manufacturing, but U.S. auto exports are increasingly disadvantaged in China's market due to state support for domestic brands and the EV transition, where China holds global leadership.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Automotive Products*
  USITC Trade Shifts Report
- U.S. Department of Commerce – *China Automotive Industry Overview*
  Trade.gov China Auto Guide
- Congressional Research Service – *U.S.–China Trade Relations*
  CRS U.S.–China Trade Report
- Center for Strategic and International Studies (CSIS) – *China's EV Supply Chain Strategy*
  CSIS China EV Report

HS 33 – Cosmetics, Perfumery, Essential Oils, etc.

Cosmetics, Perfumery, Essential Oils, etc.	33



Year	$ Amount
2018	$16,427,827
2019	$21,867,773
2020	$26,757,447
2021	$34,952,825
2022	$39,030,908
2023	$37,378,716
2024	$46,434,192

Trend Narrative:

Ohio's exports of cosmetics, perfumery, and essential oils to China expanded steadily from 2018 ($16.4M) to 2022 ($39.0M), reflecting rising Chinese consumer demand for premium beauty and personal care products. Even during the pandemic, exports continued to grow, reaching $26.8M in 2020 and $35.0M in 2021, as e-commerce platforms facilitated cross-border sales and demand for wellness-related products increased. A slight dip occurred in 2023 ($37.4M), likely due to post-pandemic consumption shifts and slower retail demand in China, but exports surged again in 2024 to $46.4M — the highest in the period — supported by strong demand for imported skincare, fragrance, and wellness products among China's middle-class consumers.

Key Drivers & Context:

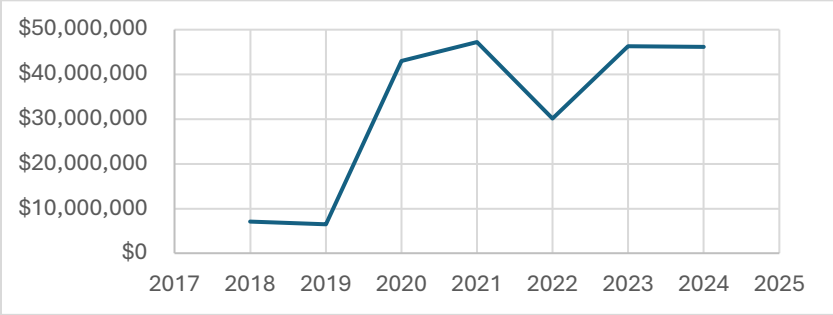
- **Consumer Trends:** Rising middle-class incomes and preferences for foreign-branded cosmetics fueled growth.
- **E-commerce Channels:** Cross-border e-commerce platforms (e.g., Tmall Global, JD Worldwide) enabled U.S. brands to access Chinese consumers even amid COVID-19 restrictions.
- **Policy/Regulation:** China's 2021 removal of mandatory animal testing for certain imported cosmetics improved market access for U.S. firms.
- **Economic Forces:** 2023 slowdown tied to weaker Chinese consumer spending, followed by strong rebound in 2024.

Sources:

- U.S. International Trade Administration – *China Country Commercial Guide: Cosmetics & Personal Care*
- McKinsey & Company – *China Beauty Market Outlook*
- China State Council – *2021 cosmetic regulation reforms (animal testing exemption)*
- U.S. Census Bureau – *State Exports Data*

HS 75 – Nickel and Articles Thereof

Nickel and Articles Thereof	75



Year	$ Amount
2018	$7,029,606
2019	$6,467,547
2020	$43,061,383
2021	$47,226,155
2022	$30,147,155
2023	$46,293,969
2024	$46,165,655

Trend Narrative:

Ohio's nickel exports to China were modest in 2018–2019, with values around $6–7 million. Beginning in 2020, however, exports surged dramatically, reaching $43.1M in 2020 and peaking at $47.2M in 2021. This sudden growth reflects China's rising demand for nickel, a critical input for stainless steel and especially for lithium-ion batteries used in electric vehicles (EVs). After a dip in 2022 ($30.1M), exports rebounded in 2023 ($46.3M) and held nearly steady in 2024 ($46.2M), underscoring sustained demand tied to China's EV boom and industrial capacity expansion.

Key Drivers & Context:

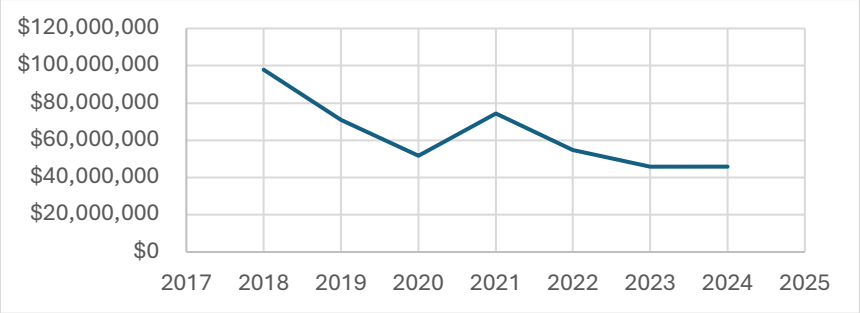
- **EV Industry Growth:** Nickel is a core component in EV batteries (nickel-manganese-cobalt chemistries), and China's aggressive EV expansion after 2020 drove import demand.
- **Commodity Price Swings:** The 2022 dip aligns with volatility in global nickel prices and supply realignment after sanctions on Russia (a major global nickel supplier).
- **Industrial Demand:** China's stainless-steel sector — the world's largest — also contributed to steady demand for nickel imports.
- **Strategic Supply Chains:** Ohio producers benefitted from U.S.-China trade flows in critical minerals despite broader trade tensions.

Sources:

- U.S. Geological Survey (USGS) – *Nickel Commodity Summaries*
- International Energy Agency (IEA) – *The Role of Critical Minerals in Clean Energy Transitions*
- Bloomberg – *China's Nickel Demand for EV Batteries*
- U.S. Census Bureau – *State Exports Data*

HS 29 – Organic Chemicals

Organic Chemicals	29



Year	$ Amount
2018	$97,860,107
2019	$70,985,965
2020	$51,614,799
2021	$74,335,229
2022	$54,903,366
2023	$45,802,591
2024	$45,936,392

Trend Narrative:

Ohio's exports of organic chemicals to China peaked in 2018 at nearly $98M before entering a steep decline in 2019 ($71.0M) and 2020 ($51.6M). The downturn coincided with escalating U.S.–China trade tensions and tariff measures that directly impacted chemical products. Exports rebounded in 2021 ($74.3M) as global manufacturing demand recovered post-pandemic, but the recovery was short-lived. From 2022 through 2024, exports slid again, stabilizing at around $45–46M, the lowest levels in the period. This reflects both China's increased emphasis on domestic chemical production capacity and weaker external demand tied to its slowing economy.

Key Drivers & Context:

- **Trade Policy:** U.S.–China tariff disputes beginning in 2018 hit chemical exports hard. Many organic chemicals were subject to retaliatory tariffs.
- **Pandemic Impact:** 2020's sharp decline mirrored disruptions in global supply chains and reduced industrial demand.
- **Partial Recovery:** Post-COVID rebound in 2021 boosted exports temporarily, but demand weakened again thereafter.
- **Structural Shift:** China has invested heavily in its domestic petrochemical and organic chemical industries, reducing reliance on imports from the U.S.
- **Economic Conditions:** Recent years reflect China's slower GDP growth and reduced demand for imported industrial inputs.

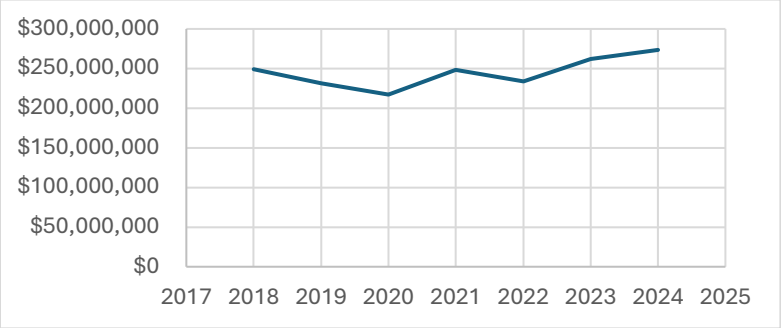
Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Chemicals*
- American Chemistry Council – *Chemicals and Trade under U.S.–China Tariffs*
- Peterson Institute for International Economics (PIIE) – *Impact of U.S.–China Trade War*
- U.S. Census Bureau – *State Exports Data*


Japan
F21
FOREVER 21
TSUTAYA

HS 84 – Industrial Machinery, Including Computers

Industrial Machinery, Including Computers	84



Year	$ Amount
2018	$249,234,728
2019	$231,630,500
2020	$217,181,499
2021	$248,258,043
2022	$234,047,342
2023	$262,441,154
2024	$273,524,311

Trend Narrative:

Ohio's exports of industrial machinery to Japan began at $249 million in 2018 before dipping modestly in 2019 ($232 million) and further in 2020 ($217 million), reflecting the global decline in investment and trade during the pandemic. A recovery started in 2021 ($249 million), followed by a slight pullback in 2022 ($234 million). Exports then grew steadily through 2023 ($262 million) and 2024 ($274 million), supported by Japan's demand for advanced manufacturing equipment and the ongoing modernization of industrial and digital infrastructure.

Key Drivers & Context:

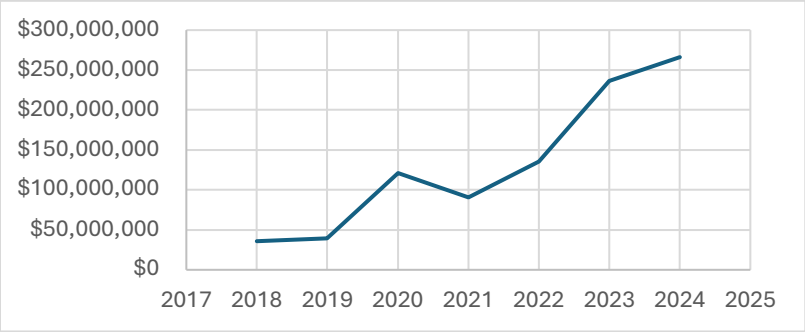
- **Policy/Trade Agreements:** The U.S.–Japan Trade Agreement (2019) reduced tariffs on machinery and related goods, stabilizing bilateral flows.
- **Economic Forces:** COVID-19 slowed machinery demand in 2020, while later recovery was supported by infrastructure stimulus in both countries.
- **Industry Dynamics:** Japan's need for precision machinery, computer systems, and industrial components underpins Ohio exports. Semiconductor and automation demand further boosted trade from 2021 onward.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Machinery*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Trade Agreement Summary*
- Japan Ministry of Economy, Trade and Industry (METI) – *Machinery & Equipment Demand Outlook*

HS 70 – Glass and Glassware

Glass and Glassware	70



Year	$ Amount
2018	$35,805,927
2019	$39,105,254
2020	$120,825,287
2021	$90,413,360
2022	$135,120,317
2023	$236,641,576
2024	$266,172,063

Trend Narrative:

Exports of glass and glassware from Ohio to Japan started relatively modest in 2018 ($36 million) and 2019 ($39 million). In 2020, values surged to $121 million, possibly reflecting increased demand for specialty glass in electronics and medical applications during the pandemic. The following year saw a pullback to $90 million in 2021, before recovering strongly in 2022 ($135 million). Growth accelerated in 2023 ($237 million) and 2024 ($266 million), marking a clear upward trajectory. This reflects Japan's strong demand for advanced glass products tied to high-tech manufacturing, renewable energy infrastructure (e.g., solar panels), and construction upgrades.

Key Drivers & Context:

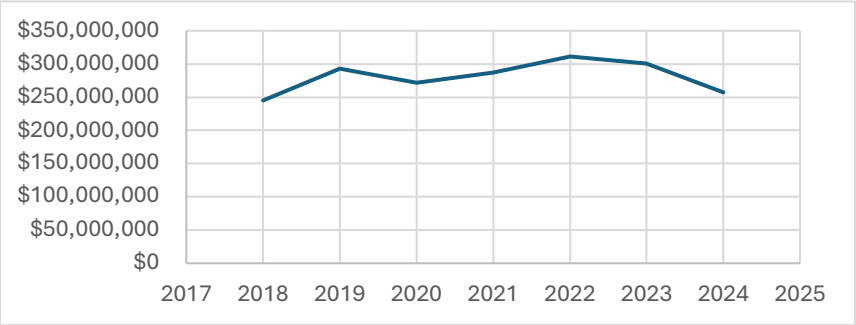
- **Policy/Trade Agreements:** U.S.–Japan trade agreements facilitated reduced tariffs and more open market access, supporting growth.
- **Economic Forces:** The spike in 2020 may be tied to demand for medical and specialty glass during COVID-19.
- **Industry Dynamics:** Japan's reliance on high-quality glass for automotive, electronics (LCDs, semiconductors), and renewable energy drove strong export demand in recent years.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Glass and Related Products*
- Japan Ministry of Economy, Trade and Industry (METI) – *Industrial Demand Reports*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Trade Agreement Highlights*
- International Energy Agency (IEA) – *Solar and Renewable Materials Demand Outlook*

HS 87 – Vehicles and Parts

Vehicles and Parts	87



Year	$ Amount
2018	$245,105,752
2019	$292,582,036
2020	$271,723,218
2021	$287,408,696
2022	$311,303,780
2023	$300,433,054
2024	$256,986,010

Trend Narrative:

Exports of vehicles and parts from Ohio to Japan started at $245 million in 2018 and rose to $293 million in 2019, reflecting stable demand before the pandemic. In 2020, exports dipped slightly to $272 million as global auto supply chains faced disruptions. Growth resumed in 2021 ($287 million) and peaked in 2022 at $311 million, supported by recovering production and Japan's ongoing automotive investment. Exports held near $300 million in 2023 before declining in 2024 to $257 million, likely due to weaker Japanese consumer demand, high input costs, and industry transition pressures tied to electric vehicle (EV) adoption and semiconductor availability.

Key Drivers & Context:

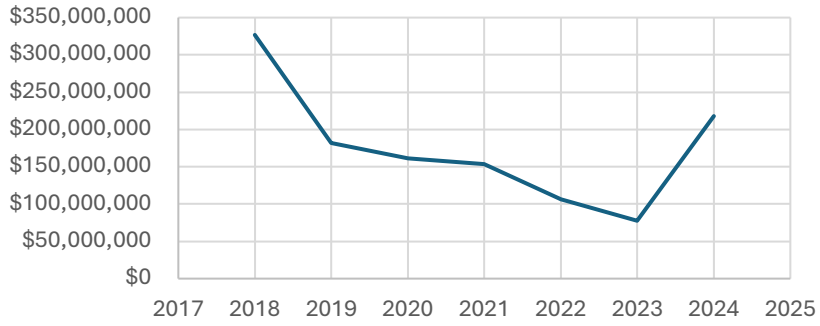
- **Policy/Trade Agreements:** The U.S.–Japan Trade Agreement and USMCA regional dynamics stabilized North American auto supply chains, indirectly supporting Japan trade.
- **Economic Forces:** COVID-19 suppressed auto demand and disrupted supply chains in 2020; recovery in 2021–2022 lifted exports before inflationary pressures and softer demand impacted 2024.
- **Industry Dynamics:** Japan's auto sector remains heavily import-reliant for specialty parts. Semiconductor shortages, EV transition policies, and changing consumer demand shaped fluctuations in recent years.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Transportation Equipment*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Trade Agreement Summary*
- Japan Automobile Manufacturers Association (JAMA) – *Industry Trends and Trade Reports*
- OECD – *Automotive Market Outlook and Semiconductor Impact*

HS 88 – Aircraft and Parts

Aircraft and Parts	88



Year	$ Amount
2018	$326,725,608
2019	$181,746,534
2020	$161,357,235
2021	$153,902,131
2022	$106,284,441
2023	$77,591,482
2024	$218,202,905

Trend Narrative:

Ohio's exports of aircraft and parts to Japan began at a strong $327 million in 2018 but fell sharply in 2019 to $182 million. The downward trend continued through 2020 ($162 million), 2021 ($154 million), and 2022 ($106 million), with a low point in 2023 at just $78 million. These declines mirror the pandemic's impact on global air travel and aerospace manufacturing, with Japanese airlines and aerospace buyers delaying fleet expansions and maintenance investments. In 2024, exports rebounded to $218 million as travel demand recovered and Japan re-engaged in aircraft procurement and maintenance cycles, particularly in preparation for increased regional travel and fleet modernization.

Key Drivers & Context:

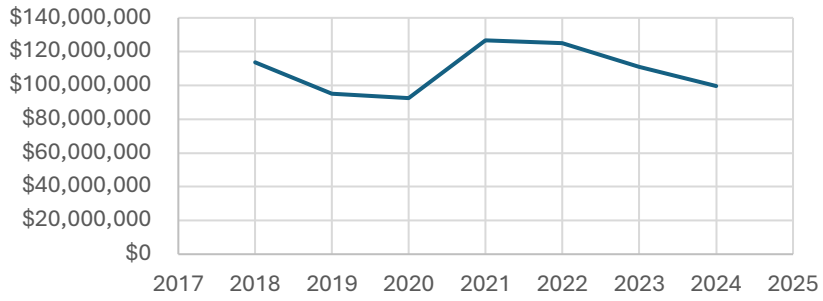
- **Policy/Trade Agreements:** U.S.–Japan trade agreements provided tariff stability, but aerospace demand remained primarily driven by global airline market cycles.
- **Economic Forces:** The pandemic heavily disrupted international travel, grounding fleets and delaying aircraft purchases from 2020–2022.
- **Industry Dynamics:** Japan's aerospace sector depends on U.S. aircraft and parts for both civil and defense purposes. Recovery in 2024 reflects resurgent passenger travel, airline fleet upgrades, and continued U.S.–Japan defense cooperation.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Aerospace Products*
- International Air Transport Association (IATA) – *Air Travel Recovery Reports*
- Boeing Market Outlook – *Asia-Pacific Aircraft Demand*
- Japan Ministry of Defense / METI – *Aerospace Industry Reports*

HS 85 – Electric Machinery; Sound Equip.; TV Equip.

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$113,769,938
2019	$94,878,467
2020	$92,462,172
2021	$126,674,511
2022	$124,897,271
2023	$110,958,278
2024	$99,586,802

Trend Narrative:

Exports of electrical machinery from Ohio to Japan were $114M in 2018, then declined in 2019 ($95M) and 2020 ($92M) amid weaker electronics demand from trade frictions and the pandemic. In 2021, exports rebounded to $127M, the highest in the period, as remote work and digital infrastructure needs drove electronics demand. They stayed strong in 2022 ($125M) but fell to $111M in 2023 and $100M in 2024, reflecting post-pandemic normalization and greater Japanese domestic sourcing.

Key Drivers & Context:

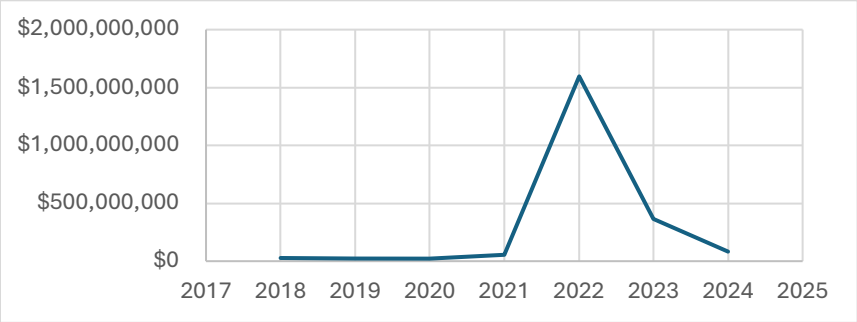
- **Policy/Trade Agreements:** The U.S.–Japan Digital Trade Agreement (2019) and broader tariff reductions helped ensure stable flows, particularly for IT and telecom equipment.
- **Economic Forces:** Pandemic-related shifts to remote work and digital transformation boosted demand in 2021, but post-pandemic adjustments reduced imports in 2023–2024.
- **Industry Dynamics:** Japan remains a leader in electronics manufacturing, but relies on specialized U.S. inputs for telecommunications, computing, and industrial machinery integration. Increased Japanese domestic production may explain the easing U.S. export growth in later years.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Electrical Machinery & Equipment*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Digital Trade Agreement Summary*
- Japan Ministry of Internal Affairs and Communications – *ICT Demand & Imports Report*
- OECD – *Global Electronics and Semiconductor Trade Outlook*

HS 30 – Pharmaceutical Products

Pharmaceutical Products	30



Year	$ Amount
2018	$28,250,032
2019	$22,864,671
2020	$24,427,702
2021	$52,677,482
2022	$1,596,065,096
2023	$364,978,490
2024	$82,985,731

Trend Narrative:

Exports of pharmaceutical products from Ohio to Japan began modestly in 2018–2020, ranging between $23 million and $28 million annually. In 2021, exports more than doubled to $53 million, reflecting heightened medical demand during the COVID-19 pandemic. The most significant development occurred in 2022, when exports skyrocketed to $1.60 billion, a more than **30-fold increase** compared to prior years. This spike likely reflects bulk shipments of vaccines, specialized medical treatments, or biopharmaceuticals during Japan's pandemic response. By 2023, exports fell sharply to $365 million and further to $83 million in 2024, suggesting the extraordinary 2022 surge was temporary, tied to pandemic-related procurement, rather than a sustained trend.

Key Drivers & Context:

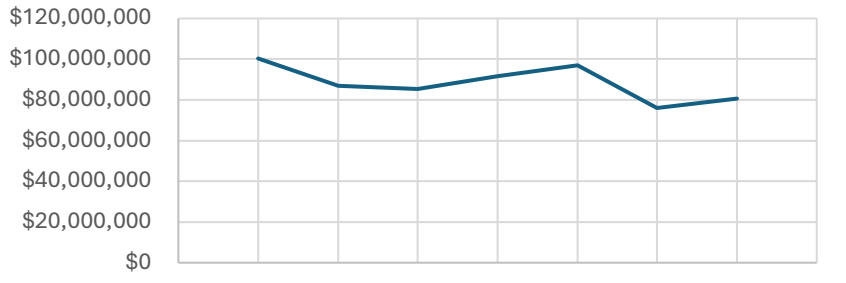
- **Policy/Trade Agreements:** The U.S.–Japan Trade Agreement facilitated open pharmaceutical trade, but pandemic-specific agreements likely drove the exceptional 2022 spike.
- **Economic Forces:** COVID-19 created unprecedented demand for vaccines and therapeutics in 2021–2022, reflected in Ohio's export surge.
- **Industry Dynamics:** Ohio hosts a robust pharmaceutical and biotech industry, which likely supplied Japan with critical medicines during its vaccination campaigns. The return to ~$80 million in 2024 shows stabilization back toward pre-pandemic demand levels.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Pharmaceuticals & Medical Products*
- Japan Ministry of Health, Labour and Welfare (MHLW) – *COVID-19 Vaccine and Medical Supply Reports*
- OECD – *Pharmaceutical Trade and Health Expenditure Trends*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Trade Agreement Summary*

HS 90 – Optic / Photo / Medical Instruments

Optic / Photo / Medical Instruments	90



Year	$ Amount
2018	$100,348,773
2019	$86,953,105
2020	$85,321,968
2021	$91,653,819
2022	$97,086,173
2023	$76,021,656
2024	$80,746,016

Trend Narrative:

Exports of optic, photo, and medical instruments from Ohio to Japan peaked at $100 million in 2018 before declining to $87 million in 2019 and $85 million in 2020, reflecting slower global demand during the trade tensions and early pandemic period. By 2021, exports rose to $92 million and strengthened further in 2022 to $97 million, supported by increased demand for diagnostic and medical devices during COVID-19 recovery. However, exports dropped again in 2023 ($76 million) and only modestly recovered in 2024 ($81 million), suggesting a return to more stable but subdued demand levels as Japanese medical imports normalized and domestic production filled part of the need.

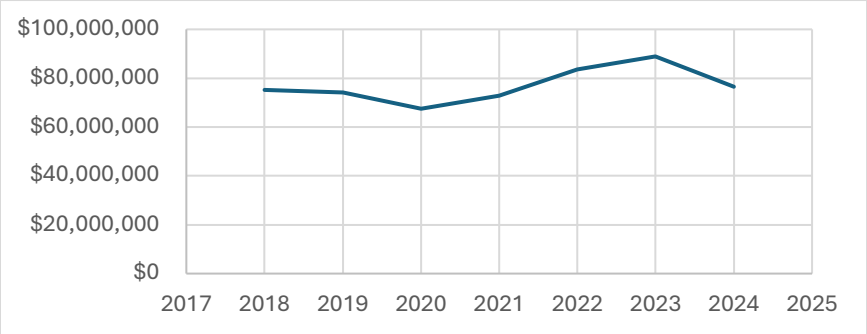
Key Drivers & Context:

- **Policy/Trade Agreements:** U.S.–Japan trade agreements supported tariff-free medical device exports, ensuring stable trade flows.
- **Economic Forces:** COVID-19 drove increased demand for diagnostic and medical instruments in 2021–2022, but post-pandemic normalization slowed exports thereafter.
- **Industry Dynamics:** Japan is a global leader in optics and medical technology, which means U.S. exports serve as complementary imports (highly specialized devices or components) rather than broad-volume products. This explains the relatively flat long-term trend.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Medical Instruments & Optics*
- Japan Ministry of Health, Labour and Welfare (MHLW) – *Medical Device Import Trends*
- OECD – *Global Medical Technology Market Outlook*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Trade Agreement Highlights*

HS 39 – Plastics and Articles Thereof



Year	$ Amount
2018	$75,252,529
2019	$74,276,553
2020	$67,500,357
2021	$72,840,756
2022	$83,563,538
2023	$88,917,806
2024	$76,603,218

Trend Narrative:

Ohio's exports of plastics and articles thereof to Japan were steady at $74–75 million in 2018–2019 before declining to $68 million in 2020, reflecting pandemic-related production slowdowns in industries such as automotive, consumer goods, and packaging. In 2021, exports began to recover at $73 million, strengthening further in 2022 ($84 million) and peaking in 2023 at $89 million. This upward momentum was supported by rising global resin prices and renewed demand in Japanese automotive and electronics manufacturing. In 2024, exports fell back to $77 million, likely due to normalizing resin markets and shifts in Japanese domestic plastics production.

Key Drivers & Context:

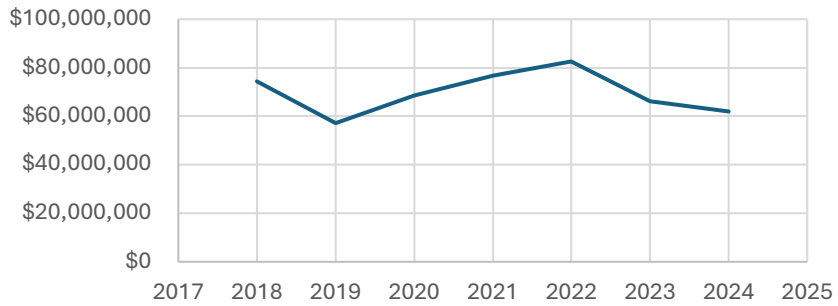
- **Policy/Trade Agreements:** U.S.–Japan trade frameworks ensured tariff-free plastics trade, maintaining stable flows.
- **Economic Forces:** COVID-19 disruptions in 2020 cut demand, while commodity price spikes in 2021–2022 boosted export values.
- **Industry Dynamics:** Plastics exports closely follow Japan's demand in automotive parts, consumer packaging, and electronics sectors, with recent moderation reflecting both domestic substitution and sustainability-driven material shifts.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Plastics & Chemicals*
- American Chemistry Council – *Plastics Trade and Resin Market Reports*
- Japan Ministry of Economy, Trade and Industry (METI) – *Industrial Demand for Plastics*
- OECD – *Global Plastics Outlook*

HS 73 – Iron and Steel Products

Iron and Steel Products	73



Year	$ Amount
2018	$74,476,039
2019	$57,155,561
2020	$68,459,754
2021	$76,605,832
2022	$82,579,711
2023	$66,239,887
2024	$62,068,770

Trend Narrative:

Exports of iron and steel products from Ohio to Japan stood at $74 million in 2018 before falling to $57 million in 2019, reflecting global trade frictions and weaker steel demand. In 2020, exports recovered slightly to $68 million despite pandemic-related volatility, and by 2021 increased to $77 million. Exports peaked in 2022 at $83 million, supported by strong post-pandemic infrastructure investment and higher global steel prices. However, values declined to $66 million in 2023 and further to $62 million in 2024, as demand eased, prices stabilized, and Japanese domestic steel production covered more of local needs.

Key Drivers & Context:

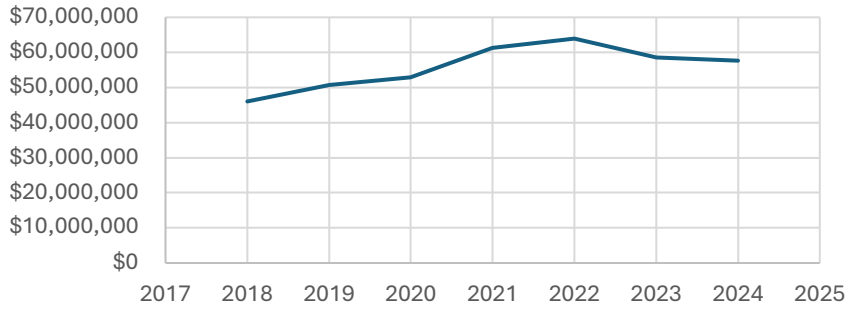
- **Policy/Trade Agreements:** Tariff stability under U.S.–Japan agreements helped maintain market access, though global steel tariffs (such as U.S. Section 232 measures) indirectly influenced trade flows.
- **Economic Forces:** Post-pandemic infrastructure and construction activity boosted demand in 2021–2022 but slowing economic activity and falling prices reduced exports in 2023–2024.
- **Industry Dynamics:** Japan is one of the world's largest steel producers, which limits long-term U.S. export growth. Ohio's steel exports serve niche or high-grade product demand rather than broad commodity flows.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Iron and Steel*
- World Steel Association – *Global Steel Demand Outlook*
- Japan Iron and Steel Federation (JISF) – *Domestic Steel Industry Trends*
- OECD – *Steel Market Developments*

HS 38 – Miscellaneous Chemical Products

Miscellaneous Chemical Products	38



Year	$ Amount
2018	$46,030,725
2019	$50,645,974
2020	$52,996,444
2021	$61,209,491
2022	$63,934,351
2023	$58,603,240
2024	$57,575,398

Trend Narrative:

Exports of miscellaneous chemical products from Ohio to Japan showed steady growth from 2018 ($46 million) through 2022 ($64 million). This rise reflected increased Japanese demand for specialized chemical inputs used in manufacturing, coatings, and industrial processes. The peak in 2022 coincides with global commodity price increases and heightened demand for chemical intermediates following supply-chain disruptions. In 2023 exports eased to $59 million and remained relatively stable at $58 million in 2024, suggesting that demand has normalized as global supply chains stabilized and Japanese domestic production offset part of the import need.

Key Drivers & Context:

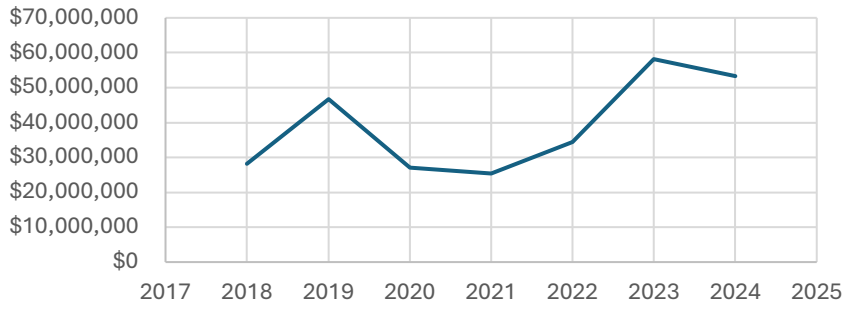
- **Policy/Trade Agreements:** U.S.–Japan agreements facilitated consistent trade flows, ensuring reliable access to specialized chemical products.
- **Economic Forces:** Rising chemical input prices in 2021–2022 boosted export values, while post-pandemic normalization kept 2023–2024 exports slightly lower.
- **Industry Dynamics:** Japan's advanced manufacturing sectors (electronics, automotive, coatings, and materials science) rely on high-quality U.S. chemical inputs. Long-term stability reflects consistent industrial demand rather than large fluctuations.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Chemicals*
- American Chemistry Council – *Specialty Chemicals Trade Outlook*
- Japan Ministry of Economy, Trade and Industry (METI) – *Chemical Industry Reports*
- OECD – *Chemical Industry Market Trends*

HS 33 – Cosmetics, Perfumery, Essential Oils, etc.

Cosmetics, Perfumery, Essential Oils, etc.	33



Year	$ Amount
2018	$28,164,346
2019	$46,747,697
2020	$27,054,015
2021	$25,385,785
2022	$34,350,336
2023	$58,169,763
2024	$53,336,454

Trend Narrative:

Exports of cosmetics, perfumery, and essential oils from Ohio to Japan showed strong growth in 2019 ($47 million) after $28 million in 2018 but fell sharply during 2020 ($27 million) and 2021 ($25 million), reflecting reduced consumer demand and supply chain disruptions during the pandemic. Exports began recovering in 2022 ($34 million) and surged to a peak of $58 million in 2023 as Japanese consumers resumed discretionary spending and imports of beauty and wellness products increased. In 2024, exports dipped slightly to $53 million, suggesting stabilization after the strong rebound but still maintaining levels well above pre-pandemic trade.

Key Drivers & Context:

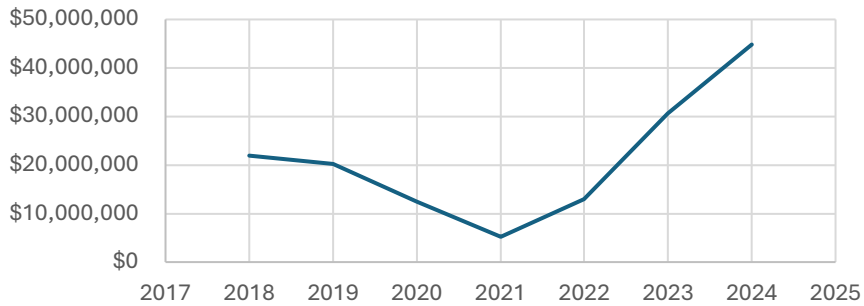
- **Policy/Trade Agreements:** The U.S.–Japan Trade Agreement facilitated stable market access for consumer goods, including cosmetics and wellness products.
- **Economic Forces:** Consumer demand for beauty, skincare, and wellness products fell during the pandemic, then rebounded strongly in the recovery phase (2022–2023).
- **Industry Dynamics:** Japan's cosmetics and wellness markets are highly developed but imports of U.S. specialty and branded products remain competitive, particularly in premium skincare and wellness niches.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Consumer Goods & Cosmetics*
- Japan Ministry of Economy, Trade and Industry (METI) – *Cosmetics and Personal Care Industry Reports*
- OECD – *Consumer Market Trends in Cosmetics & Personal Care*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Trade Agreement Summary*

HS 81 – Other Base Metals; Cermets; Articles Thereof

Other Base Metals; Cermets; Articles Thereof	81



Year	$ Amount
2018	$21,966,165
2019	$20,261,049
2020	$12,441,921
2021	$5,208,589
2022	$12,989,801
2023	$30,672,726
2024	$44,832,876

Trend Narrative:

Exports of base metals and cermets from Ohio to Japan began at $22 million in 2018 and slipped slightly in 2019 to $20 million. A sharper decline followed during 2020 ($12 million) and 2021 ($5 million), reflecting weak industrial demand, pandemic-related disruptions, and reduced procurement of specialty alloys. Exports began recovering in 2022 ($13 million) and grew significantly in 2023 ($31 million), accelerating further to $45 million in 2024. The recent rebound suggests increased demand in Japan's high-tech and heavy industries, including aerospace, electronics, and advanced manufacturing, which rely on specialty U.S. metals for precision applications.

Key Drivers & Context:

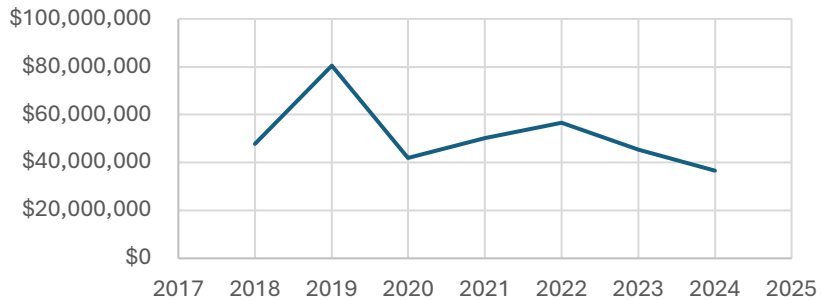
- **Policy/Trade Agreements:** The U.S.–Japan Trade Agreement maintained tariff stability, but demand in this sector is primarily industrial-cycle dependent.
- **Economic Forces:** COVID-19 depressed demand in 2020–2021; recent growth reflects post-pandemic recovery and global industrial expansion.
- **Industry Dynamics:** Specialty metals and cermets are critical for Japan's advanced industries (semiconductors, defense, aerospace). The strong growth in 2023–2024 indicates resurgent Japanese demand for high-performance materials not easily substituted domestically.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Metals & Alloys*
- OECD – *Specialty Metals and Advanced Manufacturing Materials Outlook*
- Japan Ministry of Economy, Trade and Industry (METI) – *Base Metals & Materials Demand Reports*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Trade Agreement Summary*

HS 12 – Oil Seed, Miscellaneous Grain

Oil Seed, Miscellaneous Grain	12



Year	$ Amount
2018	$47,894,856
2019	$80,481,693
2020	$41,874,806
2021	$50,179,657
2022	$56,619,459
2023	$45,467,641
2024	$36,629,413

Trend Narrative:

Exports of oil seeds and miscellaneous grains from Ohio to Japan reached $48 million in 2018 before surging to a peak of $80 million in 2019, reflecting strong Japanese demand for feedstock and oilseed imports. In 2020, exports dropped to $42 million due to pandemic-related trade disruptions and lower commodity flows. A modest recovery occurred in 2021 ($50 million) and 2022 ($57 million), supported by global food security concerns and higher agricultural prices. However, exports fell back in 2023 ($45 million) and continued downward to $37 million in 2024, indicating weaker Japanese demand and possible substitution from alternative global suppliers.

Key Drivers & Context:

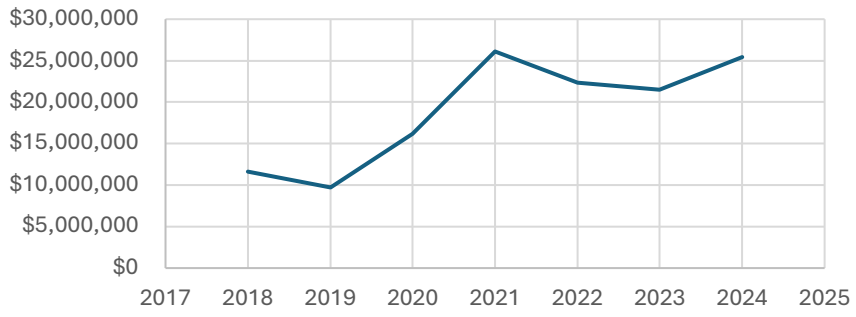
- **Policy/Trade Agreements:** The U.S.–Japan Trade Agreement (2019) lowered agricultural tariffs, giving U.S. producers greater access to the Japanese market.
- **Economic Forces:** Agricultural commodity price fluctuations and global supply chain shifts drove volatility, with spikes during global uncertainty (2019, 2022).
- **Industry Dynamics:** Japan relies heavily on imports for oilseeds and feed grains. Competition from other suppliers (Brazil, Canada, Australia) has intensified, limiting U.S. export growth in recent years.

Sources:

- U.S. Department of Agriculture (USDA) – *Global Agricultural Trade Reports*
- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Agricultural Products*
- Japan Ministry of Agriculture, Forestry and Fisheries (MAFF) – *Oilseeds and Feed Grain Import Reports*
- OECD–FAO – *Agricultural Outlook*

HS 83 – Miscellaneous Articles of Base Metal

Miscellaneous Articles of Base Metal **83**



Year	$ Amount
2018	$11,642,447
2019	$9,716,980
2020	$16,175,485
2021	$26,108,090
2022	$22,375,374
2023	$21,484,656
2024	$25,465,507

Trend Narrative:

Exports of miscellaneous articles of base metal from Ohio to Japan were relatively modest in 2018–2019 ($12 million and $10 million), before rising to $16 million in 2020. A sharp increase followed in 2021, reaching $26 million, likely linked to industrial recovery and increased demand for metal fittings, fasteners, and small fabricated components. Exports eased in 2022 ($22 million) and 2023 ($21 million) but climbed again in 2024 to $25 million, suggesting stable demand in Japan's manufacturing and construction industries for specialized U.S. base metal articles.

Key Drivers & Context:

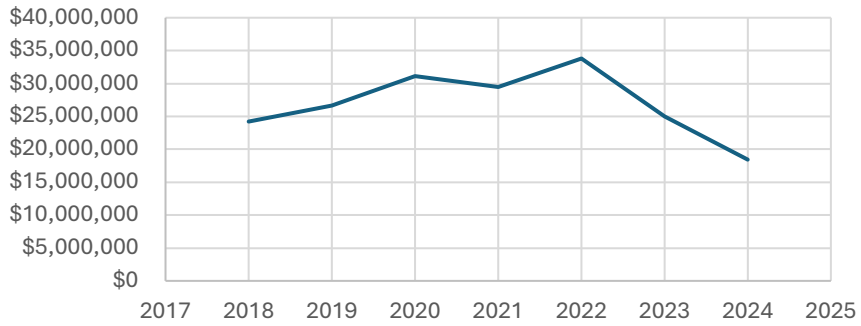
- **Policy/Trade Agreements:** U.S.–Japan trade agreements provided tariff stability, supporting niche metal exports.
- **Economic Forces:** The 2021 peak reflected post-pandemic recovery and higher construction and industrial activity.
- **Industry Dynamics:** This HS category includes hardware, fittings, fasteners, and small manufactured articles - products where U.S. producers may serve niche, high-quality demand in Japan. The relatively stable 2022–2024 figures reflect consistent long-term demand with mild cyclical fluctuations.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Base Metals & Articles*
- OECD – *Global Metals and Fabricated Products Outlook*
- Japan Ministry of Economy, Trade and Industry (METI) – *Metal Manufacturing Industry Reports*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Trade Agreement Summary*

HS 29 – Organic Chemicals

Organic Chemicals	29



Year	$ Amount
2018	$24,198,454
2019	$26,689,637
2020	$31,077,926
2021	$29,469,470
2022	$33,799,999
2023	$24,989,608
2024	$18,433,684

Trend Narrative:

Ohio's exports of organic chemicals to Japan grew steadily from $24 million in 2018 to a peak of $34 million in 2022. The early increases reflected rising demand in Japan's chemical, pharmaceutical, and electronics sectors, which rely on U.S. organic chemicals for specialized inputs. In 2020, exports held strong at $31 million despite the pandemic, underscoring the essential role of chemical imports in industrial and medical supply chains. However, after the 2022 high point, exports fell to $25 million in 2023 and further to $18 million in 2024, suggesting both weaker Japanese import demand and stronger domestic production capacity in specialty chemicals.

Key Drivers & Context:

- **Policy/Trade Agreements:** The U.S.–Japan Trade Agreement supported tariff reductions for industrial goods, including chemicals, facilitating consistent access to the Japanese market.
- **Economic Forces:** Global supply chain strains and rising input costs in 2021–2022 drove higher export values, while stabilization in 2023–2024 reduced demand.
- **Industry Dynamics:** Japan has a sophisticated domestic chemical industry, and U.S. exports often fill niche demands for specific organic compounds. Recent declines likely reflect Japan substituting with domestic or regional suppliers in Asia.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Organic & Specialty Chemicals*
- OECD – *Global Chemicals Market Outlook*
- Japan Ministry of Economy, Trade and Industry (METI) – *Chemical Industry Trends*
- Office of the U.S. Trade Representative (USTR) – *U.S.–Japan Trade Agreement Summary*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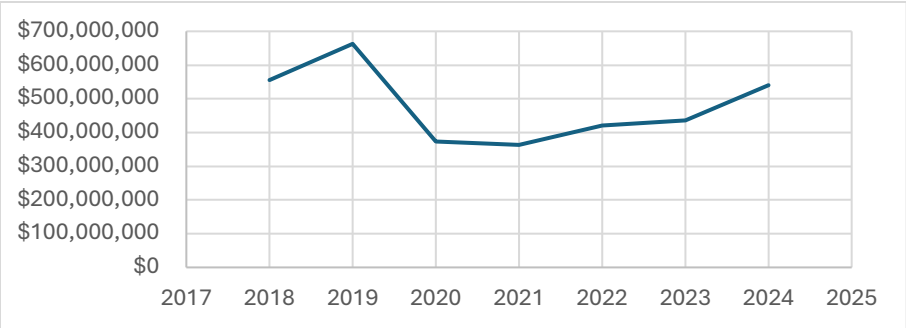
HS 88 – Aircraft and Parts

Aircraft and Parts	88



Year	$ Amount
2018	$555,713,641
2019	$662,855,421
2020	$372,543,286
2021	$363,277,531
2022	$419,817,411
2023	$435,399,560
2024	$540,715,044

Trend Narrative:

Ohio's aircraft and parts exports to the UK began at $556 million in 2018 and rose to a peak of $663 million in 2019, underscoring strong aerospace cooperation between the U.S. and UK. The pandemic disrupted trade sharply in 2020 ($373 million) and 2021 ($363 million) as international air travel collapsed and aerospace manufacturing slowed. A gradual recovery followed in 2022 ($420 million) and 2023 ($435 million), before rebounding significantly in 2024 to $541 million. This resurgence reflects the UK's aerospace industry recovery, increased aircraft maintenance and repair demand, and renewed procurement in both civil aviation and defense.

Key Drivers & Context:

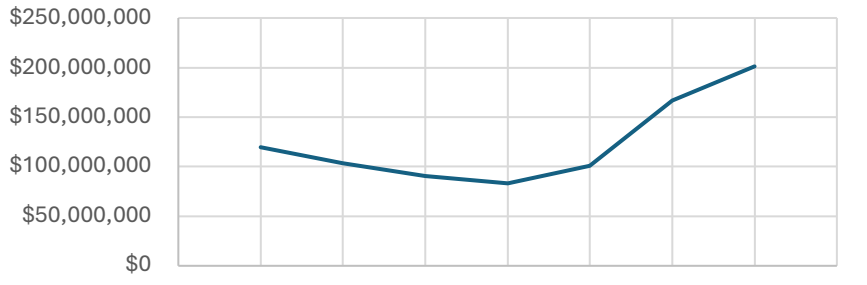
- **Policy/Trade Agreements:** The U.S.–UK aerospace trade relationship remained strong post-Brexit, with bilateral agreements ensuring continuity of standards and certifications (critical for aerospace parts).
- **Economic Forces:** The sharp downturn in 2020–2021 mirrors the collapse of global passenger air travel. Recovery was driven by pent-up demand for travel, defense procurement, and increased maintenance cycles as grounded fleets returned to service.
- **Industry Dynamics:** The UK is home to a major aerospace sector (including Rolls-Royce and BAE Systems) that imports U.S. aircraft parts and assemblies. Ohio's aerospace supply chain, tied to both civil and defense programs, has directly benefited from this rebound.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Aerospace Products*
- International Air Transport Association (IATA) – *Air Travel Recovery Outlook*
- UK Department for Business & Trade – *Aerospace Industry Reports*
- Boeing Market Outlook & Airbus Global Market Forecast – *Regional Aircraft Demand*

HS 81 – Other Base Metals; Cermets; Articles Thereof

Other Base Metals; Cermets; Articles Thereof	81



Year	$ Amount
2018	$119,596,479
2019	$103,552,287
2020	$90,831,635
2021	$83,180,058
2022	$100,955,038
2023	$166,584,324
2024	$201,188,799

Trend Narrative:

Exports of base metals and cermets from Ohio to the UK were strong in 2018 ($119.6M) but trended downward through 2021, hitting a low of $83.2M amid Brexit-related uncertainty, weaker UK manufacturing activity, and global COVID-19 disruptions. A rebound began in 2022 ($101.0M), accelerating sharply in 2023 ($166.6M) and 2024 ($201.2M) — more than doubling the 2021 trough. This surge reflects the UK's post-Brexit industrial reorientation, demand for specialized alloys and rare base metals, and heightened European demand for inputs tied to defense, aerospace, and clean energy technologies.

Key Drivers & Context:

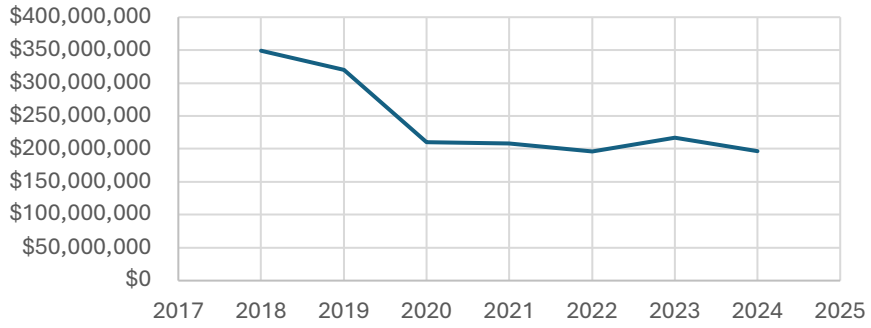
- **Brexit & Early Uncertainty (2019–2021):** Trade frictions and regulatory adjustments depressed demand for U.S. industrial metals.
- **Pandemic Shock (2020–2021):** Global supply chain disruptions and weaker UK industrial output weighed on imports.
- **Recovery & Strategic Demand (2022–2024):** Strong rebound fueled by the UK's defense and aerospace sectors, energy-transition initiatives (battery and turbine materials), and a diversification push away from Russian and Chinese supply chains.
- **Geopolitical Shifts:** Russia's invasion of Ukraine (2022) reshaped Europe's sourcing strategy for critical metals, creating opportunities for U.S. exporters like Ohio firms.

Sources:

- U.S. Geological Survey (USGS) – *Specialty Metals Reports*
- UK Department for Business & Trade – *Critical Minerals Strategy*
- International Energy Agency (IEA) – *Metals and the Energy Transition*
- U.S. Census Bureau – *State Exports Data*

HS 84 – Industrial Machinery, Including Computers

Industrial Machinery, Including Computers	84



Year	$ Amount
2018	$349,069,114
2019	$319,633,267
2020	$210,157,970
2021	$208,572,029
2022	$196,112,184
2023	$217,193,267
2024	$196,291,808

Trend Narrative:

Exports of industrial machinery, including computers, from Ohio to the UK began at a high of $349 million in 2018 but have steadily declined over the period, with the sharpest fall occurring in 2020 when values dropped to $210 million amid the pandemic's impact on global supply chains and industrial activity. The decline continued into 2021 ($209 million) and 2022 ($196 million). A modest rebound in 2023 ($217 million) was short-lived, as exports fell back to $196 million in 2024. The overall trend points to a long-term contraction, with 2024 values representing just over half of the 2018 peak, reflecting both changing UK industrial demand and increased domestic or regional sourcing.

Key Drivers & Context:

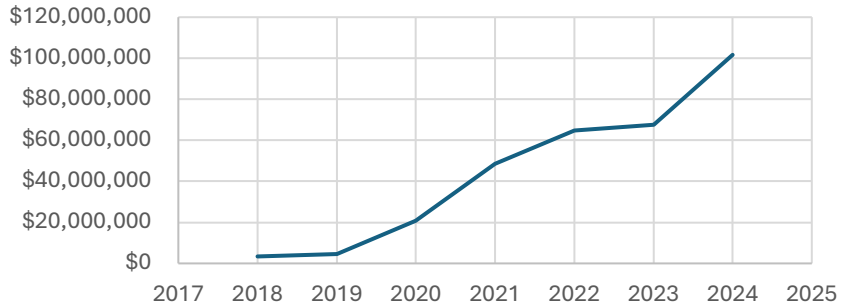
- **Policy/Trade Agreements:** Post-Brexit trade adjustments added some friction to U.S.–UK trade, while the U.S.–UK Trade Partnership continued to maintain general access.
- **Economic Forces:** The pandemic severely disrupted machinery exports, and recovery has been slow due to weaker investment in UK manufacturing and infrastructure.
- **Industry Dynamics:** The UK has been investing in automation, renewable energy, and high-tech machinery but may increasingly source from European or Asian suppliers. Ohio's exports appear to have lost share in this competitive environment, explaining the long-term downward trend.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Machinery and Computers*
- OECD – *Global Industrial Machinery Outlook*
- UK Department for Business & Trade – *Manufacturing and Industrial Equipment Reports*
- Office of the U.S. Trade Representative (USTR) – *U.S.–UK Trade Overview*

HS 75 – Nickel and Articles Thereof

Nickel and Articles Thereof	75



Year	$ Amount
2018	$3,391,004
2019	$4,587,180
2020	$20,642,882
2021	$48,650,643
2022	$64,662,413
2023	$67,617,660
2024	$101,649,916

Trend Narrative:

Exports of nickel and articles thereof from Ohio to the UK began at very low levels in 2018–2019 ($3–5 million). In 2020, they rose sharply to $21 million despite the global slowdown, reflecting surging nickel demand in energy storage, electronics, and specialty alloys. The upward trend accelerated in 2021 ($49 million), then continued strongly through 2022 ($65 million) and 2023 ($68 million), culminating in a record **$102 million in 2024**. This more than **20-fold increase since 2018** highlights nickel's growing strategic role in UK industries, particularly in renewable energy, electric vehicle batteries, aerospace, and high-performance alloys.

Key Drivers & Context:

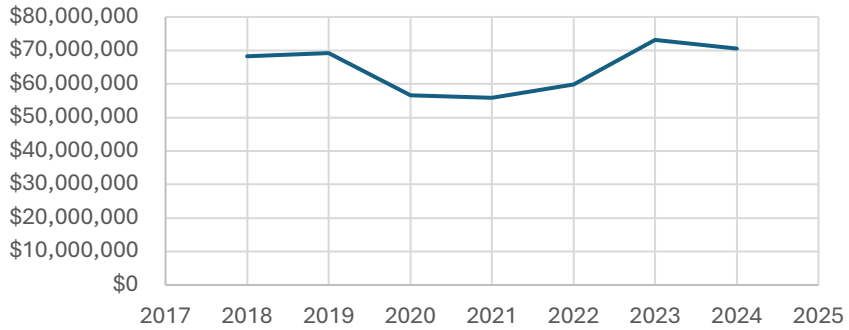
- **Policy/Trade Agreements:** U.S.–UK trade frameworks post-Brexit preserved access for critical materials like nickel, ensuring smooth trade flow.
- **Economic Forces:** The surge in nickel demand aligns with the global clean energy transition, where nickel is essential for EV batteries, renewable technologies, and high-strength alloys.
- **Industry Dynamics:** The UK's automotive and aerospace sectors, along with growing EV battery production initiatives, drove heightened demand for imported nickel products. Supply-chain diversification efforts have also encouraged the UK to strengthen sourcing relationships with the U.S.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Metals*
- International Energy Agency (IEA) – *The Role of Critical Minerals in Clean Energy Transitions*
- UK Department for Business & Trade – *Critical Minerals Strategy*
- OECD – *Global Nickel Market Trends*

HS 90 – Optic / Photo / Medical Instruments

Optic / Photo / Medical Instruments	90



Year	$ Amount
2018	$68,310,850
2019	$69,165,587
2020	$56,539,018
2021	$55,864,978
2022	$59,874,715
2023	$73,136,449
2024	$70,471,232

Trend Narrative:

Exports of optical, photographic, and medical instruments from Ohio to the UK remained relatively stable between 2018 and 2019 at around $68–69 million. A decline occurred during 2020–2021, with values dropping to $57 million and $56 million, reflecting pandemic-related disruptions, reduced elective medical procedures, and slower capital equipment purchases in healthcare systems. From 2022 onward, exports recovered, rising to $60 million and then peaking at $73 million in 2023, before easing slightly to $70 million in 2024. The resilience of this category highlights the essential nature of medical technology trade, even amid broader industrial volatility.

Key Drivers & Context:

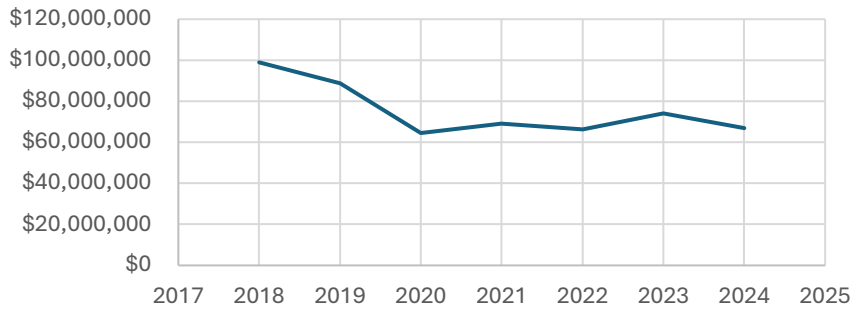
- **Policy/Trade Agreements:** The U.S.–UK Mutual Recognition Agreement on medical devices (post-Brexit) helped ensure continued regulatory alignment and smooth trade.
- **Economic Forces:** The 2020–2021 downturn reflects supply-chain delays and reduced healthcare spending during the pandemic, while recovery in 2022–2024 corresponds to increased investments in healthcare modernization and medical technology.
- **Industry Dynamics:** This category includes precision instruments, diagnostic devices, and medical technologies, all areas in which U.S. suppliers are strong. The UK's aging population and demand for advanced healthcare services continue to support sustained imports in this category.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Medical Instruments*
- OECD – *Healthcare Spending and Medical Technology Outlook*
- UK Department of Health & Social Care – *Medical Devices Market Reports*
- Office of the U.S. Trade Representative (USTR) – *U.S.–UK Trade Agreements and Regulatory Cooperation*

HS 85 – Electric Machinery; Sound Equip.; TV Equip.

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$98,955,034
2019	$88,622,323
2020	$64,518,990
2021	$68,993,238
2022	$66,415,110
2023	$74,186,065
2024	$66,802,960

Trend Narrative:

Exports of electric machinery and related equipment from Ohio to the UK peaked at $99 million in 2018 but declined steadily to $65 million in 2020, reflecting weaker demand and pandemic-driven disruptions in global electronics and supply chains. Recovery in 2021 ($69 million) and 2022 ($66 million) was modest, followed by a stronger rebound in 2023 ($74 million). However, the category slipped again in 2024 to $67 million, suggesting that long-term trade levels remain below pre-2019 highs. The overall pattern indicates cyclical recovery tied to electronics and industrial demand but constrained by rising competition and supply chain realignments post-Brexit.

Key Drivers & Context:

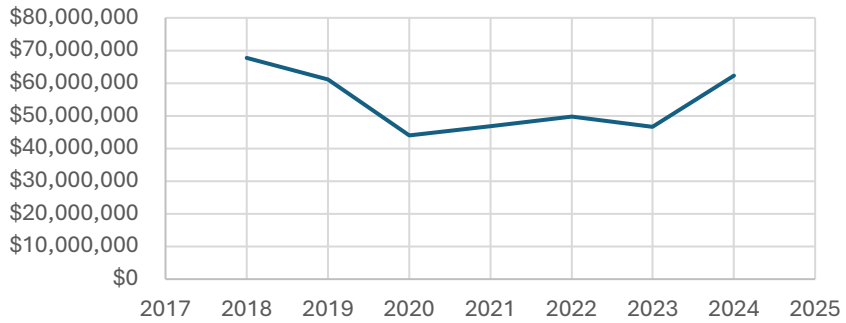
- **Policy/Trade Agreements:** U.S.–UK trade continuity agreements supported market access, but Brexit introduced regulatory and customs complexities that impacted electronics trade flows.
- **Economic Forces:** Global semiconductor shortages (2020–2022) and post-pandemic supply chain restructuring limited growth. Inflationary pressures in the UK also reduced consumer electronics demand in recent years.
- **Industry Dynamics:** This HS category includes electrical machinery, sound equipment, and broadcasting technology. Ohio's exports likely serve industrial, telecom, and consumer markets. Increasing competition from Asian suppliers and UK-Europe supply chains has put pressure on U.S. exporters.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Electrical Machinery and Electronics*
- OECD – *Electronics and Semiconductor Supply Chain Reports*
- UK Department for Business & Trade – *Electronics Industry Outlook*
- Office of the U.S. Trade Representative (USTR) – *U.S.–UK Trade Overview*

HS 39 – Plastics and Articles Thereof

Plastics and Articles Thereof	39



Year	$ Amount
2018	$67,738,676
2019	$61,097,217
2020	$44,009,121
2021	$46,739,360
2022	$49,836,520
2023	$46,535,646
2024	$62,241,550

Trend Narrative:

Ohio's exports of plastics and articles thereof to the UK peaked at $68 million in 2018 before declining steadily to $44 million in 2020, reflecting reduced industrial demand, Brexit-related trade disruptions, and global supply chain challenges. A modest recovery began in 2021–2022, with exports stabilizing around $47–50 million, though 2023 saw another dip to $47 million. However, by 2024, exports rebounded strongly to $62 million, suggesting renewed demand in UK manufacturing and packaging sectors. While still below the 2018 peak, the recovery in 2024 indicates plastics remain a core trade category with cyclical fluctuations tied to industrial activity.

Key Drivers & Context:

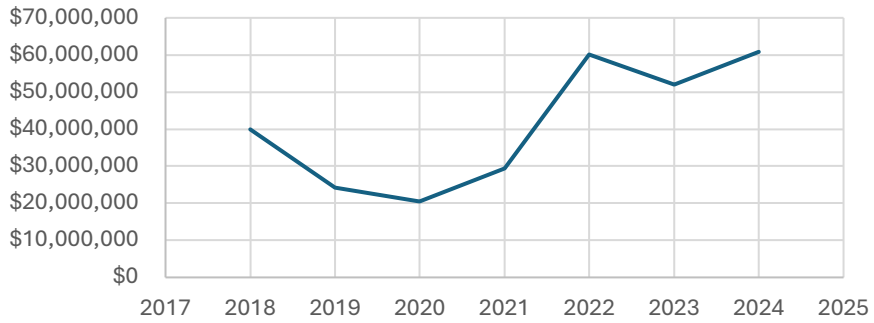
- **Policy/Trade Agreements:** Post-Brexit customs and regulatory adjustments initially disrupted plastics trade, but long-term trade continuity helped stabilize exports.
- **Economic Forces:** The downturn in 2020–2021 reflects both pandemic-driven disruptions and weaker UK industrial demand. Rising global raw material costs also impacted trade flows.
- **Industry Dynamics:** Plastics serve a wide range of UK industries, including packaging, automotive, and construction. The 2024 rebound suggests demand for U.S. plastics recovered with increased UK manufacturing activity and ongoing demand for specialty plastic products.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Plastics and Articles Thereof*
- OECD – *Plastics Industry and Packaging Outlook*
- UK Department for Business & Trade – *Plastics and Materials Market Reports*
- Office of the U.S. Trade Representative (USTR) – *U.S.–UK Trade Overview*

HS 33 – Cosmetics, Perfumery, Essential Oils, etc.

Cosmetics, Perfumery, Essential Oils, etc.	33



Year	$ Amount
2018	$39,901,454
2019	$24,165,602
2020	$20,478,104
2021	$29,397,948
2022	$60,084,340
2023	$52,068,963
2024	$60,835,596

Trend Narrative:

Exports of cosmetics and perfumery products from Ohio to the UK started at $39.9M in 2018 but fell sharply in 2019 ($24.2M) and 2020 ($20.5M). This early decline reflected both Brexit-related uncertainty and weaker UK consumer demand during the COVID-19 pandemic. From 2021 onward, exports showed significant recovery, rising from $29.4M to $60.1M in 2022, more than doubling within a year. While dipping slightly in 2023 ($52.1M), exports rebounded again in 2024 to $60.8M, the highest in the period. The recovery highlights strong UK consumer appetite for U.S. beauty and personal care products, particularly premium and wellness-oriented brands.

Key Drivers & Context:

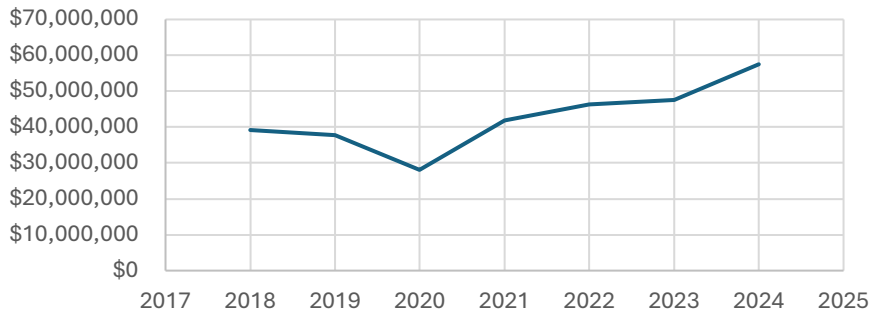
- **Brexit Adjustment:** Regulatory and trade uncertainty depressed trade flows in 2019–2020.
- **Pandemic Impact:** 2020 saw reduced consumer spending on non-essential products.
- **E-commerce & Premium Branding:** Growth in online sales channels and demand for U.S. beauty brands boosted exports post-2021.
- **Consumer Trends:** Rising interest in wellness, natural ingredients, and premium imported cosmetics among UK consumers drove demand.
- **Resilient Market:** By 2022–2024, Ohio exporters capitalized on stable trade channels and consumer rebound in discretionary spending.

Sources:

- UK Department for International Trade – *Cosmetics and Personal Care Market Overview*
- Euromonitor – *UK Beauty and Personal Care Report*
- U.S. International Trade Administration – *Country Commercial Guide: UK – Cosmetics Sector*
- U.S. Census Bureau – *State Exports Data*

HS 73 – Iron and Steel Products

Iron and Steel Products	73



Year	$ Amount
2018	$39,235,164
2019	$37,735,198
2020	$28,081,573
2021	$41,814,536
2022	$46,386,186
2023	$47,610,500
2024	$57,507,454

Trend Narrative:

Exports of iron and steel products from Ohio to the UK began at $39 million in 2018 and dipped slightly in 2019 ($38 million). A sharper decline came in 2020, with exports dropping to $28 million, reflecting reduced construction activity, supply chain challenges, and the broader pandemic downturn. From 2021 onward, exports steadily rebounded, growing each year to reach $58 million in 2024 - nearly doubling from the 2020 low. This recovery aligns with renewed infrastructure spending and manufacturing demand in the UK, along with higher steel prices globally in recent years.

Key Drivers & Context:

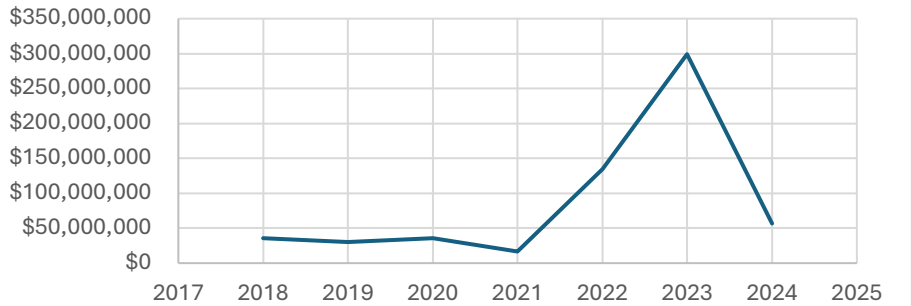
- **Policy/Trade Agreements:** U.S.–UK trade continuity arrangements and tariff adjustments following Brexit provided stability in metals trade. Removal of certain steel tariffs also helped normalize trade flows.
- **Economic Forces:** The 2020 decline mirrors global steel demand contraction during COVID-19. Subsequent recovery (2021–2024) reflects higher raw material prices, restocking cycles, and UK industrial rebound.
- **Industry Dynamics:** Steel products are critical inputs for UK construction, automotive, and manufacturing industries. Ohio's exports likely benefitted from UK infrastructure and housing projects, as well as demand from industrial sectors seeking diversified supply sources outside of the EU.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Iron and Steel Products*
- OECD – *Steel Market Developments and Outlook*
- UK Department for Business & Trade – *UK Steel Industry Reports*
- World Steel Association – *Global Steel Demand Trends*

HS 30 – Pharmaceutical Products

Pharmaceutical Products 30



Year	$ Amount
2018	$35,939,050
2019	$30,051,484
2020	$35,921,310
2021	$16,677,641
2022	$134,409,611
2023	$299,126,143
2024	$57,236,205

Trend Narrative:

Exports of pharmaceutical products from Ohio to the UK show a highly volatile pattern. Between 2018 and 2020, exports held steady around $30–36 million before plunging to just $17 million in 2021. However, in 2022, exports surged to $134 million, followed by a dramatic peak of nearly $300 million in 2023. This spike was likely driven by pandemic-related demand, vaccine or therapeutic shipments, and heightened transatlantic collaboration in healthcare supply chains. By 2024, exports normalized to $57 million, still above early-period levels but far below the exceptional 2022–2023 highs.

Key Drivers & Context:

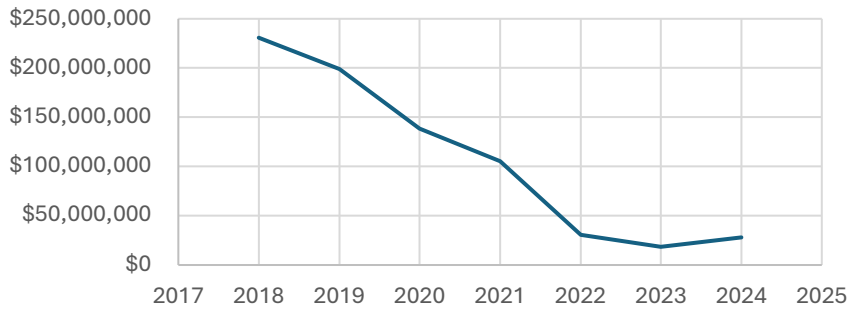
- **Policy/Trade Agreements:** Ongoing U.S.–UK cooperation on pharmaceuticals, including regulatory alignment and joint healthcare initiatives, supported export surges. Brexit also shifted UK sourcing strategies, opening opportunities for U.S. suppliers.
- **Economic Forces:** The sharp 2022–2023 increase reflects extraordinary demand tied to COVID-19 responses and possible large-volume shipments of vaccines or specialty drugs. The return to $57 million in 2024 represents a normalization toward long-term trade flows.
- **Industry Dynamics:** Pharmaceuticals remain a critical export sector for Ohio due to its strong biotech and medical manufacturing base. Demand in the UK is tied to healthcare spending, demographic pressures, and ongoing needs for specialty and generic drugs.

Sources:

- U.S. International Trade Commission (USITC) – *Pharmaceuticals in U.S. Trade Reports*
- OECD – *Global Health and Pharmaceuticals Market Outlook*
- UK Department of Health & Social Care – *Pharmaceutical Supply Chain Reports*
- Statista – *UK Pharmaceutical Market Size and Imports*

HS 87 – Vehicles and Parts

Vehicles and Parts	87



Year	$ Amount
2018	$230,776,571
2019	$198,696,212
2020	$138,729,143
2021	$105,598,886
2022	$30,625,446
2023	$18,479,193
2024	$27,750,573

Trend Narrative:
Ohio's exports of vehicles and parts to the UK have faced a steep and consistent decline since 2018, when they peaked at $231 million. By 2019 and 2020, values had already dropped significantly to $199 million and $139 million, largely due to Brexit-related uncertainty, supply chain realignments, and weakening UK demand for imported vehicles. The COVID-19 pandemic further accelerated this contraction, with exports plunging to $106 million in 2021. A collapse followed in 2022–2023, where exports fell to just $31 million and then $18 million, reflecting both global semiconductor shortages and the UK's pivot to EU and domestic suppliers. While 2024 shows a small rebound to $28 million, exports remain drastically below pre-2019 levels.

Key Drivers & Context:

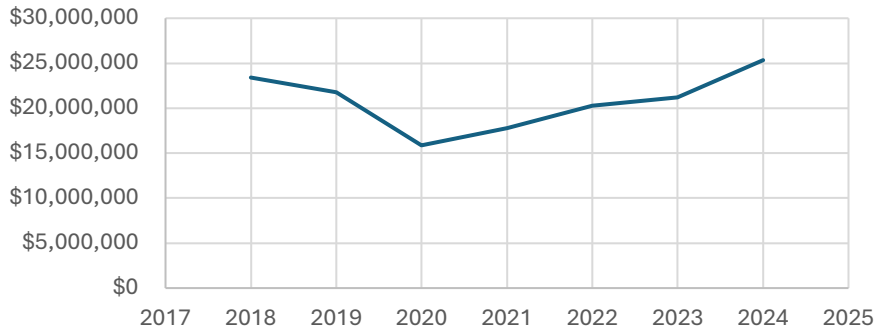
- **Policy/Trade Environment:** Post-Brexit trade barriers and rules of origin requirements reduced U.S. automotive competitiveness in the UK market. This disproportionately affected Ohio, a major hub for auto and parts manufacturing.
- **Economic & Industry Forces:** The global semiconductor shortage (2020–2022) severely constrained vehicle exports worldwide. UK auto sales also contracted sharply in this period, with EV adoption reshaping supply chains toward EU-based production.
- **Long-Term Dynamics:** The UK's push for electric vehicle transition and localized supply chains makes recovery for U.S. auto exporters uncertain. Ohio producers may need to pivot toward high-value automotive parts, EV components, or aftermarket services to regain market share.

Sources:

- U.S. International Trade Commission (USITC) – *Vehicles and Automotive Parts Trade Data*
- UK Society of Motor Manufacturers and Traders (SMMT) – *UK Automotive Market Reports*
- OECD – *Global Supply Chain Disruptions in the Auto Industry*
- Financial Times – *UK Car Industry and Post-Brexit Trade Challenges*

HS 76 – Aluminum and Articles Thereof

Aluminum and Articles Thereof	76



Year	$ Amount
2018	$23,416,927
2019	$21,769,041
2020	$15,869,661
2021	$17,815,836
2022	$20,247,478
2023	$21,175,979
2024	$25,341,057

Trend Narrative:

Exports of aluminum and related articles from Ohio to the United Kingdom show moderate fluctuations with a generally stable but slightly upward trajectory in recent years. After peaking at $23 million in 2018, exports dipped to $16 million in 2020, likely reflecting global trade disruptions during the pandemic. Since then, exports have gradually recovered, climbing to $25 million in 2024-the highest level of the observed period. This recovery reflects increased demand for lightweight metals in automotive, aerospace, and packaging industries, alongside stabilizing trade flows post-pandemic.

Key Drivers & Context:

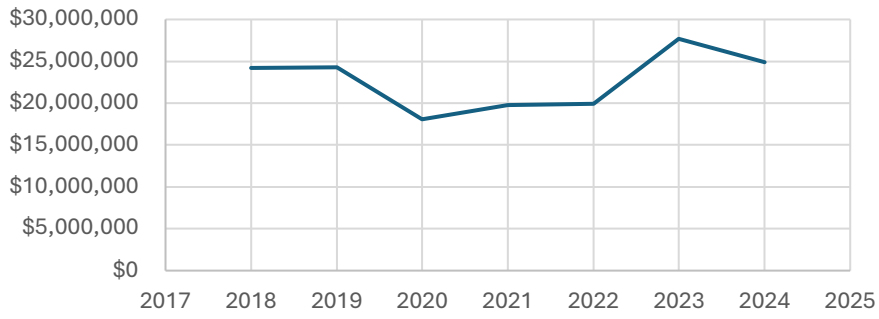
- **Industrial Demand:** Aluminum is critical in aerospace, automotive, and construction-key UK industries. The modest but steady growth since 2021 likely reflects renewed manufacturing activity and infrastructure investments.
- **Trade Environment:** U.S.–UK aluminum trade has been shaped by tariff negotiations (particularly related to Section 232 tariffs imposed in 2018). The gradual easing of tariffs and trade frictions likely supported recovery after 2020.
- **Global Economic Conditions:** Supply chain normalization, combined with rising demand for sustainable and recyclable materials, has benefited aluminum exports. The UK's push for low-carbon construction and electric vehicles also supports demand for lightweight metals like aluminum.

Sources:

- U.S. International Trade Administration (ITA) – *Aluminum Industry Reports*
- World Bank – *Metals and Minerals Market Outlook*
- UK Department for Business & Trade – *UK Manufacturing and Materials Industry Data*
- Reuters – *U.S.–UK Trade Negotiations on Steel and Aluminum Tariffs*

HS 82 – Tools, Implements, Cutlery of Base Metals

Tools, Implements, Cutlery of Base Metals	82



Year	$ Amount
2018	$24,180,406
2019	$24,287,768
2020	$18,074,229
2021	$19,795,574
2022	$19,895,657
2023	$27,686,787
2024	$24,882,881

Trend Narrative

Imports of HS 82 products into the UK remained relatively stable from 2018 to 2024, with values hovering mostly in the $20–27 million range. After steady levels in 2018–2019, imports declined to $18.1 million in 2020 as COVID-19 disrupted industrial and consumer demand, followed by a modest recovery in 2021 and 2022. The sector peaked at $27.7 million in 2023, reflecting post-pandemic recovery and restocking, before easing slightly to $24.9 million in 2024. Overall, the category shows resilience, with only moderate fluctuations around a stable long-term average.

Key Drivers & Context

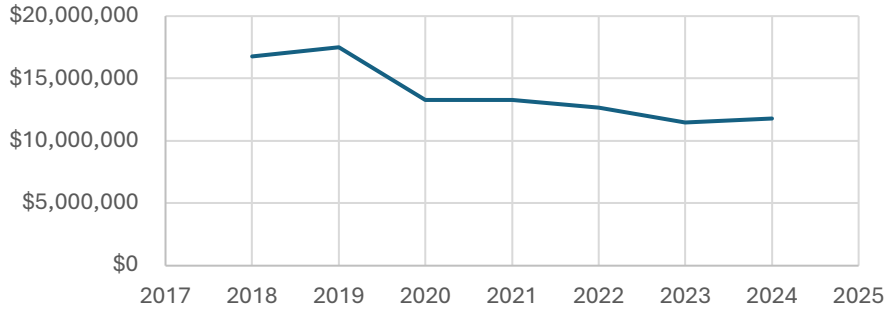
- **Industrial and Household Demand:** Consistent baseline demand for tools, cutlery, and implements across industrial, construction, and consumer markets.
- **COVID-19 Impact:** The 2020 downturn was linked to pandemic-related restrictions that reduced production and imports.
- **Recovery and Restocking:** The 2022–2023 rebound reflected the reopening of industrial activity and higher consumer spending.
- **Metal Prices and Trade Costs:** Fluctuations in global steel and metal prices influenced import values, alongside shifting trade dynamics post-Brexit.

Sources

- UN Comtrade Database – HS Code 82 trade flows
- UK Office for National Statistics (ONS) Trade Data
- World Bank, *Global Economic Prospects*
- WTO Trade Statistics

HS 40 – Rubber and Articles Thereof

Rubber and Articles Thereof	40



Year	$ Amount
2018	$16,745,820
2019	$17,503,865
2020	$13,292,551
2021	$13,292,974
2022	$12,673,192
2023	$11,475,549
2024	$11,814,223

Trend Narrative

UK exports of rubber and articles thereof (HS 40) have shown a gradual decline over the past six years, falling from $17.5 million in 2019 to $11.8 million in 2024. The strongest year was 2019, after which exports dropped sharply in 2020 and have since trended downward. Although the decline has slowed in recent years, the data indicates that the sector has been unable to recover to pre-2020 levels, suggesting a sustained erosion of competitiveness in this category.

Key Drivers & Context

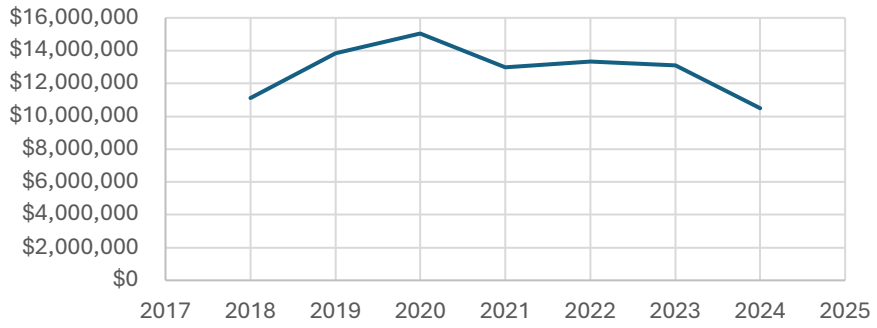
- **Weak demand from UK manufacturing sectors** such as automotive and machinery, which historically relied on rubber inputs.
- **Rising competition from low-cost Asian producers**, reducing the UK's share in global markets.
- **Brexit-related trade frictions**, particularly with EU partners, impacting a key destination market.
- **Pandemic supply chain disruptions** that curtailed exports during 2020–2021.
- **Shift toward synthetic and sustainable alternatives**, gradually reducing reliance on traditional rubber exports.

Sources

- UK Trade & Investment Statistics – HMRC Export Data
- International Trade Centre (ITC) – Trade Map, HS 40 trends
- UK Office for National Statistics (ONS) – Trade in Goods by Classification
- European Rubber Journal – industry reports

HS 38 – Miscellaneous Chemical Products

Miscellaneous Chemical Products	38



Year	$ Amount
2018	$11,107,853
2019	$13,842,881
2020	$15,044,481
2021	$12,970,869
2022	$13,338,923
2023	$13,094,002
2024	$10,490,559

Trend Narrative

UK imports of miscellaneous chemical products have shown only modest fluctuations over the 2018–2024 period, remaining within a relatively narrow band. Imports rose from about $11.1 million in 2018 to a peak of nearly $15.0 million in 2020, reflecting steady demand for specialty and auxiliary chemical products. However, since 2021 the trend has been slightly downward, with values slipping to $10.5 million in 2024, marking the lowest point in the observed period. This trajectory indicates a market that has not experienced strong growth, instead displaying relative stability with minor contractions in recent years.

Key Drivers & Context

- **Specialty Chemicals Demand**: These imports are largely tied to industrial applications such as adhesives, lubricants, coatings, and cleaning products. Stable but limited growth in UK manufacturing has tempered demand.
- **COVID-19 Disruption (2020–2021)**: Fluctuations in supply chains and industrial operations temporarily boosted imports in 2020 but suppressed them afterward.
- **Shift Toward Domestic/EU Sourcing**: Post-Brexit adjustments likely influenced sourcing strategies, with some reliance shifting toward EU suppliers, which may have affected U.S. trade volumes.
- **Sectoral Dependence**: Demand for these products is closely linked to performance in automotive, construction, and industrial sectors-all of which have faced uneven recovery in the UK economy.

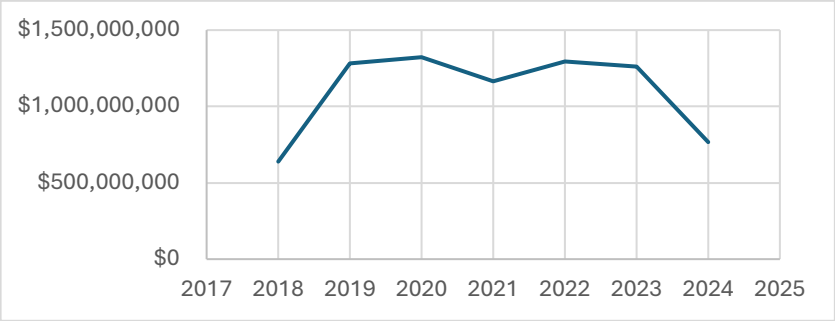
Sources

- UN Comtrade Database
- U.S. Census Bureau – Foreign Trade Statistics
- UK Office for National Statistics (ONS) Trade Data


Brazil

HS 88 – Aircraft and Parts

Aircraft and Parts	88



Year	$ Amount
2018	$638,989,419
2019	$1,280,234,056
2020	$1,322,690,588
2021	$1,165,285,973
2022	$1,295,698,989
2023	$1,259,981,673
2024	$764,474,703

Trend Narrative

Ohio's exports of aircraft and parts to Brazil rose sharply from $639.0M in 2018 to $1.28B in 2019, then edged up slightly to $1.32B in 2020. While global aviation suffered during the pandemic, exports to Brazil remained strong, likely reflecting defense procurement and sustained aerospace trade ties. Exports dipped to $1.17B in 2021 but recovered in 2022 ($1.30B) and stayed high in 2023 ($1.26B). In 2024, however, exports dropped significantly to $764.5M, highlighting the cyclical nature of aircraft orders, production backlogs, and shifting demand in Brazil's aviation sector.

Key Drivers & Context

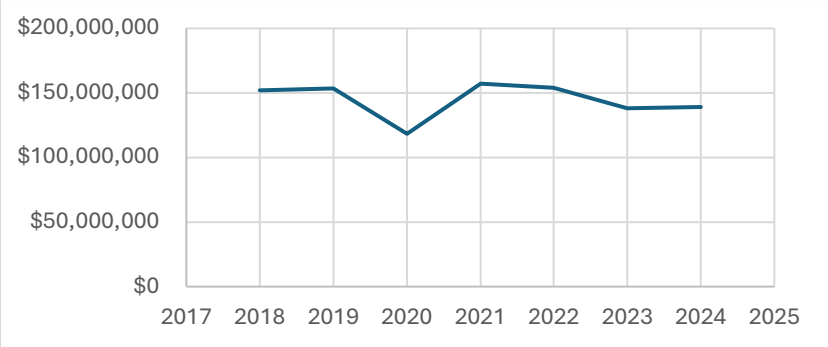
- **Policy/Trade Agreements:** U.S.–Brazil aerospace cooperation supported trade, though not under a formal FTA like USMCA.
- **Economic Forces:** Resilient exports through 2020–2023 reflect defense and commercial fleet investment; 2024 decline suggests reduced orders and potential fiscal tightening in Brazil.
- **Industry Dynamics:** Aircraft trade is highly cyclical, with exports driven by major contracts, deliveries, and aftermarket parts demand.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, Aerospace*
- Aerospace Industries Association – *U.S.–Brazil Aerospace Trade Integration*
- International Air Transport Association (IATA) – *Brazil Aviation Market Reports*
- U.S. Department of Commerce – *Brazil Country Commercial Guide: Aerospace*

HS 84 – Industrial Machinery, Including Computers

Industrial Machinery, Including Computers	84



Year	$ Amount
2018	$151,971,069
2019	$153,313,942
2020	$118,355,176
2021	$157,201,132
2022	$154,051,962
2023	$138,063,091
2024	$139,264,399

Trend Narrative

Ohio's exports of industrial machinery and computers to Brazil were stable in 2018–2019 at around $152–153M before dropping to $118.4M in 2020 due to pandemic-related manufacturing slowdowns and investment delays. Exports rebounded strongly in 2021 ($157.2M) and held steady in 2022 ($154.1M), reflecting Brazil's recovery in industrial production and demand for equipment. However, in 2023 exports fell to $138.1M and remained subdued in 2024 ($139.3M), signaling softer demand and potentially tighter investment conditions in Brazil's manufacturing and infrastructure sectors.

Key Drivers & Context:

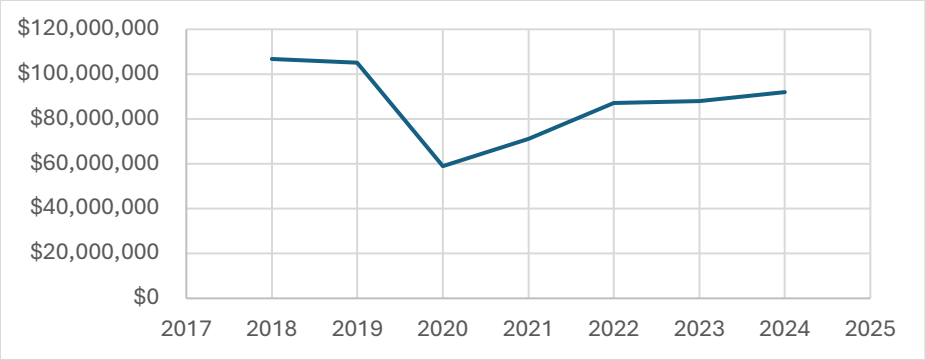
- **Policy/Trade Environment:** No U.S.–Brazil free trade agreement; machinery exports face standard tariffs but benefit from strong bilateral industrial ties.
- **Economic Forces:** 2020 decline tied to Brazil's economic contraction and deferred industrial investment; recovery in 2021–2022 reflects industrial restocking.
- **Industry Dynamics:** Machinery exports are linked to Brazil's manufacturing and infrastructure cycles, with moderate volatility compared to aerospace exports.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Machinery*
- World Bank – *Brazil Economic Update*
- U.S. Department of Commerce – *Brazil Country Commercial Guide: Machinery and Equipment*
- Connect2Canada (for Ohio baseline export trends; contextual comparison)

HS 90 – Optic / Photo / Medical Instruments

Optic / Photo / Medical Instruments	90



Year	$ Amount
2018	$106,768,939
2019	$105,052,533
2020	$58,972,692
2021	$71,035,013
2022	$87,033,894
2023	$87,937,906
2024	$91,946,218

Trend Narrative

Ohio's exports of medical and optical instruments to Brazil started at $106.8M in 2018 and $105.1M in 2019 before plunging to $59.0M in 2020 during the COVID-19 pandemic, which disrupted healthcare supply chains and reduced imports for elective and non-emergency medical devices. Exports began recovering in 2021 ($71.0M) and rose steadily in 2022 ($87.0M), holding stable in 2023 ($87.4M) before climbing modestly again in 2024 to $91.9M. While not yet back to pre-pandemic peaks, the sector shows a gradual recovery and stable demand trajectory.

Key Drivers & Context

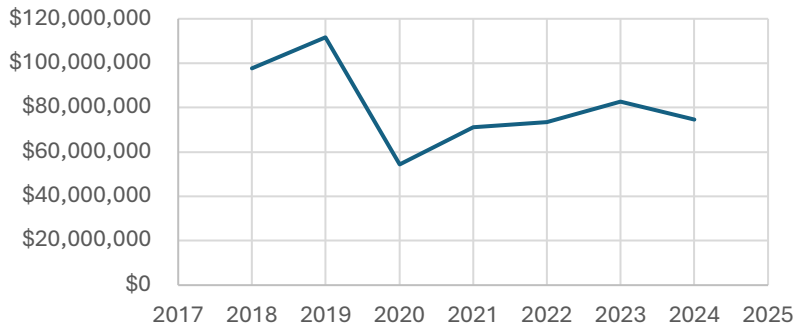
- **Policy/Trade Environment:** No U.S.–Brazil FTA, but bilateral medical supply trade is well established; Brazil imports advanced devices not produced domestically.
- **Economic Forces:** 2020 decline tied to pandemic-driven disruptions and reduced hospital investment; recovery reflects ongoing modernization of Brazil's healthcare sector.
- **Industry Dynamics:** Growth is supported by demand for diagnostic and surgical instruments, with exports stabilizing as hospitals expand capacity post-pandemic.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, Medical Devices*
- International Trade Administration (ITA) – *Brazil Healthcare & Medical Devices Market Reports*
- World Bank – *Brazil Health Expenditure Data*
- U.S. Department of Commerce – *Brazil Country Commercial Guide: Medical Equipment*

HS 87 – Vehicles and Parts

Vehicles and Parts	87



Year	$ Amount
2018	$97,782,904
2019	$111,641,504
2020	$54,385,709
2021	$71,112,195
2022	$73,392,053
2023	$82,716,856
2024	$74,554,032

Trend Narrative

Ohio's vehicle and parts exports to Brazil reached $97.8M in 2018 and climbed to $111.6M in 2019. In 2020, exports dropped sharply to $54.4M, reflecting the COVID-19 pandemic's severe impact on global automotive production and consumer demand. A gradual recovery followed in 2021 ($71.1M) and 2022 ($73.4M), with further growth in 2023 ($82.7M). However, exports eased again in 2024 to $74.6M, suggesting a leveling off as Brazil's auto market faced weaker consumer spending and slower industrial growth.

Key Drivers & Context

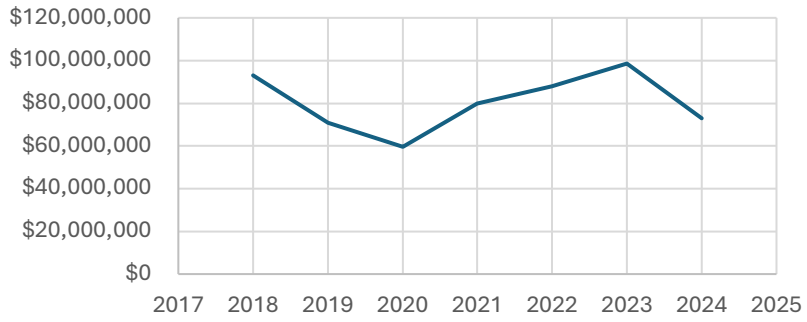
- **Policy/Trade Environment:** U.S. auto exports to Brazil are not under a free trade agreement, making them subject to tariffs, which limit large-scale growth.
- **Economic Forces:** 2020 contraction tied to pandemic-related plant shutdowns and demand collapse; recovery in 2021–2023 followed improvements in Brazil's auto sector.
- **Industry Dynamics:** Exports are sensitive to Brazil's auto production cycles and consumer credit conditions; 2024 dip reflects a cooling market after short-term recovery.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Transportation Equipment*
- International Trade Administration (ITA) – *Brazil Automotive Industry Reports*
- World Bank – *Brazil Economic Update*
- U.S. Department of Commerce – *Brazil Country Commercial Guide: Automotive Sector*

HS 85 – Electric Machinery; Sound Equipment; TV Equipment

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$93,086,906
2019	$70,813,274
2020	$59,600,647
2021	$79,728,944
2022	$87,837,137
2023	$98,598,200
2024	$72,908,029

Trend Narrative

Ohio's exports of electric machinery and related equipment to Brazil began at $93.1M in 2018 but fell to $70.8M in 2019 and further to $59.6M in 2020, reflecting global electronics supply chain disruptions and weaker demand. The sector rebounded in 2021 ($79.7M) and strengthened further in 2022 ($87.8M) and 2023 ($98.6M), suggesting renewed investment in consumer electronics and industrial electrical systems. However, exports dropped again in 2024 to $72.9M, likely due to Brazil's slower economic growth and reduced import demand for high-value electronics.

Key Drivers & Context

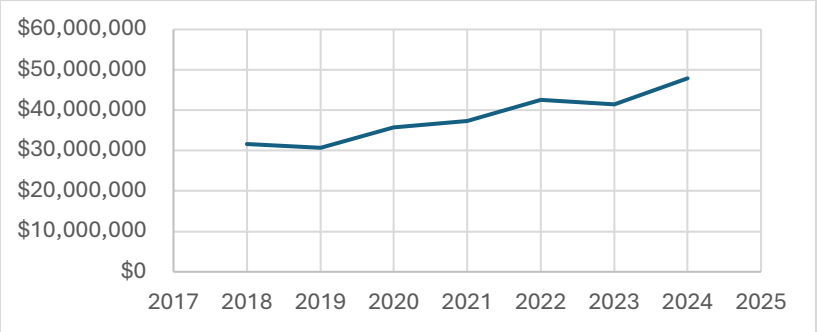
- **Policy/Trade Environment:** Lack of a U.S.–Brazil FTA limits growth potential, as tariffs and local content rules affect electronics imports.
- **Economic Forces:** Declines in 2019–2020 tied to global trade tensions and COVID-19 disruptions; 2021–2023 rebound coincided with Brazil's partial economic recovery.
- **Industry Dynamics:** Includes both consumer electronics and industrial electrical machinery; demand fluctuates with consumer spending power and industrial modernization.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, Electrical Equipment*
- International Trade Administration (ITA) – *Brazil ICT & Electronics Market Reports*
- World Bank – *Brazil Economic Outlook*
- U.S. Department of Commerce – *Brazil Country Commercial Guide: Electronics Sector*

HS 39 – Plastics and Articles Thereof

Plastics and Articles Thereof	39



Year	$ Amount
2018	$31,693,070
2019	$30,701,507
2020	$35,811,480
2021	$37,278,358
2022	$42,602,092
2023	$41,482,561
2024	$47,903,464

Trend Narrative

Ohio's plastics exports to Brazil remained stable around $31–32M in 2018–2019 before increasing to $35.8M in 2020, even amid the pandemic. The growth trend continued with $37.3M in 2021 and reached $42.6M in 2022. Exports dipped slightly in 2023 ($41.5M) but climbed to their highest level in the period at $47.9M in 2024. This upward trend highlights steady demand for industrial plastics, packaging, and manufactured plastic goods in Brazil, tied to both consumer and industrial sectors.

Key Drivers & Context

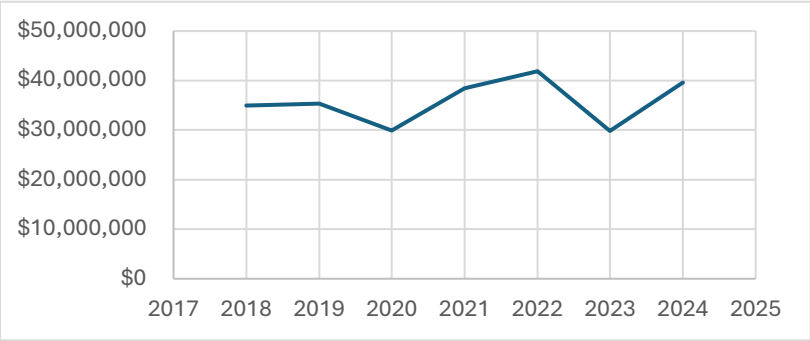
- **Policy/Trade Environment:** While tariffs apply due to no U.S.–Brazil FTA, demand for high-quality plastics supports stable trade.
- **Economic Forces:** Plastics are widely used across industries, making demand more resilient even during downturns (as seen in 2020).
- **Industry Dynamics:** Growth reflects Brazil's industrial production needs, packaging demand, and consumer product manufacturing.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, Chemicals & Plastics*
- American Chemistry Council – *Plastics Trade and Demand Reports*
- World Bank – *Brazil Manufacturing Sector Insights*
- U.S. Department of Commerce – *Brazil Country Commercial Guide: Chemicals and Plastics*

HS 38 – Miscellaneous Chemical Products

Miscellaneous Chemical Products	38



Year	$ Amount
2018	$34,921,462
2019	$35,382,284
2020	$29,872,638
2021	$38,478,058
2022	$41,890,009
2023	$29,835,532
2024	$39,634,955

Trend Narrative

Ohio's exports of miscellaneous chemical products to Brazil showed moderate fluctuations over the 2018–2024 period. Exports were steady at about $35M in 2018–2019, dipped to $29.9M in 2020 during the pandemic, and rebounded to $38.5M in 2021 and $41.9M in 2022. In 2023, exports dropped back to $29.8M, suggesting weaker demand or shifts in sourcing, but partially recovered in 2024 to $39.6M. This pattern highlights both resilience and volatility in Brazil's chemical imports, which are sensitive to industrial activity and investment cycles.

Key Drivers & Context

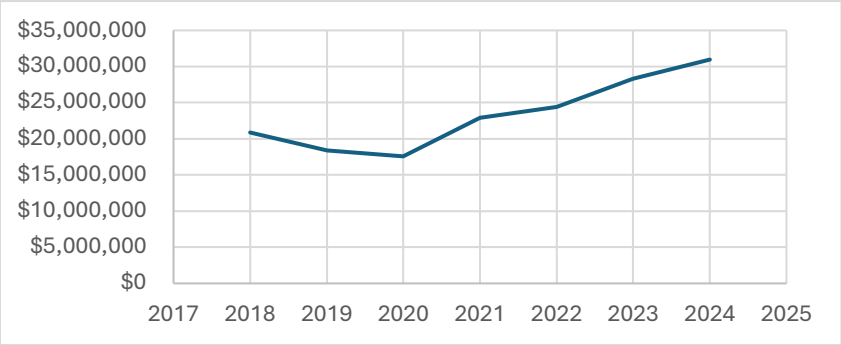
- **Policy/Trade Environment:** U.S.–Brazil chemical trade faces tariffs, but specialty and industrial chemicals maintain demand.
- **Economic Forces:** Declines in 2020 and 2023 reflect both pandemic disruptions and economic slowdowns in Brazil's industrial base.
- **Industry Dynamics:** Miscellaneous chemical exports serve diverse uses—manufacturing, agriculture, cleaning—making them cyclical but essential.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, Chemicals*
- American Chemistry Council – *Specialty Chemicals Trade Report*
- World Bank – *Brazil Industry & Economy Overview*
- U.S. Department of Commerce – *Brazil Country Commercial Guide: Chemicals*

HS 73 – Iron and Steel Products

Iron and Steel Products **73**



Year	$ Amount
2018	$20,884,958
2019	$18,431,901
2020	$17,574,942
2021	$22,887,515
2022	$24,383,420
2023	$28,307,539
2024	$30,964,786

Trend Narrative

Ohio's iron and steel product exports to Brazil started at $20.9M in 2018 and declined to $17.6M by 2020, reflecting weaker industrial demand and global trade disruptions during the pandemic. From 2021 onward, exports began climbing steadily—$22.9M in 2021, $24.4M in 2022, $28.3M in 2023, and reaching $31.0M in 2024. This sustained recovery reflects Brazil's resurgent industrial production, construction demand, and reliance on U.S. specialty iron and steel products not produced domestically.

Key Drivers & Context

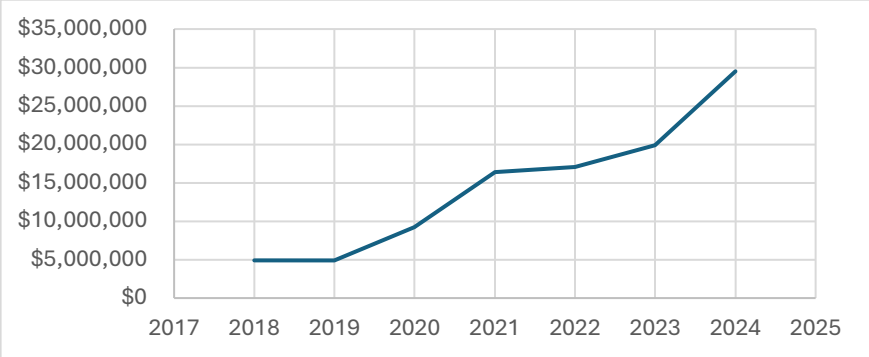
- **Policy/Trade Environment:** Steel exports are influenced by global trade tensions and tariffs; however, niche products maintain steady demand.
- **Economic Forces:** Pandemic-era dip aligned with slower Brazilian construction and manufacturing; rebound tied to infrastructure investment and industrial recovery.
- **Industry Dynamics:** HS 73 exports are smaller in scale but show reliable growth as Brazil expands manufacturing capacity and construction activity.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, Metals & Steel*
- World Steel Association – *Brazil Steel Industry Overview*
- World Bank – *Brazil Infrastructure and Construction Reports*
- U.S. Department of Commerce – *Brazil Country Commercial Guide: Metals & Mining*

HS 75 – Nickle and Articles Thereof

Nickel and Articles Thereof	75



Year	$ Amount
2018	$4,903,892
2019	$4,929,802
2020	$9,261,120
2021	$16,404,002
2022	$17,047,967
2023	$19,861,943
2024	$29,499,004

Trend Narrative

Ohio's exports of nickel and nickel-based articles to Brazil were relatively low and stable in 2018–2019 (around $4.9M) before doubling in 2020 ($9.3M). Exports then accelerated rapidly, reaching $16.4M in 2021, $17.0M in 2022, and $19.9M in 2023. By 2024, exports surged to $29.5M—the highest in the period. This strong upward trajectory reflects Brazil's growing demand for nickel in stainless steel production, batteries, and industrial applications, particularly as global energy transition policies expand the market for nickel-intensive technologies.

Key Drivers & Context

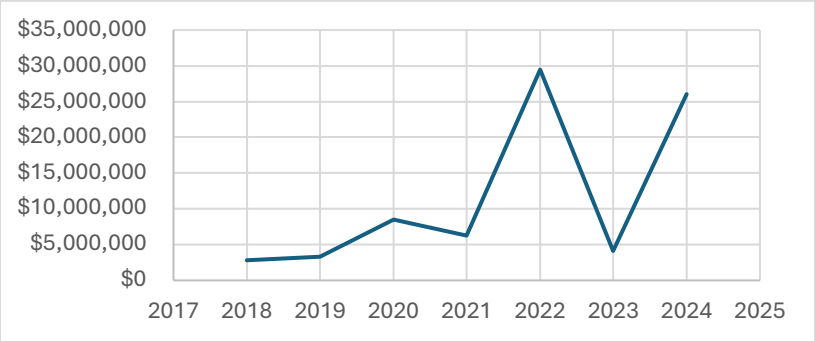
- **Policy/Trade Environment:** Brazil is a large producer of iron and steel but imports certain high-quality nickel products from the U.S. to support advanced industries.
- **Economic Forces:** Global demand for nickel has been fueled by stainless steel output and the rise of electric vehicle (EV) batteries, boosting U.S. export opportunities.
- **Industry Dynamics:** Nickel's role in Brazil's growing energy, automotive, and industrial sectors explains its rapid export growth from Ohio.

Sources

- U.S. Geological Survey (USGS) – *Nickel Commodity Summaries*
- U.S. International Trade Commission (USITC) – *Metals Trade Data*
- International Energy Agency (IEA) – *Critical Minerals and EV Battery Demand*
- World Bank – *Brazil Mining and Industrial Reports*

HS 30 – Pharmaceutical Products

Pharmaceutical Products	30



Year	$ Amount
2018	$2,814,822
2019	$3,289,846
2020	$8,465,795
2021	$6,249,582
2022	$29,466,519
2023	$4,134,129
2024	$26,032,152

Trend Narrative

Ohio's pharmaceutical exports to Brazil were modest from 2018–2019 ($2.8M–$3.3M) but jumped significantly in 2020 ($8.5M), likely reflecting pandemic-related emergency demand for medicines and health products. Exports dipped slightly in 2021 ($6.2M) but surged to $29.5M in 2022, one of the strongest spikes in this sector. However, this was followed by a steep decline in 2023 ($4.1M), indicating the temporary nature of certain supply contracts or shifts in sourcing. By 2024, exports rebounded to $26.0M, underscoring the volatility of pharmaceutical trade flows but also the potential for large-scale contracts and urgent demand.

Key Drivers & Context

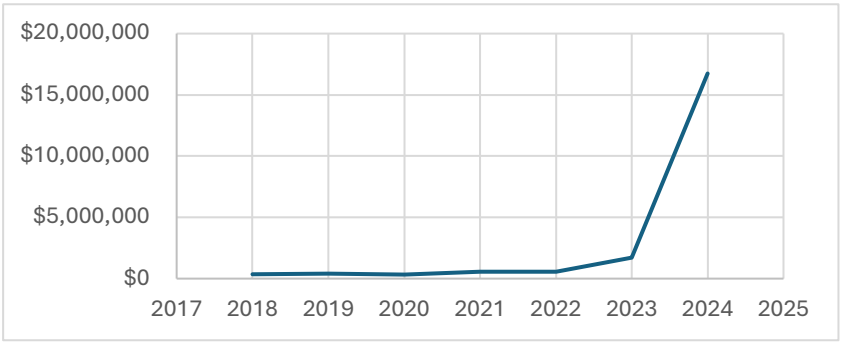
- **Policy/Trade Environment:** Pharmaceuticals face strict Brazilian regulatory requirements, but U.S. suppliers benefit when demand exceeds local production.
- **Economic Forces:** Pandemic and post-pandemic health crises drove temporary surges; volatility reflects Brazil's procurement cycles and stockpiling patterns.
- **Industry Dynamics:** Highly contract-driven, with peaks tied to government tenders or health emergencies rather than steady consumer demand.

Sources

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, Pharmaceuticals*
- Pan American Health Organization (PAHO) – *Brazil Health System Reports*
- International Trade Administration (ITA) – *Brazil Healthcare & Pharmaceutical Market*
- World Bank – *Brazil Health Expenditure and Imports Data*

HS 81 - Base Metals Nesoi; Cermets; Articles Thereof

Base Metals Nesoi; Cermets; Articles Thereof	81



Year	$ Amount
2018	$378,348
2019	$402,284
2020	$329,089
2021	$571,158
2022	$582,720
2023	$1,737,982
2024	$16,742,398

Trend Narrative

Ohio's exports of base metals and cermets to Brazil remained minimal between 2018 and 2022, consistently below $1 million annually. A modest increase occurred in 2023 ($1.7M), followed by a dramatic surge in 2024 to $16.7M — the highest level in the period. This represents an **850% year-over-year increase**, suggesting a large one-off shipment, new supplier relationship, or Brazil's rising demand for specialty alloys and advanced metal products.

Key Drivers & Context

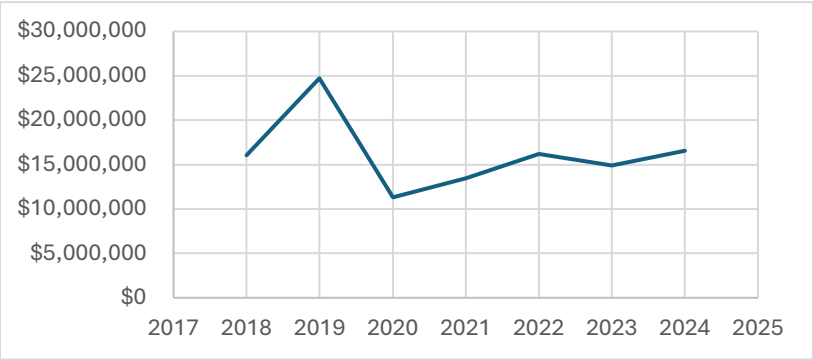
- **Policy/Trade Environment:** With no formal U.S.–Brazil free trade agreement, exports of advanced metals face tariffs, but bilateral trade ties remain strong in strategic industries. Brazil's push to expand industrial capacity may have opened new channels for Ohio-based exporters specializing in advanced metals.
- **Economic Forces:** Global volatility in nickel, tungsten, and other alloy markets may have increased Brazil's reliance on U.S. suppliers to fill short-term gaps. Ohio's advanced manufacturing base positions it as a competitive supplier in these niches.
- **Industry Dynamics:** Base metals and cermets are critical inputs for aerospace, automotive, and energy applications. Brazil's aerospace sector (centered around Embraer), as well as demand for alloys in industrial manufacturing, could have driven Ohio's sudden export spike in 2024.

Sources

- U.S. International Trade Commission (USITC) – *U.S. State Export Data by HS Code*
- UN Comtrade Database – *U.S. Exports to Brazil (HS 81)*
- OECD – *Metals Market Developments and Outlook* (2023)
- U.S. Department of Commerce – *Brazil Country Commercial Guide: Advanced Materials*

HS 34 – Soaps, Waxes, Lubricating Preparations, etc.

Soap, Waxes, Lubricating Preparations, etc	34



Year	$ Amount
2018	$16,036,271
2019	$24,724,704
2020	$11,319,026
2021	$13,443,698
2022	$16,196,753
2023	$14,900,561
2024	$16,556,506

Trend Narrative:

Ohio's exports of soap, waxes, and lubricating preparations to Brazil were modest but volatile over 2018–2024. Exports peaked in 2019 at $24.7M before falling sharply in 2020 ($11.3M) amid pandemic disruptions. A gradual recovery followed, reaching $16.2M in 2022, dipping slightly in 2023 ($14.9M), and rising again to $16.6M in 2024, essentially back to pre-pandemic levels. The pattern suggests steady but cyclical demand tied to Brazil's consumer, industrial, and chemical input markets.

Key Drivers & Context:

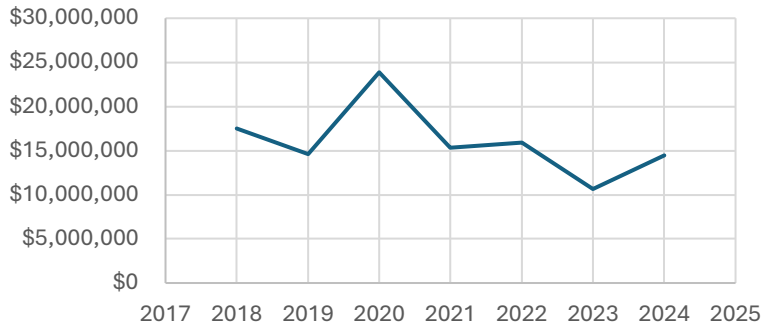
- **Consumer Products:** Demand for imported soaps, detergents, and cosmetics tied to middle-class consumption trends.
- **Industrial Inputs:** Lubricants and waxes used in manufacturing and automotive industries drove steady base demand.
- **Pandemic Disruption:** 2020 marked the steepest drop, reflecting Brazil's economic contraction during COVID-19.
- **Economic Cycles:** Brazil's recurring inflation and currency fluctuations influenced import affordability and trade volumes.
- **Recovery Phase:** By 2022–2024, Ohio exports stabilized as Brazil's consumer market normalized.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Chemicals & Related Products*
- U.S. International Trade Administration – *Brazil Country Commercial Guide: Consumer Goods & Chemicals*
- World Bank – *Brazil Economic Outlook Reports*
- U.S. Census Bureau – *State Exports Data*

HS 29 – Organic Chemicals

Organic Chemicals	29



Year	$ Amount
2018	$17,476,163
2019	$14,601,889
2020	$23,873,419
2021	$15,322,530
2022	$15,878,065
2023	$10,650,380
2024	$14,492,521

Trend Narrative

Ohio's organic chemical exports to Brazil were $17.5M in 2018 and fell slightly to $14.6M in 2019 before spiking to $23.9M in 2020, likely driven by pandemic-era demand for chemical inputs in pharmaceuticals, cleaning, and industrial uses. Exports then declined to $15.3M in 2021 and remained relatively flat in 2022 at $15.9M. By 2023, exports dipped further to $10.7M, but 2024 shows a partial recovery at $14.5M. The volatility reflects both cyclical industrial demand and shifting global supply chain dynamics, where Brazil balances imports with its own expanding chemical production.

Key Drivers & Context

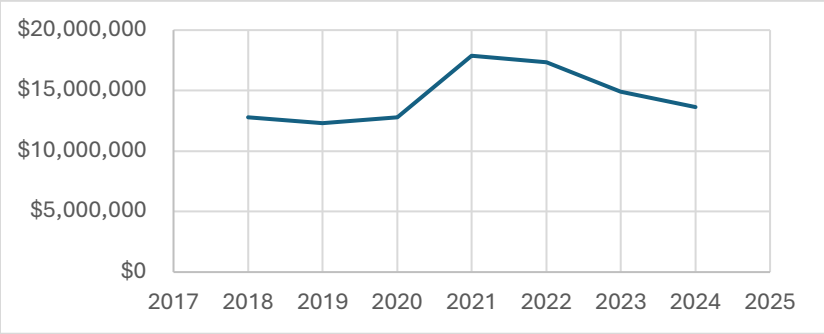
- **Policy/Trade Environment:** Brazil's chemical sector is subject to complex import licensing and tariffs, and domestic policy favors local production of key inputs. U.S.–Brazil trade dialogues occasionally ease barriers for specialized chemical exports.
- **Economic Forces:** The 2020 surge aligned with heightened demand for health-related chemical inputs during COVID-19. Subsequent declines mirror both reduced demand post-pandemic and global cost competitiveness challenges.
- **Industry Dynamics:** Brazil has invested heavily in its domestic petrochemical and organic chemical industries, reducing dependency on imports. Ohio's exports are concentrated in niche, high-value products, which remain in demand despite overall contraction.

Sources

- U.S. International Trade Commission (USITC) – U.S. Chemicals Trade Data
- American Chemistry Council – U.S. Chemical Exports Overview
- Associação Brasileira da Indústria Química (ABIQUIM) – Brazil Chemical Industry Reports
- U.S. Department of Commerce – Brazil Country Commercial Guide: Chemicals Sector

HS 32 – Tanning, Dye, Paint, Putty

Tanning, Dye, Paint, Putty	32



Year	$ Amount
2018	$12,807,216
2019	$12,309,484
2020	$12,803,249
2021	$17,882,111
2022	$17,320,448
2023	$14,882,957
2024	$13,653,042

Trend Narrative

Ohio's exports of tanning, dye, paint, and putty products to Brazil remained steady from 2018 to 2020, averaging around $12.8M annually. In 2021, exports rose sharply to $17.9M, supported by stronger industrial demand. This higher level was sustained in 2022 at $17.3M before declining to $14.9M in 2023 and $13.7M in 2024. The pattern suggests cyclical demand tied to industrial and automotive applications, with Brazil's slowing economy in recent years tempering import growth.

Key Drivers & Context

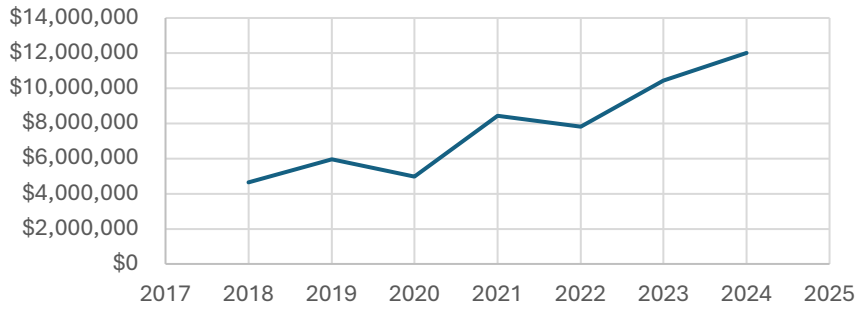
- **Policy/Trade Environment:** U.S.–Brazil trade agreements do not provide major tariff relief in this sector, so exports remain sensitive to duties and customs regulations. Regulatory alignment on industrial chemicals continues to shape trade volumes.
- **Economic Forces:** Demand rose in line with Brazil's industrial rebound in 2021–2022 but weakened as broader economic pressures and currency volatility reduced import purchasing power in 2023–2024.
- **Industry Dynamics:** These products are tied to automotive manufacturing, construction, and leather processing in Brazil. Growth periods align with Brazil's domestic industry expansion, while declines reflect lower production output and substitution with regional suppliers.

Sources

- U.S. Census Bureau – Foreign Trade Statistics (HS 32 exports data)
- International Trade Administration – Brazil Country Commercial Guide: Chemicals & Paints
- World Bank – Brazil Industrial Production and Manufacturing Reports
- UN Comtrade – U.S.–Brazil Chemical Products Trade

HS 83 – Miscellaneous Articles of Base Metal

Miscellaneous Articles of Base Metal	83



Year	$ Amount
2018	$4,643,328
2019	$5,968,629
2020	$4,957,259
2021	$8,439,049
2022	$7,808,561
2023	$10,431,264
2024	$12,010,491

Trend Narrative:

Ohio's exports of miscellaneous articles of base metal to Brazil grew steadily from $4.64M in 2018 to $5.97M in 2019. Exports dipped in 2020 ($4.96M) during the COVID-19 pandemic as Brazil's economy contracted and demand slowed. A strong rebound followed in 2021 ($8.44M), supported by industrial recovery and increased demand for imported base metal components. While 2022 saw a slight pullback to $7.81M, exports surged again in 2023 ($10.43M) and reached a peak in 2024 ($12.01M), suggesting sustained growth in Brazil's manufacturing, construction, and consumer goods sectors that rely on U.S. base metal products.

Key Drivers & Context:

- **Policy/Trade Agreements:** Brazil does not have a free trade agreement with the U.S., so exports face applied tariffs, but consistent demand for industrial base metal goods continues to drive shipments.
- **Economic Forces:** Brazil's recovery from its deep 2020 recession boosted imports; infrastructure and industrial investments in 2021–2024 further supported demand.
- **Industry Dynamics:** Base metal articles (e.g., hardware, fasteners, fittings, mountings) are essential inputs for Brazil's auto, construction, and consumer goods industries. Rising demand from these sectors explains the strong post-2021 export performance.

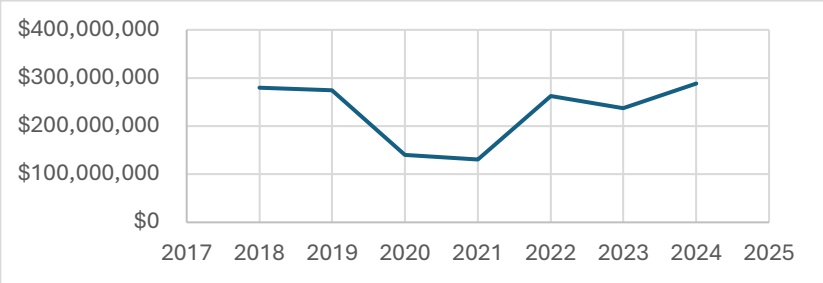
Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Metals & Manufactures*
- World Bank – *Brazil Economic Update*
- WTO – *Brazil Tariff Profiles*
- Reuters / Bloomberg – coverage on Brazil's industrial growth and infrastructure investments

Germany

HS 88 – Aircraft and Parts

Aircraft and Parts	88



Year	$ Amount
2018	$280,091,898
2019	$274,720,823
2020	$140,532,075
2021	$130,610,622
2022	$262,690,817
2023	$236,671,739
2024	$288,462,753

Trend Narrative:

Ohio's exports of aircraft and parts to Germany were strong in 2018 ($280.1M) and 2019 ($274.7M), before plunging in 2020 ($140.5M) and 2021 ($130.6M) as global air travel collapsed during the pandemic. Recovery began in 2022 ($262.7M) with airlines resuming fleet renewal and supply chains stabilizing. Exports eased slightly in 2023 ($236.7M) but climbed to $288.5M in 2024, surpassing pre-pandemic levels and reflecting renewed commercial demand and growing defense-related aerospace trade.

Key Drivers & Context:

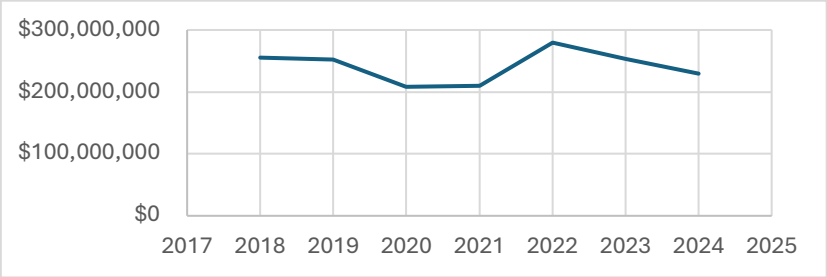
- **Policy/Trade Agreements:** U.S.–EU cooperation on aerospace strengthened after the suspension of long-running Airbus-Boeing tariff disputes in 2021, supporting recovery in transatlantic aerospace trade.
- **Economic Forces:** COVID-19's impact on aviation (2020–2021) was the major driver of the downturn; recovery paralleled global passenger and cargo demand rebound from 2022 onward.
- **Industry Dynamics:** Germany's aerospace sector (Airbus facilities, defense contracts, and MRO operations) increased reliance on U.S. parts and components as production cycles resumed. Growing defense budgets in Europe also contributed to 2024's surge.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Transportation Equipment & Aerospace*
- Aerospace Industries Association – *U.S.–EU Aerospace Trade Trends*
- International Air Transport Association (IATA) – *Global Air Travel and Aircraft Demand Outlooks*
- German Aerospace Industries Association (BDLI) – *Annual Aerospace Market Reports*

HS 84 – Industrial Machinery, Including Computers

Industrial Machinery, Including Computers	84



Year	$ Amount
2018	$255,279,939
2019	$252,295,207
2020	$208,258,143
2021	$210,067,752
2022	$279,595,822
2023	$253,182,739
2024	$229,817,880

Trend Narrative:

From 2018 to 2024, Ohio's exports of industrial machinery and computers to Germany displayed a mixed but relatively stable trend overall. Exports started at $255 million in 2018 and remained steady through 2019 before dipping to $210 million in 2020, reflecting pandemic-related disruptions. A recovery followed, peaking at $279 million in 2022 as industrial demand strengthened with supply chain normalization. However, exports softened slightly again to $230 million by 2024, suggesting Germany's machinery demand has moderated amid slower European growth and energy-cost pressures.

Key Drivers & Context:

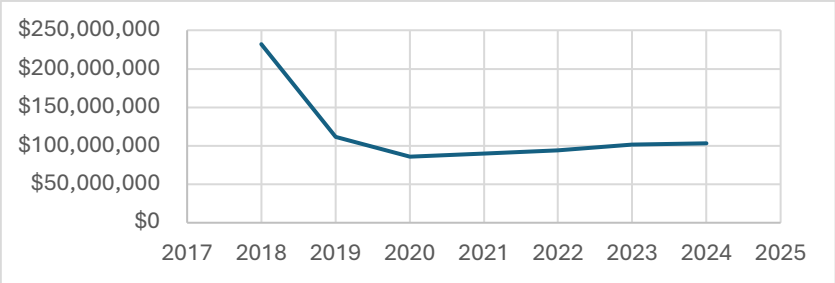
- **Pandemic disruptions (2020)**: Slowed industrial activity in Germany and weaker capital investment reduced machinery imports.
- **Post-pandemic rebound (2021–2022)**: Strong demand from German automotive and advanced manufacturing sectors boosted U.S. machinery exports.
- **Energy & cost pressures (2023–2024)**: Rising energy costs in Europe and weaker manufacturing activity slightly dampened demand for U.S. machinery.
- **Technology specialization**: Ohio exports remain competitive in precision machinery and computer-related equipment, aligning with Germany's high-tech sectors.

Sources:

- U.S. Census Bureau, Foreign Trade Division – Trade Data on Exports by HS Code
- International Trade Administration (ITA), *U.S.–Germany Trade Relations*
- World Bank & IMF – Global economic and industrial output data
- UN Comtrade Database – U.S.-Germany Bilateral Trade, HS 84

HS 90 – Optic / Photo / Medical Instruments

Optic / Photo / Medical Instruments	90



Year	$ Amount
2018	$231,915,021
2019	$111,107,503
2020	$85,820,983
2021	$89,512,230
2022	$93,846,292
2023	$101,202,264
2024	$103,409,206

Trend Narrative:

From 2018 to 2024, Ohio's exports of optical, photographic, and medical instruments to Germany saw a sharp initial decline followed by a period of stabilization and modest recovery. Exports dropped steeply from $231.9M in 2018 to $85.8M in 2020, reflecting reduced demand, trade uncertainties, and supply chain challenges during that time. After bottoming out, exports gradually improved, reaching $101.2M in 2023 and $103.4M in 2024, suggesting a slow but steady recovery. Overall, exports have not yet returned to 2018 levels but are showing signs of resilience.

Key Drivers & Context:

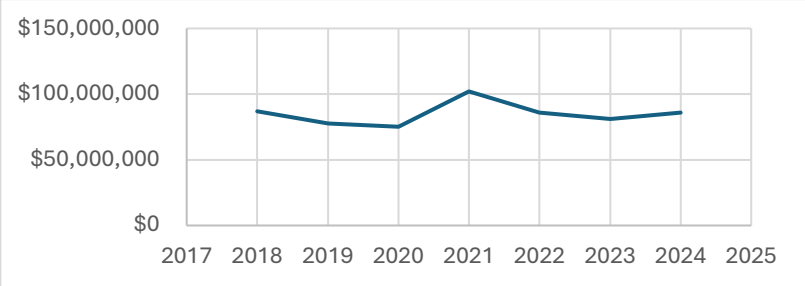
- **Medical and Healthcare Demand:** Germany is a leading market for advanced medical equipment, and demand rebounded post-pandemic as healthcare systems invested in diagnostic and surgical technologies.
- **COVID-19 Disruption:** The 2019–2020 drop aligns with global supply chain shocks and healthcare procurement shifts during the pandemic.
- **Industry Recovery & Modernization:** The modest rebound post-2021 reflects continued reliance on U.S.-made precision instruments, particularly in medical diagnostics and optics.
- **Competition & Pricing:** Strong competition from European suppliers (e.g., Germany's own optics and medical device industry) limited rapid growth in U.S. exports.

Sources:

- U.S. Census Bureau – Foreign Trade Division (HS Code 90 Data)
- International Trade Administration (ITA) – U.S. Exports by Country and Product Category
- Observatory of Economic Complexity (OEC) – HS 90 Trade Data

HS 85 – Electric Machinery; Sound Equip.; TV Equip.

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$86,800,476
2019	$77,733,106
2020	$75,169,906
2021	$102,069,166
2022	$85,801,462
2023	$80,875,513
2024	$85,824,723

Trend Narrative:

Between 2018 and 2024, Ohio's exports of electric machinery and related equipment to Germany show moderate volatility but largely remained within a range of $75M to $102M annually. The peak occurred in 2021 ($102M), followed by a dip in 2022 and 2023, before stabilizing at $85.8M in 2024. Compared to the sharp declines seen in other sectors, HS 85 has demonstrated relative stability with cyclical ups and downs, suggesting a steady demand base, possibly tied to Germany's electronics and industrial automation sectors.

Key Drivers & Context:

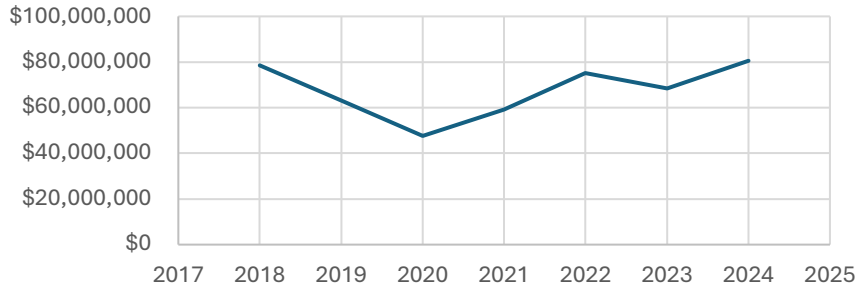
- **German Industry Demand**: Germany's heavy reliance on advanced manufacturing, robotics, and renewable energy sectors sustains demand for U.S. electronic machinery and components.
- **Supply Chain Dynamics**: The fluctuations reflect broader supply chain constraints during **COVID-19 (2020–2021)** and recovery phases in 2022.
- **Competition from Asia**: Germany imports large volumes of electronics from Asia (China, South Korea, Japan), which puts pricing and volume pressure on Ohio exports.
- **Technological Collaboration**: Strong U.S.–Germany cooperation in **industrial IoT, automotive electronics, and renewable technologies** helps maintain steady trade volumes.
- **Exchange Rates**: Euro–U.S. dollar exchange rate movements impact German purchasing power for U.S. electronics.

Sources:

- U.S. Census Bureau – Foreign Trade Division (FTA Data)
- International Trade Administration (ITA) – Country Commercial Guides: Germany
- UN Comtrade Database – HS 85 trade flows

HS 39 – Plastics and Articles Thereof

Plastics and Articles Thereof	39



Year	$ Amount
2018	$78,518,590
2019	$63,223,561
2020	$47,626,067
2021	$59,314,622
2022	$75,213,490
2023	$68,371,572
2024	$80,549,986

Trend Narrative:

Ohio's exports of plastics and articles thereof to Germany have shown fluctuations over the 2018–2024 period. In 2018, exports totaled $78.5 million, but declined in subsequent years, reaching a low of $47.6 million in 2020. This downturn reflects both global manufacturing slowdowns and trade uncertainties. From 2021 onward, exports rebounded steadily, peaking at $80.5 million in 2024, surpassing 2018 levels. The recovery trend highlights the resilience of Ohio's plastics sector and the sustained demand in Germany's automotive, packaging, and industrial sectors.

Key Drivers & Context:

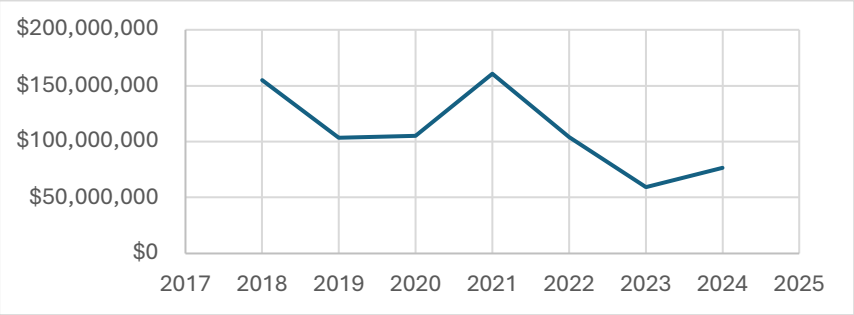
- **Automotive & Manufacturing Demand**: German automakers and industrial manufacturers continue to rely on specialized plastics for lightweighting, components, and advanced applications.
- **Packaging & Consumer Goods**: Growth in sustainable and high-performance packaging materials has helped drive demand for Ohio's exports.
- **Trade Policy & Supply Chain Resilience**: Post-2020 recovery reflects stabilized trade relations, despite earlier trade frictions and supply chain disruptions.
- **Competitive Positioning**: Ohio plastics benefit from advanced R&D, competitive pricing, and integration with U.S. chemical and polymer supply chains.

Sources:

- U.S. Census Bureau, USA Trade Online (HS Code 39 Exports by State and Partner Country)
- Ohio Development Services Agency – Export Highlights
- International Trade Administration (ITA), Plastics Industry Top Markets Report

HS 87 – Vehicles and Parts

Vehicles and Parts	87



Year	$ Amount
2018	$154,835,027
2019	$103,196,631
2020	$105,303,714
2021	$160,699,266
2022	$103,965,574
2023	$59,324,777
2024	$76,554,096

Trend Narrative:

Exports of vehicles and parts from Ohio to Germany show a highly volatile pattern between 2018 and 2024. In 2018, exports stood at $154.8M but fell sharply to $103.2M in 2019. Exports remained relatively stable in 2020 ($105.3M), before peaking in 2021 at $160.7M, likely due to a rebound in transatlantic auto demand and inventory restocking following the pandemic's early disruptions. However, 2022 marked another steep decline ($104.0M), followed by an even sharper drop in 2023 to just $59.3M, reflecting semiconductor shortages, shifting German sourcing strategies, and weakening demand in the European auto market. In 2024, exports partially recovered to $76.6M but remained well below pre-2022 levels.

Key Drivers & Context:

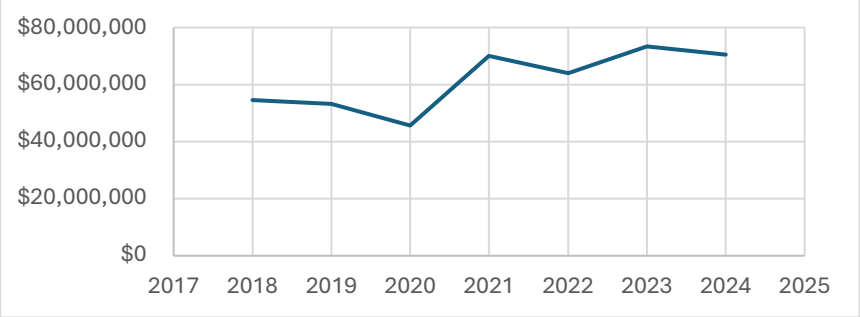
- **Policy/Trade Agreements:** U.S.–EU auto trade continued under WTO rules; ongoing debates about tariffs and standards influenced trade stability.
- **Economic Forces:** COVID-19 and global semiconductor shortages hit auto supply chains (2020–2022). Elevated energy costs and consumer demand weakness further pressured Germany's auto sector from 2022 onward.
- **Industry Dynamics:** 2021's surge likely reflected pent-up demand and restocking, while 2023's drop highlights structural challenges — Germany's EV transition and preference for intra-EU suppliers reduced reliance on U.S. vehicle exports.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Transportation Equipment*
- European Automobile Manufacturers' Association (ACEA) – *EU Auto Market Reports*
- Brookings Institution – *Transatlantic Trade in Autos & EV Policy Shifts*
- German Federal Ministry for Economic Affairs – *Automotive Sector Transition Reports*

HS 82 – Tools, Implements, Cutlery of Base Metals

Tools, Implements, Cutlery of Base Metals	82



Year	$ Amount
2018	$54,511,072
2019	$53,203,235
2020	$45,639,267
2021	$69,947,489
2022	$63,918,351
2023	$73,374,831
2024	$70,481,660

Trend Narrative:

Ohio's exports of HS 82 products to Germany have shown moderate volatility between 2018 and 2024. In 2018, exports stood at $54.5M, dipping slightly in 2019 and 2020 to around $53.2M and $45.6M respectively. The sector then rebounded sharply in 2021 to nearly $70M, marking the highest point in the period. Although there was a slight contraction in 2022 ($63.9M), growth resumed in 2023 **(**$73.4M), before settling at $70.5M in 2024. Overall, the trend reflects resilience, with the 2024 figure exceeding 2018's baseline, showing stable long-term growth despite global trade disruptions.

Key Drivers & Context:

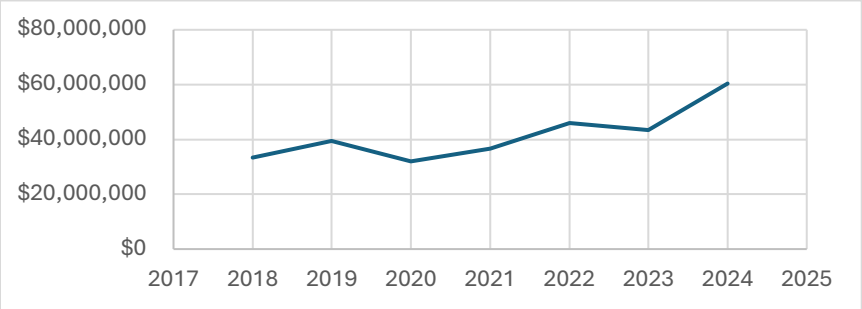
- **German Industrial Demand:** Germany's advanced manufacturing and engineering industries (e.g., automotive, machinery, precision tools) rely on imported U.S. tooling and cutlery, supporting demand stability.
- **COVID-19 Slowdowns (2019–2020):** Reduced industrial activity and supply chain constraints led to temporary contractions.
- **Recovery & Resilience (2021–2023):** A strong rebound aligned with Germany's industrial recovery and Ohio exporters regaining market share.
- **U.S.–EU Trade Relations:** Tariff disputes on metals during 2018–2019 added headwinds but were partially eased, improving export competitiveness.
- **2024 Plateau:** Slight stabilization after consecutive growth years suggests mature demand and strong competition from European suppliers.

Sources:

- U.S. Census Bureau, Foreign Trade Division – HS Code 82 Exports Data
- United States International Trade Commission (USITC) – DataWeb
- Eurostat – German imports by HS code

HS 74 – Copper and Articles Thereof

Copper and Articles Thereof 74



Year	$ Amount
2018	$33,334,329
2019	$39,404,238
2020	$31,994,217
2021	$36,563,991
2022	$45,987,958
2023	$43,427,381
2024	$60,389,880

Trend Narrative:

Ohio's copper exports to Germany grew steadily from 2018 ($33.3M) to 2019 ($39.4M), before dropping to $32.0M in 2020 amid global supply chain disruptions and lower industrial demand during the pandemic. Recovery began in 2021 ($36.6M) and strengthened through 2022 ($46.0M), reflecting rising copper prices and resurgent demand in German manufacturing and renewable energy sectors. After a slight dip in 2023 ($43.4M), exports surged to $60.4M in 2024 — the highest level in the period — likely driven by strong German demand for copper in the energy transition, particularly in electrical wiring, EV production, and renewable infrastructure.

Key Drivers & Context:

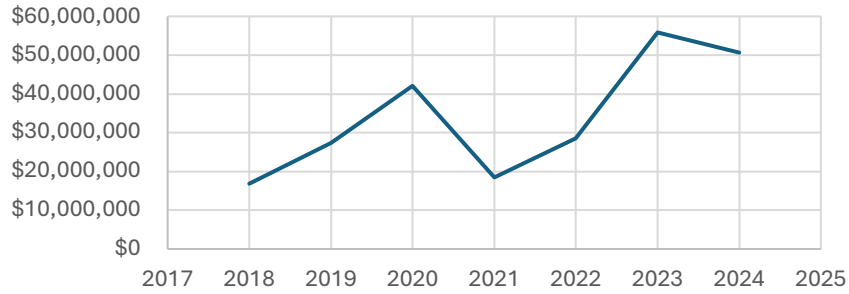
- **Policy/Trade Agreements:** Tariff-free U.S.–EU copper trade continued under WTO rules, ensuring stable access.
- **Economic Forces:** Global copper price volatility and strong demand from electrification projects boosted exports in 2021–2024.
- **Industry Dynamics:** Germany's heavy investment in renewable energy and EV manufacturing increased demand for copper inputs, aligning with Ohio's export growth.

Sources:

- U.S. Geological Survey (USGS) – *Mineral Commodity Summaries: Copper*
- World Bank – *Commodity Market Outlook: Metals*
- German Federal Ministry for Economic Affairs – *Energy Transition & Raw Materials Demand*
- International Copper Study Group (ICSG) – *World Copper Market Reports*

HS 30 – Pharmaceutical Products

Pharmaceutical Products	30



Year	$ Amount
2018	$16,851,286
2019	$27,419,231
2020	$42,110,959
2021	$18,447,848
2022	$28,479,746
2023	$55,860,457
2024	$50,632,984

Trend Narrative:

Ohio's pharmaceutical exports to Germany began at $16.9 million in 2018, then grew significantly, peaking at $42.1 million in 2020-likely linked to COVID-19–related demand. Exports then dropped sharply to $18.4 million in 2021 before rebounding in 2022 and peaking again at $55.9 million in 2023. The latest data shows a slight decline to $50.6 million in 2024, but overall, exports have tripled since 2018, highlighting strong long-term growth despite volatility.

Key Drivers & Context:

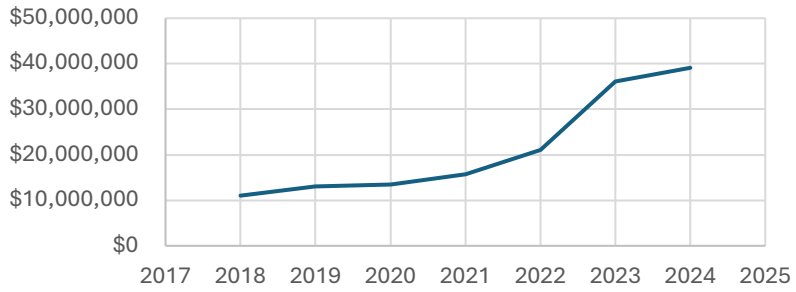
- **Pandemic-related surge (2020):** Strong demand for U.S. pharmaceutical products during COVID-19 boosted exports.
- **German pharma industry:** Imports support major companies such as Bayer, Merck, and BioNTech, which source U.S. ingredients and products.
- **R&D and bioscience base in Ohio:** Institutions like Cleveland Clinic and Battelle drive pharmaceutical innovation and exports.
- **Regulatory alignment:** The U.S.–EU Mutual Recognition Agreement (MRA) on pharma inspections streamlines trade.
- **Volatility factors:** Patent cycles, EU price controls, and regulatory shifts create export swings.

Sources:

- U.S. Census Bureau – Foreign Trade Data (HS 30, Ohio Exports)
- USTR – EU Trade Agreements
- SelectUSA – Pharmaceuticals Industry Overview
- Germany Trade & Invest (GTAI) – Pharma Market Reports

HS 68 – Articles of Stone, Plaster, Cement, Asbestos

Articles of Stone, Plaster, Cement, Asbestos	68



Year	$ Amount
2018	$11,023,181
2019	$13,000,879
2020	$13,446,713
2021	$15,741,027
2022	$21,086,786
2023	$36,105,327
2024	$39,110,872

Trend Narrative:

Ohio's exports of articles of stone, plaster, cement, and asbestos to Germany grew steadily from 2018 to 2024, starting at $11.0M in 2018 and more than tripling to $39.1M by 2024. Growth was relatively slow between 2018 and 2020, with values ranging from $11M–$13M, but momentum picked up in 2021 with $15.7M and accelerated sharply after 2022. The largest increase occurred between 2022 ($21.1M) and 2023 ($36.1M), signaling stronger German demand for construction-related goods. Although growth slowed somewhat in 2024, exports still climbed to $39.1M, representing a new peak for the sector. Overall, the trend reflects growing construction and renovation demand in Germany, as well as possible substitution toward U.S. materials due to shifting EU supplier dynamics.

Key Drivers & Context:

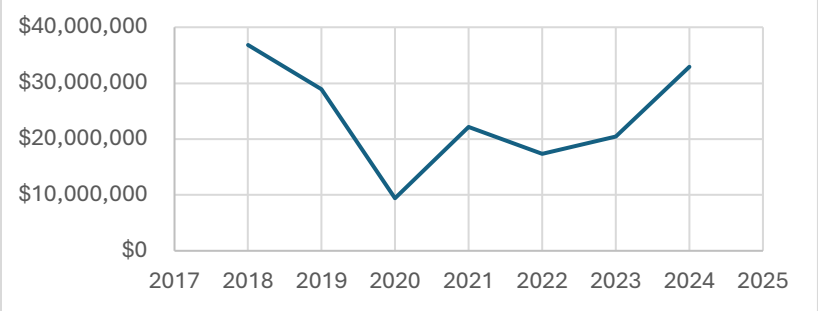
- **German construction demand:** Increased demand for cement, stone, and plaster in commercial and residential projects.
- **Post-pandemic recovery:** Stronger 2022–2023 growth tied to EU recovery packages, infrastructure upgrades, and green building initiatives.
- **Diversification of suppliers:** EU supply chain rebalancing encouraged more imports from the U.S. in construction-related goods.
- **Sustainability and material quality:** U.S. stone and cement products often positioned as high-quality and competitive in niche applications.

Sources:

- U.S. Census Bureau, Foreign Trade Data (HS 68 exports)
- International Trade Administration – Germany Country Commercial Guide
- Eurostat Construction Sector Analysis

HS 33 – Cosmetics, Perfumery, Essential Oils, etc.

Cosmetics, Perfumery, Essential Oils, etc.	33



Year	$ Amount
2018	$36,825,153
2019	$28,946,575
2020	$9,405,878
2021	$22,192,280
2022	$17,392,885
2023	$20,389,702
2024	$32,914,068

Trend Narrative:

Between 2018 and 2024, Ohio's exports of cosmetics, perfumery, and essential oils to Germany showed volatility but ended on a strong note. Exports fell sharply from $36.8 million in 2018 to just $9.4 million in 2020, reflecting both reduced demand during the pandemic and regulatory frictions in the EU market. However, shipments rebounded to $22.2 million in 2021 and continued climbing, reaching $32.9 million in 2024. Despite fluctuations, the long-term trend suggests that Ohio firms have been regaining their foothold in Germany's cosmetics sector, supported by rising demand for premium, health-conscious, and sustainable products.

Key Drivers & Context:

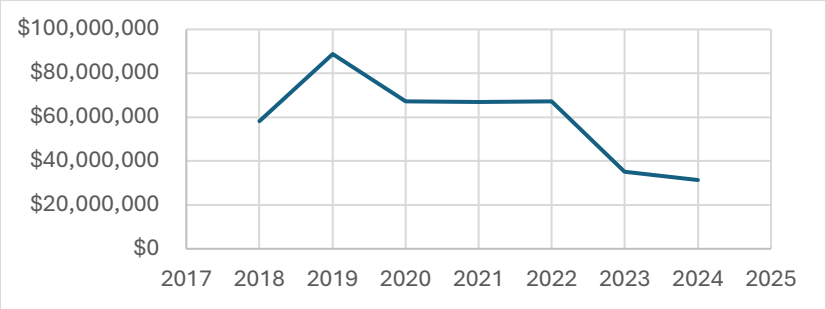
- **Pandemic-driven slump and rebound:** COVID-19 cut personal care and luxury spending in 2019–2020, but demand recovered from 2021 onward.
- **Germany's cosmetics dominance:** As the largest cosmetics market in Europe, Germany remains highly attractive for U.S. exporters despite compliance hurdles.
- **Shift toward natural and sustainable goods:** German consumers strongly prefer eco-friendly, organic, and cruelty-free products - Ohio exporters aligning with these trends have benefitted.
- **Regulatory compliance:** Meeting EU cosmetics safety and labeling standards increases costs, creating barriers for smaller Ohio exporters.
- **Exchange rate effects:** Dollar–euro fluctuations influenced competitiveness, with a strong dollar making U.S. goods pricier in the German market.

Sources:

- U.S. International Trade Administration (ITA) – Germany Country Commercial Guide: Cosmetics Sector
- Statista – Cosmetics & Personal Care Market in Germany
- U.S. Census Bureau – Foreign Trade Division (HS 33 export data)

HS 29 – Organic Chemicals

Organic Chemicals	29



Year	$ Amount
2018	$58,277,157
2019	$88,768,961
2020	$67,330,905
2021	$66,812,701
2022	$67,284,068
2023	$35,090,613
2024	$31,344,658

Trend Narrative:

Exports of organic chemicals from Ohio to Germany rose sharply from $58.3M in 2018 to a peak of $88.8M in 2019, reflecting robust demand from Germany's pharmaceutical and chemical manufacturing sectors. However, exports fell to $67.4M in 2020, where they stabilized through 2021–2022 at about $66–67M. The steepest decline occurred in 2023 ($35.1M) and 2024 ($31.3M), cutting export levels to nearly one-third of the 2019 peak. This downturn highlights weakening German demand for U.S. organic chemical imports, driven by energy-cost pressures on Europe's chemical industry, supply chain realignment, and increased competition from domestic and Asian suppliers.

Key Drivers & Context:

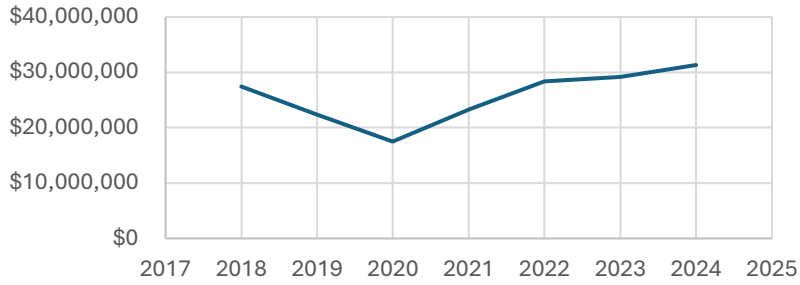
- **Policy/Trade Agreements:** USMCA had little direct effect here; EU–U.S. trade tensions and regulatory standards for chemicals (e.g., REACH) shaped market access.
- **Economic Forces:** Germany's chemical industry—energy-intensive by nature—was hit hard by high gas and electricity prices after 2022, lowering import volumes.
- **Industry Dynamics:** Pharmaceuticals and specialty chemicals remain Germany's core import drivers, but diversification to Asian suppliers and domestic substitution has eroded Ohio's position.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, 2020: Chemicals*
- American Chemistry Council – *Trade & Competitiveness in Chemicals*
- European Commission – *REACH Chemical Regulatory Framework*
- German Chemical Industry Association (VCI) – *Reports on Energy & Trade Impacts, 2022–2024*

HS 73 – Iron and Steel Products

Iron and Steel Products	73



Year	$ Amount
2018	$27,443,560
2019	$22,351,714
2020	$17,508,601
2021	$23,328,663
2022	$28,332,060
2023	$29,197,445
2024	$31,337,341

Trend Narrative:

Ohio's exports of Iron and Steel Products (HS 73) to Germany experienced a fluctuating but overall positive trajectory between 2018 and 2024. In 2018, exports stood at $27.4 million but fell to a low of $17.5 million in 2020. Since then, the category has rebounded steadily, reaching $31.3 million in 2024, the highest level in the series. This reflects a gradual strengthening of demand for Ohio's fabricated steel products in Germany after the initial downturn, with recent years showing stable upward momentum despite global trade uncertainties.

Key Drivers & Context:

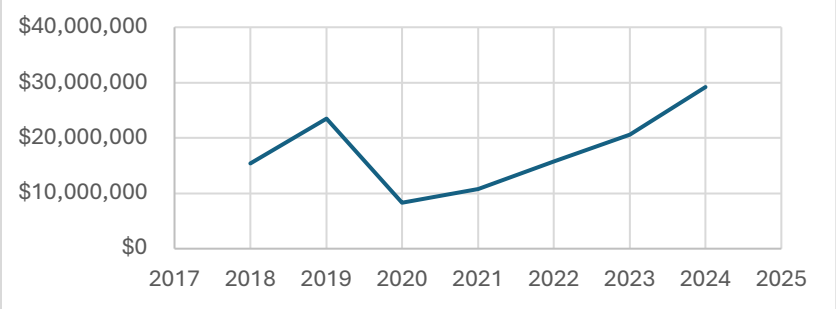
- **Industrial Recovery in Germany:** Germany's industrial base, particularly in automotive, machinery, and construction, has driven steady demand for fabricated iron and steel products sourced from Ohio.
- **COVID-19 Disruptions:** The sharp dip in 2020 reflected disruptions in both U.S. production and German import demand due to the pandemic.
- **EU–U.S. Tariff Tensions:** Previous tariffs and trade frictions between the U.S. and EU suppressed export growth before easing in later years.
- **Resurgence in Manufacturing Demand (2021–2024):** As German industries recovered and expanded post-pandemic, Ohio exports rebounded, leading to consistent growth through 2024.
- **Specialized Products:** Much of Ohio's competitive advantage lies in value-added steel goods (pipes, tubes, and fabricated structures), which are in demand for Germany's advanced manufacturing sectors.

Sources:

- U.S. Census Bureau, USA Trade Online (HS 73 export data, Ohio → Germany).
- International Trade Administration (ITA), country trade fact sheets.
- European Commission, EU–U.S. trade policy updates on steel and aluminum tariffs.

HS 81 – Base Metals Nesoi; Cermets; Articles Thereof

Base Metals Nesoi; Cermets; Articles Thereof	81



Year	$ Amount
2018	$15,399,798
2019	$23,442,239
2020	$8,302,633
2021	$10,760,328
2022	$15,729,021
2023	$20,597,402
2024	$29,198,162

Trend Narrative:

Exports of HS 81 products from Ohio to Germany fluctuated between 2018 and 2024. The category began at $15.4M in 2018 and rose sharply to $23.4M in 2019, before experiencing a significant decline to $8.3M in 2020-likely reflecting supply chain and demand shocks tied to the COVID-19 pandemic. Recovery followed in 2021 at $10.8M, with steady growth in subsequent years. By 2024, exports reached their peak at $29.2M, nearly doubling the 2018 baseline. Overall, the trend highlights volatility early in the period but strong upward momentum in the last three years.

Key Drivers & Context:

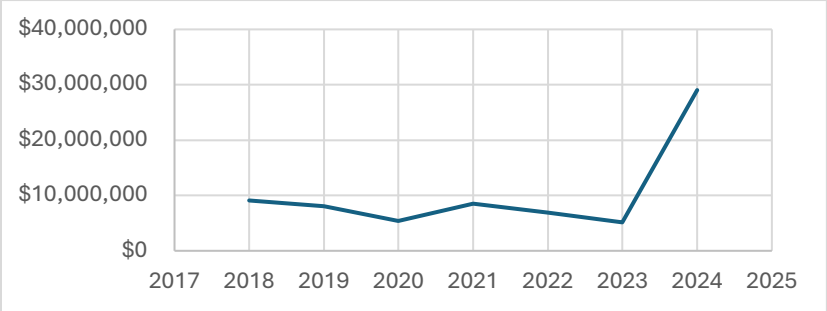
- **Industrial demand in Germany**: Base metals and cermets are used in aerospace, automotive, tooling, and energy industries, sectors where Germany is a global leader.
- **COVID-19 impacts (2020)**: Disruption of manufacturing activity in both Ohio and Germany likely caused the sharp drop in 2020.
- **Recovery in European industry**: Post-2021, Germany's manufacturing rebound, especially in automotive electrification and renewable energy infrastructure, supported higher import demand.
- **Niche specialization**: U.S. exports in HS 81 often include specialty alloys and high-performance metals used in advanced applications, where Ohio's metallurgical and industrial base is competitive.
- **Trade dynamics**: Despite broader trade headwinds, Ohio's exports in this sector show resilience and suggest strong buyer–supplier relationships with German firms.

Sources:

- U.S. Census Bureau – USA Trade Online (state-level HS code exports)
- International Trade Administration (ITA) – Country Commercial Guides: Germany
- World Bank & IMF – Global Trade Outlook Reports
- Industry context: German Federal Statistical Office (Destatis) manufacturing sector updates

HS 32 – Tanning, Dye, Paint, Putty

Tanning, Dye, Paint, Putty	32



Year	$ Amount
2018	$9,063,564
2019	$8,047,101
2020	$5,435,343
2021	$8,463,611
2022	$6,902,428
2023	$5,139,850
2024	$29,035,524

Trend Narrative:

Ohio's exports of HS 32 – Tanning, Dye, Paint, Putty to Germany show a fluctuating pattern between 2018 and 2024. In 2018, exports were $9.06 million, followed by a slight dip to $8.05 million in 2019. The lowest point occurred in 2020 with just $5.43 million, reflecting global trade slowdowns during the pandemic. After a modest recovery in 2021 ($8.46 million), exports again declined in 2022 and 2023, reaching another trough of $5.14 million. However, in 2024, exports surged dramatically to $29.04 million, marking the highest level in the series and a nearly 6x increase from the previous year, suggesting renewed German demand or strong U.S. supply-side competitiveness in chemical-related industries.

Key Drivers & Context:

- **Pandemic Effects**: The 2020 low aligns with global manufacturing shutdowns, especially in Germany's automotive and industrial coatings sectors.
- **German Industrial Base**: Germany's strong chemical and coatings industries likely drive demand for U.S. specialty paints, dyes, and chemical inputs.
- **Energy & Supply Chain Pressures (2022–2023)**: Rising energy costs in Europe post-Ukraine conflict may have constrained German production capacity, reducing imports.
- **2024 Recovery**: The sharp rebound in 2024 may reflect restocking of industrial inputs, stabilization of supply chains, and higher demand from Germany's recovering automotive and construction sectors, which heavily use paints, dyes, and chemical agents.

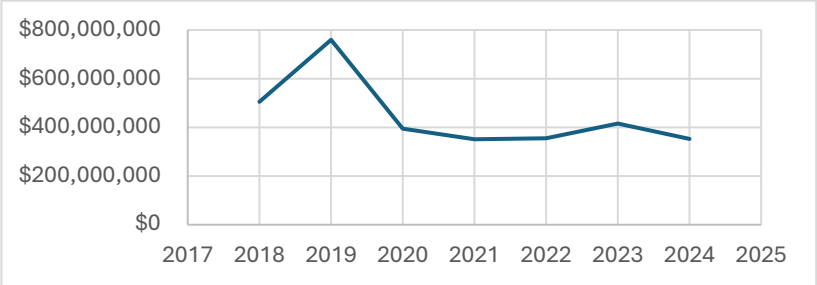
Sources:

- U.S. Census Bureau, USA Trade Online – Ohio export data.
- International Trade Administration (ITA), Chemicals Sector Reports.
- German Chemical Industry Association (VCI) – Annual reports on chemical imports and demand.


France

HS 88 – Aircraft; Spacecraft and Parts

Aircraft; Spacecraft and Parts	88



Year	$ Amount
2018	$503,889,919
2019	$759,592,672
2020	$395,401,949
2021	$351,136,435
2022	$355,862,190
2023	$415,285,923
2024	$352,348,713

Trend Narrative:

Ohio's exports of aircraft, spacecraft, and parts to France fluctuated significantly between 2018 and 2024. In 2018, exports stood at approximately $503.9 million, before surging to a peak of **$**759.6 million in 2019. However, this peak was followed by a steep decline, dropping nearly in half to $395.4 million in 2020 and further to $351.1 million in 2021. Although exports partially rebounded in 2022 ($355.9 million) and 2023 ($415.3 million), they fell again in 2024 to $352.3 million. Overall, the seven-year trend shows volatility with France remaining a key but inconsistent market for Ohio aerospace exports.

Key Drivers & Context:

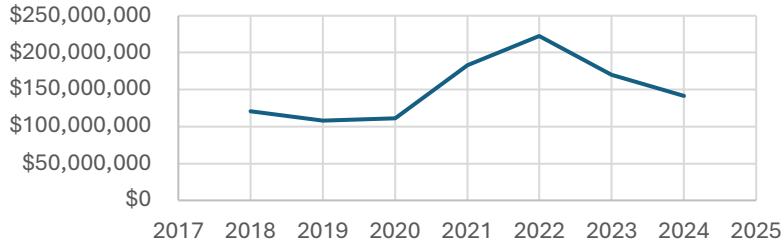
- France's central role in global aerospace (Airbus, Safran, Dassault) sustains demand for U.S. components.
- The 2019 peak may reflect strong pre-pandemic aircraft orders and joint aerospace ventures.
- The 2020–2021 declines coincide with COVID-19's impact on aviation demand, international travel restrictions, and reduced aircraft production.
- Partial rebounds in 2022–2023 suggest renewed procurement as air travel and defense contracts resumed.
- The 2024 dip signals lingering uncertainty in civilian aerospace orders, supply chain pressures, or increased EU sourcing away from U.S. suppliers.

Sources:

- U.S. Census Bureau, USA Trade® database (2024).
- Aerospace Industries Association (2023) – COVID-19 and supply chain recovery in aerospace.
- Airbus Global Market Outlook (2023) – Forecasts for European aircraft demand.

HS 84 – Industrial Machinery, Including Computers

Industrial Machinery, Including Computers	84



Year	$ Amount
2018	$120,646,973
2019	$108,012,602
2020	$111,002,430
2021	$182,943,233
2022	$222,554,352
2023	$169,930,479
2024	$141,489,684

Trend Narrative:

From 2018 to 2024, Ohio's exports of industrial machinery to France showed considerable fluctuations. In 2018, exports stood at $120.6M, followed by a slight decline in 2019 ($108.0M) before stabilizing in 2020 ($111.0M). A strong surge occurred in 2021 with exports climbing to $182.9M, peaking further in 2022 at $222.6M, marking the highest level in the period. However, this growth was not sustained, as exports declined to $169.9M in 2023 and fell further to $141.5M in 2024. Overall, the trend reflects volatility with a mid-period peak, followed by a downward correction in the last two years.

Key Drivers & Context:

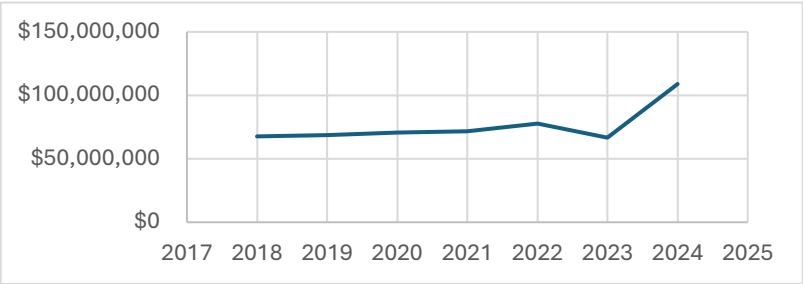
- **Industrial Demand in France**: France's aerospace, automotive, and manufacturing sectors rely heavily on advanced machinery imports. Periods of high investment cycles likely drove the 2021–2022 peak.
- **COVID-19 Recovery (2020–2021)**: The jump in 2021 corresponds with France's industrial rebound, where demand for automation and precision machinery accelerated.
- **Global Supply Chain Disruptions**: Semiconductor shortages and equipment delays (2021–2022) may have influenced both the surge (as stockpiling occurred) and subsequent decline.
- **Shifts in Trade Policy & Eurozone Market Dynamics**: France's role as a gateway for U.S. machinery into the EU market may have amplified volatility depending on exchange rates, tariffs, or policy uncertainty.
- **Competition from European Suppliers**: French firms often source machinery from Germany and Italy, reducing reliance on U.S. suppliers after the 2022 peak.

Sources:

- U.S. Census Bureau Trade Data (HS Code 84)
- International Trade Administration (ITA) – U.S.–EU Machinery Sector Reports
- World Bank & IMF – France Industrial Output Trends

HS 38 – Miscellaneous Chemical Products

Miscellaneous Chemical Products	38



Year	$ Amount
2018	$67,725,792
2019	$68,585,386
2020	$70,800,243
2021	$71,516,175
2022	$77,928,166
2023	$66,656,528
2024	$108,942,874

Trend Narrative

Ohio's exports of miscellaneous chemical products to France have remained relatively stable from 2018 through 2022, ranging between $67M and $78M annually. In 2023, there was a dip to $66.6M, but exports rebounded significantly in 2024, rising to $108.9M-a five-year peak. This suggests a resurgence in demand or improved trade conditions after a period of modest stagnation. Overall, the long-term trajectory reflects a steady base of chemical trade with France, punctuated by recent growth momentum.

Key Drivers & Context

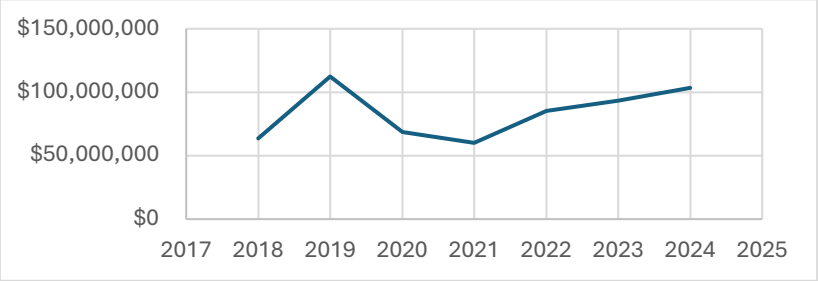
- **EU Regulatory Framework (REACH & Green Deal):** Compliance costs remain high, but firms that meet these standards gain strong market credibility in the EU.
- **France's Specialty Chemicals Sector:** France imports U.S. inputs for industries like pharmaceuticals, coatings, adhesives, and agriculture, where Ohio producers are competitive.
- **Industrial & Manufacturing Demand:** Growth in automotive, aerospace, and construction sectors in France supports imports of advanced U.S. chemical compounds.
- **Resilience Post-COVID:** After disruptions in 2020–2021, steady recovery in French manufacturing and R&D drove renewed imports.
- **Shift Toward High-Value Chemicals:** France increasingly relies on U.S. specialty and niche chemicals rather than bulk commodities, aligning with Ohio's export strengths.

Sources

- U.S. Census Bureau – International Trade & USA Trade Online (state-level HS code export data)
- ITA Country Commercial Guide: France (market overview of key U.S. export sectors)
- Eurostat COMEXT – International trade in goods database (EU import demand by HS sector)
- European Commission – REACH and EU Green Deal chemical regulations

HS 33 – Cosmetics, Perfumery, Essential Oils, Etc.

Cosmetics, Perfumery, Essential Oils, Etc.	33



Year	$ Amount
2018	$63,353,238
2019	$112,381,487
2020	$68,854,665
2021	$60,089,749
2022	$85,143,998
2023	$93,425,799
2024	$103,567,378

Trend Narrative:

Ohio's exports of cosmetics and related products to France started at $63.4M in 2018 and surged to $112.4M in 2019, reflecting strong French demand for imported U.S. beauty and wellness products. Exports fell to $68.9M in 2020 and $60.1M in 2021, driven by the pandemic's impact on retail sales, reduced discretionary spending, and supply-chain disruptions in luxury and personal care markets. Beginning in 2022, exports recovered strongly, reaching $85.1M, then rose to $93.4M in 2023 and $103.6M in 2024. This rebound aligns with global consumer recovery, renewed demand for U.S. skincare and essential oils, and diversification of sourcing in the French cosmetics sector.

Key Drivers & Context:

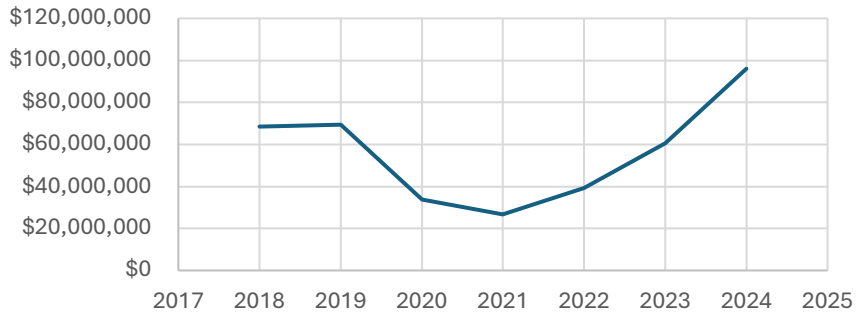
- **Policy/Trade Agreements:** France (as part of the EU) applies a common external tariff structure; U.S. cosmetic exports face regulatory hurdles (e.g., ingredient labeling rules) but strong consumer demand sustains volumes.
- **Economic Forces:** Pandemic-era contraction (2020–2021) depressed discretionary consumer spending on cosmetics and perfumes, followed by a strong rebound in 2022–2024 as luxury and skincare markets recovered.
- **Industry Dynamics:** France is itself a global leader in cosmetics (home to L'Oréal and luxury brands), yet U.S. exports fill niche categories such as natural skincare, essential oils, and wellness-focused formulations.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Consumer Goods*
- European Commission – *EU Tariff & Import Requirements for Cosmetics*
- Statista / Euromonitor – *French Cosmetics and Skincare Market Reports*
- Brookings – *Global Consumer Goods Trade Trends*

HS 81 – Base Metals Nesoi; Cermets; Articles Thereof

Base Metals Nesoi; Cermets; Articles Thereof	81



Year	$ Amount
2018	$68,462,890
2019	$69,402,056
2020	$33,883,296
2021	$26,696,542
2022	$39,185,423
2023	$60,489,129
2024	$96,034,141

Trend Narrative:

Exports of base metals (HS 81) from Ohio to France were strong and stable in 2018–2019 at roughly $68–69M. However, exports fell by half in 2020 ($33.9M) and declined further in 2021 ($26.7M), reflecting the global pandemic's disruption of industrial production and weakened demand for specialty and rare metals. A gradual recovery began in 2022 ($39.2M), accelerating in 2023 ($60.5M), and surging to $96.0M in 2024 — the highest level in the period. This rebound is consistent with recovering industrial demand, higher global prices for specialty metals (including tungsten, molybdenum, and cobalt), and increased sourcing from the U.S. amid European supply diversification efforts.

Key Drivers & Context:

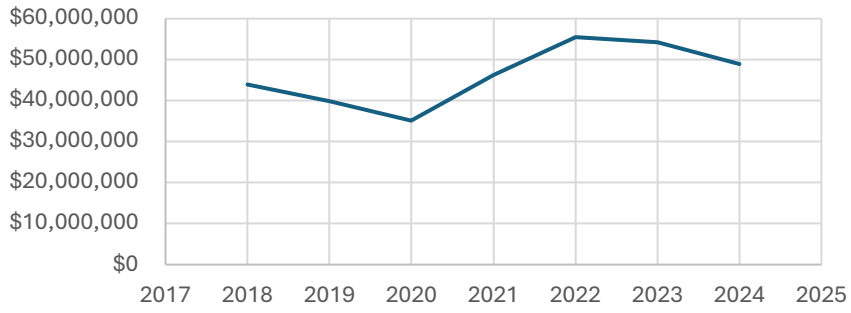
- **Policy/Trade Agreements:** France, through the EU, applies uniform tariffs; U.S. exports in this category are influenced more by industrial demand and global pricing than by tariff shifts.
- **Economic Forces:** The pandemic (2020–2021) suppressed industrial demand, while subsequent years saw global price spikes and a supply rebalancing due to geopolitical disruptions (e.g., sanctions on Russia, critical minerals demand).
- **Industry Dynamics:** HS 81 metals are critical for aerospace, electronics, and defense industries — all of which are highly relevant to France. Rising European demand for strategic metals in the energy transition (e.g., EV batteries, renewables) supported the strong 2023–2024 rebound.

Sources:

- U.S. Geological Survey (USGS) – *Minerals Yearbook: Specialty Metals*
- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Metals & Minerals*
- European Commission – *Critical Raw Materials Resilience Reports*
- International Energy Agency (IEA) – *Critical Minerals Market Outlook*

HS 90 – Optic/Photo/Medical Instruments

Optic/ Photo/ Medical Instruments	90



Year	$ Amount
2018	$43,919,532
2019	$39,927,805
2020	$35,125,597
2021	$46,351,870
2022	$55,490,198
2023	$54,259,894
2024	$48,993,554

Trend Narrative:

Exports of optical, photographic, and medical instruments from Ohio to France showed moderate volatility across 2018–2024. Exports fell from $43.9M in 2018 to $39.9M in 2019 and $35.1M in 2020, reflecting the pandemic's disruption of supply chains and reduced capital spending on diagnostic and industrial optical equipment. Recovery began in 2021 ($46.4M), accelerated in 2022 with a peak at $55.5M, and remained strong through 2023 ($54.3M). By 2024, exports moderated slightly to $49.0M, suggesting demand stabilized at a level above pre-pandemic norms.

Key Drivers & Context:

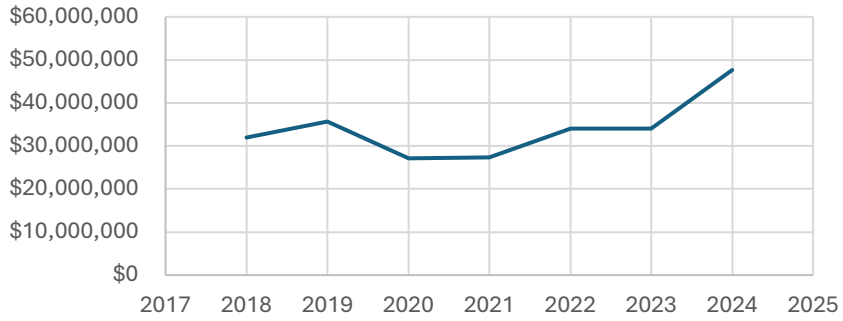
- **Policy/Trade Agreements:** U.S. exports to the EU face regulatory standards (CE marking, safety requirements), but France remains a strong importer of advanced medical and optical instruments.
- **Economic Forces:** 2020 declines were pandemic-driven, as elective procedures slowed and investment in non-essential equipment dropped. By 2021–2022, recovery was fueled by renewed hospital and medical demand, alongside industrial and scientific equipment investment.
- **Industry Dynamics:** France's advanced healthcare system and growing demand for diagnostic and precision equipment supported long-term growth. At the same time, global competition in medical technology remains high, with Germany and other EU producers being strong players.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Medical Devices and Optical Instruments*
- European Commission – *Medical Device Regulation (MDR) & Import Requirements*
- OECD – *Healthcare Spending and Technology Uptake in Europe*
- World Trade Organization (WTO) – *Trade Profiles: Medical Technology*

HS 39 – Plastics and Articles Thereof

Plastics and Articles Thereof	39



Year	$ Amount
2018	$32,011,699
2019	$35,744,595
2020	$27,127,587
2021	$27,399,511
2022	$33,978,864
2023	$34,083,144
2024	$47,649,632

Trend Narrative:

Ohio's exports of plastics and related articles to France rose modestly in 2018–2019 ($32.0M → $35.7M) before falling sharply in 2020 ($27.1M), reflecting pandemic-related slowdowns in industrial demand and supply chain disruptions. Exports remained flat in 2021 ($27.4M), then began recovering in 2022–2023 (around $34M each year). A strong rebound occurred in 2024, with exports climbing to $47.6M — the highest level in the period — suggesting both rising French demand for plastics in packaging, automotive, and construction applications, and higher global resin prices.

Key Drivers & Context:

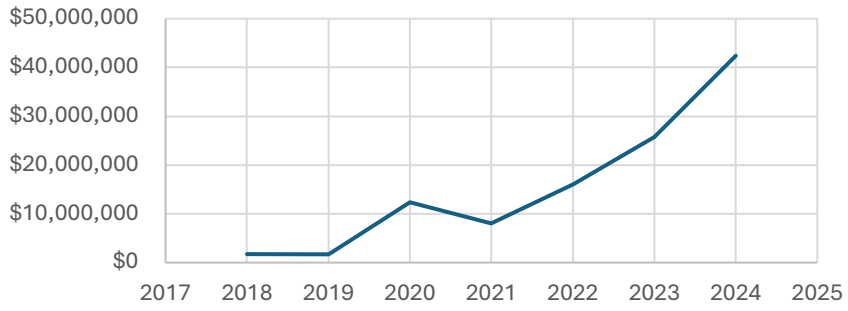
- **Policy/Trade Agreements:** As part of the EU, France maintains strict environmental regulations on plastics, but U.S. exporters benefit from consistent industrial demand.
- **Economic Forces:** 2020–2021 declines tied to pandemic-driven industrial contraction; recovery from 2022 onward reflects stabilization of global supply chains and rising demand.
- **Industry Dynamics:** Plastics are widely used in automotive, packaging, and building materials. France's push for recyclable and advanced materials may have driven demand for higher-quality imports in 2024.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Chemicals & Plastics*
- American Chemistry Council – *Plastics Trade and Market Reports*
- European Commission – *EU Plastics Strategy and Import Market Effects*
- OECD – *Plastics Outlook and Demand in Europe*

HS 75 – Nickel and Articles Thereof

Nickel and Articles Thereof	75



Year	$ Amount
2018	$1,760,910
2019	$1,695,364
2020	$12,313,622
2021	$8,058,046
2022	$16,002,787
2023	$25,727,390
2024	$42,398,438

Trend Narrative:

Ohio's nickel exports to France began at modest levels in 2018–2019 (about $1.7M annually). In 2020, exports spiked to $12.3M as global nickel demand rose for stainless steel and battery applications, even amid pandemic disruptions. After dipping to $8.1M in 2021, exports accelerated again, rising to $16.0M in 2022, $25.7M in 2023, and $42.4M in 2024 — the strongest growth trend among Ohio's industrial metal exports to France. This surge reflects both higher global nickel prices and Europe's push to secure reliable supplies of critical minerals to support its energy transition (EV batteries, renewable energy infrastructure).

Key Drivers & Context:

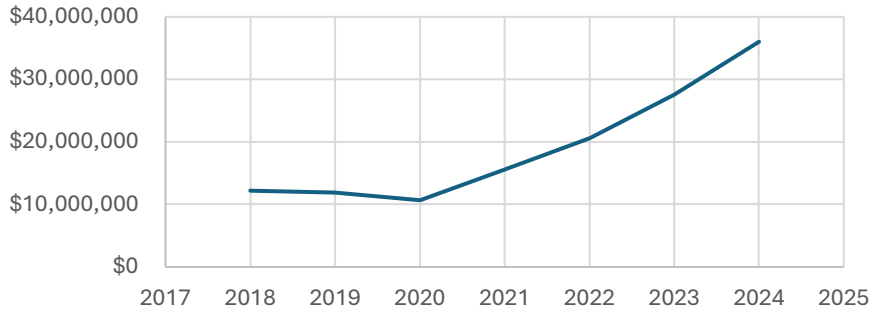
- **Policy/Trade Agreements:** France, as part of the EU, treats nickel as a strategic raw material, and U.S. exporters benefit from diversification of sourcing away from Russia and other politically sensitive suppliers.
- **Economic Forces:** Global nickel prices rose sharply after 2020, fueled by the growth of EV battery demand and supply risks linked to geopolitical events (notably Russia's major role in nickel supply).
- **Industry Dynamics:** Nickel is essential for stainless steel, aerospace alloys, and lithium-ion batteries. France's industrial base and energy transition goals have boosted demand, making this category a rapidly growing export opportunity for Ohio.

Sources:

- U.S. Geological Survey (USGS) – *Nickel Commodity Summaries*
- International Energy Agency (IEA) – *Critical Minerals Market Review*
- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Metals*
- European Commission – *Critical Raw Materials and Energy Transition Reports*

HS 73 – Iron and Steel Products

Iron and Steel Products	73



Year	$ Amount
2018	$12,168,845
2019	$11,913,440
2020	$10,670,510
2021	$15,623,659
2022	$20,557,784
2023	$27,535,466
2024	$36,020,234

Trend Narrative:

Ohio's iron and steel product exports to France began at $12.2M in 2018 and dipped slightly in 2019–2020 ($11.9M and $10.7M), reflecting softer global steel demand and pandemic-era disruptions. Exports rebounded in 2021 to $15.6M and expanded significantly through 2022 ($20.6M) and 2023 ($27.5M). By 2024, exports reached $36.0M — the highest of the period — signaling both a recovery in France's industrial activity and the impact of higher global steel prices and demand in construction, automotive, and machinery sectors.

Key Drivers & Context:

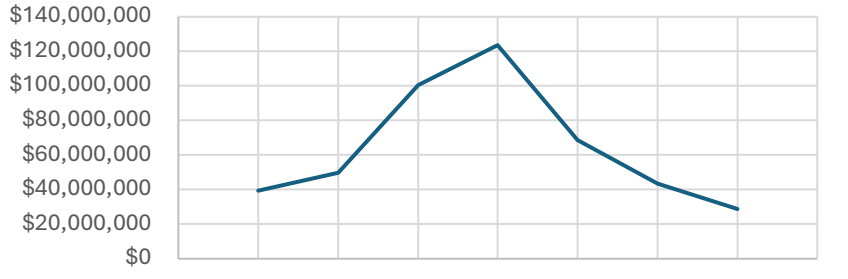
- **Policy/Trade Agreements:** While U.S. steel exports to the EU have faced periodic tariffs and quota regimes, France's demand for specialty and semi-finished products sustained Ohio's export growth.
- **Economic Forces:** Weakness in 2019–2020 tied to global steel overcapacity and pandemic shutdowns; recovery aligned with post-pandemic construction and industrial rebound.
- **Industry Dynamics:** Rising demand for steel in infrastructure projects, renewable energy installations, and automotive applications boosted exports in 2022–2024, alongside elevated global steel prices.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Iron and Steel Products*
- World Steel Association – *Steel Demand Outlook*
- European Commission – *EU Steel Safeguard and Trade Policy*
- OECD – *Global Steel Market Developments*

HS 85 – Electric Machinery; Sound Equip.; TV Equip

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$39,376,778
2019	$49,787,699
2020	$100,449,531
2021	$123,585,441
2022	$68,809,801
2023	$43,405,751
2024	$28,797,684

Trend Narrative:

Exports of electrical machinery and equipment from Ohio to France rose from $39.4M in 2018 to $49.8M in 2019, before surging in 2020 ($100.4M) and peaking in 2021 ($123.6M). This sharp increase reflected pandemic-driven demand for electronics, IT hardware, and communication equipment, as well as industrial purchases of advanced electrical machinery. However, beginning in 2022, exports fell significantly to $68.8M and declined further in 2023 ($43.4M) and 2024 ($28.8M). The decline likely reflects a mix of supply-chain normalization, reduced consumer electronics demand post-pandemic and increased European sourcing and competition in high-tech equipment sectors.

Key Drivers & Context:

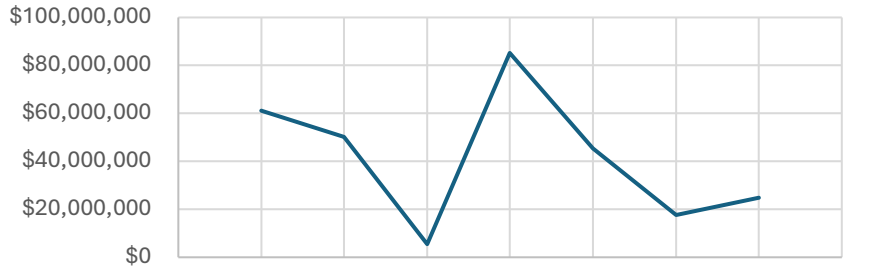
- **Policy/Trade Agreements:** The U.S. exports to the EU face standard tariffs and strict technical certification (CE marking); competition from European and Asian electronics manufacturers is intense.
- **Economic Forces:** Pandemic-era spikes in demand for electronics (2020–2021) gave way to declining orders as consumer demand cooled, inventories normalized, and France's tech imports diversified.
- **Industry Dynamics:** France's strong domestic and EU electronics sector (e.g., Siemens, Schneider, Philips) limited sustained U.S. growth. Ohio's exports likely focused on specialized machinery and high-end electronics, but these could not maintain the pandemic-era peaks.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Electrical Machinery*
- European Commission – *EU Electronics Market & Import Regulations*
- OECD – *ICT and Electronics Market Trends*
- World Bank – *Global Electronics Trade Flows*

HS 87 – Vehicles and Parts

Vehicles and Parts	87



Year	$ Amount
2018	$61,132,289
2019	$50,173,059
2020	$5,477,615
2021	$85,203,491
2022	$45,266,487
2023	$17,697,118
2024	$24,771,147

Trend Narrative:

Ohio's vehicle and parts exports to France fluctuated sharply from 2018–2024. After strong levels in 2018–2019 ($61.1M and $50.2M), exports collapsed in 2020 ($5.5M) due to COVID-19 shutdowns. A rebound in 2021 ($85.2M) was followed by steep declines in 2022–2023 ($45.3M → $17.7M), before a modest recovery in 2024 ($24.8M). These swings reflect global supply shocks, semiconductor shortages, and competition from France's domestic auto industry.

Key Drivers & Context:

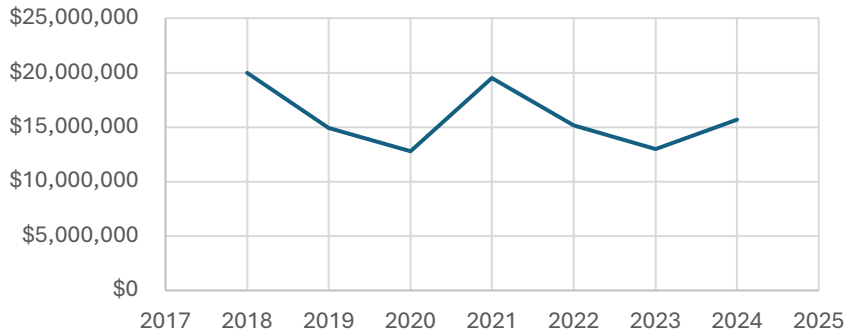
- **Policy/Trade Agreements:** U.S. exports of vehicles and parts to the EU face tariffs and strong competition from European automakers, which limits stable long-term growth.
- **Economic Forces:** The collapse in 2020 was pandemic-driven; the rebound in 2021 corresponded with reopening and pent-up consumer demand. Declines from 2022–2023 reflect semiconductor shortages, tighter European auto demand, and greater reliance on intra-EU supply chains.
- **Industry Dynamics:** France has a strong domestic auto industry (Renault, Peugeot, Citroën), so U.S. exports largely fill specialized niches. The volatility in Ohio's exports highlights the sensitivity of this trade flow to global supply shocks and demand cycles.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Transportation Equipment*
- European Automobile Manufacturers Association (ACEA) – *EU Auto Industry Reports*
- OECD – *Global Automotive Market Trends*
- Reuters/Bloomberg – *Semiconductor Shortages and Auto Trade Impacts (2020–2023)*

HS 29 – Organic Chemicals

Organic Chemicals 29



Year	$ Amount
2018	$19,975,793
2019	$14,891,920
2020	$12,780,348
2021	$19,520,024
2022	$15,154,488
2023	$13,003,344
2024	$15,675,508

Trend Narrative:
Ohio's exports of organic chemicals to France have shown consistent fluctuations. Exports were strong in 2018 ($20.0M), but declined steadily through 2019–2020 ($14.9M → $12.8M) amid slower demand and pandemic-driven supply constraints. A rebound occurred in 2021 ($19.5M), though this was not sustained, as values slipped again in 2022 ($15.2M) and 2023 ($13.0M). In 2024, exports recovered modestly to $15.7M. Overall, the trade pattern reflects cyclical demand tied to France's pharmaceuticals, plastics, and chemical industries, with volatility influenced by global pricing and production cycles.

Key Drivers & Context:

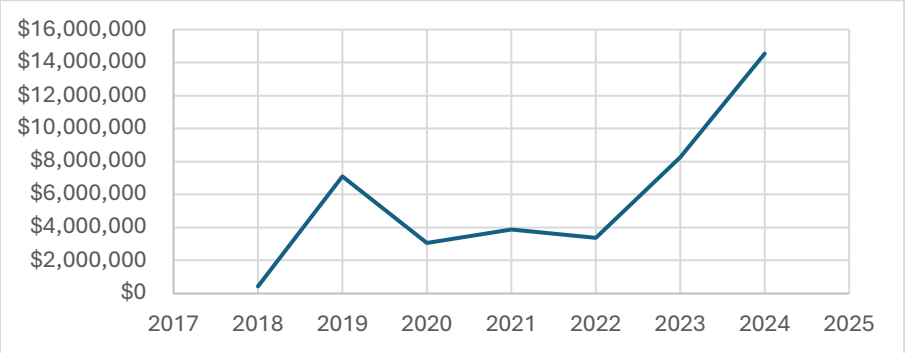
- **Policy/Trade Agreements:** Organic chemicals face strict EU regulatory frameworks (REACH standards), but U.S. suppliers remain competitive in pharmaceutical and specialty chemical segments.
- **Economic Forces:** Demand dropped in 2019–2020 due to global slowdown and COVID-19 disruptions. Recovery in 2021 reflected strong pharmaceutical and industrial demand, though market competition kept volumes volatile thereafter.
- **Industry Dynamics:** Organic chemicals are core inputs for pharma, plastics, and industrial processes. France's reliance on EU-based chemical production creates competition, limiting sustained growth in U.S. exports despite periodic rebounds.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Chemicals*
- European Chemicals Agency (ECHA) – *REACH Regulatory Framework*
- OECD – *Chemical Industry Outlook*
- Statista / Marketline – *France Chemical Market Reports*

HS 97 – Works of Art, Collectors Pieces and Antiques

Works of Art, Collectors Pieces and Antiques	97



Year	$ Amount
2018	$431,121
2019	$7,086,697
2020	$3,073,299
2021	$3,886,738
2022	$3,392,395
2023	$8,278,757
2024	$14,540,040

Trend Narrative:

Exports of works of art and antiques from Ohio to France were minimal in 2018 ($0.43M) but spiked to $7.1M in 2019. Values dipped during 2020–2022 (ranging between $3.1M and $3.9M) as the global art trade slowed under pandemic restrictions, auction delays, and reduced international sales. From 2023 onward, however, exports rebounded strongly — rising to $8.3M in 2023 and surging further to $14.5M in 2024, the highest level in the period. This sharp growth reflects recovery in the global art market, renewed auction activity, and increased French demand for U.S. works of art and collectors' items.

Key Drivers & Context:

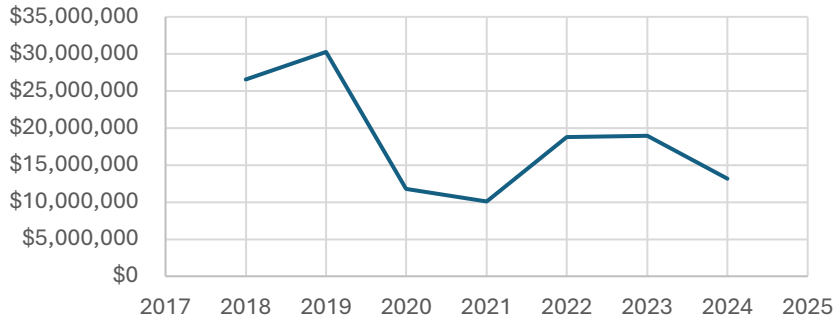
- **Policy/Trade Agreements:** Art and antique exports face fewer tariff barriers but are subject to customs regulations and provenance requirements under EU law.
- **Economic Forces:** Pandemic-era downturn limited art transactions, but recovery brought stronger auction sales and private collections entering the market.
- **Industry Dynamics:** France (with Paris as a global art hub) remains a major destination for high-value art trade. U.S. art exports benefit from strong transatlantic demand, especially in post-pandemic recovery years.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Miscellaneous Manufactured Commodities*
- Art Basel & UBS – *The Art Market Reports*
- European Commission – *Customs and Provenance Regulations for Art Imports*
- OECD – *Cultural Trade Trends and Statistics*

HS 76 – Aluminum and Articles Thereof

Aluminum and Articles Thereof	76



Year	$ Amount
2018	$26,557,403
2019	$30,266,760
2020	$11,803,128
2021	$10,090,742
2022	$18,771,185
2023	$18,911,968
2024	$13,128,406

Trend Narrative:

Ohio's aluminum exports to France peaked early in 2019 at $30.3M before collapsing during 2020–2021 ($11.8M → $10.1M), reflecting pandemic-driven supply chain disruptions and weakened industrial activity. A recovery occurred in 2022 and 2023 (around $18.8M–$18.9M), but exports declined again in 2024 to $13.1M. The overall pattern highlights sensitivity to global demand cycles, with exports tied to fluctuations in the aerospace, automotive, and construction sectors where aluminum is a critical input.

Key Drivers & Context:

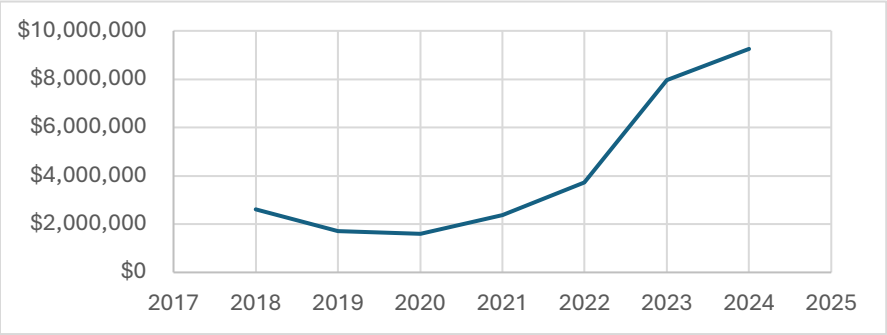
- **Policy/Trade Agreements:** U.S. aluminum exports to the EU have been affected by trade tensions (including tariffs in 2018–2021), though temporary tariff suspensions helped partially stabilize flows.
- **Economic Forces:** Sharp declines in 2020–2021 reflect the pandemic's severe impact on aerospace and auto manufacturing, both major aluminum consumers.
- **Industry Dynamics:** Aluminum demand in France is closely linked to Airbus and other industrial production. Recovery in 2022–2023 was consistent with renewed aerospace activity, but the 2024 dip suggests either reduced orders or increased EU internal sourcing.

Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Metals & Aluminum*
- OECD – *Aluminum Market Outlook*
- European Commission – *EU-U.S. Trade Tariff Agreements (Steel & Aluminum)*
- Reuters/Bloomberg – *Global Aluminum Market and Demand Trends*

HS 83 - Miscellaneous Articles of Base Metal

Miscellaneous Articles of Base Metal	83



Year	$ Amount
2018	$2,621,838
2019	$1,696,383
2020	$1,597,574
2021	$2,359,345
2022	$3,734,336
2023	$7,974,620
2024	$9,252,944

Trend Narrative:

Ohio's exports of miscellaneous base metal articles to France began at $2.6M in 2018 and dipped through 2019–2020 (around $1.6–1.7M) during weaker demand and pandemic disruptions. From 2021 onward, exports steadily increased — first modestly ($2.4M in 2021), then accelerating to $3.7M in 2022, before more than doubling in 2023 ($8.0M) and reaching $9.3M in 2024. This growth indicates a rising demand in France for specialized hardware, fasteners, fittings, and other fabricated base metal articles, with momentum building in the post-pandemic industrial recovery.

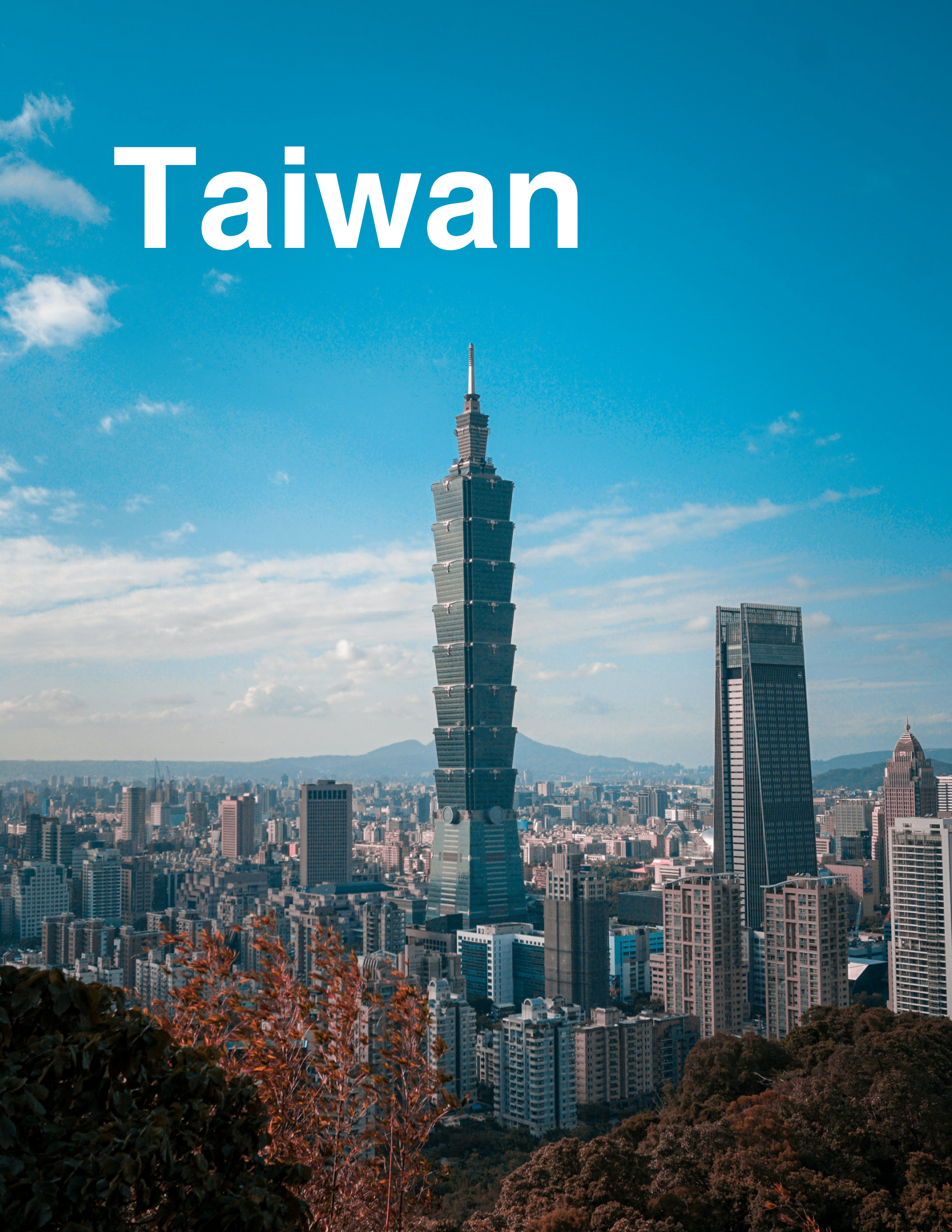
Key Drivers & Context:

- **Policy/Trade Agreements:** U.S. exports to the EU face standard tariffs but no major trade barriers specific to these articles; competitiveness depends on quality and industrial need.
- **Economic Forces:** Low levels in 2019–2020 reflect reduced industrial production and pandemic disruptions; the strong climb after 2022 aligns with Europe's industrial recovery and infrastructure investment.
- **Industry Dynamics:** France's automotive, construction, and machinery sectors rely on imported base metal components. Ohio exports benefited as supply chains diversified and demand for industrial inputs rose.

Sources:

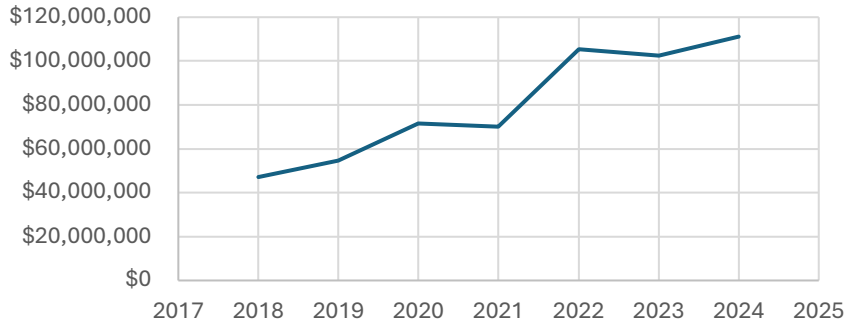
- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Metals & Manufactured Goods*
- OECD – *Global Industrial Metals Demand Outlook*
- European Commission – *EU Market Reports on Industrial Components*
- World Bank – *France Industrial Production and Trade Trends*

Taiwan



HS 84 – Industrial Machinery, Including Computers

Industrial Machinery, Including Computers 84



Year	$ Amount
2018	$47,135,597
2019	$54,752,370
2020	$71,692,389
2021	$70,095,245
2022	$105,389,866
2023	$102,588,410
2024	$111,146,061

Trend Narrative:

Exports of industrial machinery and computers from Ohio to Taiwan have shown strong growth, rising from $47.1M in 2018 to $111.1M in 2024. The period 2018–2020 saw steady gains, with exports climbing to $71.7M in 2020, reflecting Taiwan's high demand for U.S. machinery to support its advanced manufacturing and semiconductor industries. A slight dip occurred in 2021 ($70.1M), likely due to pandemic-era supply chain disruptions, but exports surged in 2022 ($105.4M) and remained above $100M in both 2023 and 2024. The sustained high levels underscore Taiwan's strategic reliance on U.S. machinery and computer equipment to drive its globally dominant semiconductor and electronics industries.

Key Drivers & Context:

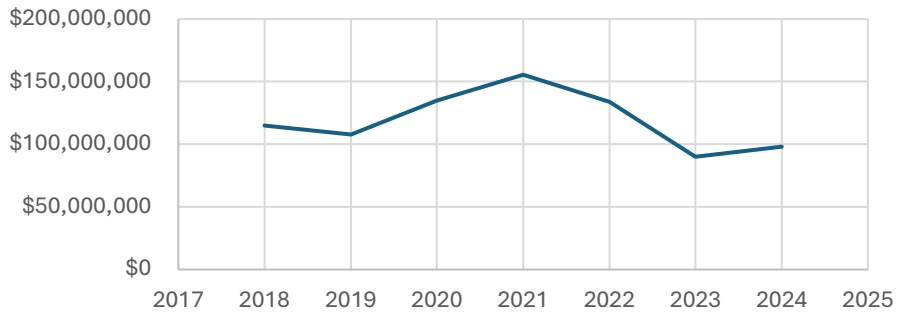
- **Policy/Trade Relations:** The U.S. and Taiwan maintain strong trade ties, particularly in high-tech sectors; while not covered by a free trade agreement, Taiwan is a critical U.S. partner in advanced manufacturing.
- **Economic Forces:** Taiwan's world-leading semiconductor industry drives constant demand for precision machinery, automation, and computing equipment.
- **Industry Dynamics:** Growth in exports is linked to Taiwan's investment in capacity expansion for TSMC and other manufacturers, as well as diversification efforts to secure critical machinery supply from trusted U.S. partners.

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Machinery and Electronics*
- Taiwan Semiconductor Manufacturing Company (TSMC) – *Annual Reports and Investment Announcements*
- Office of the U.S. Trade Representative – *U.S.-Taiwan Trade Facts*
- Austrade & OECD Trade Data – *Taiwan Industrial Investment Trends*

HS 39 – Plastics and Articles Thereof

Plastics and Articles Thereof 39



Year	$ Amount
2018	$114,944,727
2019	$107,904,557
2020	$135,132,660
2021	$155,533,671
2022	$134,122,798
2023	$90,060,665
2024	$98,136,187

Trend Narrative:

Exports of plastics and related articles from Ohio to Taiwan began at $114.9M in 2018 and dipped slightly in 2019 ($107.9M). A strong upward surge followed, reaching $135.1M in 2020 and peaking at $155.5M in 2021, reflecting robust Taiwanese demand for plastics in electronics, packaging, and industrial manufacturing. However, exports contracted to $134.1M in 2022 and fell more sharply to $90.1M in 2023, before stabilizing at $98.1M in 2024. The recent downturn highlights slowing global demand for plastics, shifting supply chains, and greater reliance on regional Asian producers, though the U.S. continues to play a role in supplying high-performance and specialty plastics.

Key Drivers & Context:

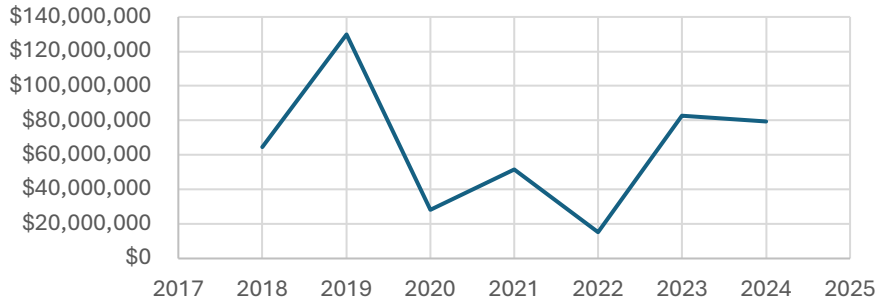
- **Policy/Trade Relations:** While Taiwan and the U.S. lack a formal FTA, strong industrial cooperation supports steady demand for U.S. plastics.
- **Economic Forces:** Pandemic-era surges in 2020–2021 reflected increased packaging and electronics production. The 2022–2023 decline aligns with lower global resin prices and Taiwan's diversified sourcing.
- **Industry Dynamics:** Taiwan's heavy reliance on plastics for semiconductors, electronics, and manufacturing sustains demand, though U.S. exports are strongest in niche/specialty applications versus commodity plastics dominated by Asian suppliers.

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Chemicals & Plastics*
- American Chemistry Council – *Global Plastics Outlook*
- Office of the U.S. Trade Representative – *U.S.-Taiwan Trade Facts*
- Taiwan Ministry of Economic Affairs – *Manufacturing and Industrial Input Trends*

HS 88 – Aircraft and Parts

Aircraft and Parts	88



Year	$ Amount
2018	$64,702,515
2019	$129,841,557
2020	$28,183,311
2021	$51,732,412
2022	$15,241,553
2023	$82,880,288
2024	$79,548,695

Trend Narrative:

Exports of aircraft and parts from Ohio to Taiwan have been highly volatile. In 2018, exports reached $64.7M before doubling in 2019 to $129.8M, likely reflecting major procurement contracts or fleet upgrades. However, 2020 saw a sharp collapse to $28.2M, coinciding with the global aviation downturn during the pandemic. Recovery was partial in 2021 ($51.7M), but exports again dropped to $15.2M in 2022. A strong rebound occurred in 2023 ($82.9M) and remained elevated in 2024 ($79.5M), suggesting resumed procurement activity, possibly tied to Taiwan's military modernization programs and continued investments in civil aviation.

Key Drivers & Context:

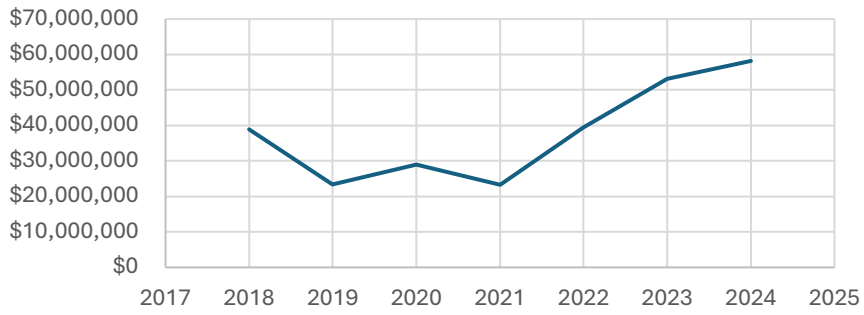
- **Policy/Defense Relations:** Taiwan's strategic defense buildup, with strong U.S. alignment, drives periodic surges in aircraft and parts imports.
- **Economic Forces:** The steep 2020 and 2022 declines align with the pandemic's impact on global aviation and delays in procurement cycles.
- **Industry Dynamics:** Taiwan relies heavily on the U.S. for advanced aircraft and defense-related parts, while civil aviation demand reflects cyclical airline fleet renewals.

Sources:

- U.S. Department of Commerce – *International Trade Administration: Aerospace & Defense Trade*
- Taiwan Ministry of National Defense – *Defense Procurement and Modernization Reports*
- U.S.-Taiwan Business Council – *Defense Industry Updates*
- Aerospace Industries Association – *Global Aerospace Trade Data*

HS 85 – Electric Machinery; Sound Equipment; TV Equipment

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$38,979,622
2019	$23,443,844
2020	$29,001,980
2021	$23,284,682
2022	$39,380,264
2023	$53,176,019
2024	$58,198,977

Trend Narrative:

Exports of electric machinery, sound equipment, and TV equipment from Ohio to Taiwan displayed a volatile but upward trajectory. After reaching $39.0M in 2018, exports fell sharply in 2019 ($23.4M) and remained subdued through 2021, reflecting global trade uncertainty and pandemic-related supply chain disruptions. However, exports rebounded strongly in 2022 ($39.4M) and surged further in 2023 ($53.2M), reaching $58.2M in 2024 — the highest level of the period. This growth aligns with Taiwan's expanding semiconductor and electronics sectors, where demand for advanced U.S. machinery and electronic components supports production capacity upgrades and diversification efforts.

Key Drivers & Context:

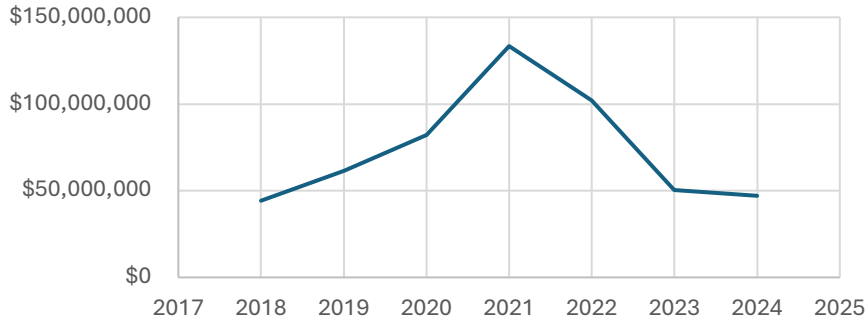
- **Policy/Trade Relations:** While Taiwan and the U.S. lack an FTA, strong bilateral trade, especially in high-tech, ensures a steady market for U.S. electronics and equipment.
- **Economic Forces:** The rebound in 2022–2024 reflects Taiwan's aggressive investments in semiconductor and electronics manufacturing, where U.S. exports fill critical gaps in specialized machinery and components.
- **Industry Dynamics:** U.S. exports are concentrated in high-value and specialized electronics, where American firms complement Taiwan's dominant semiconductor ecosystem rather than competing in commodity-grade electronics dominated by Asian suppliers.

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Electronics & Electrical Machinery*
- Taiwan Ministry of Economic Affairs – *Semiconductor and Electronics Industry Reports*
- Office of the U.S. Trade Representative – *U.S.-Taiwan Trade Facts*
- Semiconductor Industry Association – *U.S.-Taiwan High-Tech Cooperation*

HS 12 – Oil Seed, Miscellaneous Grain

Oil Seed, Miscellaneous Grain	12



Year	$ Amount
2018	$44,232,820
2019	$61,346,736
2020	$82,097,463
2021	$133,397,474
2022	$101,999,379
2023	$50,363,033
2024	$47,154,360

Trend Narrative:

Exports of oil seeds and miscellaneous grains from Ohio to Taiwan expanded strongly between 2018 and 2021, rising from $44.2M to a peak of $133.4M in 2021. This surge reflects Taiwan's reliance on imported soybeans, corn, and related grains to support its food processing and livestock feed industries. The sharp growth also aligns with global price increases and demand spikes during the pandemic, when supply chain disruptions reshaped agricultural trade flows. After 2021, exports fell significantly, declining to $102.0M in 2022 and dropping further to about $47.2M by 2024. This downward shift highlights normalization in commodity markets, intensified regional competition (notably from South America), and Taiwan's diversification of grain suppliers to reduce import dependency from any single country.

Key Drivers & Context:

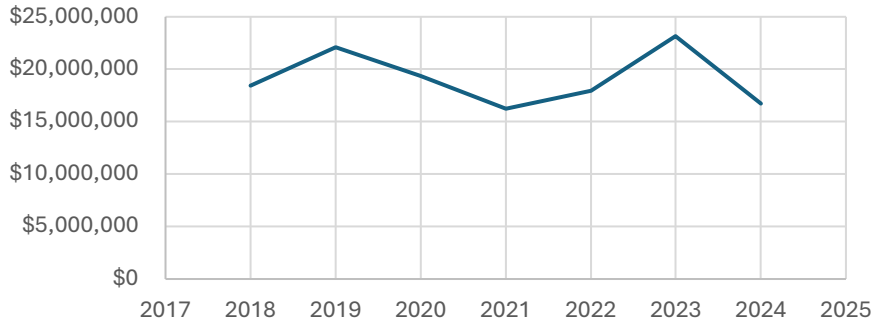
- **Policy/Trade Relations:** Taiwan is a major importer of U.S. soybeans and grains, but it actively diversifies sourcing between the U.S., Brazil, and Argentina to mitigate risks.
- **Economic Forces:** Prices surged in 2020–2021 due to global supply chain disruptions and high agricultural demand, lifting U.S. export values. Since then, easing prices and competition have reduced trade volumes.
- **Industry Dynamics:** U.S. exports remain competitive in quality and reliability, but shipping costs and Asia's geographic ties to South America influence Taiwan's sourcing decisions.

Sources:

- U.S. Department of Agriculture (USDA) – *U.S. Agricultural Exports to Taiwan*
- U.S. Soybean Export Council – *Taiwan Market Reports*
- Taiwan Council of Agriculture – *Grain and Oilseed Import Statistics*
- World Bank – *Global Commodity Price Data*

HS 90 – Optic/Photo/Medical Instruments

Optic/ Photo/ Medical Instruments **90**



Year	$ Amount
2018	$18,413,316
2019	$22,079,215
2020	$19,379,632
2021	$16,235,265
2022	$17,919,916
2023	$23,154,594
2024	$16,748,192

Trend Narrative:

Exports of optical, photographic, and medical instruments from Ohio to Taiwan have fluctuated within a relatively narrow range over the 2018–2024 period, averaging around $19M annually. Exports peaked at $22.1M in 2019 and again reached $23.2M in 2023, reflecting periodic spikes in demand for advanced medical equipment and precision instruments. However, declines in 2021 ($16.2M) and 2024 ($16.7M) suggest sensitivity to procurement cycles and competition from Asian and European suppliers. Overall, the market remains modest but strategically important, with U.S. exports playing a niche role in supplying specialized medical devices, diagnostic equipment, and optical instruments that complement Taiwan's own manufacturing capabilities.

Key Drivers & Context:

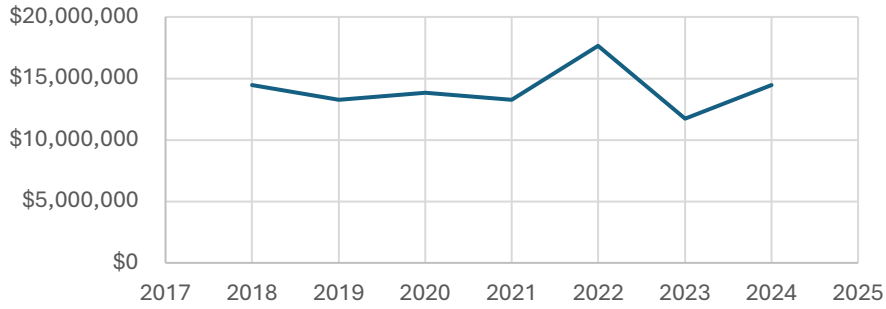
- **Policy/Trade Relations:** Taiwan's advanced healthcare sector drives ongoing demand for U.S. medical instruments, even without a formal FTA.
- **Economic Forces:** Spikes in 2019 and 2023 align with health infrastructure investments and possible pandemic-driven needs for diagnostic and optical technologies.
- **Industry Dynamics:** Taiwan manufactures many of its own optical and imaging technologies, but U.S. exports fill gaps in highly specialized, high-quality medical devices and instruments.

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Medical Devices and Instruments*
- Taiwan Ministry of Health and Welfare – *Medical Technology and Healthcare Investment Reports*
- Office of the U.S. Trade Representative – *U.S.-Taiwan Trade Facts*
- MedTech Intelligence – *Global Medical Device Market Trends*

HS 38 – Miscellaneous Chemical Products

Miscellaneous Chemical Products	38



Year	$ Amount
2018	$14,476,436
2019	$13,262,215
2020	$13,826,098
2021	$13,240,751
2022	$17,648,800
2023	$11,727,732
2024	$14,439,038

Trend Narrative:

Exports of miscellaneous chemical products from Ohio to Taiwan remained relatively stable between 2018 and 2021, fluctuating narrowly between $13M–$14M. A noticeable uptick occurred in 2022, reaching $17.6M, likely tied to increased industrial and manufacturing demand as Taiwan expanded capacity in high-tech production and chemical-intensive sectors. However, this gain was followed by a sharp decline in 2023 ($11.7M), reflecting weaker global chemical demand and intensified supply competition from Asian producers. In 2024, exports rebounded moderately to $14.4M, indicating stabilization but not a return to the 2022 high. The trend suggests Taiwan sources most of its bulk and commodity-grade chemicals regionally, while U.S. exports are concentrated in niche, high-performance chemical categories.

Key Drivers & Context:

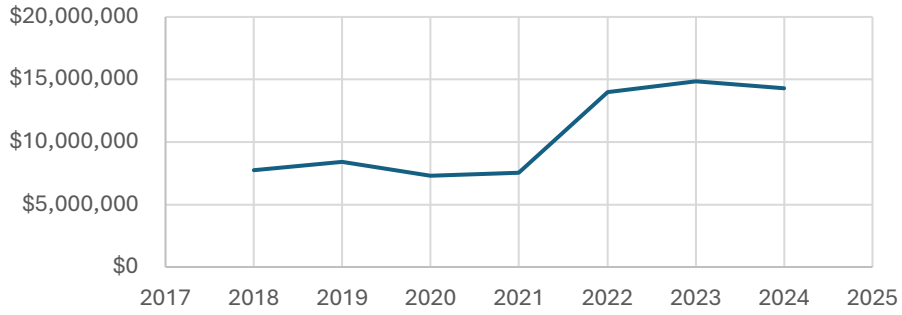
- **Policy/Trade Relations:** Strong bilateral ties support steady U.S. exports, though without an FTA, U.S. suppliers compete on cost with Asian and European firms.
- **Economic Forces:** The 2022 spike reflected industrial restocking and higher demand for specialty chemicals, while the 2023 dip aligned with global chemical industry slowdowns and softer prices.
- **Industry Dynamics:** Taiwan's reliance on chemicals for semiconductor, electronics, and manufacturing keeps baseline demand stable, but cost-sensitive segments are often supplied by closer Asian markets.

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Chemicals & Related Products*
- Taiwan Ministry of Economic Affairs – *Industrial Production and Chemical Inputs Data*
- Office of the U.S. Trade Representative – *U.S.-Taiwan Trade Facts*
- OECD – *Global Chemicals Trade and Pricing Trends*

HS 70 – Glass and Glassware

Glass and Glassware	70



Year	$ Amount
2018	$7,746,047
2019	$8,389,864
2020	$7,298,860
2021	$7,539,513
2022	$13,985,897
2023	$14,850,524
2024	$14,273,742

Trend Narrative:

Exports of glass and glassware from Ohio to Taiwan started relatively modest, averaging between $7M–$8M from 2018 to 2021. A major shift occurred in 2022, when exports nearly doubled to $14.0M, and growth continued into 2023 ($14.9M), before slightly easing in 2024 ($14.3M). This surge reflects Taiwan's rising demand for specialized glass products, particularly in high-tech industries such as semiconductors, displays, and precision optics — sectors where Ohio manufacturers play a role in supplying high-quality, specialized glassware. The data suggests that Taiwan's advanced manufacturing push, especially for LCD panels and semiconductors, has increased reliance on imported specialty glass inputs from the U.S.

Key Drivers & Context:

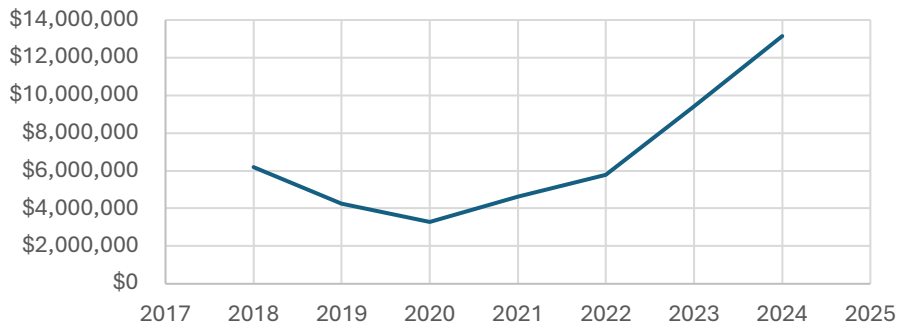
- **Policy/Trade Relations:** Taiwan's strong integration in global electronics and display supply chains fuels steady demand for high-performance glass imports from the U.S.
- **Economic Forces:** The jump in 2022–2023 corresponds with Taiwan's industrial expansion in semiconductor fabrication and electronics, which require specialized glass in production and testing processes.
- **Industry Dynamics:** While Taiwan produces standard glass domestically, U.S. exports remain competitive in niche, high-spec applications such as optical glass, laboratory glassware, and specialty coatings.

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Glass and Specialty Materials*
- Taiwan Ministry of Economic Affairs – *Electronics & Semiconductor Industry Reports*
- Office of the U.S. Trade Representative – *U.S.-Taiwan Trade Facts*
- International Trade Centre (ITC) – *Glassware and Specialty Inputs Trade Data*

HS 74 – Copper and Articles Thereof

Copper and Articles Thereof	74



Year	$ Amount
2018	$6,193,259
2019	$4,244,697
2020	$3,282,860
2021	$4,627,563
2022	$5,788,321
2023	$9,427,948
2024	$13,145,824

Trend Narrative:

Exports of copper and articles thereof from Ohio to Taiwan began at $6.2M in 2018 but fell steadily through 2020, reaching a low of $3.3M. Modest recovery occurred in 2021 and 2022, before surging sharply in 2023 ($9.4M) and again in 2024 ($13.1M) — the highest level of the period. This recent rebound reflects Taiwan's intensified demand for copper, a critical input in semiconductors, electrical wiring, and renewable energy infrastructure. The sharp rise in 2023–2024 aligns with global copper price increases and Taiwan's heavy investments in expanding its semiconductor capacity and green energy initiatives.

Key Drivers & Context:

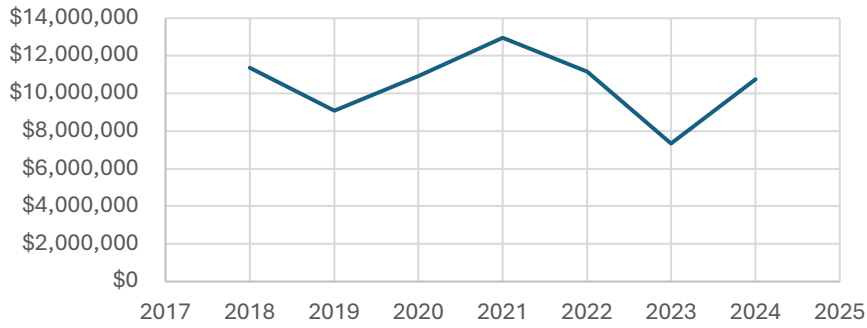
- **Policy/Trade Relations:** Taiwan's reliance on U.S. and global copper sources ties into its electronics-driven economy, though it also imports heavily from Chile and other copper-rich countries.
- **Economic Forces:** The surge in 2023–2024 corresponds with rising global copper prices and demand linked to the clean energy transition, including electric vehicles and grid infrastructure.
- **Industry Dynamics:** Taiwan's semiconductor and electronics industries — both copper-intensive — continue to drive strong demand, offering opportunities for U.S. exporters despite regional supply competition.

Sources:

- U.S. Geological Survey (USGS) – *Mineral Commodity Summaries: Copper*
- International Copper Study Group – *Global Copper Market Data*
- Taiwan Ministry of Economic Affairs – *Semiconductor and Renewable Energy Reports*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Metals and Raw Materials*

HS 34 – Soap, Waxes, Lubricating Preparations, etc.

Soap, Waxes, Lubricating Preparations, etc.	34



Year	$ Amount
2018	$11,355,572
2019	$9,100,446
2020	$10,914,711
2021	$12,961,828
2022	$11,172,727
2023	$7,339,725
2024	$10,755,331

Trend Narrative:
Exports of soap, waxes, and lubricating preparations to Taiwan have generally fluctuated within the $9M–$13M range, showing a peak in 2021 at nearly $13M. After that high, shipments declined in 2022 and dropped further in 2023 ($7.4M), likely due to weaker demand in industrial lubricants and chemical formulations, alongside supply competition from regional producers. However, 2024 saw a partial recovery to $10.8M, suggesting a rebound in demand. The long-term pattern indicates that U.S. exports in this sector serve a mix of consumer and industrial needs but face volatility tied to global oil prices (impacting wax and lubricants) and Taiwan's own strong domestic production in soaps and cleaning products.

Key Drivers & Context:

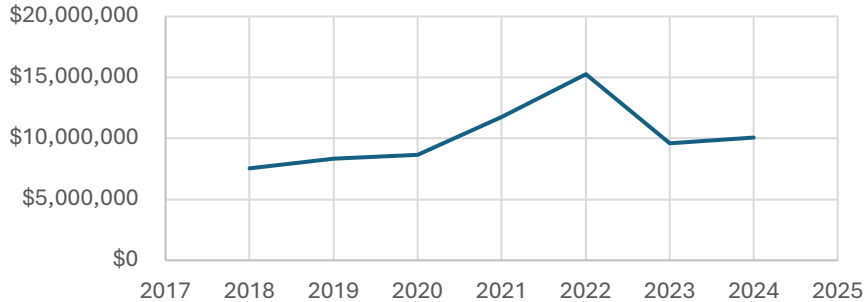
- **Policy/Trade Relations:** No FTA, but Taiwan's chemical industry creates both competition and complementary opportunities for U.S. specialty products.
- **Economic Forces:** The sharp 2023 decline aligns with post-pandemic market adjustments and weaker global lubricant demand due to slower industrial output.
- **Industry Dynamics:** U.S. exports are competitive in specialized, higher-quality waxes and lubricants (industrial or technical applications), while Taiwan tends to meet its domestic demand for consumer-grade soaps and detergents.

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Chemicals & Related Products*
- Taiwan Ministry of Economic Affairs – *Chemical Industry Reports*
- Office of the U.S. Trade Representative – *U.S.-Taiwan Trade Facts*
- OECD – *Global Trade in Chemicals and Lubricants*

HS 32 – Tanning, Dye, Paint, Putty

Tanning, Dye, Paint, Putty	32



Year	$ Amount
2018	$7,542,729
2019	$8,310,794
2020	$8,669,391
2021	$11,743,675
2022	$15,259,865
2023	$9,587,634
2024	$10,059,430

Trend Narrative:

Exports of tanning materials, dyes, paints, and putty from Ohio to Taiwan have shown steady growth from 2018 through 2022, peaking at $15.3M in 2022. This rise reflects Taiwan's strong demand for industrial coatings, pigments, and specialty chemicals linked to electronics, textiles, and construction. However, exports dropped in 2023 ($9.6M) before slightly recovering in 2024 ($10.1M). This recent volatility likely mirrors global raw material price shifts, tighter environmental regulations affecting chemical imports, and slower industrial activity in Taiwan. Despite this, U.S. exporters continue to play a role in supplying specialized dyes and coatings not produced domestically at scale.

Key Drivers & Context:

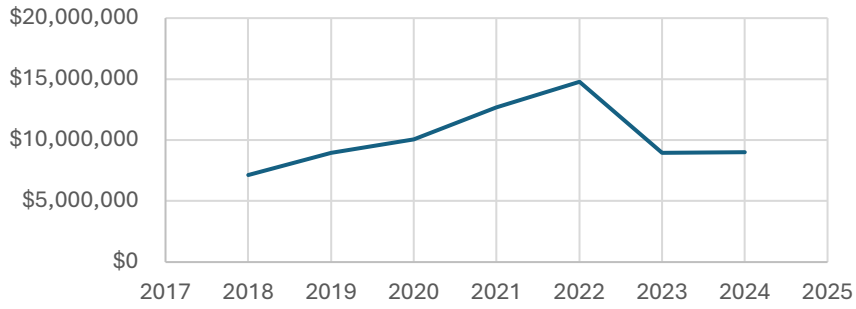
- **Policy/Trade Relations:** Taiwan's chemical imports are influenced by safety and environmental standards, but the U.S. remains competitive in specialty coatings and high-value additives.
- **Economic Forces:** 2022's peak corresponds with global construction and manufacturing rebounds post-pandemic, while the 2023 decline is tied to weaker industrial demand and high energy costs.
- **Industry Dynamics:** Taiwan's electronics and textile sectors are major consumers of dyes and paints. U.S. products have an advantage in advanced coatings and eco-friendly formulations, supporting ongoing but fluctuating demand.

Sources:

- U.S. International Trade Commission – *Chemical and Specialty Products Trade Reports*
- OECD – *Trends in Global Chemical Trade*
- Taiwan Ministry of Economic Affairs – *Textile and Electronics Industry Reports*
- American Coatings Association – *Global Paint and Coatings Market Outlook*

HS 73 – Iron and Steel Products

Iron and Steel Products **73**



Year	$ Amount
2018	$7,136,221
2019	$8,931,533
2020	$10,054,491
2021	$12,671,557
2022	$14,779,694
2023	$8,970,447
2024	$9,026,818

Trend Narrative:
Ohio's iron and steel product exports to Taiwan experienced strong and consistent growth from 2018 through 2022, more than doubling to nearly $14.8M in 2022. This upward trend coincided with Taiwan's rising demand for steel inputs in construction, infrastructure, and electronics-related manufacturing. However, 2023 marked a sharp contraction (falling to $9.0M) due to weakening global steel prices, higher energy costs, and softened demand in Taiwan's housing and manufacturing sectors. Exports stabilized in 2024 at a similar level ($9.0M), suggesting the market corrected after the 2022 peak. The volatility highlights the cyclical nature of steel demand, which is highly sensitive to global commodity prices and infrastructure investment cycles.

Key Drivers & Context:

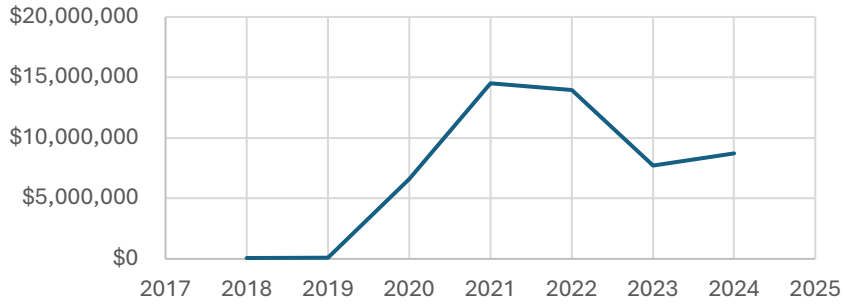
- **Commodity Price Cycles:** 2022 peak exports align with a global surge in steel demand and high raw material costs, while the 2023 drop reflects global steel price corrections.
- **Taiwan's Manufacturing Base:** Steel products support Taiwan's machinery, electronics, and automotive industries, providing ongoing baseline demand even when construction slows.
- **Trade & Supply Chains:** Taiwan often sources iron and steel products from Asian producers (e.g., Japan, South Korea, China). U.S. suppliers, like those in Ohio, fill niches in specialty steel products or when Asian supply tightens.
- **Economic Context:** Taiwan's slowed construction and manufacturing growth in 2023 dampened demand, but U.S. exports stabilized in 2024, suggesting a potential foundation for renewed growth.

Sources:

- U.S. International Trade Administration – *Steel and Metals Trade Data*
- World Steel Association – *Global Steel Market Outlook 2022–2024*
- Taiwan Ministry of Economic Affairs – *Industrial and Construction Demand Reports*
- OECD – *Steel Market Developments*

HS 10 – Cereals

Cereals	10



Year	$ Amount
2018	$70,670
2019	$89,816
2020	$6,615,541
2021	$14,512,479
2022	$13,967,356
2023	$7,740,361
2024	$8,708,598

Trend Narrative:

Ohio's exports of cereals to Taiwan were minimal in 2018–2019 (less than $100K annually). In 2020, shipments surged to $6.6M, coinciding with global food security concerns and increased Asian grain imports during the COVID-19 pandemic. The trend accelerated in 2021, reaching $14.5M, supported by high international grain prices and strong Taiwanese demand for wheat and feed grains. Exports remained elevated in 2022 ($14.0M) before falling to $7.7M in 2023, reflecting price normalization and shifts in sourcing. In 2024, exports edged slightly higher to $8.7M, indicating stabilization at a mid-range level compared to the 2021–2022 peaks.

Key Drivers & Context:

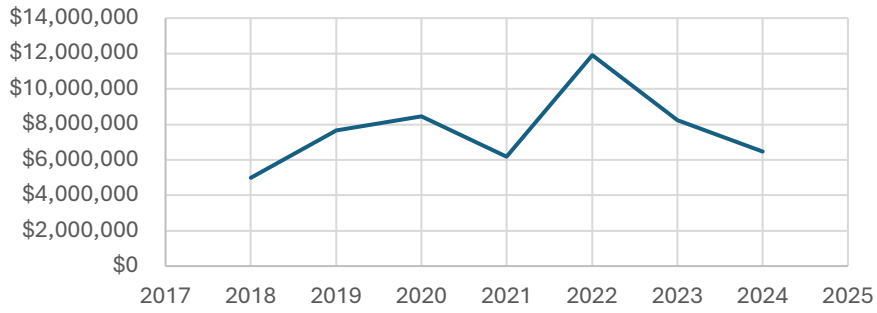
- **Policy/Trade Agreements:** Taiwan maintains a consistent import market for U.S. cereals; no major tariff barriers affected Ohio exports.
- **Economic Forces:** The 2020–2022 spike reflects global grain price volatility, pandemic-related stockpiling, and supply disruptions (e.g., Ukraine-Russia conflict impacting global wheat/corn trade).
- **Industry Dynamics:** Taiwan relies heavily on imports for cereals, particularly wheat and corn for food and feed use, which makes its demand sensitive to global market fluctuations.

Sources:

- USDA Foreign Agricultural Service (FAS) – *Taiwan Grain and Feed Annual Reports*
- U.S. Grains Council – *Taiwan Market Outlook*
- FAO – *Global Food Price Index (2020–2023)*
- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Agricultural Products*

HS 75 – Nickel and Articles Thereof

Nickel and Articles Thereof 75



Year	$ Amount
2018	$4,983,677
2019	$7,659,468
2020	$8,447,169
2021	$6,171,617
2022	$11,909,168
2023	$8,239,910
2024	$6,449,319

Trend Narrative:

Ohio's exports of nickel and related articles to Taiwan began at $4.98M in 2018 and grew steadily through 2019 ($7.66M) and 2020 ($8.45M). In 2021, values fell back to $6.17M, reflecting weakened global demand and pandemic-related supply constraints. A surge occurred in 2022, with exports nearly doubling to $11.91M, driven by spikes in global nickel prices following supply disruptions and strong demand from Taiwan's stainless steel and electronics sectors. However, the momentum eased in 2023 ($8.24M) and declined further in 2024 ($6.45M), likely reflecting both the normalization of nickel prices and moderating industrial demand.

Key Drivers & Context:

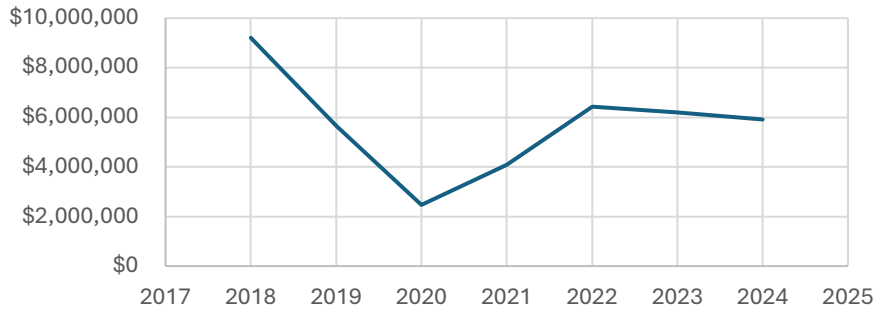
- **Policy/Trade Agreements:** U.S.-Taiwan trade remained tariff-stable; demand was driven primarily by industrial needs, not policy shifts.
- **Economic Forces:** Global nickel prices spiked in 2022 due to Russia's invasion of Ukraine, as Russia is a major global supplier.
- **Industry Dynamics:** Taiwan's role as a hub for stainless steel and electronics manufacturing strongly influences demand for nickel imports; fluctuations in these industries impacted Ohio's export levels.

Sources:

- U.S. Geological Survey (USGS) – *Nickel Commodity Summaries*
- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade, Metals & Minerals*
- International Energy Agency (IEA) – *Critical Minerals Market Review*
- Reuters/Bloomberg – global nickel price trends (2021–2023)

HS 33 – Cosmetics, Perfumery, Essential Oils, etc.

Cosmetics, Perfumery, Essential Oils, etc.	33



Year	$ Amount
2018	$9,205,393
2019	$5,643,685
2020	$2,467,774
2021	$4,085,761
2022	$6,419,477
2023	$6,203,164
2024	$5,909,025

Trend Narrative:

Exports of cosmetics and related products from Ohio to Taiwan peaked in 2018 at $9.2M but fell sharply over the next two years, declining to $5.64M in 2019 and reaching a low of $2.47M in 2020. This downturn reflected reduced consumer spending during the COVID-19 pandemic, supply-chain disruptions, and shifts in demand toward essential goods. A recovery began in 2021 ($4.09M) and accelerated in 2022 ($6.42M), buoyed by the return of consumer activity and increased demand for skincare and wellness products in Taiwan. Since then, exports have stabilized around $6M annually, with 2023 at $6.20M and 2024 at $5.91M, suggesting a plateau rather than continued growth.

Key Drivers & Context:

- **Policy/Trade Agreements:** U.S.-Taiwan trade in cosmetics has remained open and relatively barrier-free, with demand driven by market preferences rather than tariffs.
- **Economic Forces:** The 2020 decline was tied to pandemic-era reductions in discretionary spending; subsequent recovery reflects post-pandemic consumer rebound.
- **Industry Dynamics:** Rising demand in Asia for U.S. and Western-branded cosmetics, especially skincare and essential oils, supports a steady export base. Competition from Korea and Japan limits Ohio's long-term growth potential in this sector.

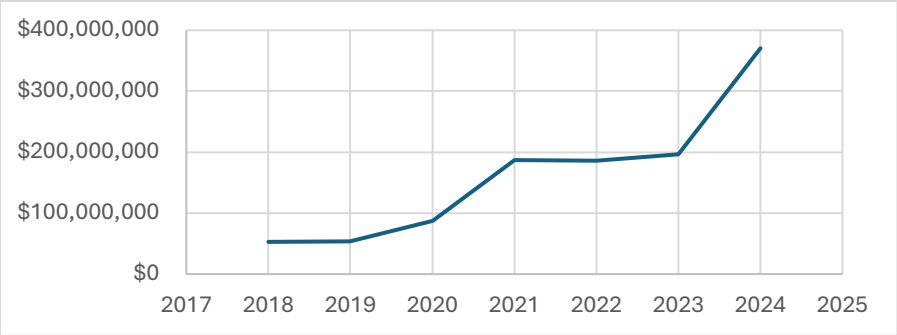
Sources:

- U.S. International Trade Commission (USITC) – *Shifts in U.S. Merchandise Trade: Chemicals & Consumer Products*
- USDA Foreign Agricultural Service (FAS) – *Taiwan Consumer Products Reports*
- Euromonitor / Statista – *Cosmetics and Personal Care Market in Taiwan*
- Brookings – *U.S.-Asia Consumer Goods Trade Trends*

Australia

HS 87 – Vehicles and Parts

Vehicles and Parts	87



Year	$ Amount
2018	$52,818,169
2019	$54,047,621
2020	$87,056,703
2021	$186,898,662
2022	$185,550,245
2023	$196,357,902
2024	$370,484,887

Trend Narrative:

Ohio's vehicle and parts exports to Australia began at a modest level of $52.8M in 2018 and $54.0M in 2019. Despite global trade disruptions, exports rose to $87.1M in 2020, indicating resilient demand for U.S. automotive equipment in the Australian market. A sharp increase occurred in 2021, nearly doubling to $186.9M, driven by post-pandemic recovery, Australian fleet renewal, and increased demand for specialized U.S.-made automotive parts. This elevated level held steady through 2022 ($185.6M) and 2023 ($196.4M). In 2024, exports surged to $370.5M, marking a historic high—likely reflecting Australia's accelerated adoption of U.S. vehicles and parts, shifts in supply chains due to U.S.-Australia defense/strategic agreements, and demand linked to both commercial and consumer fleets.

Key Drivers & Context:

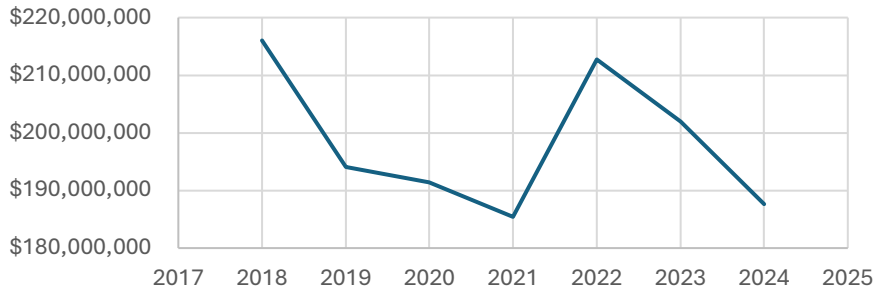
- **Policy/Trade Agreements:** U.S.-Australia Free Trade Agreement (AUSFTA) ensures tariff-free treatment for autos and parts, underpinning long-term growth.
- **Economic Forces:** Australia's strong post-pandemic recovery and high vehicle turnover rates contributed to demand.
- **Industry Dynamics:** Rising need for replacement parts, off-road and utility vehicles (popular in Australia), and possible defense-related shipments supported export growth, particularly in 2024.

Sources:

- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA) Overview*
- U.S. Department of Commerce – *International Trade Administration: Automotive Exports to Australia*
- Austrade – *Automotive Market Outlook*
- USITC – *Shifts in U.S. Merchandise Trade, Transportation Equipment*

HS 84 – Industrial Machinery, Including Computers

Industrial Machinery, Including Computers	84



Year	$ Amount
2018	$216,028,538
2019	$194,126,513
2020	$191,445,835
2021	$185,421,103
2022	$212,784,787
2023	$201,980,802
2024	$187,646,532

Trend Narrative:

Exports of industrial machinery and computers from Ohio to Australia began strongly in 2018 ($216.0M) but fell to $194.1M in 2019 and $191.4M in 2020, reflecting weaker investment cycles and the onset of pandemic-related slowdowns. The decline continued into 2021 ($185.4M) as COVID-19 restrictions reduced industrial demand. A recovery emerged in 2022 ($212.8M), supported by strong Australian infrastructure and mining investment, before softening again in 2023 ($202.0M) and 2024 ($187.6M). The recent downward shift suggests cyclical moderation in demand for imported U.S. machinery and increased competition from Asian suppliers, particularly China and Japan, who are major machinery exporters to Australia.

Key Drivers & Context:

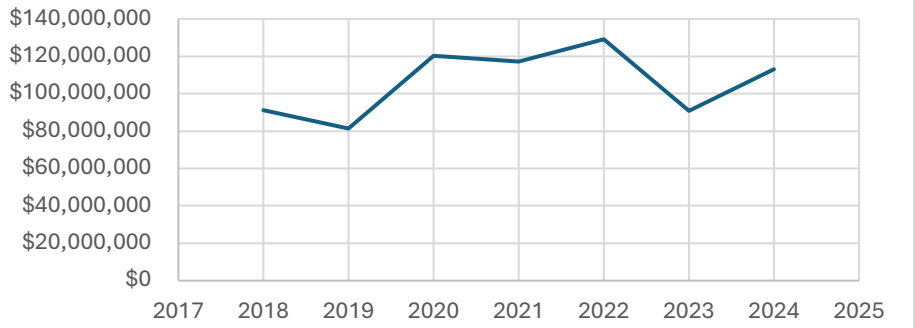
- **Policy/Trade Agreements:** The U.S.-Australia Free Trade Agreement (AUSFTA) ensures tariff-free access, providing a stable trade environment.
- **Economic Forces:** Demand tied to mining, energy, and infrastructure projects drove the 2022 rebound; weaker business investment explains 2023–2024 declines.
- **Industry Dynamics:** Rising competition from Asian machinery exporters and Australian firms' pivot to cost-effective sourcing options limited U.S. market share.

Sources:

- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- Austrade – *Australian Machinery and Equipment Industry Outlook*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Industrial Machinery*
- OECD – *Investment Trends in Australia*

HS 85 – Electric Machinery; Sound Equipment; TV Equipment

Electric Machinery; Sound Equip.; TV Equip.	85



Year	$ Amount
2018	$91,092,368
2019	$81,364,885
2020	$120,376,546
2021	$117,285,262
2022	$129,105,233
2023	$90,967,746
2024	$112,976,517

Trend Narrative:

Exports of electrical machinery and electronics from Ohio to Australia started at $91.1M in 2018 before dipping to $81.4M in 2019. Demand surged in 2020 ($120.4M) despite global disruptions, reflecting Australia's reliance on U.S. equipment for communications, specialized electronics, and industrial systems. Exports remained elevated in 2021 ($117.3M) and peaked in 2022 ($129.1M) as Australian investment in energy infrastructure, telecommunications, and consumer electronics increased. However, trade values fell back to $91.0M in 2023, partly due to softened consumer spending and increased sourcing from Asian suppliers. A partial rebound occurred in 2024 ($113.0M), suggesting renewed demand in industrial and defense-related electronics.

Key Drivers & Context:

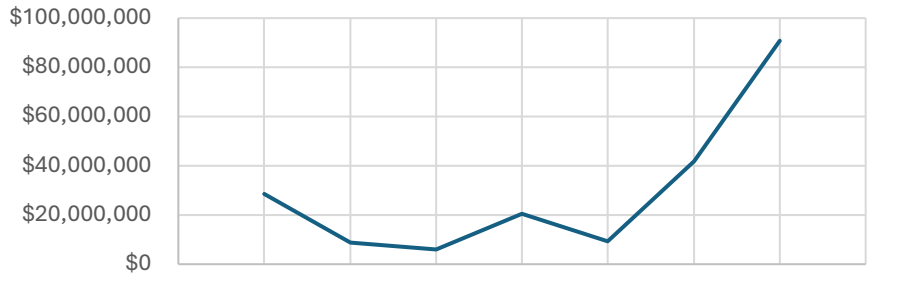
- **Policy/Trade Agreements:** AUSFTA ensures tariff-free trade, giving U.S. electronics a competitive position.
- **Economic Forces:** Shifts in Australian consumer demand and business investment cycles strongly influence imports.
- **Industry Dynamics:** U.S. exports compete with strong Asian suppliers (China, South Korea, Japan). Peaks in 2020–2022 likely tied to Australian infrastructure upgrades and resilience planning during/post-COVID.

Sources:

- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- Austrade – *Electronics and Telecommunications Market Outlook*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Electronics*
- OECD – *Australia Investment Outlook*

HS 88 – Aircraft and Parts

Aircraft and Parts	88



Year	$ Amount
2018	$28,533,589
2019	$8,799,844
2020	$5,988,170
2021	$20,455,233
2022	$9,201,842
2023	$41,716,636
2024	$90,789,610

Trend Narrative:

Exports of aircraft and parts from Ohio to Australia fluctuated sharply over the 2018–2024 period. In 2018, exports totaled $28.5M before collapsing to just $8.8M in 2019 and further to $6.0M in 2020, reflecting disruptions in global aviation demand during the pandemic and reduced procurement activity. A partial rebound occurred in 2021 ($20.5M), but values dropped again in 2022 ($9.2M). A strong turnaround emerged in 2023 ($41.7M) and accelerated dramatically in 2024 ($90.8M), representing the highest export value of the period. This surge likely reflects increased defense-related procurement, Australia's military modernization programs, and post-pandemic recovery in commercial aviation, supported by closer U.S.–Australia defense cooperation under the AUKUS alliance framework.

Key Drivers & Context:

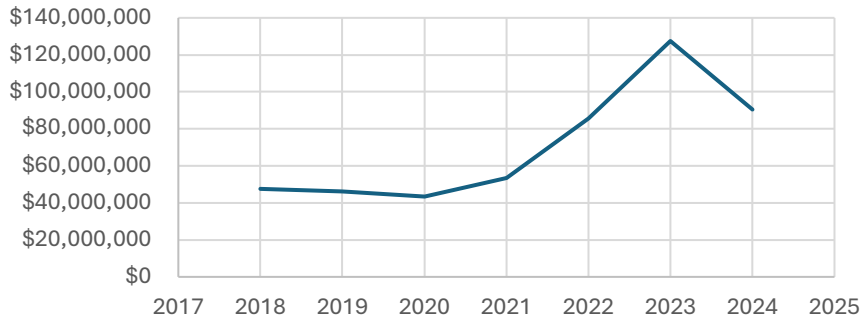
- **Policy/Defense Agreements:** The U.S.–Australia alliance and AUKUS security pact have boosted aerospace and defense trade flows.
- **Economic Forces:** Civil aviation downturn (2019–2020) from the pandemic depressed demand, while recovery in airline fleet renewal supported later growth.
- **Industry Dynamics:** Defense procurement (fighter jets, spare parts, maintenance contracts) and commercial fleet upgrades explain the strong rise in 2023–2024.

Sources:

- U.S. Department of Commerce – *International Trade Administration: Aerospace & Defense Exports to Australia*
- Australian Department of Defence – *Defence Strategic Review and Procurement Priorities*
- Office of the U.S. Trade Representative – *U.S.-Australia Trade Facts*
- Aerospace Industries Association – *Global Aerospace Trade Reports*

HS 33 – Cosmetics, Perfumery, Essential Oils, etc.

Cosmetics, Perfumery, Essential Oils, etc.	33



Year	$ Amount
2018	$47,537,649
2019	$46,148,789
2020	$43,413,080
2021	$53,569,153
2022	$85,764,185
2023	$127,486,252
2024	$90,590,301

Trend Narrative:

Exports of cosmetics and related products from Ohio to Australia were relatively stable between 2018 and 2020, averaging around $45M annually. Growth began in 2021 ($53.6M) and surged in 2022 ($85.8M), peaking at $127.5M in 2023. This boom reflects strong consumer demand for U.S. beauty and wellness products, the expansion of e-commerce platforms, and the premium positioning of American cosmetics in the Australian market. By 2024, exports moderated to $90.6M, though still nearly double pre-2021 levels. This dip likely reflects softer consumer spending amid inflationary pressures in Australia and stronger competition from Asian and European cosmetics brands.

Key Drivers & Context:

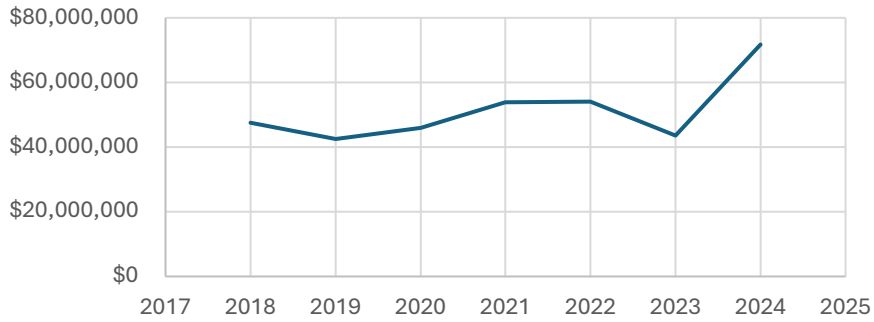
- **Policy/Trade Agreements:** AUSFTA provides duty-free access, allowing U.S. cosmetics brands to compete strongly in the premium market segment.
- **Economic Forces:** Rising Australian disposable income and consumer spending on health/beauty fueled growth through 2023; inflation and currency fluctuations constrained demand in 2024.
- **Industry Dynamics:** U.S. cosmetic brands have strong recognition and demand in Australia, particularly in skincare and wellness. E-commerce platforms and influencer marketing accelerated adoption, though competition from Korean and European brands intensified.

Sources:

- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- Austrade – *Australian Cosmetics and Personal Care Market Insights*
- Euromonitor – *Australia Beauty & Personal Care Market Report*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Cosmetics and Essential Oils*

HS 90 – Optic / Photo / Medical Instruments

Optic / Photo / Medical Instruments 90



Year	$ Amount
2018	$47,648,152
2019	$42,524,289
2020	$45,872,480
2021	$53,809,357
2022	$54,044,041
2023	$43,593,126
2024	$71,751,682

Trend Narrative:

Exports of optical, photographic, and medical instruments from Ohio to Australia fluctuated but showed an overall upward trajectory by 2024. After modest levels between 2018–2020 ($42–47M), demand rose to $53.8M in 2021 and remained steady in 2022 ($54.0M), likely reflecting heightened investment in healthcare and medical equipment during and after the pandemic. Exports dipped again in 2023 ($43.6M) but rebounded sharply in 2024 to $71.8M — the highest value in the period. This surge suggests strong procurement of U.S. diagnostic devices, optical instruments, and specialized medical technologies, driven by Australia's healthcare expansion and modernization.

Key Drivers & Context:

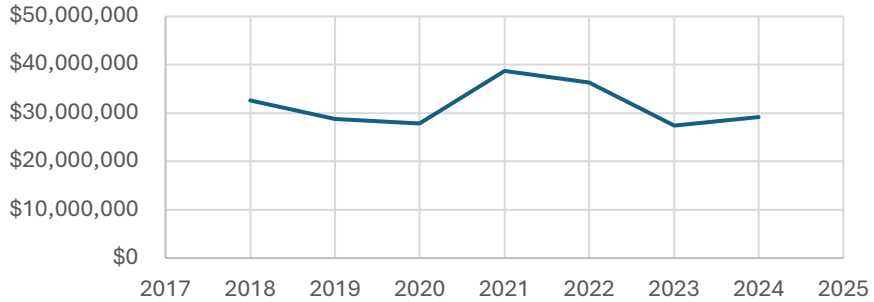
- **Policy/Trade Agreements:** Duty-free access under AUSFTA gives U.S. medical and optical devices a strong position in Australia.
- **Economic Forces:** Australian healthcare spending increased significantly in the post-pandemic period, fueling demand for advanced U.S. medical technologies.
- **Industry Dynamics:** Growth areas include diagnostic imaging equipment, surgical instruments, and high-precision optical devices. The 2024 spike suggests either large institutional purchases or defense/aviation-related optical systems complementing medical demand.

Sources:

- U.S. International Trade Administration – *Medical Device Market in Australia*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- Austrade – *Healthcare & Medical Technology in Australia*
- USITC – *Shifts in U.S. Merchandise Trade: Optical and Medical Instruments*

HS 39 – Plastics and Articles Thereof

Plastics and Articles Thereof	39



Year	$ Amount
2018	$32,669,738
2019	$28,839,069
2020	$27,922,802
2021	$38,736,837
2022	$36,304,837
2023	$27,426,967
2024	$29,171,370

Trend Narrative:

Exports of plastics and related articles from Ohio to Australia were relatively modest but steady, starting at $32.7M in 2018 before dipping in 2019–2020 ($28.8M and $27.9M). A recovery followed in 2021 ($36.7M) and remained stable in 2022 ($36.3M), reflecting stronger industrial demand tied to packaging, automotive, and construction materials. However, exports fell sharply again in 2023 ($27.4M) before slightly recovering in 2024 ($29.2M). The overall trend suggests that while Australia has periodic needs for U.S. plastics, much of its demand is met by closer Asian suppliers, limiting consistent growth for Ohio exports.

Key Drivers & Context:

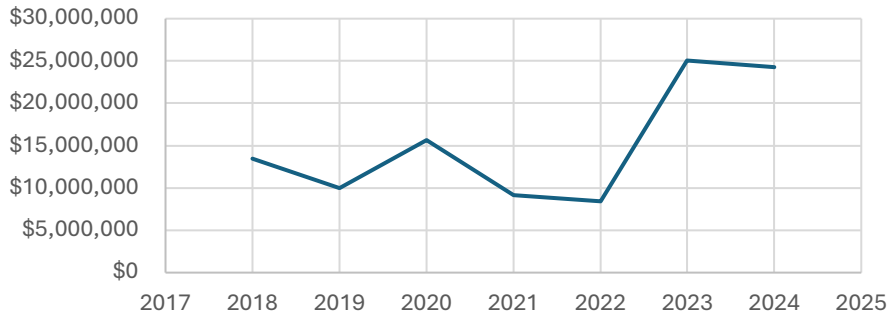
- **Policy/Trade Agreements:** AUSFTA ensures tariff-free plastics trade, but distance and logistics costs limit competitiveness against Asian suppliers.
- **Economic Forces:** Demand rises during construction and industrial expansion cycles (e.g., 2021–2022) but weakens when local or regional suppliers can fill gaps.
- **Industry Dynamics:** Plastics trade is highly price-sensitive; U.S. exports are less dominant compared to higher-value or specialized categories (e.g., medical instruments, defense).

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Plastics and Chemicals*
- Austrade – *Australia Plastics and Packaging Industry Outlook*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- American Chemistry Council – *Global Plastics Trade Reports*

HS 30 – Pharmaceutical Products

Pharmaceutical Products **30**



Year	$ Amount
2018	$13,483,190
2019	$9,952,969
2020	$15,632,272
2021	$9,129,665
2022	$8,422,459
2023	$25,054,583
2024	$24,280,194

Trend Narrative:

Pharmaceutical exports from Ohio to Australia remained relatively low and fluctuating between 2018 and 2022, with values ranging from $8.4M to $15.6M. The period reflects Australia's reliance on global pharmaceutical suppliers and competitive sourcing from Europe and Asia. In 2023, exports surged to $25.1M — nearly triple 2022 levels — and remained high in 2024 at $24.3M. This sharp rise likely reflects increased U.S. pharmaceutical shipments tied to specialty drugs, vaccines, or medical treatments, alongside closer healthcare cooperation and post-pandemic demand for diversified supply chains.

Key Drivers & Context:

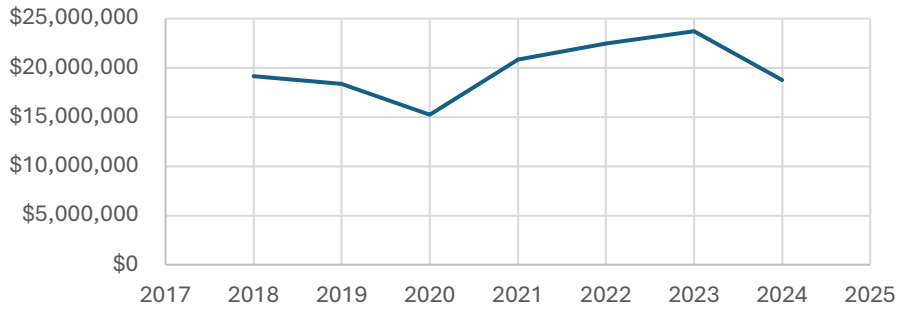
- **Policy/Trade Agreements:** AUSFTA provides tariff-free access, helping U.S. pharmaceutical firms compete in Australia's regulated healthcare market.
- **Economic Forces:** The pandemic highlighted supply chain vulnerabilities, driving Australia to diversify pharmaceutical imports, including greater reliance on U.S. producers.
- **Industry Dynamics:** Specialty and high-value pharmaceuticals (e.g., biologics, oncology drugs, vaccines) are primary U.S. export strengths, while generics are sourced more cheaply from India and Europe. The 2023–2024 jump may be tied to institutional procurement contracts or expanded FDA–TGA cooperation.

Sources:

- Austrade – *Pharmaceutical and Life Sciences Market in Australia*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Pharmaceuticals*
- OECD – *Healthcare Spending and Pharmaceutical Imports in Australia*

HS 73 – Iron and Steel Products

Iron and Steel Products	73



Year	$ Amount
2018	$19,181,908
2019	$18,358,579
2020	$15,239,912
2021	$20,850,199
2022	$22,484,594
2023	$23,722,696
2024	$18,769,481

Trend Narrative:

Ohio's iron and steel product exports to Australia remained relatively modest but showed cyclical swings tied to global commodity markets. Exports declined between 2018 ($19.2M) and 2020 ($15.2M), reflecting softer demand and trade frictions in the global steel sector. A recovery began in 2021 ($20.9M), with growth continuing in 2022 ($22.5M) and peaking in 2023 ($23.7M), supported by strong Australian infrastructure and mining investment cycles. However, 2024 saw a decline to $18.8M, in line with falling global steel prices and slower construction demand in Australia.

Key Drivers & Context:

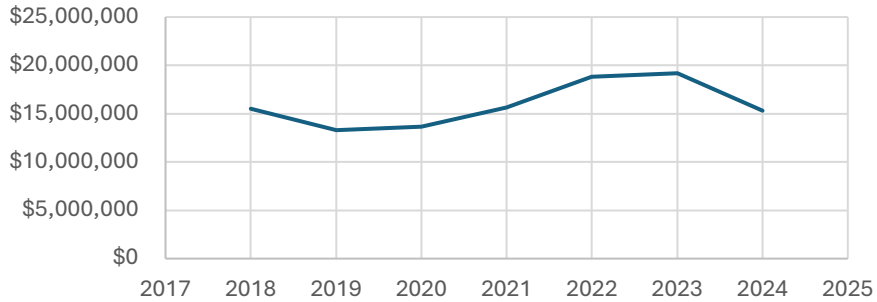
- **Policy/Trade Agreements:** AUSFTA guarantees tariff-free steel trade, but logistics and shipping costs limit U.S. competitiveness versus Asian suppliers.
- **Economic Forces:** Demand rose during infrastructure and resource-sector investment booms but fell when construction slowed or global steel prices weakened.
- **Industry Dynamics:** Australia imports specialized steel products and fabricated goods from the U.S., but bulk steel is more cost-effectively sourced regionally (China, Japan, Korea).

Sources:

- World Steel Association – *Global Steel Market Outlook*
- Austrade – *Australian Infrastructure and Construction Market Reports*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Iron and Steel Products*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*

HS 34 – Soap, Waxes, Lubricating Preparations, etc.

Soap, Waxes, Lubricating Preparations, etc.	34



Year	$ Amount
2018	$15,521,644
2019	$13,293,864
2020	$13,651,994
2021	$15,611,920
2022	$18,843,053
2023	$19,186,511
2024	$15,320,707

Trend Narrative:
Exports of soaps, waxes, and lubricating preparations from Ohio to Australia have remained relatively steady but modest in value, ranging between $13M and $19M throughout most of the period. After dipping in 2019–2020, exports recovered in 2021 ($15.6M) and rose to peak levels in 2022–2023 ($18.8M and $19.2M). These gains likely reflected higher demand for industrial lubricants, cleaning agents, and specialty waxes during Australia's post-pandemic recovery and construction activity. In 2024, however, exports declined back to $15.3M, pointing to normalized demand and increased substitution by local or regional suppliers.

Key Drivers & Context:

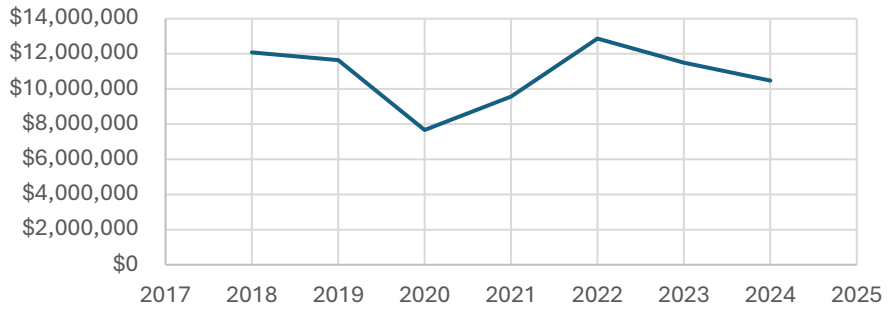
- **Policy/Trade Agreements:** AUSFTA ensures tariff-free trade access, but U.S. exporters face strong competition from Asian chemical manufacturers.
- **Economic Forces:** Demand fluctuates with industrial cycles, construction activity, and energy sector usage. Peaks in 2022–2023 coincided with recovery-driven expansion.
- **Industry Dynamics:** Lubricants and cleaning preparations are price-sensitive, with imports from nearby Asian suppliers often undercutting U.S. shipments unless specialized or high-quality formulations are needed.

Sources:

- Austrade – *Chemicals and Cleaning Products Industry in Australia*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Chemicals & Related Products*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- International Energy Agency – *Industrial Energy and Lubricants Demand Trends*

HS 40 – Rubber and Articles Thereof

Rubber and Articles Thereof	40



Year	$ Amount
2018	$12,085,502
2019	$11,625,040
2020	$7,666,104
2021	$9,551,993
2022	$12,867,109
2023	$11,504,343
2024	$10,472,478

Trend Narrative:
Exports of rubber and related articles from Ohio to Australia fluctuated at relatively low levels, averaging $10–12M annually. From 2018 to 2019, exports remained steady near $12M before falling sharply in 2020 ($7.7M), reflecting pandemic-driven supply disruptions and reduced demand for automotive and industrial rubber goods. A rebound followed in 2021 ($9.6M) and 2022 ($12.9M), coinciding with Australia's recovery in automotive and manufacturing sectors. However, the trend softened again in 2023 ($11.5M) and 2024 ($10.5M), pointing to stabilized but limited demand as local and regional suppliers — particularly from Asia — continued to dominate the market.

Key Drivers & Context:

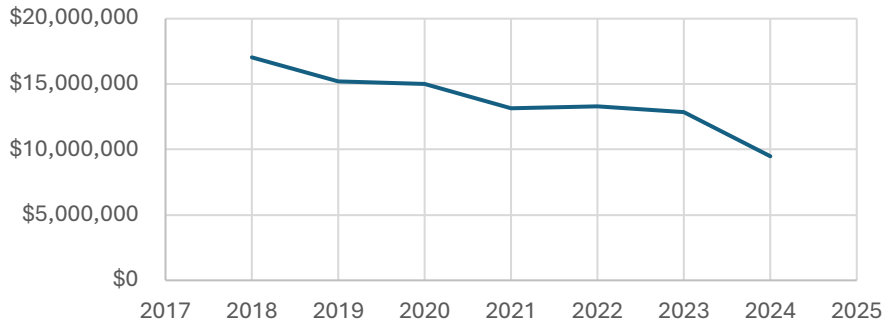
- **Policy/Trade Agreements:** Duty-free access under AUSFTA supports U.S. exports, but logistics costs and Asia's geographic advantage limit competitiveness.
- **Economic Forces:** Rubber demand is tied to the automotive and mining sectors; disruptions in 2020 highlight exposure to global shocks.
- **Industry Dynamics:** The U.S. tends to export more specialized or high-performance rubber goods, while standard tires and industrial rubber are sourced more cost-effectively from Asia.

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Rubber and Industrial Goods*
- Austrade – *Australian Automotive and Rubber Market Overview*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- International Rubber Study Group – *Global Rubber Trade Reports*

HS 32 – Tanning, Dye, Paint, Putty

Tanning, Dye, Paint, Putty	32



Year	$ Amount
2018	$17,040,319
2019	$15,192,885
2020	$15,022,169
2021	$13,155,226
2022	$13,301,711
2023	$12,861,401
2024	$9,481,828

Trend Narrative:

Exports of tanning materials, dyes, paints, and putty from Ohio to Australia showed a consistent downward trajectory from 2018 through 2024. Values declined from $17.0M in 2018 to just $9.5M in 2024 — a 44% drop over the period. After holding steady around $15M in 2019–2020, exports gradually weakened in 2021–2023 before hitting their lowest level in 2024. This trend reflects both structural and competitive pressures: Australia increasingly sources paints, coatings, and dye products from regional suppliers in Asia, while U.S. exports in this sector tend to face high freight costs relative to lower-value goods. The decline also suggests substitution by locally produced or alternative industrial coatings, further limiting U.S. share.

Key Drivers & Context:

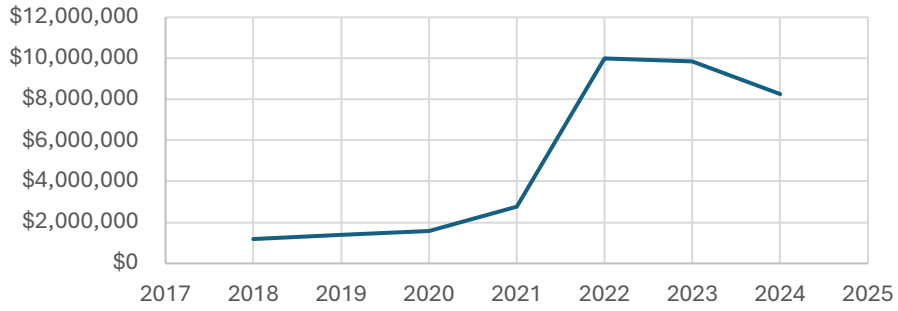
- **Policy/Trade Agreements:** AUSFTA provides tariff-free trade, but cost competitiveness is a significant barrier in this category.
- **Economic Forces:** Demand is tied to construction, automotive, and industrial cycles; while overall demand has grown in Australia, U.S. exporters have lost market share to regional competitors.
- **Industry Dynamics:** U.S. tends to export higher-end specialty coatings or dyes, but bulk and commodity-grade products are more efficiently sourced from Asia or local Australian manufacturers.

Sources:

- Austrade – *Paints, Coatings, and Chemicals Industry in Australia*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Dyes, Paints, and Coatings*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- OECD – *Industrial Production and Construction Trends in Australia*

HS 86 – Railway Stock Etc.; Traffic Signal Equipment

Railway Stock Etc.; Traffic Signal Equipment	86



Year	$ Amount
2018	$1,188,423
2019	$1,387,702
2020	$1,585,112
2021	$2,766,005
2022	$9,996,166
2023	$9,851,064
2024	$8,267,440

Trend Narrative:

Exports of railway stock and traffic signal equipment from Ohio to Australia began at very low levels in 2018–2020, under $1.6M annually. A gradual increase emerged in 2021 ($2.8M), before surging in 2022 ($10.0M) and holding near that level in 2023 ($9.9M). This significant jump aligns with Australia's expanded investment in rail modernization, urban transport infrastructure, and signaling systems. In 2024, exports declined modestly to $8.3M, but remained far above pre-2021 levels, suggesting sustained demand tied to long-term infrastructure projects.

Key Drivers & Context:

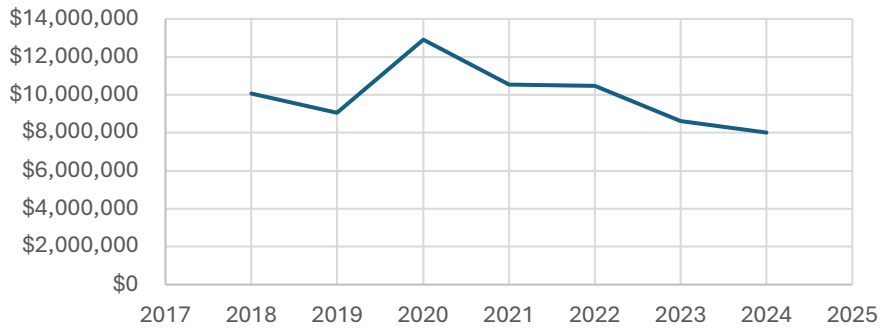
- **Policy/Trade Agreements:** AUSFTA provides tariff-free access, supporting U.S. suppliers in specialized railway and signaling technologies.
- **Economic Forces:** Australia's urban transit and freight rail expansion programs have increased procurement of specialized equipment.
- **Industry Dynamics:** U.S. exports tend to focus on niche, high-value components such as signaling systems and control technologies, complementing Australia's broader sourcing from Europe and Asia for rolling stock.

Sources:

- Austrade – *Australian Rail and Infrastructure Investment Outlook*
- Infrastructure Australia – *Rail Modernization and Urban Transit Programs*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Transportation Equipment*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*

HS 38 – Miscellaneous Chemical Products

Miscellaneous Chemical Products **38**



Year	$ Amount
2018	$10,054,065
2019	$9,048,426
2020	$12,907,671
2021	$10,539,684
2022	$10,461,691
2023	$8,622,423
2024	$8,010,123

Trend Narrative:

Exports of miscellaneous chemical products from Ohio to Australia have remained modest, fluctuating between $8M and $13M over the period. Exports began at $10.1M in 2018 and dipped to $9.0M in 2019 before peaking at $12.9M in 2020, likely due to pandemic-related demand for specialty chemicals such as disinfectants, cleaning compounds, and other chemical preparations. Post-2020, exports leveled off near $10.5M in 2021–2022 before declining again in 2023 ($8.6M) and 2024 ($8.0M). The recent downward trend suggests weakened demand for U.S. specialty chemicals in Australia, with increased reliance on regional suppliers and potential local substitution.

Key Drivers & Context:

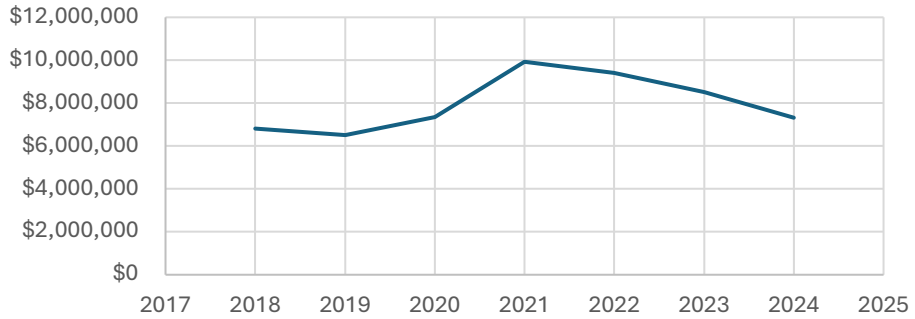
- **Policy/Trade Agreements:** AUSFTA provides tariff-free treatment, but logistics and cost competitiveness are barriers for commodity-grade chemical products.
- **Economic Forces:** Pandemic-related surges in 2020 temporarily boosted U.S. exports, particularly in cleaning and hygiene products. Demand has since normalized.
- **Industry Dynamics:** U.S. exports in this category often involve specialty and high-performance chemicals, but Australia meets much of its need through Asian and European imports.

Sources:

- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Chemicals & Related Products*
- Austrade – *Chemical Industry Outlook in Australia*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- OECD – *Australia Industrial Production & Trade Data*

HS 83 – Miscellaneous Articles of Base Metal

Miscellaneous Articles of Base Metal	83



Year	$ Amount
2018	$6,821,984
2019	$6,509,986
2020	$7,349,126
2021	$9,927,554
2022	$9,410,608
2023	$8,505,971
2024	$7,308,311

Trend Narrative:

Exports of miscellaneous base metal articles from Ohio to Australia began at $6.8M in 2018 and remained stable in 2019 before increasing to $7.3M in 2020. Growth accelerated in 2021 to $9.9M, reflecting higher demand for specialized fittings, fasteners, hardware, and industrial components during Australia's post-pandemic recovery and infrastructure expansion. Exports held relatively strong in 2022 ($9.4M) before gradually easing in 2023 ($8.5M) and 2024 ($7.3M). This decline suggests stabilizing demand and substitution from regional Asian suppliers, who dominate lower-cost segments of the base metal trade.

Key Drivers & Context:

- **Policy/Trade Agreements:** AUSFTA provides tariff-free access, giving U.S. exporters a level playing field but not offsetting Asia's geographic cost advantage.
- **Economic Forces:** Infrastructure spending and manufacturing recovery drove the 2021–2022 peak, while moderating industrial demand and tighter supply chains contributed to the 2023–2024 decline.
- **Industry Dynamics:** U.S. exports tend to focus on higher-quality or specialized base metal articles (e.g., precision fittings, locks, fasteners) rather than bulk, commodity-grade goods where Asian competitors are stronger.

Sources:

- Austrade – *Metals and Manufacturing Market in Australia*
- U.S. International Trade Commission – *Shifts in U.S. Merchandise Trade: Base Metals and Articles Thereof*
- Office of the U.S. Trade Representative – *U.S.-Australia Free Trade Agreement (AUSFTA)*
- World Bank – *Global Industrial Production and Trade Data*

External Links:

[USMCA Ohio State Fact Sheet]

[Ohio Exports Report PDF]

[World Bank Copper Outlook]