

What is the difference between 304 & 316L Stainless Steel?

To begin there is not a visible difference between the two - both are polished or grained in the exact same way - you can't tell just by looking at a fitting, valve or section of tubing. That is why Tri-Canada will generally send a material test report (MTR) of the actual material to validate it as being 304 or 316L as requested.

From a chemical or scientific stand-point, Type 304 stainless steel contains 18% chromium and 8% nickel while 316L contains 16% chromium, 10% nickel and 2% molybdenum. The molybdenum is added to help resist corrosion. The "L" in 316L refers to a lower carbon content and is the standard type of stainless steel used in Bio-Pharm applications for improved corrosion resistance.

Type 304 stainless steel, with its chromium-nickel content (also available with a lower carbon content as 304L stainless steel) is the most versatile and commonly used of the austenitic stainless steels for Food & Beverage applications. Type 304 proves to be resistant to oxidation, corrosion, and durability. Type 304 stainless provides ease of fabrication and cleaning, prevention of product contamination and offers a variety of finishes. Type 304 stainless steel is used in enclosures, storage tanks, pressure vessels and tubing or piping.

Type 316L stainless steel is an austenitic chromium-nickel stainless and heat-resisting steel with superior corrosion resistance as measured up to other chromium-nickel steels when exposed to many types of chemical corrodents.

Given that Type 316L stainless steel contains molybdenum, it has a considerably more resistance to chemical attack than Type 304 stainless steel. Type 316L is durable, easy-to-fabricate, clean, weld and finish. It is considerably more resistant to solutions of sulfuric acid, chlorides, bromides, iodides and fatty acids at high temperature. Stainless steels containing molybdenum are required in the manufacture of certain pharmaceuticals to avoid excessive metallic contamination.

Tri-Canada's inventory of sanitary fittings and tubing includes both Type 304 and Type 316L stainless steel in a wide range of sizes and polish specifications. Both Materials meet 3A and FDA requirements. Tri-Canada also carries fittings and tubing that meet the much tougher ASME BPE Standards for Bio-Pharm applications

In summary, Type 316L stainless steel costs a little more money, but you could save a whole lot on the back end. Something worth keeping in mind when you're planning your next project.