AMS 5872

AERODYNE ALLOYS
O'Neal High-Performance Metals Group

Alloy C-263 Plate

UNS N07263

0.302 lbs/in^3, 8.36 g/cm^3

Nominal Composition
Nickel 52% Cobalt 20% Chromium 20% Molybdenum 6% 2.4% Titanium 0.6% Aluminum

Description
Alloy C-263 is an age-hardenable nickel-cobalt chromium-molybdenum alloy designed specifically to combine good aged strength properties with excellent fabrication characteristics in the annealed condition. While its strength at elevated temperatures is not quite as high as Waspaloy or Rene 41, it is far easier to form or weld than these alloys. Alloy C-263 exhibits excellent intermediate temperature tensile ductility, and is not normally subject to strain age cracking problems common for other gamma prime strengthened alloys. Alloy C-263 is typically used for applications up to about 1650°F (900°C).

Properties
Non-magnetic. Alloy C-263 has high strength up to 1500°F (816°C) and good oxidation resistance up to 1800°F (982°C). This alloy has excellent forming and welding characteristics. In the annealed condition, this alloy has excellent ductility and may be formed by cold working. Alloy C-263 combines properties which make it suitable for a variety of fabricated components in both aircraft turbine engine and landbased turbine applications. These include low temperature combustors, transition liners, and some ring components.

Hardness
Hardness of Aerodyne stock is typically 200 BHN. Grain structure is austenitic at both cryogenic and elevated temperatures.

Machinability
TYPICAL STOCK REMOVAL RATE:
20 surface feet/minute with high speed tools. 80 surface feet/minute with carbide.
COMMENTS:
Care must be taken to ensure a rigid machine setup and sharp tools, so that work hardening and surface glazing do not occur.

Weldability
Alloy C-263 has excellent welding characteristics and can be welded by most customary techniques, such as inert gas tungsten arc (TIG), gas metal arc welding (GMAW), electron beam and resistance welding. Oxyacetylene and submerged arc processes are not recommended. Avoid excessive heat input when welding and when a filler metal is required a matching C-263 filler metal should be used. Alloy C-263 is typically used in the fully aged condition. Following forming and welding, a full solution anneal prior to aging is often employed to develop optimum properties.

Density: 0.302 lbs/in^3, 8.36 g/cm^3

Standard Inventory Specifications
- AMS 5872
- GE B50A774
- Predominantly produced by AOD-ESR melt method. Hot worked, solution treated (annealed), then descaled.