



2016 Top Markets Report **Manufacturing Technology** Sector Snapshot

Industrial Molds

Industrial Molds are manufacturing implements used for casting shapes and objects out of metal or other materials such as plastics, glass or rubber. Typically, molds are two hardened dies that have been machined, cast, or additively manufactured into the desired shape, and then affixed to each other under pressure to eliminate seams of air. The mold is then affixed to a machine which fills the cavity with the desired material.

Molds are an essential part of the “tooling” in manufacturing processes like plastic injection-molding or aluminum die-casting. While a plastic injection-molding machine can be used to make any number of products, the mold is the variable that makes this possible. Molds must be made and machined with high levels of precision to achieve the nuances of a particular part, as well as the durability and longevity to undergo hundreds of thousands of production runs over a lifetime. As they are injected with hot liquid material, they must be made to take into account the specific cooling qualities of the end-use material.

Export Outlook

In 2015, U.S. exports of industrial molds accounted for \$624.7 million. More than other manufacturing machinery, industrial molds are typically sold in close regional proximity for a variety of reasons. For one, molds are unique and must be built to order. For this reason many manufacturers prefer to source their molds from relatively close geographic proximity. Another reason is that any change in tooling for a manufacturer can present serious down-time, and therefore many manufacturers attempt to offset this by sourcing locally or regionally.

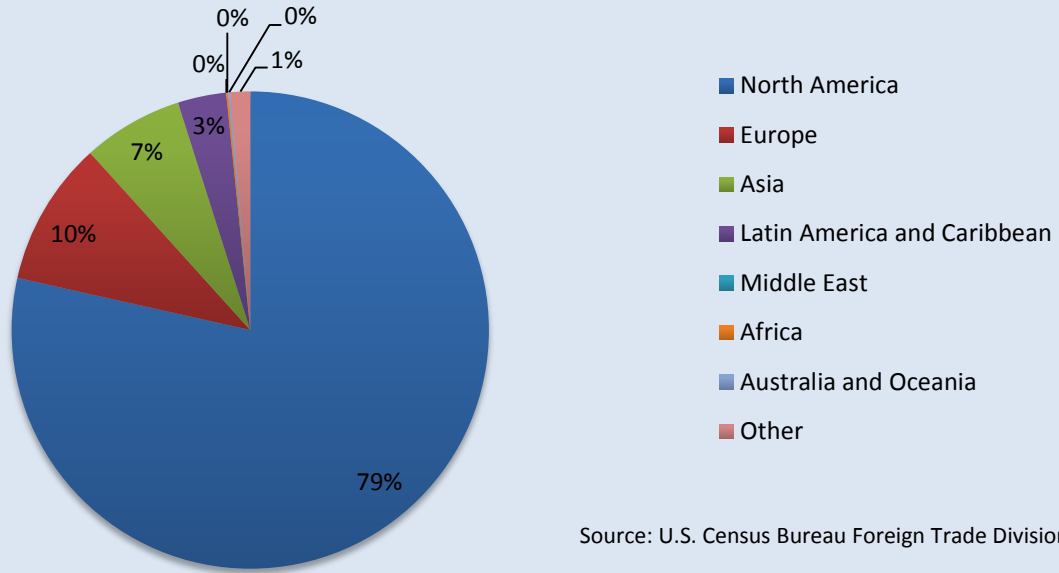
For U.S. exporters, this trend was clearly visible in 2015, when 79 percent of all U.S. mold exports were to Mexico and Canada (see Figure 2). By contrast, China, which is the largest global importer of molds outside of the United States, accounted for only 2.5 percent of U.S. exports in 2015. While exporters will undoubtedly continue to find opportunities in other industrialized markets, ITA projects that Mexico and Canada will remain the largest export markets for mold makers by far through 2017.

Challenges

Of all the manufacturing machinery subsectors outlined in this Top Markets study, the U.S. industrial mold subsector arguably faces the most headwinds. From 2009 to 2014, U.S. mold exports declined at an average annual rate (CAGR) of 0.8 percent, the most of any subsector. This is largely a result of the general global shift in manufacturing output to the Asia-Pacific region. As manufacturing continues to grow overseas, the need for geographic proximity of mold making operations outlined earlier will also drive the manufacturing of industrial molds to these areas.

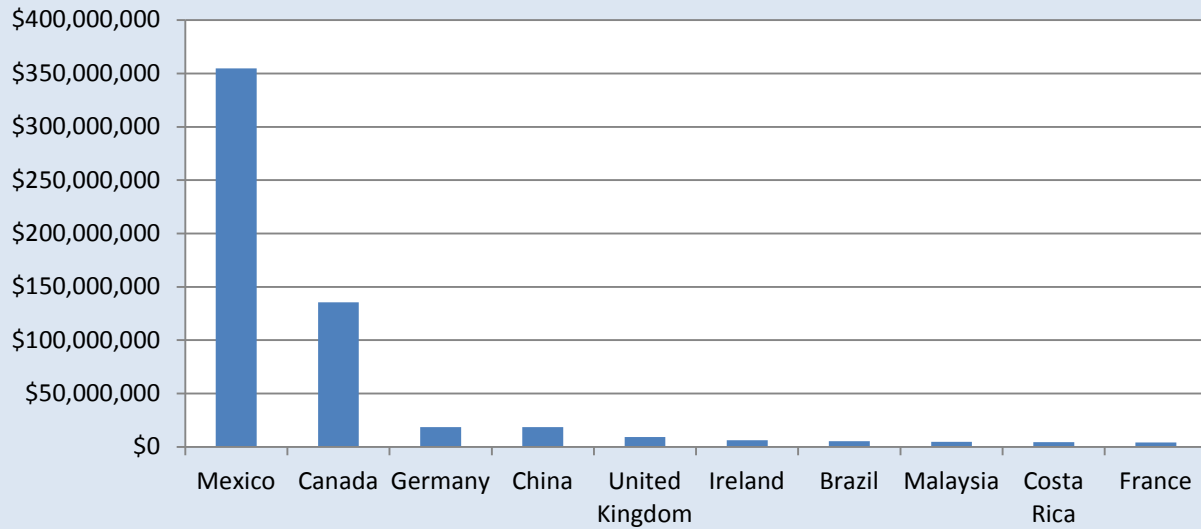
A second challenge on the horizon for mold makers will likely be the increasing adoption of additive manufacturing into supply chains. Industry experts have already noted the growing application of this technology to do “in-house” mold and tooling production, which was not previously feasible without significant investments in equipment and labor.

Figure 1: U.S. Industrial Mold Exports, 2015 (in USD Millions)



Source: U.S. Census Bureau Foreign Trade Division

Figure 2: U.S. Industrial Mold Exports, 2015



Source: U.S. Census Bureau Foreign Trade Division