AEROSPACE
MATERIAL SPECIFICATIONS
SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 7726B

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ALLOY WIRE, LOW EXPANSION, GLASS SEALING
53Fe - 29Ni - 17Co

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. APPLICATION: Primarily for the fabrication of lead wires and other electronic elements to be sealed to hard glasses during the assembly of electronic components.

3. COMPOSITION: Shall be a metallic alloy containing approximately 53% iron, 29% nickel, and 17% cobalt with impurities not exceeding the following limits:

Carbon	0.06
Manganese	0.50
Silicon	0.20
Titanium	0.10
Aluminum	0.10
Magnesium	0.10
Zirconium	0.10
Ti + Al + Mg + Zr	0.20

3.1 Ø The following impurities shall not exceed the limits shown, but analysis is not required for routine acceptance:

4. CONDITION: Unless otherwise specified, cold drawn and bright annealed.

5. TECHNICAL REQUIREMENTS: When ASTM methods are specified for determining conformance to the following requirements, tests shall be conducted in accordance with the issue of the ASTM method listed in the latest issue of AMS 2350.

5.1 Thermal Expansion: The average linear coefficient of thermal expansion, when determined in accordance with ASTM B95, shall conform to the following:

Temperature Range, Degrees	Average Linear Coefficient of Thermal Expansion, In. per In. per Deg Cent
30 C (86 F) to 400 C (752 F)	$4.60 \text{ to } 5.28 \times 10^{-6}$
30 C (86 F) to 450 C (842 F)	$5.10 \text{ to } 5.50 \times 10^{-6}$

5.1.1 Prior to testing, the specimen shall be annealed in a hydrogen atmosphere for 1 hr at 900 C (1652 F) followed by 15 min. at 1100 C (2012 F). Between the 900 C and 1100 C heat treatment periods, the specimen may be cooled to room temperature. The specimen shall be cooled from 1100 C to 200 C (2012 F to 392 F) in the hydrogen atmosphere at a rate not to exceed 5 C (9 F) per minute.

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5.2 Temperature of Transformation: The temperature of transformation from gamma to alpha phase, as determined by means of expansion measurements or metallographic examination, shall be not higher than -78.5 C (-109.3 F). Prior to testing, the specimen shall have been annealed as in 5.1.1.

5.3 Grain Size: Predominantly 5 or finer with occasional grains as large as 3 permissible, ASTM E112.

5.4 Glass Seal Test: Material shall be capable of producing, with Corning Glass 7052 or equivalent, a glass-to-metal seal free from bubbles. The seal shall be free from cracks after immersion in a mixture of dry ice and acetone maintained at -112 F. Annealing after the sealing operation to relieve stresses in the glass is permissible. When specified by the purchaser, the seal produced in this test shall meet the additional requirements of standards supplied to the manufacturer.

5.5 Hardness: Shall be not higher than Rockwell B 82 or equivalent.

6. QUALITY: Material shall be uniform in quality and condition, sound, and free from foreign materials and from internal and external imperfections, consistent with the type of material involved, detrimental to fabrication or to performance of parts.

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to the following:

7.1 Diameter or Thickness:

Nominal Diameter or Distance Between Parallel Sides Inch	Tolerance, Inch Plus and Minus
0.002 to 0.0043, incl	0.0002
Over 0.0043 to 0.0079, incl	0.00025
Over 0.0079 to 0.0149, incl	0.0003
Over 0.0149 to 0.0199, incl	0.0004
Over 0.0199 to 0.0309, incl	0.0005
Over 0.0309 to 0.0409, incl	0.0006
Over 0.0409 to 0.0609, incl	0.0007
Over 0.0609 to 0.0809, incl	0.0008
Over 0.0809 to 0.1259, incl	0.001
Over 0.1259 to 0.1569, incl	0.0015
Over 0.1569 to 0.250, incl	0.002

7.2 Roundness: Round wire shall not be out-of-round by more than one-half the total tolerance specified in 7.1 for the nominal diameter.