Technical Data Sheet

ATI C-263™

Precipitation Hardenable Nickel-Base Superalloy

(UNS N07263)

INTRODUCTION

The ATI C-263™ (UNS N07263) alloy is a high-temperature alloy commonly used in aircraft turbine engines and land-based gas turbines. It is typically supplied in the solution-annealed condition and then age-hardened by the customer after fabrication. The alloy is nickel based, but it also contains a significant amount of cobalt, which gives it superior high-temperature strength over other superalloys such as Types 718 and 625.

Typical applications require high strength at temperatures up to 1500°F (816°C) or oxidation resistance up to a temperature of 2000°F (1093°C). In addition to turbine engines, ATI C-263 alloy has also been used for components in automotive turbochargers.

PRODUCT FORMS

ATI C-263™ alloy is available in plate, sheet, strip and long product forms.

SPECIFICATIONS & CERTIFICATES

ATI C-263™ alloy is covered by AMS Specification 5872E for sheet, strip, and plate product forms. It is produced per the GE B50A774 specification.

FORMABILITY

In the solution-annealed condition, ATI C-263 alloy may be readily formed by hot or cold working.

WELDABILITY

The ATI C-263 alloy can be welded by many common methods, including gas tungsten arc welding (GTAW)
and gas metal arc welding (GMAW). The use of matching filler metal is recommended when welding thicker sections. A solution anneal and an age-hardening heat treatment are often performed following welding.

TYPICAL COMPOSITION

The table to the right shows the composition range specified for UNS N07263 material.

Element	UNS N07263 (weight %)
Al	0.3 - 0.6
C	0.04 - 0.08
Co	19.0 - 21.0
Cr	19.0 - 21.0
Cu	0.20 maximum
Fe	0.7 maximum
Mn	0.60 maximum
Mo	5.6 - 6.1
P	0.015 maximum
S	0.007 maximum
Si	0.40 maximum
Ti	1.9 - 2.4
Ni	Balance

PHYSICAL PROPERTIES

Density

0.302 lb/in^3 (8360 kg/m^3)

Modulus of Elasticity in Tension

32 x 10^6 psi (220 GPa)

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MECHANICAL PROPERTIES

Typical mechanical properties for ATI C-263 alloy are listed below:

	Yield Strength (0.2% Offset)	Ultimate Tensile Strength	Elongation in 2" (50.8 mm)	Hardness
Solution Annealed Tested at 70°F (21°C)	60 ksi (414 MPa)	120 ksi (827 MPa)	50%	90 R_b
Age Hardened* Tested at 70°F (21°C)	90 ksi (621 MPa)	150 ksi (1034 MPa)	35%	28 R_c
Age Hardened* Tested at 1435°F (779°C)	80 ksi (552 MPa)	95 ksi (655 MPa)	17%	-

*Precipitation heat-treated per AMS Standard 5872D.

When creep tested at 1435°F (779°C) under a stress of 16.8 ksi (116 MPa) for 50 hours the total plastic strain is typically 0.06%.

HEAT TREATMENT

Heat treatment is to be performed as required by specification AMS 5872E.

Solution Anneal
ATI C-263 alloy is normally supplied in the solution heat-treated condition. This is obtained by annealing between 1900 and 2150°F (1038 and 1177°C) followed by a rapid air cool or quench.

Age-Hardening Heat Treatment
The standard age-hardening heat treatment is to hold the material at 1475 ± 15°F(802 ± 8°C) for 8 hours followed by air cooling.

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