



AEROSPACE STANDARD	AS7246™	REV. A
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Inserts, Screw Threads, Helical Coil 72Ni-15.5Cr-0.95(Cb+Ta)-2.5Ti-0.70Al-7.0Fe Corrosion and Heat Resistant Alloy Procurement Specification For FSC 5340		

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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1. SCOPE:

1.1 Type:

This specification covers closely-wound helical coil, screw thread inserts made from an age hardenable nickel base alloy formed wire of the type identified under the Unified Numbering System as UNS N07750. The inner surface of the insert coil, after assembly into a screw thread tapped hole, provides internal threads of standard 60° Unified Form.

1.2 Application:

Primarily to provide hard, smooth internal screw threads in heat resistant alloys for use at temperatures up to approximately 1000 °F or where low permeability is desired, and for salvaging worn or damaged internal threads.

2. REFERENCES:

2.1 Applicable Documents:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other documents shall be the issue in effect on the date of the purchase order.

2.1.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2269	Chemical Check Analysis Limits, Wrought Nickel and Nickel Base Alloys
AMS 2371	Quality Assurance Sampling of Corrosion and Heat Resistant Steels and Alloys, Wrought Products and Forging Stock

- 2.1.2 U.S. Government Publication: Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-STD-2073-1 DoD Materiel, Procedures for Development and Application of Packaging Requirements

- 2.1.3 ASTM Publications: Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM E 8 Tension Testing of Metallic Materials

ASTM E 290 Semi-Guided Bend Test for Ductility of Metallic Materials

ASTM E 354 Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt-Base Alloys

- 2.1.4 ANSI Publication: Available from American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036.

ANSI Y14.5M Dimensioning and Tolerancing

2.2 Definitions:

DEFECTIVE: Is a unit of product that has one or more defects.

PRODUCTION INSPECTION LOT: Shall be all finished inserts of the same part number, made from a single heat of alloy, heat treated at the same time to the same specified condition, produced as one continuous run, and submitted for vendor's inspection at the same time.

2.3 Unit Symbols:

% - percent (1% = 1/100)

ksi - kips (1000 pounds) per square inch

° - degree, angular

°F - degree, Fahrenheit

3. TECHNICAL REQUIREMENTS:

3.1 Material:

- 3.1.1 Chemical Composition: Shall conform to the percentages by weight specified in Table 1, determined by wet chemical methods in accordance with ASTM E 354, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

- 3.1.1.1 Check Analysis: Composition variation shall meet the requirements of AMS 2269.

- 3.1.2 Condition: Wire cold drawn and formed by rolling to achieve the properties as in 3.1.3, and to conform to the cross-section as specified on the insert drawing.

TABLE 1 - Material Composition

Element	% By Weight min	% By Weight max
Carbon	---	0.08
Manganese	---	1.00
Silicon	---	0.50
Phosphorus /1/	---	0.015
Sulfur	---	0.010
Chromium	14.00	17.00
Nickel + Cobalt	70.00	---
Columbium + Tantalum	0.70	1.20
Titanium	2.25	2.75
Aluminum	0.40	1.00
Iron	5.00	9.00
Cobalt /1/	---	1.00
Copper	---	0.50
/1/ Determination not required for routine acceptance		

3.1.3 Properties (Before Coiling and Heat Treatment):

- 3.1.3.1 Ultimate Tensile Strength: Formed wire, before coiling into parts and heat treatment, shall have an ultimate tensile strength not lower than 130 ksi, determined in accordance with ASTM E 8.
- 3.1.3.2 Bending: Formed wire from which inserts are coiled shall withstand, without cracking, bending at room temperature through an angle of 180E around a diameter equal to twice the cross-sectional dimension of the formed wire in the plane of the bend, determined in accordance with ASTM E 290.

3.2 Design:

Finished (completely manufactured) parts shall conform to the following requirements:

- 3.2.1 Dimensions: The dimensions of finished parts, after all processing, shall conform to the part drawing.
- 3.2.2 Tang location and approximate shape shall be as shown in Figure 1 and Table 2. The tang removal notch shall be located as shown on the part drawing and shall be of such depth that the part may be installed without failure of the tang and that the tang may be removed, after assembly, without affecting the function of the installed insert.