AEROSPACE STANDARD

AS7241™	REV. A

Issued 2006-11
Revised 2011-10
Reaffirmed 2022-09

Superseding AS7241

Washers, Spring Lock, Corrosion-Resistant Steel, 18Cr - 9Ni (UNS S30200), Procurement Specification for

RATIONALE

AS7241A has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE

1.1 Type

This procurement specification covers plain helical lock washers made of corrosion-resistant steel.of the type identified under the Unified Numbering System as UNS S30200.

1.2 Application

Primarily for use with corrosion-resistant steel threaded fasteners; not recommended for use at temperatures higher than 700 °F (370 °C).

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS2248 Chemical Check Analysis Limits, Wrought Corrosion and Heat Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys

AMS2371 Quality Assurance Sampling of Corrosion and Heat Resistant Steels and Alloys, Wrought Products Except Forgings and Forging Stock

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/AS7241A/

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM E 18 Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

ASTM E 353 Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys

2.1.3 ANSI Publications

Available from ANSI, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI/ASQC Z1.9 Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming

2.1.4 U.S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, http://assist.daps.dla.mil/quicksearch/.

MIL-STD-2073-1 Standard Practice for Military Packaging

2.2 Unit Symbols

°F - degree, Fahrenheit

°C - degree, Celsius

% - percent (1% = 1/100)

mm - millimeter

in - inch

3. TECHNICAL REQUIREMENTS

3.1 Material

3.1.1 Chemical Composition

Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E 353 or by spectrochemical or other analytical methods approved by purchaser:

TABLE 1 – CHEMICAL COMPOSITION

	min	max
Carbon	--	0.15
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Nickel	8.00	10.00
Chromium	17.00	19.00
Molybdenum	--	0.75
Copper	--	0.75

3.1.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.1.2 Condition

Cold worked.

3.2 Fabrication

3.2.1 Helix

Washers shall be coiled so that the free height is approximately twice the thickness of the washer section. Gap and relationship of the severed ends shall be such as to prevent the washers tangling.

3.3 Properties

Parts shall conform to the following requirements:

3.3.1 Hardness

Shall be 35 - 43 HRC, determined in accordance with ASTM E 18.

3.3.2 Temper

After the first compression to flat, the free height of a washer shall be not less than 0.66 times the original free height. Subsequent compressions to flat shall not further reduce this free height by more than 0.005 in (0.13 mm) but the free height after ten compressions to flat shall be not less than 0.66 times the original free height.

3.3.3 Toughness

A portion of washer shall be firmly gripped in vise jaws having sharp edges. Ends of washer shall be free and an axis passing through the slot shall be parallel to top of vise. An equal portion of washer shall be gripped in wrench jaws. Edges of wrench jaws shall be sharp and in a plane parallel to top of vise. Free portion of washer, between the grip of vise and wrench, shall be approximately 25% of washer diameter. Movement of wrench in the direction that increases the free height of the washer shall twist the lock washer through 90° without evidence of fracture. When a washer fractures because of twist, the structure at the point of fracture shall show a fine grain; the washers shall deliver, at the instant of fracture, a tough, springy, reactive shear.

3.4 Quality

The flat faces and the inner and outer periphery of the washers shall be smooth and free from knurling, serration, die marks, and deep scratches; however, slight feed marks are permissible. The ends at the gap shall not have cutting edges at the contact surfaces. Washers shall have rounded edges and shall be free from internal and external imperfections detrimental to their performance.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of parts shall supply all samples for vendor's test and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the parts conform to the requirements of this specification.

4.2 Classification of Tests

Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each lot.

4.3 Sampling

Shall be in accordance with the following; a lot shall be all parts of the same part number presented for vendor's inspection at one time:

4.3.1 Composition

One sample per lot.

4.3.2 Other Requirements

In accordance with ANSI/ASQC Z1.9 to an AQL of 3.5%.

4.4 Reports

The vendor of parts shall furnish with each shipment a report stating that the parts conform to the technical requirements of this specification. This report shall include the purchase order number, this specification number and its revision letter, contractor or other direct supplier of the material, part number, nominal size, and quantity.

4.5 Resampling and Retesting

If any specimen used in the above tests fails to meet the specified requirements, disposition of the parts may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the parts represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY

5.1 Identification and Packaging

5.1.1 Parts having different part number shall be packaged in separate containers.

5.1.2 Each container shall be marked to show not less than the following information:

a. Washers, Corrosion Resistant Steel

b. AS7241

c. Part number

d. Lot number

e. Purchase order number

f. Quantity

g. Manufacturer's identification