

Stainless steel is the name of a family of alloy steels that resist *corrosion* (rust). As a family, the stainless steels have an easily maintained, attractive appearance. They show remarkable strength and ductility and are unique in their general resistance to weather and to most corrosives. Most stainless steels used in the home are highly polished, with a silvery appearance, but they do not need this finish to resist corrosion. *Stainless-clad steel* is commonly ordinary steel to which a thin layer of stainless steel has been bonded on one or both sides.

The most familiar use of stainless steel in the home is in kitchen knives, flatware, sinks, pots and pans, and other places where cleanliness and easy maintenance are essential. Stainless-steel equipment is used in hospitals, restaurants, chemical industries, dairies, and food-processing plants. Engineers use stainless steel parts for automobiles, aircraft, and railroad passenger cars. Scientists use microporous stainless steel, made with a nickel alloy, to filter gases, liquids, and small particles.

Chromium is the chief metal alloyed with iron, carbon, manganese, and silicon in making stainless steel. Chromium helps steel resist corrosion. However, the carbon in the steel reduces the ability of chromium to provide corrosion resistance. As a result, most stainless steels are improved by reducing the amount of carbon in them to very low levels. Nickel ranks as the second most important alloy in most stainless steels. One or more of the following elements also may be added to iron to make stainless steel: molybdenum, titanium, columbium, aluminum, nitrogen, phosphorus, sulfur, and selenium. Each element modifies stainless steel so it can be used for a specific purpose.

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