Congressional Research Service
Informing the legislative debate since 1914

IN FOCUS

Updated October 9, 2018

Effects of U.S. Tariff Action on U.S. Aluminum Manufacturing

Since March 2018, the United States has assessed duties of 10% or more on certain imports of aluminum on national security grounds. The duties are controversial, with some Members of Congress questioning whether the duties will encourage domestic aluminum production and whether they could adversely affect U.S. industries that use aluminum.

Aluminum Tariff and Other Restrictions

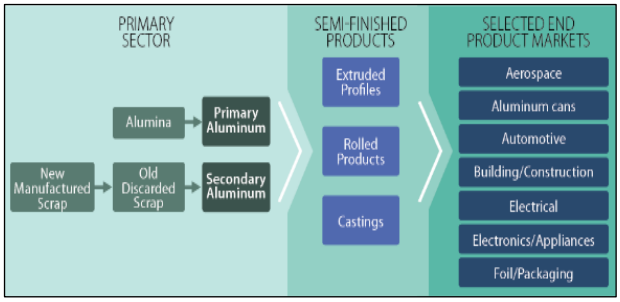
Acting under Section 232 of the Trade Expansion Act (19 U.S.C. §1862, as amended), which allows the President to levy tariffs and quotas on imports found to threaten or impair U.S. national security, President Trump signed a proclamation that imposed a 10% tariff on foreign-made primary unwrought aluminum and certain semifinished aluminum products effective March 23, 2018.

Although aluminum manufactured in certain countries was initially exempted, most exemptions expired on June 1, 2018, thereby extending the tariff to key sources of aluminum imports, including Canada, the leading import source of primary unwrought aluminum into the United States. Argentina, which agreed to a quota, and Australia are the only two countries that have been permanently exempted. The tariff has no set expiration date; it can be removed at any time. On August 10, 2018, the President announced in a tweet he had authorized an increase of the tariff on aluminum from Turkey to 20%, but he has not yet signed a Section 232 proclamation putting the higher duty into effect. The United States has also imposed sanctions on Rusal, a Russian aluminum company and the world's largest producer outside China.

Domestic Aluminum Manufacturing

As **Figure 1** shows, unwrought aluminum, a light metal, is made in two distinct ways. Primary aluminum production consists of mining bauxite, refining it to produce alumina, and then smelting alumina to yield aluminum.

Figure 1. Aluminum Industry Overview



Source: Figure adapted by CRS from NERA Economic Consulting, *Impacts of Potential Aluminum Tariffs on the U.S. Economy,* June 2017.

Secondary aluminum production uses recycled scrap melted in a smelter. Although secondary aluminum can be substituted for primary aluminum in most uses, primary aluminum is favored in applications with high quality and consistency requirements, such as electronics and aerospace manufacturing. One U.S. smelter produces primary aluminum of sufficient purity for use in military aircraft.

In 2017, U.S. production of primary aluminum totaled 741,000 metric tons, the lowest level since 1951, down from 2.6 million metric tons in 2007, according to the U.S. Geological Survey (USGS). U.S. production peaked in 1980 at 4.7 million metric tons, and the United States was the world's top producer through 2000. In 2017, the United States accounted for 1.2% of the world's primary aluminum production.

At the end of 2017, Alcoa and Century Aluminum were the two remaining operators of primary aluminum smelters in the United States. In June 2018, Magnitude 7 Metals restarted limited production at its primary aluminum smelter, which had been closed since 2016. According to USGS, capacity utilization of primary smelters stood at 37% in 2017.

Secondary aluminum is produced in two ways. Old scrap is recovered from used aluminum cans, auto parts, aircraft, and other products. New scrap is the leftovers from processing wrought aluminum and cast products into consumer or industrial products. Secondary aluminum accounted for 83% of U.S. aluminum production in 2017.

The United States is now the world's largest producer of secondary aluminum. China ranks second. Unlike primary aluminum production, domestic production of secondary aluminum has been fairly steady over the past two decades.

Causes of Declining Primary Aluminum Output

A Department of Commerce investigation of the aluminum industry found that imports and global overcapacity, caused in part by foreign government subsidies (particularly in China), have had a substantial negative effect on domestic production of primary aluminum. But it appears that comparatively high electricity costs have been another important factor affecting domestic production.

According to the Aluminum Association, electricity can account for up to 40% of the costs of primary unwrought aluminum production. For this reason, many U.S. aluminum smelters were constructed in locations with access to abundant developed hydropower. U.S. electricity prices today, however, are generally higher than in many other countries that produce aluminum. Alcoa and Century have located their newer smelting operations near low-cost electricity sources outside the United States. Favored locations for primary smelting include Iceland, Russia, the United Arab Emirates, Norway, and Canada. In response to this and other factors, including exchange rates and labor costs, many domestic facilities have cut back production or shut down entirely.

The newest U.S. primary smelter was built nearly 40 years ago. Primary smelting involves large capital investments—industry groups estimate the cost of a new smelter at around

$4.5 billion—and there are no plans to build new primary smelters in the United States. Because of their age, U.S. primary smelters tend to use older, less energy-efficient technologies than newer plants in the Middle East and Asia.

The Energy Information Administration estimates secondary smelters use only 6% of the energy required by primary smelters; they mainly use natural gas and liquefied petroleum gas rather than electricity. The cost of scrap represents 80% to 85% of total costs for producers of recycled aluminum. In addition, the capital costs of secondary smelters are much lower than those of primary smelters. These factors help explain the attractiveness of producing secondary aluminum in the United States even as production of primary aluminum has declined.

Aluminum Industry Jobs and Wages

Aluminum manufacturing employed 58,100 workers in 2017, according to the Bureau of Labor Statistics. Of these, factory jobs in primary and secondary aluminum production totaled 12,952 in 2017, down from 16,683 in 2013. The remainder are employed in plants that make rolled or extruded products, which can be made from primary or secondary aluminum. To the extent that the duties under Section 232 raise the cost of unwrought aluminum domestically, this could put domestic producers of semifinished aluminum products at a disadvantage against imports of these aluminum products.

Primary aluminum workers earned an average wage of $80,900 in 2017, higher than the average wage of $66,800 for all U.S. manufacturing workers. The secondary aluminum sector paid an average wage of $57,300 in 2017.

U.S. Demand for Aluminum Products

Because aluminum is lightweight, ductile, malleable, and corrosion-resistant, it has many end uses. Demand for semifinished aluminum in the form of bars, sheets, plates, tubes, rods, and forgings is tied to their key end markets. The three main end uses of aluminum are transportation equipment, containers and packaging, and construction. The amount of aluminum required by national defense and homeland security is small, accounting for 1.7% of total domestic consumption of aluminum.

According to USGS, U.S. consumption of aluminum has grown strongly in recent years. In 2017, consumption reached 5.9 million metric tons, up 32% from 2013. In 2017, domestic primary aluminum production represented around 13% of total consumption; domestic secondary production of old scrap accounted for 27% and imports for 60%. Secondary aluminum production is limited by the amount of available recycled scrap for remelting and refining, so aluminum users have turned to imports to make up for the decline in domestic primary supply.

Imported primary aluminum is the fastest-growing source of U.S. supply. Imports of primary unwrought aluminum came to 4.8 million metric tons in 2017, up 64% from 2007. The United States imports a small amount of secondary aluminum mainly from Canada and Mexico.

In 2017, half of U.S. primary aluminum imports were from Canada. Alcoa operates three primary aluminum smelters in Canada. Although China accounted for more than half the world's primary aluminum production in 2017, it does not export aluminum in commodity form to the United States. China ships semifinished aluminum products such as bars, rods, and wire to the United States. These are subject to the Section 232 tariff.

Potential Effects

The 10% Section 232 aluminum tariff is added to any existing U.S. tariffs, which range from zero to 2.6% on primary aluminum and zero to 6.5% on semifinished aluminum. The tariff on secondary aluminum is zero. The United States also imposes antidumping and countervailing duties on certain aluminum imports from China.

The 10% tariff may raise the price of imported aluminum, which could encourage domestic manufacturers to restart idled capacity. Before the tariff, the average spot price of primary aluminum ingot produced in the United States was $2,167 per metric ton in 2017, or 10% higher than the London price (the global price of aluminum). The price effect of the tariff is still unclear. From January to July 2018, the average price of primary aluminum in the United States rose 3%, according to USGS. Secondary ingot prices tend to be slightly higher than the London primary price, and secondary scrap prices are generally the lowest price of all forms of aluminum.

Domestic demand may shrink if aluminum prices rise, leading some end users to shift to substitute materials such as steel in cars, glass in drink containers, and titanium in aerospace products. The tariff may also reduce the incentive for domestic aluminum manufacturers to undertake investments in new, more efficient technologies, such as finding ways to reduce the energy required for aluminum production or to improve scrap recovery.

Century Aluminum, the main proponent of the tariff and chiefly a domestic producer, has responded positively, restarting its smelter in Hawesville, KY. Alcoa, the largest domestic producer with substantial overseas production and an opponent of the tariff, has not restarted any capacity. It says the tariff has not been enough of a factor to allow it to reopen curtailed capacity. The Aluminum Association, an industry trade group, opposes the global tariff on aluminum, arguing it will raise costs across the aluminum supply chain. It has asked for a global forum to discuss aluminum excess capacity and a U.S.-Chinese negotiated agreement.

If the United States ultimately excludes a sizable number of major trading partners from the tariff, it will likely have a modest impact on the overall level of imports, U.S. production, and prices. The proposed United States-Mexico-Canada Agreement maintains the Section 232 aluminum tariff for Canada and Mexico. Under the Section 232 trade action, U.S. companies can petition the Department of Commerce to exclude specific imported aluminum products from the tariffs. The department has processed or is currently processing over 4,000 product exclusion requests, including some from Alcoa. Representatives of some U.S. firms have testified before Congress that the exclusion process is burdensome, opaque, and costly.

For more information, see CRS Report R45249, *Section 232 Investigations: Overview and Issues for Congress*, coordinated by Rachel F. Fefer and Vivian C. Jones.

Michaela D. Platzer, Specialist in Industrial Organization and Business

IF10998

Disclaimer