April 2026

Study on the Availability of Recycled Nickel and Stainless Steel in the United States

MetalMiner℠

Table of Contents

Key Findings at a Glance

This report presents a comprehensive, data-driven assessment of the availability of recycled stainless steel and nickel in the United States — examining how that supply is generated, how it moves through the market, and what the long-term outlook holds for supply security.

1. Structural Surplus *The U.S. generates more recycled stainless steel and nickel than it uses — and historical data show this is a long-standing structural condition.*

- The U.S. stainless steel market has run a **consistent structural surplus every year from 1980 through the first half of 2025** — including after Section 232 tariffs increased domestic mill production and recycled material consumption.
- Domestic recycled stainless steel and nickel supply has **exceeded mill consumption requirements throughout this entire period** — the surplus is structural, not cyclical.
- U.S. stainless steel mill output is constrained by **end-use demand, not raw material availability**. There is no shortage of recycled material limiting what mills can produce.

2. Reservoir Size *The U.S. has accumulated approximately 53 years' worth of recyclable stainless steel — and the reservoir keeps growing.*

- **72 million metric tons** of recyclable stainless steel have accumulated in the U.S. economy since 1995 — equivalent to **approximately 53 years of supply** at average annual consumption levels.
- Stainless steel's long service life means material put into use decades ago is entering the recycling stream right now — and will continue to do so for years to come.
- End-of-life material recovery is the **primary mechanism** through which the domestic supply base grows — prompt and home recycled material are functions of current production and cannot expand independently.

3. Nickel Availability *Domestically generated recycled nickel meets more than half of U.S. nickel consumption needs — and that share has been rising steadily.*

Domestically generated recycled nickel now accounts for **more than 50% of apparent U.S. nickel consumption** — recovered from stainless steel and nickel-bearing scrap — and that share continues to rise.

- Primary nickel imports remain necessary for precise chemistry adjustment in melt operations, but domestically generated recycled nickel continues to **displace primary imports over time.**

4. Trade Flows *Trade flows are the primary mechanism through which the U.S. stainless and nickel market balances supply — and the data show how disruptions to those flows affect availability.*

- The U.S. has been a **consistent net exporter** of recycled stainless steel throughout the study period, reflecting a structural surplus the market clears through trade — absorbing excess supply, supporting recycler margins, and maintaining collection incentives.
- China's demand for U.S. recycled stainless steel and nickel rises and falls with **Nickel Pig Iron economics — not U.S. export policy** — meaning export restrictions would not meaningfully redirect material to domestic mills.
- Disruption modeling shows an export ban would cause **significant short-term price volatility without improving domestic availability** over time.

5. Supply Security *The long-term availability of recycled stainless steel and nickel depends on the economic viability of the recycling industry — not just the size of the reservoir.*

- The **72 million metric ton reservoir** only becomes available if collection, processing, and sorting operations remain economically viable — reservoir size does not guarantee accessibility.
- Historical data show that **collection activity contracts during periods of economic disruption** — even when the in-ground reservoir remains intact — underscoring that availability depends on conditions that support recovery.
- Advances in **automated sorting technology** — including spectroscopic and AI-assisted systems — have the potential to increase recovery rates from mixed material streams, expanding accessible supply without requiring new primary production.

What This Means

Taken together, these findings indicate that the U.S. recycled stainless steel and nickel market is structurally well-supplied, continuously replenishing, and self-correcting through trade. The data do not support a shortage narrative. Policy measures that disrupt trade flows would reduce market stability and recycling industry viability without improving domestic availability.

Section 1: The U.S. Stainless and Nickel Markets

U.S. stainless steel mill output is not limited by raw material availability — it is limited by end-use demand. That distinction matters: it means the recycled materials market is not strained by production pressure, and the surplus is structural, not accidental.

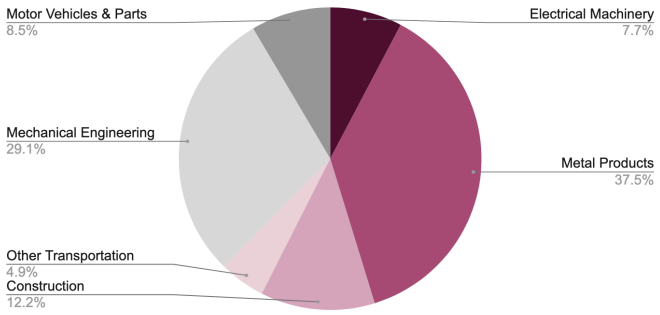
This section provides a brief overview of the U.S. stainless market — who produces it, what drives demand, and what the current demand environment means for recycled material availability.

Major Domestic Producers

The U.S. stainless steel market is served by a small number of major integrated producers, along with foundries and specialty alloy manufacturers. Domestic capacity is concentrated, and recent investments have been incremental rather than transformational — reflecting a market where demand, not raw material supply, is the binding constraint on output.

Stainless Steel End Uses

The U.S. stainless steel market is served by a small number of major integrated producers, along with foundries and specialty alloy manufacturers. Domestic capacity is concentrated, and recent investments have been incremental rather than transformational — reflecting a market where demand, not raw material supply, is the binding constraint on output.

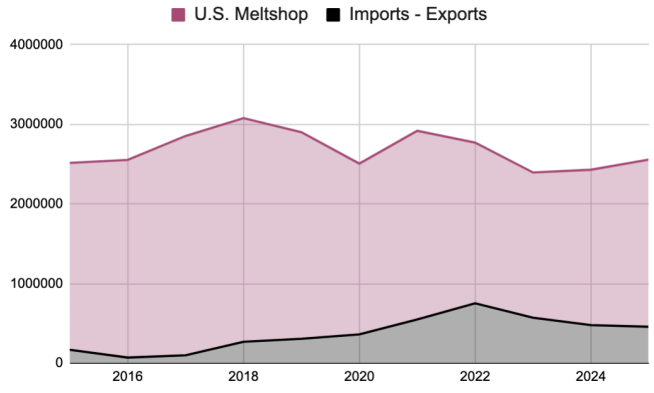


Stainless Steel End Uses (2019)
Source: World Stainless

Stainless steel is a performance material — valued for its corrosion resistance, hygiene, durability, and long service life rather than its cost. This means that stainless demand, while sensitive to the manufacturing cycle, does not exhibit the extreme volatility of more commoditized steel products.

U.S. Meltshop Production and Capacity

After peaking around 2018, U.S. stainless consumption softened and has remained below historical highs. Section 232 tariffs implemented in 2025 helped domestic mills improve capacity utilization and recapture some market share — but overall activity remains measured.

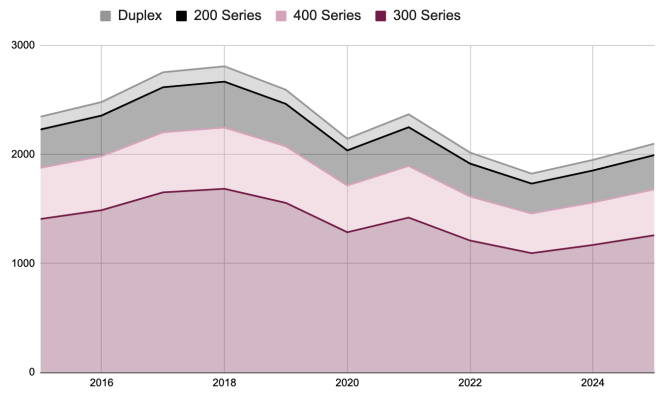


Annual U.S. Stainless Consumption, Metric Tons, 2015-2025
Sources: World Stainless, Department of Commerce

Critically, U.S. stainless steel mill output is constrained by end-use demand, not by raw material availability. There is no shortage of recycled material limiting what mills can produce.

Grade Breakdown

The U.S. stainless market is dominated by 300-series grades, which account for more than half of total consumption and are used across architecture, food processing, appliances, and general manufacturing. The remaining market is divided among 400-series, 200-series, and duplex grades serving automotive, structural, and high-corrosion applications.



U.S. Stainless Meltshop Production by Grade, 1000 Metric Tons, 2015-2025
Sources: World Stainless, Grand View Research

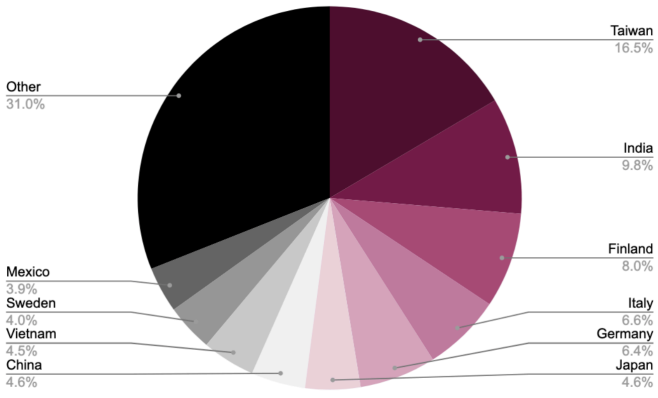
Grade	U.S. Market Share	Nickel Content	Typical Applications
300 Series	~50%+	8–12% (up to 14% for 316)	Architecture, appliances, food processing, manufacturing
400 Series	~15–25 %	<1% (essentiall y nickel-free)	Automotive, consumer goods, structural components
200 Series	~10–20 %	1–5% (mangane se-substit uted)	Cost-sensitive stainless applications
Duple x	~5–10%	4–7%	Energy, chemical processing, high-corrosion infrastructure

Source: Grand View Research, MetalMiner analysis

Import and Export Patterns

The U.S. consistently imports more finished stainless steel than it exports — a structural trade imbalance that Section 232 tariffs have moderated but not eliminated.

For stainless scrap, the picture is the opposite: the U.S. has been a consistent net exporter, a direct reflection of the structural surplus described throughout this report. Stainless scrap is not subject to direct U.S. tariffs. Trade policy has affected scrap flows indirectly — through its impact on finished product margins and cross-border logistics — but has not materially restricted the movement of recycled material into or out of the United States.



Top Stainless Exporters to the U.S. by Volume, 2020-2025
Source: Department of Commerce

U.S. Consumption Outlook

Near-term demand for stainless and nickel-bearing materials is projected to remain broadly flat. Mill demand in 2026 is expected to be largely unchanged from 2025, with only modest growth anticipated over the subsequent five-year period as macroeconomic fundamentals stabilize and investment in infrastructure and manufacturing sectors provides incremental support. One domestic producer characterized demand expectations succinctly: "We look at the growth projections and don't really see much happening there."

Specialty and superalloy producers — serving aerospace, defense, and energy markets — represent a growing share of U.S. nickel consumption and a bright spot in an otherwise stable demand environment.

What this stable, mature demand environment means for the recycled materials market is significant: it creates the conditions for a persistent and structural surplus — more recyclable material than the domestic system currently needs. The next section examines that surplus in detail.

Section 2: The U.S. Stainless Scrap Market

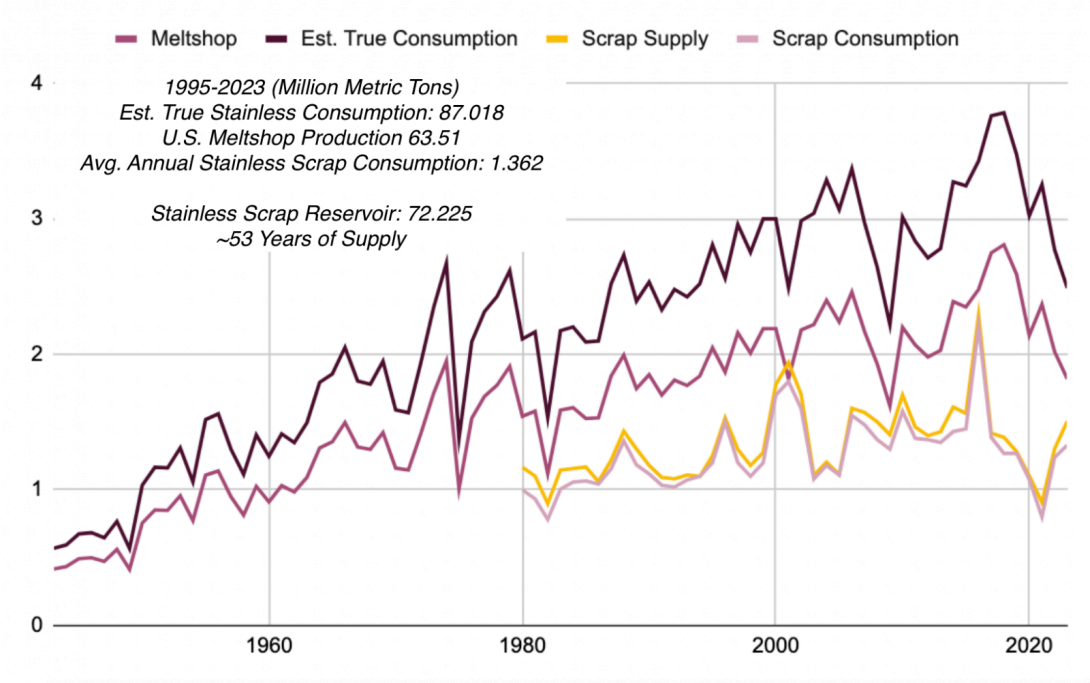
The U.S. stainless scrap market is not simply adequate — it is structurally abundant.

The U.S. Stainless Scrap Reservoir

The U.S. stainless scrap reservoir is best understood as a dynamic and continuously replenishing resource — fed by industrial activity today and by the steady stream of long-lived products reaching end of life every year. It is not a fixed stockpile. It grows as stainless steel is put into use, and it replenishes as those products are eventually retired and recycled.

Why the Reservoir Is So Large

Stainless steel has a long service life — which means material put into use decades ago is reaching end of life and entering the recycling stream right now and will continue to do so for years to come. The longer stainless lasts, the larger the future supply pipeline grows — and the more consistently it replenishes. The U.S. economy has been consuming stainless steel at meaningful scale for decades, creating a vast embedded reserve that continues generating recycled material flows and will do so long into the future.



Historical U.S. Stainless Scrap Reservoir, Million Metric Tons, 1943-2023

Sources: USGS, International Trade Administration, World Steel, Laplace Study

**Note USGS began publishing stainless scrap statistics in 1980*

Measuring the U.S. Reservoir

Assuming an 83% recycling rate, between 1995 and 2023, the U.S. added an average of approximately 2.5 million metric tons of recyclable stainless steel to the reservoir per year. Considering true stainless consumption observed during that period, the U.S. accumulated a total of approximately 72 million metric tons of recyclable stainless steel — equivalent to approximately 53 years of supply at average annual consumption levels.

Reservoir Statistics

On average, stainless steel contributes more to the recycling reservoir than carbon steel because it stays in use longer, is more valuable when recycled, is more carefully separated, and is more likely to be recycled back into the same material family.

Annual Scrap Balance and Scrap Types

Home scrap is internally generated material recycled directly back into the mill without entering commercial markets. It accounted for approximately 12% of total scrap consumption in 2023.

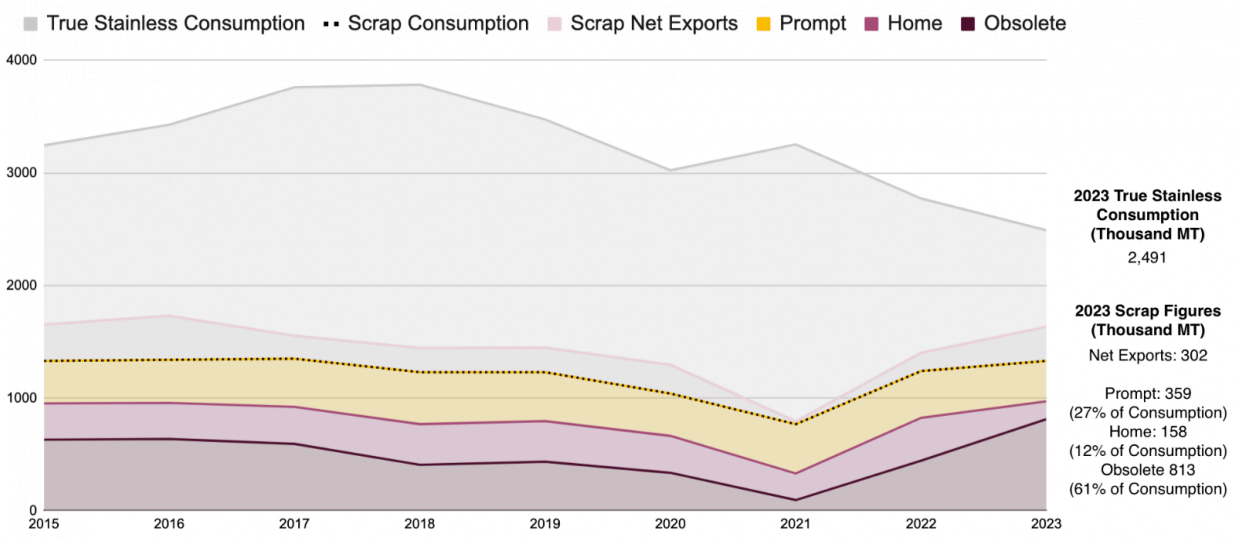
Prompt scrap is generated during fabrication and manufacturing — stamping, cutting, and forming. It scales directly with manufacturing output and represented approximately 27% of commercially traded recycled material in 2023.

Obsolete scrap — recovered from end-of-life products and infrastructure — is the largest and most strategically important supply stream, accounting for roughly 61% of market-facing supply in 2023. It is also the most sensitive to recycling economics, making it the primary swing factor in domestic supply.

Stainless steel remains in use for 20–30 years on average. Material consumed before 1995 is assumed to have largely already cycled through the recycling stream by 2025, so the reservoir is measured from 1995 onward.

Between 1995 and 2023, the U.S. accumulated approximately *72 million metric tons* of recyclable stainless steel — adding an average of approximately *2.5 million metric tons per year*. Most of this material will enter the recycling stream over the next two to three decades.

Average annual consumption of recycled stainless steel over this period was approximately *1.4 million metric tons*. At that rate, the accumulated reservoir represents approximately *53 years of supply*.



U.S. Stainless Scrap Reservoir by Type, 1000 Metric Tons, 2015-2023
Sources: MetalMiner Analysis, USGS, World Steel, World Stainless, Department of Commerce, Laplace Study, International Trade Association

What Swings U.S. Scrap Supply

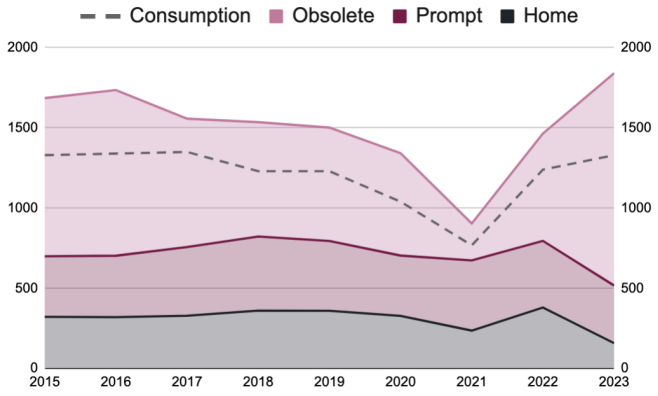
Unlike home and prompt scrap, obsolete supply can grow independently of current production levels, making it the primary swing factor that determines the size and resilience of the domestic scrap surplus.

The Role of Recycling in the Scrap Reservoir

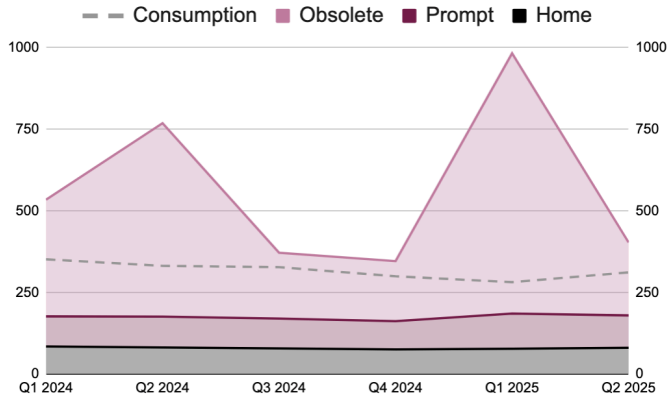
The reservoir is vast — but it only becomes available recycled material if the economics of collection and processing remain viable. When recycling economics weaken — low prices, inactive mill buying programs, or logistical disruptions — collection slows and the effective supply shrinks, even though the in-ground material hasn't changed.

The COVID-19 pandemic offered a vivid illustration of this dynamic. Reduced demolition activity, labor shortages, and logistical constraints temporarily suppressed obsolete scrap collection even as industrial production began to normalize.

This temporary tightening was not caused by a shortage of in-ground material but by disruptions to the systems that recover it. The episode underscores why maintaining the conditions for profitable recycling, including access to export markets and predictable pricing, is essential to long-term supply security.



U.S. Stainless Scrap Supply & Usage, 1000 Metric Tons, 2015-2023
(Prompt Estimated at 15% of Finished Stainless Consumption)
Sources: USGS, World Stainless, Department of Commerce, International Trade Association



U.S. Stainless Scrap Supply & Usage, 1000 Metric Tons, 2024-Q2 2025
(Prompt Estimated at 15% of Consumption)
Sources: USGS, World Stainless, Department of Commerce, International Trade Association
**Note: Ending stocks data were unavailable at the time of publishing. Overall scrap supply is likely modestly higher than reported in the chart above.*

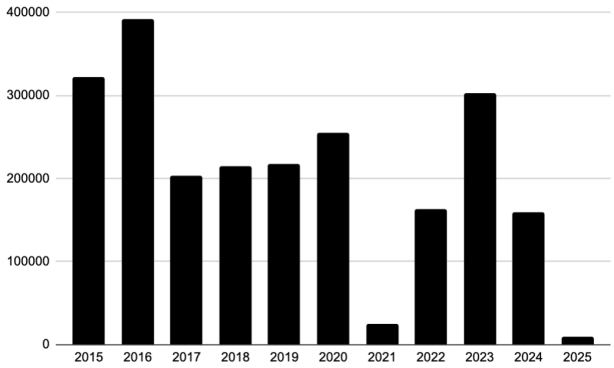
Beyond domestic collection, the future supply pipeline gets an additional boost from trade. The U.S. is also a net importer of stainless-containing finished goods — vehicles, appliances, machinery — which embed additional stainless in the domestic economy. When those products reach end of life, they will enter the recycling stream, further reinforcing the structural surplus for decades to come.

This is already reflected in how domestic mills operate. All major domestic producers secure the recycled material they need through long-term contracts with domestic recyclers — prioritizing commercial relationships over policy protections.

Scrap Import and Export Behavior

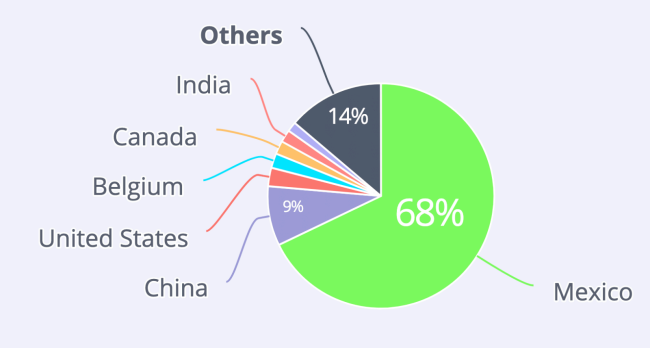
The market clears surplus through trade — naturally and without policy intervention

Through 2025, the United States was consistently a net exporter of stainless scrap, a clear reflection of the structural surplus described above. Exports serve a vital economic function: they absorb excess commercial supply, support processor and broker margins, maintain system-wide recycling profitability, and prevent the accumulation of unsold inventory that would otherwise depress prices and discourage collection activity.



Stainless Scrap Exports - Imports, Metric Tons, 2015-2025
Source: U.S. Department of Commerce

North American supply chains are deeply integrated — Mexico accounts for 68% of U.S. stainless scrap imports, making stable trade rules under USMCA directly relevant to domestic supply security. China, the second-largest source, represents only 9% of import volumes.



U.S.-Bound Stainless Scrap Shipments by Country
Source: Exiger

Trade flows have demonstrated a high degree of responsiveness to market conditions. During the COVID disruption, export volumes declined and import flows stabilized as the domestic market tightened, adjustments that occurred without formal policy intervention. This market-driven flexibility is a feature, not a flaw, of the current system.

The data show a market that manages itself — and that track record extends into the future.

Future Availability of U.S. Scrap

A forward-looking view of U.S. stainless scrap availability starts with the structural reality: the domestic scrap reservoir is both large and still expanding. Decades of stainless-intensive investment across construction, industrial equipment, and consumer goods continue to age into the recyclable stream, while new stainless consumption adds further to this future pipeline. Even in periods of weaker demand, scrap flows remain steady.

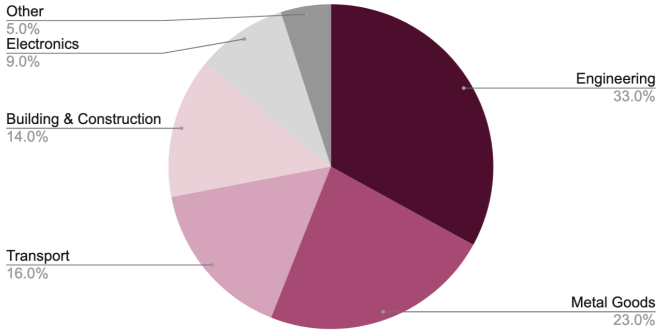
Taken together, these forces point to a clear conclusion: U.S. stainless scrap availability is likely to remain structurally ample relative to domestic melt demand. The long-term expansion of the reservoir, combined with only moderate demand growth, ensures that recycled stainless steel and nickel will remain a reliable — not a limiting — input for U.S. producers.

Section 3: Primary and Secondary Nickel Markets

Recycled nickel already meets more than half of U.S. nickel consumption — and that share is growing.

Nickel End Uses

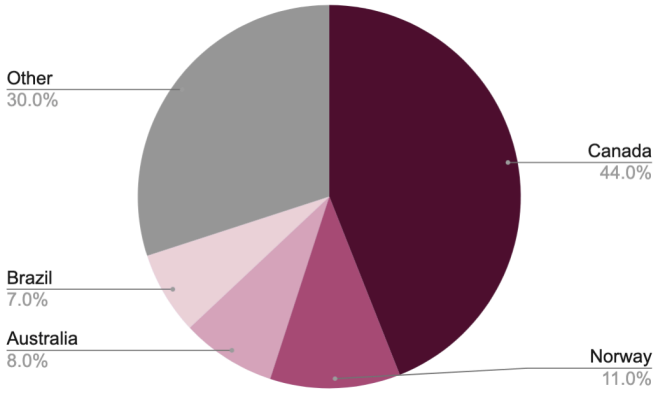
Stainless steel accounts for the overwhelming majority of global nickel demand. Beyond stainless, nickel is used in batteries, plating, alloy steels, and specialty applications — but none come close to stainless steel's share. Nickel demand is broad-based and tied to general manufacturing and construction activity rather than any single volatile end market.



Nickel End-Uses by Sector (2020)
Source: Nickel Institute

U.S. Net Trade Position

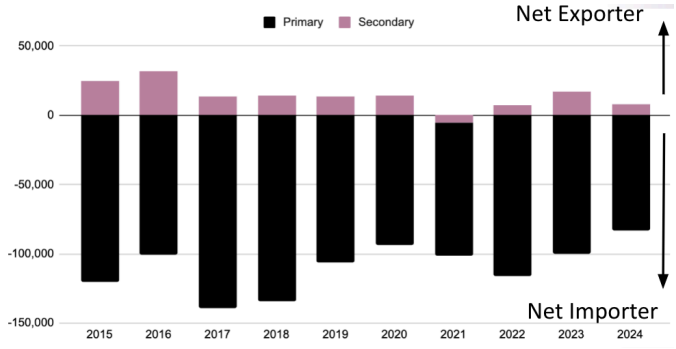
The United States is a structural net importer of primary nickel. Domestic mining, refining, and Class-1 processing capacity are limited, and the country depends on allied and partner nations for the majority of its primary nickel supply. Canada, Norway, Finland, and Australia have historically been the most consequential sources, reflecting both commercial relationships and supply chain risk management by U.S. consumers.



Primary Nickel U.S. Import Sources, 2021-2024
Source: USGS

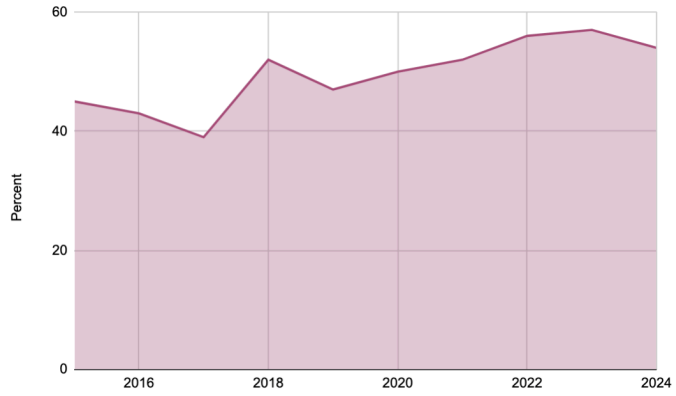
An important development on the horizon is the U.S.–Indonesia trade agreement finalized in February 2026, which grants the U.S. essentially unrestricted access to Indonesia's vast nickel resources. Given that Indonesia already supplies over 60% of global nickel mine output and has been a center of Chinese-linked downstream processing investment, this agreement has the potential to diversify U.S. nickel supply chains, remove any barriers to maintain supply security, and reduce dependence on Chinese-affiliated production networks.

The U.S. is a structural net importer of primary nickel, while exhibiting a modest export bias in recycled nickel and scrap. Domestically generated recycled nickel now meets more than 50% of apparent U.S. nickel consumption — and that share continues to rise.



Primary and Secondary Nickel U.S. Net Trade Balance, Metric Tons
Source: USGS

While the U.S. depends on imports for primary nickel, the recycled nickel picture tells a different story — domestically generated recycled nickel now meets more than 50% of apparent U.S. nickel consumption, and that share continues to rise.



Recycled Nickel Percentage of Apparent Consumption, All Forms of Nickel
Source: USGS

Secondary Nickel and Its Limitations

Secondary nickel plays a substantial and growing role in meeting U.S. needs — but it cannot fully replace primary nickel. Because nickel makes up only about 8–12% of stainless scrap by weight, meltshops must still add primary nickel units to precisely adjust melt chemistry, particularly for specialty and high-nickel grades. This is a

metallurgical constraint, not a supply security concern — and it reinforces why expanding access to primary nickel through agreements like the U.S.–Indonesia deal matters for the long term.

Section 4: The Role of Nickel Pig Iron

China's demand for U.S. recycled stainless steel and nickel is opportunistic, not structural — making export restrictions both ineffective and harmful.

What Is NPI and Why Does It Matter?

Nickel pig iron is a low-grade ferronickel product produced primarily in Indonesia and used almost exclusively as a lower-cost substitute for refined primary nickel in stainless steel production. Its rise over the past two decades has fundamentally reshaped how and where stainless is made — and how global markets for recycled stainless and nickel are priced.

NPI's Impact on Global Scrap Markets

Because NPI gives Chinese stainless mills a lower-cost alternative to refined nickel, their demand for imported recycled stainless and nickel rises and falls with NPI economics — not with U.S. export policy. When NPI is cheap and abundant, Chinese mills pull less U.S. material. When NPI economics deteriorate, they pull more. This is opportunistic demand, not structural dependence.

The policy implication is straightforward: export restrictions would not redirect Chinese demand to domestic U.S. mills. They would simply eliminate an important outlet for surplus material — depressing prices, compressing recycler margins, and discouraging the collection activity that sustains long-term domestic supply.

Second, NPI anchors stainless production in regions with integrated feedstock supply, intensifying competition for recycled stainless and nickel-bearing scrap during periods of strong Asian output. While NPI does not directly replace recycled material, it alters meltshop economics and therefore indirectly influences scrap demand, pricing, and the competitiveness of U.S. recyclers and traders in global markets.

NPI and U.S. Scrap Supply Security

Because NPI limits China's structural reliance on imported stainless scrap, U.S. export volumes are not a meaningful threat to domestic supply availability. The logic that restricting scrap exports would preserve domestic supply misunderstands how the market actually works — Chinese demand for U.S. scrap rises and falls with NPI economics, not with U.S. export policy.

Nickel prices are the primary driver of stainless scrap values in the U.S. market. LME nickel acts as the leading signal, with domestic 304 scrap prices typically following within days to weeks. For a detailed price correlation analysis, see the full technical report.

Section 5: Sectors Influencing the Stainless Scrap Market

Key Demand Drivers

The key end-use sectors for stainless steel in the United States are industrial machinery and equipment, food and chemical processing, construction, transportation, and household

appliances. Demand across these sectors is driven by stainless steel's performance characteristics — corrosion resistance, durability, and hygienic properties — rather than price alone, which gives the market a degree of stability that more commoditized materials don't enjoy. Manufacturing activity — particularly industrial production and the ISM Manufacturing PMI — is the most reliable leading indicator for demand. When manufacturing expands, recycled material generation and mill buying both increase. For detailed sector and indicator analysis, see the full technical report.

Section 6: Barriers and Constraints

Open trade is not a threat to domestic supply — it is what sustains it.

Collection and Grade Separation

The most fundamental challenge in the stainless scrap market is the difficulty of identifying and separating stainless steel from mixed metal streams. Traditional scrap collection often aggregates materials by general appearance rather than chemistry, resulting in mixed-grade loads that reduce meltshop efficiency and limit the price premium available to processors. One processor noted that low scrap value and difficulty separating materials are the top impediments to increasing collection rates.

Economic Viability of Recycling Operations

LME nickel prices and domestic mill buying programs closely influence the profitability of scrap collection and processing. When nickel prices are weak or mill buying programs are inactive, the economics of collecting, sorting, and transporting stainless scrap can become marginal, particularly for small or mid-size processors. This price sensitivity creates vulnerability during extended periods of weak nickel prices, as collection activity slows and the effective volume of obsolete scrap entering the commercial system contracts.

The COVID period illustrated this dynamic acutely: even as the in-ground reservoir of stainless steel remained vast, collection activity temporarily contracted because logistics costs rose, labor was constrained, and demolition activity slowed. This highlights that supply availability is not simply a function of how much stainless exists in the economy, but of whether the economic conditions support its recovery.

The Impact of Trade Policy on Scrap Availability

Any future policy that restricted exports of recycled stainless and nickel — such as export bans or licensing requirements — would pose a significant threat to the health of the domestic recycling industry.

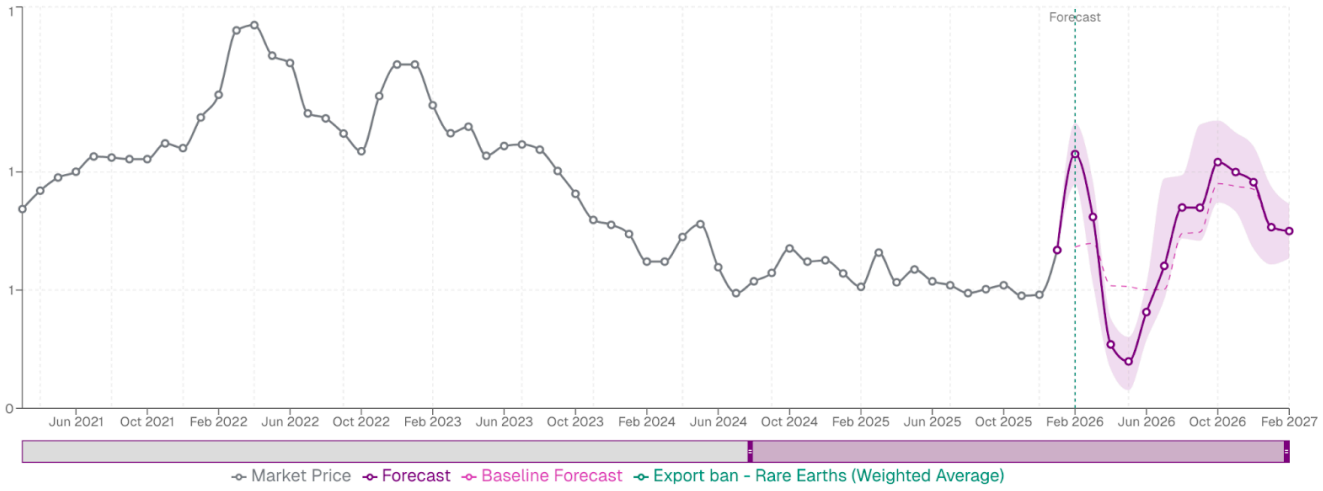
Export access provides a critical demand outlet for surplus scrap and is the mechanism through which processor profitability is sustained during periods of weak domestic mill demand. Restricting this outlet would accumulate inventory, depress prices, compress margins, and ultimately discourage the collection activity that ensures long-term scrap availability.

Across the supply chain, recyclers and scrap brokers were uniformly opposed to export restrictions, emphasizing that both exports and imports are critical for balancing domestic supply and maintaining profitability. Manufacturers cautioned that artificially higher input costs could accelerate substitution toward alternative materials — shrinking stainless demand over the long term

Key Principle: Stable Trade Rules Reduce Volatility

The evidence consistently shows that predictable and open trade flows are the most effective stabilizing force in the stainless scrap and nickel markets. Policy-driven disruptions generate sharp but temporary price spikes that ultimately resolve around underlying supply-demand fundamentals — but in the interim impose significant costs on processors, mills, and end-use manufacturers. Maintaining stable trade rules is therefore both a commercial and a supply-security imperative.

The following disruption simulation illustrates what an immediately implemented export ban would look like for U.S. recycled stainless prices.



U.S. 304 Stainless Solid Scrap Prices
Source: MetalMiner Market Signal

Section 7: Emerging Technologies

Advances in Sorting and Scrap Recovery

New sensor-based and spectroscopic technologies, like X-ray fluorescence (XRF) analyzers, laser-induced breakdown spectroscopy (LIBS), and AI-assisted image recognition, can more accurately identify and separate different types of stainless steel. If adopted at scale, these technologies could increase the yield of high-quality feedstock from mixed scrap streams, reduce contamination, and improve the reliability of domestic scrap supply for mills with tight compositional requirements.

As one dealer observed, "There's a laser separator that they're using in aluminum right now." The potential application of analogous technology to stainless scrap collection could meaningfully increase recovery rates, particularly from the dispersed and heterogeneous obsolete scrap pool. Over time, widespread adoption could strengthen the role of recycled stainless in the U.S. supply chain, improving both environmental outcomes and price stability.

Decarbonization and Renewable Energy Infrastructure

Decarbonization and renewable energy investment have attracted attention as potential drivers of stainless demand — but the relationship has proven more uneven than early forecasts suggested. Higher interest rates, supply chain constraints, slower permitting, and shifting policy priorities have moderated the pace of renewable build-out, particularly in the United States. Most market participants indicated that renewable-sector demand is currently providing only limited support to domestic stainless consumption, with shifting policy priorities reducing the visibility and reliability of project pipelines.

Data Centers

Rapidly expanding data center investment is creating incremental stainless demand — but it is unlikely to materially reshape overall market fundamentals. The overall metal intensity of data center construction is dominated by carbon steel for structural frames, aluminum for lightweight components, and copper for power and data cabling. Stainless steel represents only a modest share of total materials demand and will provide resilient but incremental support rather than a structural shift in recycled material dynamics.

Section 8: Study Conclusions

The evidence in this study converges on a straightforward conclusion: the U.S. stainless and nickel recycling system is working. It produces more than it needs, manages surplus through open trade, and is positioned to do so for decades to come.

The U.S. stainless scrap market is, in the most fundamental sense, a success story for the circular economy. A vast in-use reservoir, a well-established and profitable recycling industry, and market-driven trade flows that balance surplus conditions without policy intervention all support the conclusion that domestic supply security is strong and improving. The most important priorities for maintaining and enhancing this strength are preserving open trade, investing in sorting and collection technology, and ensuring that recycling operations remain economically viable—not restricting the markets that sustain them.

The U.S. recycling system produces more recycled stainless steel and nickel than it currently uses. Historical data going back to 1995 show a consistent and structural surplus of recycled material — including through the first half of 2025, after trade barriers on finished stainless steel were implemented.

The in-use stock of stainless steel embedded in the U.S. economy is vast and continuously replenishing. Material put into use decades ago is reaching end of life and entering the recycling stream right now and will continue to do so for years to come — supporting structurally resilient long-term availability.

Obsolete material is the key determinant of long-term secondary supply growth. Prompt and home scrap are functions of current production activity and cannot expand independently of manufacturing output. Only the recovery of end-of-life material can structurally increase the domestic secondary reservoir. Policies that weaken recycling economics — such as restricting export outlets in a surplus market — would directly undermine collection, dismantling, and processing activity and would therefore be counterproductive to the very supply security they claim to protect.

The market clears excess material through exports, while domestic consumers secure the volumes they need through established commercial channels and long-term supply contracts. North American supply chains are deeply integrated — Mexico accounts for 68% of U.S. stainless imports, making stable trade rules under USMCA directly relevant to domestic supply security.

On the nickel side, the U.S. requires primary nickel imports to meet consumption needs — and recycled nickel cannot fully close that gap. But primary nickel supply is concentrated among allied and partner nations, and the U.S.–Indonesia trade agreement further strengthens that position. The geographic structure of U.S. supply chains limits the likelihood that geopolitical disruptions would materially impair access to nickel units.

U.S. mills report that they are able to secure the recycled material they require through multi-year contractual arrangements — prioritizing commercial relationships over policy protections. This reflects a broader industry preference for commercial risk management over policy intervention, consistent with procurement strategies observed across other nickel-intensive supply chains.

The evidence is clear and consistent across every dimension this study examined: supply, trade, pricing, and policy. The U.S. recycled stainless steel and nickel market is not fragile — it is structurally sound, continuously replenishing, and sustained by open trade. The priority for policymakers and industry alike is to protect the conditions that make it work — not restrict them.

Appendix

Purpose of the Study

This study provides a comprehensive, data-driven assessment of the availability of recycled nickel and stainless steel in the United States. The purpose is to quantify how much recycled material is generated domestically, how it flows through the recycling and manufacturing system, and how much material is actually accessible to U.S. scrap buyers in practice after accounting for processing capacity, quality requirements, logistics, inventories, contracts, and international trade.

Definitions & Terms

Prompt Scrap: Material generated during manufacturing and fabrication processes (for example, trimming, stamping, machining, and forming of stainless steel or nickel-bearing products). Prompt scrap is typically clean, homogeneous, and returned quickly to the recycling market.

Home scrap: Material generated and recycled within the same facility where it is produced (for example, internal mill returns or in-plant production scrap). Home scrap generally does not enter the open market and is therefore treated separately from externally traded recycled material.

Obsolete scrap: Material recovered from end-of-life products and structures, such as vehicles, appliances, industrial equipment, consumer goods, and demolished buildings. Obsolete scrap is influenced by product life cycles, replacement rates, and collection infrastructure, and is typically more variable in quality and availability than prompt scrap.

Primary material: Nickel or stainless-steel input produced from virgin raw materials (such as mined ores and concentrates) through primary refining and smelting processes.

Secondary material: Nickel or stainless-steel input produced from recycled scrap through processing, melting, and refining. In this study, secondary material refers specifically to material derived from prompt, home, and obsolete scrap streams.

Recycling (for purposes of this study): The collection, processing, and preparation of scrap and other end-of-life materials so they can be used as feedstock in manufacturing and metallurgical production.

Production: The output of recycled nickel and stainless-steel material suitable for use by downstream consumers, including mills, foundries, and other manufacturing facilities.

Consumption: The use of recycled or primary nickel and stainless-steel material by domestic end-use manufacturing sectors.

Availability: The volume of recycled nickel and stainless-steel material that is realistically accessible to the U.S. market after accounting for generation, processing capability, quality constraints, logistics, contractual arrangements, and competing export demand. Availability is distinct from total scrap generation.

Imports and Exports: Imports and exports refer to cross-border trade of recycled nickel, stainless steel, and related scrap and secondary materials, as recorded in official U.S. trade statistics. The study distinguishes between physical trade flows and changes in domestic availability resulting from those flows.

Relevant Trade & Policy Frameworks

This study evaluated the effects of major U.S. trade measures — including Section 232, IEEPA, USMCA, and various tariff mechanisms — on recycled stainless and nickel markets. None directly targets stainless scrap; impacts are largely indirect, through finished product markets and logistics. For a full policy framework analysis, see the full technical report.

Reservoir Methodology

The reservoir model measures true stainless consumption — domestic production plus direct and indirect trade — and applies an 83% recycling rate to estimate the volume of material accumulating in the U.S. economy that will eventually return as recycled material. For full methodology detail, see the full technical report.

Scrap Availability Methodology

Total supply is calculated as the sum of home, prompt, and obsolete material. Prompt is estimated at 15% of total U.S. stainless consumption. Obsolete is derived as the residual after accounting for mill receipts, trade flows, and ending stocks. For full methodology detail, see the full technical report.

Full Bibliography

i. Primary Sources: Interviews and surveys conducted across the supply chain, including mills, service centers, manufacturers, recyclers, brokers, and foundries
ii. U.S. Geological Survey
iii. Department of Commerce
iv. World Stainless
v. Exiger trade flow mapping
vi. Outokumpu, Acerinox Quarterly Financial Reports
vii. Laplace Study on Steel Scrap
viii. World Steel
ix. American Institute of Architects (AIA)
x. Board of Governors of the Federal Reserve
xi. Census Bureau
xii. Grand View Research
xiii. Nickel Institute
xiv. International Trade Association
xv. Specialty Steel Industry of North America (SSINA)
xvi. UN Department of Economic and Social Affairs Population Division
xvii. ISSF
xviii. MetalMiner Market Signal, MetalMiner Insights