# AEROSPACE MATERIAL SPECIFICATION

| AMS5643™ | REV. W |
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Issued 1951-10
Reaffirmed 2007-08
Revised 2021-12

Superseding AMS5643V

Steel, Corrosion-Resistant, Bars, Wire, Forgings, Mechanical Tubing, and Rings
16Cr - 4.0Ni - 0.30Cb (Nb) - 4.0Cu
Solution Heat Treated, Precipitation Hardenable
(Composition similar to UNS S17400)

RATIONALE

AMS5643W prohibits unauthorized exceptions (3.8, 3.4.3.2.1,8.9, 8.10), revises composition (3.1) to replace obsolete chemical analysis standards, updates finish categories (3.2.1.1, 8.10), updates heat treatment specification (3.3.1), deletes requirement for CEO approval of heat treatment test (3.4.3.2), adds strain rate for tensile tests (3.4.3.2.1.1), updates requirements for product stock testing (3.4.3.2.2, 3.4.3.2.3), adds quality requirements of AS1182 (3.5.2, 8.8), changes microstructure from acceptance to periodic (4.2.1.3, 4.2.2, 4.4.1), and results from a Five-Year Review and update of this specification.

## 1. SCOPE

### 1.1 Form

This specification covers a corrosion-resistant steel in the form of bars, wire, forgings, mechanical tubing, flash welded rings in the solution heat treated condition up to 8.0 inches (203 mm) in diameter or least distance between parallel sides, and stock of any size for forging, flash welded rings, or heading (see 8.4).

1.1.1 For purchase of solution treated and aged product, use the applicable AMS slash specification (see 8.4). If a slash sheet description is not specified, solution annealed material shall be supplied. A specific example of a slash specification is:

AMS5643/H1025 - Precipitation Hardened to H1025 condition.

### 1.2 Application

These products have been used typically for parts requiring corrosion resistance and high strength up to 600 °F (316 °C), but usage is not limited to such applications.

1.2.1 Certain processing procedures and service conditions may cause these products to become susceptible to stress-corrosion cracking; ARP1110 recommends practices to minimize such conditions.

1.2.2 For applications, such as bolting, where stress-corrosion is a possibility, the product should be precipitation heat treated for not less than 4 hours at the highest temperature compatible with the strength requirements but in no case lower than 1025 °F (552 °C).



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