

Material Information



Stainless Steel Nitronic 60

Introduction

Stainless Steel Nitronic 60, also known as UNS S21800, is a nitrogen-strengthened austenitic stainless steel containing chromium, nickel, manganese, silicon, and nitrogen. It offers an excellent combination of strength, corrosion resistance, wear resistance, and galling resistance, making it suitable for CNC machined components exposed to sliding contact and demanding mechanical environments.

Advantages

Excellent wear and galling resistance, high strength, good corrosion resistance, and good performance at elevated temperatures. Nitronic 60 is particularly well suited to applications involving sliding contact, repeated movement, or threaded connections where galling and adhesive wear are concerns.

Disadvantages

Stainless Steel Nitronic 60 is more difficult and costly to machine than common stainless steels such as 303 and 304 because of its high strength and work-hardening behavior. Its machining performance therefore requires appropriate tooling, cutting conditions, and chip control for efficient CNC production.

Tolerance

3DSPRO can manufacture and inspect to tight tolerances, including sub +/- 0.001" tolerances, per your drawing specifications and GD&T callouts.

Recommendation

The combination of high strength, corrosion resistance, wear resistance, and outstanding galling resistance makes Stainless Steel Nitronic 60 suitable for CNC-machined components used in aerospace, industrial, marine, oil and gas, and chemical processing applications. It is particularly appropriate for shafts, pins, bushings, valve components, and other parts subjected to sliding or repeated contact.

Material Specifications (For reference only.)	
Tensile strength	414MPa

Shear modulus	69GPa
Elongation at Break	64%
Hardness	210 HB
Density	7.62 g/cm ³

Attention

Stainless Steel Nitronic 60 is normally supplied in a solution-annealed condition and does not require precipitation hardening. Its strength can be increased through cold working, while machining can become more demanding because the alloy work hardens readily. Proper tooling and machining practices should therefore be used to avoid excessive work hardening and tool wear.

Applications

3DSPRO finds people using Stainless Steel Nitronic 60 to make functional parts and prototypes in the following industries and applications.

Valve and fluid-control components:

Valve stems, valve seats, valve trim, pump components, and other parts requiring strong resistance to wear and galling.

Aerospace and industrial equipment:

Pins, bushings, shafts, fasteners, bearings, and other precision mechanical components exposed to repeated movement or sliding contact.

Marine and oil & gas equipment:

Subsea components, bridge pins, fittings, pump wear rings, and other parts requiring corrosion and galling resistance.

General engineering:

Gears, wear rings, threaded components, rollers, and other CNC machined parts where wear resistance and dimensional durability are important.