439 Stainless Steel Overview

Apricus frames are now manufactured from 439 Stainless Steel, previously grade 304 was used. The key difference between the two grades is that 304 contains a large amount of nickel (9.25%). With the record price of nickel, the price of 304 is 50% greater than 439, and twice that of 304 in mid 2005. 439 has been chosen (over 430 or other grades) as it is very similar to 304 in terms of strength, machine working ability and corrosion resistance. It's choice therefore does not reflect a compromise of quality.

Austenitic

300-series austenitic steels are stainless steels that contain chromium and nickel. The stainless steels in each austenitic group have different compositions and properties, but many common characteristics. They can be hardened by cold working, but not by heat treatment. In the annealed condition, all are essentially nonmagnetic, although some may become slightly magnetic by cold working. They have excellent corrosion resistance, unusually good formability, and increased strength due to cold working.

Type 304 or 18-8 stainless steel is the most widely used alloy in the 300-series austenitic group. It has a nominal composition of 18% chromium and 8% nickel. Type 316 stainless steel has an 18-8 composition modified with molybdenum to improve pitting corrosion resistance.

Austenitic grades consist of 201, 301, 301, 303, 304, 304L, 305, 309, 310, 316, 316L, 317, 317L, 321, 347, and 348 as well as specialized or proprietary austenitic stainless steels.

Ferritic

Ferritic stainless steels are straight-chromium 400-series metals that cannot be hardened by heat treatment, and only moderately hardened by cold marketing. They are magnetic, have good ductility, and resist corrosion and oxidation. Ferritic stainless steels have chromium levels that range from 10.5% to 40% (typically 12% or more) and carbon levels less than 0.20%. Types 409, 430, 434, 430, 439, 442, and 446 belong in this category. Type 430 is a general-purpose ferritic stainless steel.

439 Details

Type 439 with 18-20% **Cr** resists chloride stress-corrosion cracking. Resistance to general and pitting corrosion is approximately equivalent to that of austenitic types 304 and 316. This grade is suitable for equipment exposed to the aqueous chloride environments, heat transfer applications, condenser tubing for fresh water power plants, food-handling uses and water tubing for domestic and industrial buildings.

439 SS also provides comparable corrosion resistance to 304 SS in coastal (sea spray) locations.

Source: http://www.key-to-steel.com/Articles/Art58.htm