



About Stainless Steel

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When you need a corrosion-resistant metal, stainless steel is a practical choice. It contains a minimum of 10% chromium, which makes it more corrosion resistant than other types of steel. The designation 18-8 refers to stainless steel that has approximately 18% chromium and 8% nickel; it generally applies to 301, 303, and 304 stainless steel.

If strength is more important to your application than corrosion resistance, consider steel. For more information, see [About Carbon Steel](#), [Alloy Steel](#), [Spring Steel](#), and [Cast Iron](#).

If you are machining tools that cut, form, or shape other materials, tool steel is especially well-suited for those applications. For more information, see [About Tool Steel](#).

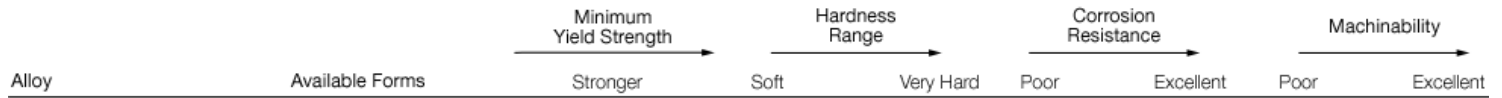
Alloy Comparison

Use the chart below to compare attributes and identify the best stainless steel for your application. We've included the ratings for 6061 aluminum and low-carbon steel to provide a reference for how stainless steel measures up to these familiar materials. The ratings are provided for comparison only and are not intended for design purposes.

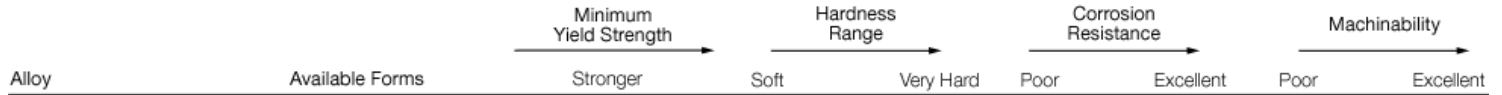
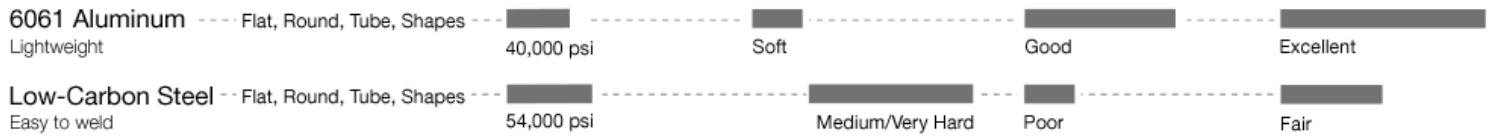
Hardness—All hardness values given below are in the unhardened condition. Stainless steel can be hardened in various ways. The 300 series hardens by cold working. Many in the 400 series can be hardened by heat treating. Those designated as "PH" can be heat treated using a precipitation hardening process.

Corrosion Resistance—An invisible film forms on the surface of stainless steel when it's in contact with oxygen. This allows it to withstand damage from corrosives including many acids, bases, and detergents, as well as salt water.

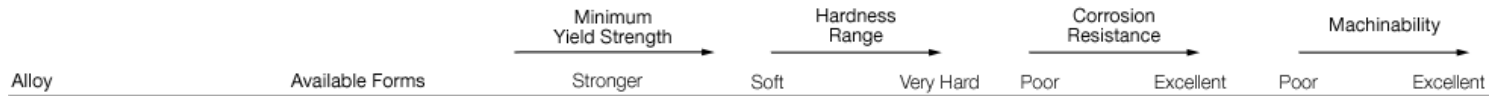
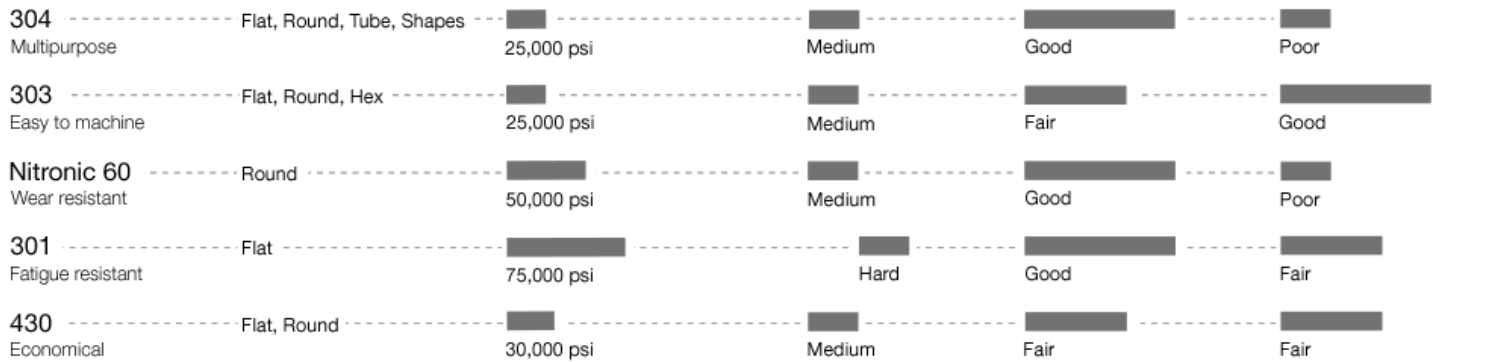
Machinability—During machining, stainless steel can become gummy and stick to cutting tools, making it typically more difficult to machine than steel.



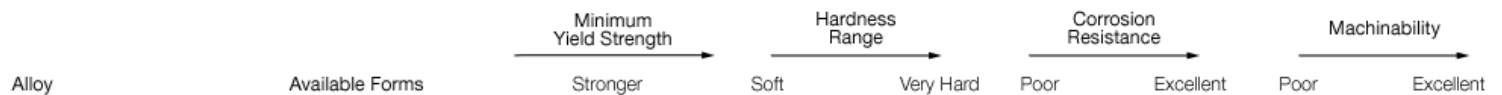
Compare to other metals:



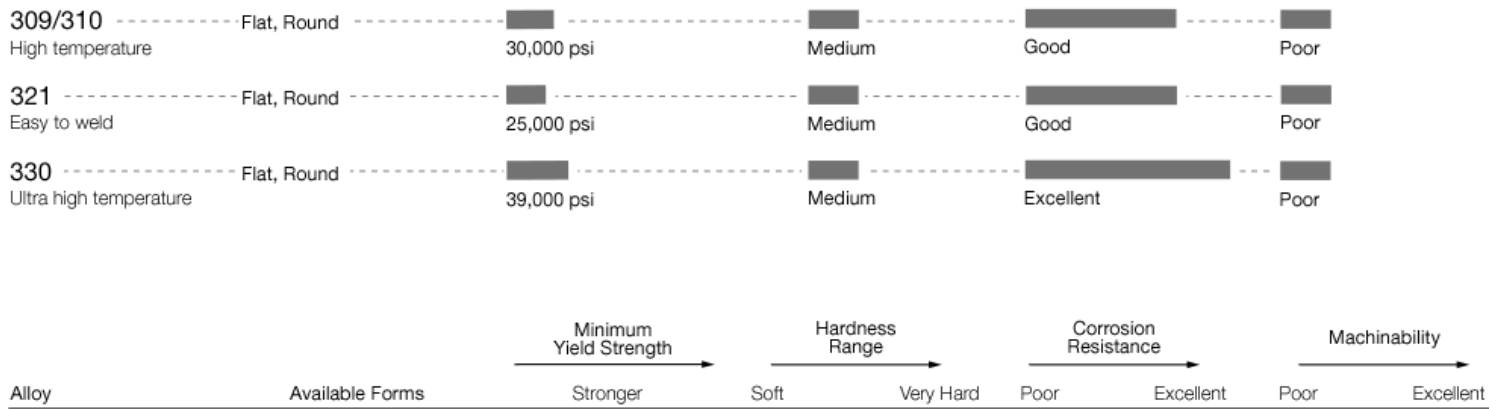
Multipurpose: Offering a good balance of strength, corrosion resistance, and machinability



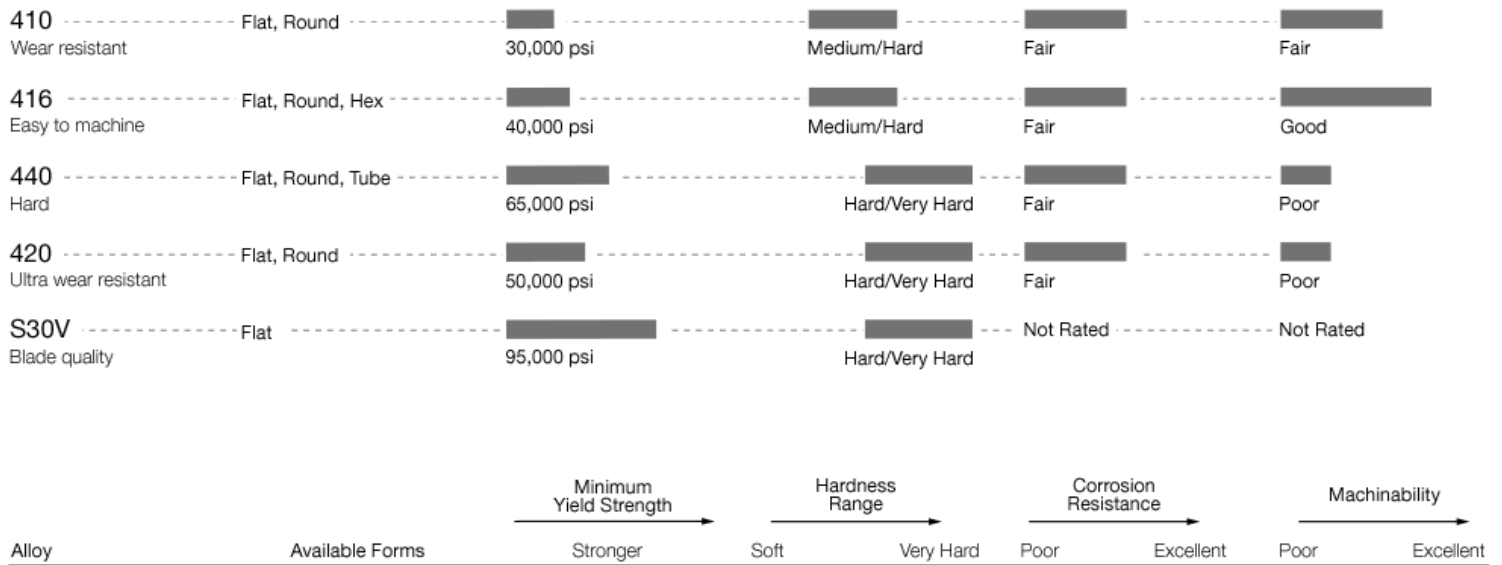
Corrosion Resistant: Especially suited for corrosive applications, such as those involving salt water and chemicals



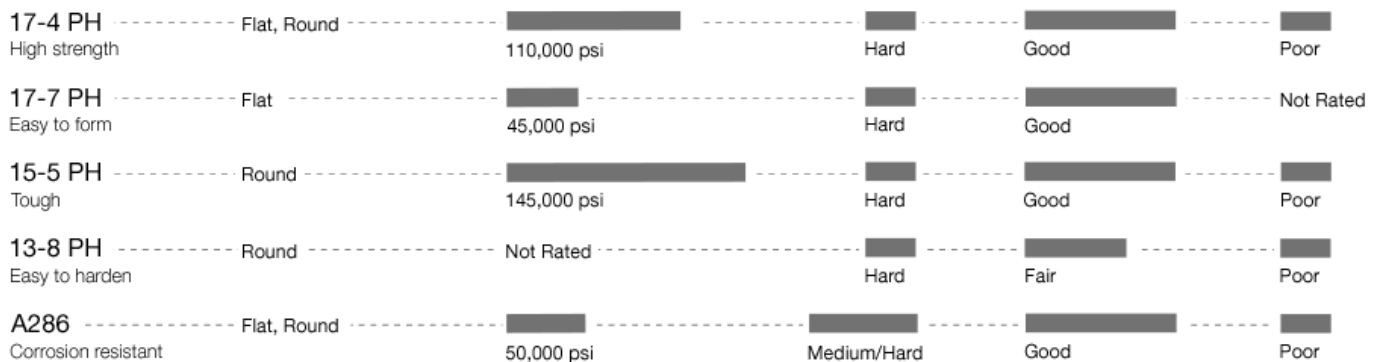
High Temperature: Maintains corrosion properties at high temperatures



Wear Resistant: Hardenable by heat treatment; good for use as tooling



High Strength: Hardenable by heat treatment; capable of the highest strengths in stainless steel



Hardness

As hardness increases, metal becomes more wear resistant, but it may also become less malleable. Metal hardness can be measured on a Brinell scale or on one of the Rockwell scales. The scales have some overlap; therefore, if a metal has a hardness rating of Brinell 170, it is the same relative hardness as Rockwell B85.