



AEROSPACE MATERIAL SPECIFICATION

AMS6451™**REV. D**

Issued	1982-04
Revised	2000-09
Noncurrent	2005-11
Reaf. Nonc.	2011-05
Stabilized	2015-12

Superseding AMS6451C

Steel, Spring Wire
1.4Si - 0.65Cr (0.51 - 0.59C) (SAE 9254)
Oil Tempered

G92540

RATIONALE

AMS6451D is stabilized as mature technology that is not expected to change.

STABILIZED NOTICE

AMS6451D has been declared "STABILIZED" by AMS E Carbon and Low Alloy Steels Committee. This document will no longer be updated and may no longer represent standard industry practice. This document was stabilized because this document contains mature technology that is not expected to change and thus no further revisions are anticipated. Previously this document was reaffirmed noncurrent. The last technical update of this document occurred in September 2000. Users of this document should refer to the cognizant engineering organization for disposition of any issues with reports/certifications to this specification; including exceptions listed on the certification.

NOTE: In many cases, the purchaser may represent a sub tier supplier and not the cognizant engineering organization.

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1. SCOPE:

1.1 Form:

This specification covers a low-alloy steel in the form of wire supplied as coils or straight lengths.

1.2 Application:

This wire has been used typically for the fabrication of mechanical springs for use up to 450 °F (230 °C), but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS:

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been canceled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications:

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

AMS 2259	Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS 2301	Cleanliness, Aircraft Quality Steel Magnetic Particle Inspection Procedure
MAM 2301	Cleanliness, Aircraft Quality Steel Magnetic Particle Inspection Procedure, Metric (SI) Measurement
AMS 2370	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM A 370	Mechanical Testing of Steel Products
ASTM E 290	Semi-Guided Bend Test for Ductility of Metallic Metals
ASTM E 350	Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 350, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - Composition

Element	min	max
Carbon	0.51	0.59
Manganese	0.60	0.80
Silicon	1.20	1.60
Phosphorus	--	0.035
Sulfur	--	0.040
Chromium	0.60	0.80

3.1.1 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2259.

3.2 Condition:

Oil tempered to meet the requirements of Table 2.