



AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AMS 7247C
Superseding AMS 7247B

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INSERTS, THREAD FORM, PHOSPHOR BRONZE
95 Cr - 4.6Sn - 0.19P

1. SCOPE:

- 1.1 Form: This specification covers closely-wound helices of phosphor bronze wire, the insides of which, after assembly, provide threads of the diameter and pitch specified on the drawing.
- 1.2 Application: Primarily to provide moderately hard, wear-resistant, interchangeable threads in metals and nonmetals and for salvaging worn or damaged threads.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

- 2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

- 2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM E8 - Tension Testing of Metallic Materials
ASTM E54 - Chemical Analysis of Special Brasses and Bronzes
ASTM E290 - Semi-Guided Bend Test for Ductility of Metallic Materials

- 2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

- 3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E54, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other approved analytical methods:

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	min	max
Copper	93.0	--
Tin	3.5	5.8
Phosphorus	0.03	0.35
Copper + Tin + Phosphorus	99.5	--
Zinc	--	0.30
Iron	--	0.10
Lead	--	0.05

3.2 Fabrication:

3.2.1 Inserts shall be coiled from cold-drawn and shaped wire.

3.2.2 Tang location and approximate shape shall be as shown in Fig. 1 and Table I. The tang-removal notch, when provided, 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.

3.3 Properties:

3.3.1 Tensile Strength: Shaped wire, before coiling into parts, shall have tensile strength not lower than \emptyset 110,000 psi (758 MPa), determined in accordance with ASTM E8.

3.3.2 Bending: Shaped wire shall withstand, without cracking, bending in accordance with ASTM E290 at \emptyset room temperature through an angle of 120 deg (2.09 rad) around a diameter equal to twice the cross-sectional dimension of the wire in the plane of the bend.

3.3.3 Spacing: Inserts shall stretch with approximately equal spacing between turns when extended axially beyond their elastic limit.

3.4 Quality:

3.4.1 Inserts shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external imperfections detrimental to their performance.

3.4.2 Edges of wire in inserts shall be continuous and uniformly smooth.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of inserts shall supply all samples 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 perform such confirmatory testing as he deems necessary to ensure that the inserts 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 or routine control tests.

4.3 Sampling: Shall be in accordance with the following; control number shall be a designation indicating \emptyset round wire acceptance testing and batch processing of inserts:

\emptyset 4.3.1 Composition: One sample from each heat of wire.

\emptyset 4.3.2 Tensile Strength and Bending: Two specimens from each control number of shaped wire.

\emptyset 4.3.3 Spacing: One insert from each control number.

4.4 Reports: The vendor of inserts shall furnish with each shipment three copies of a report stating that the wire conforms to the chemical composition and tensile strength requirements of this specification and showing the results of tests to determine conformance to bending and spacing requirements. This report shall include the purchase order number, this specification number and its revision letter, control number, part number, and quantity.

4.5 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the inserts 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 inserts represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification:

5.1.1 Inserts of each different part number shall be packaged in separate containers.

5.1.2 Each container shall be permanently and legibly marked to show the following information:

- Ø INSERTS, THREAD FORM, PHOSPHOR BRONZE
- AMS 7247C
- PART NUMBER _____
- CONTROL NUMBER _____
- QUANTITY _____
- MANUFACTURER'S IDENTIFICATION _____

5.1.3 Containers shall be prepared for shipment in accordance with commercial practice to ensure carrier acceptance and safe transportation to the point of delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

5.1.4 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.1.3 will be acceptable if it meets the requirements of Level C.

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

7. REJECTIONS: Inserts not conforming to this specification or to authorized modifications will be subject to rejection.

8. NOTES:

8.1 Marginal Indicia: The phi (Ø) symbol is used to indicate technical changes from the previous issue of this specification.

8.2 For direct U.S. Military procurement, purchase documents should specify the following:

- Title, number, and date of this specification
- Size or part number of inserts desired
- Quantity of inserts desired
- Applicable level of packaging (See 5.1.4).

TABLE I

Dimension, Inches

Size	A	B	C
0.086 -56	0.024 - 0.026	0.007 - 0.009	0.053 - 0.055
0.099 -48	0.032 - 0.034	0.009 - 0.011	0.064 - 0.066
0.099 -56	0.028 - 0.030	0.008 - 0.010	0.081 - 0.083
0.112 -40	0.034 - 0.036	0.009 - 0.011	0.074 - 0.076
0.112 -48	0.032 - 0.034	0.009 - 0.011	0.073 - 0.075
0.125 -40	0.034 - 0.036	0.014 - 0.016	0.089 - 0.091
0.138 -32	0.044 - 0.046	0.019 - 0.021	0.100 - 0.102
0.138 -40	0.037 - 0.039	0.019 - 0.021	0.103 - 0.105
0.164 -32	0.044 - 0.046	0.019 - 0.021	0.126 - 0.128
0.164 -36	0.040 - 0.042	0.019 - 0.021	0.127 - 0.129
0.190 -24	0.060 - 0.062	0.019 - 0.021	0.141 - 0.143
0.190 -32	0.051 - 0.053	0.019 - 0.021	0.152 - 0.154
0.250 -20	0.072 - 0.074	0.027 - 0.029	0.192 - 0.194
0.250 -28	0.059 - 0.061	0.019 - 0.021	0.207 - 0.209
0.3125 -18	0.081 - 0.083	0.033 - 0.035	0.249 - 0.251
0.3125 -24	0.069 - 0.071	0.021 - 0.025	0.264 - 0.266
0.375 -16	0.092 - 0.094	0.038 - 0.040	0.301 - 0.303
0.375 -24	0.069 - 0.071	0.023 - 0.025	0.327 - 0.329
0.4375 -14	0.111 - 0.113	0.055 - 0.057	0.354 - 0.356
0.4375 -20	0.087 - 0.089	0.045 - 0.047	0.379 - 0.381
0.500 -13	0.124 - 0.126	0.075 - 0.077	0.410 - 0.412
0.500 -20	0.089 - 0.091	0.045 - 0.047	0.421 - 0.423
0.5625 -12	0.141 - 0.143	0.085 - 0.087	0.467 - 0.469
0.5625 -18	0.099 - 0.101	0.065 - 0.067	0.499 - 0.501
0.625 -11	0.155 - 0.157	0.113 - 0.115	0.520 - 0.522
0.625 -18	0.099 - 0.101	0.088 - 0.090	0.562 - 0.564
0.750 -10	0.185 - 0.187	0.116 - 0.118	0.624 - 0.626
0.750 -16	0.108 - 0.110	0.086 - 0.088	0.678 - 0.680
0.875 - 9	0.185 - 0.187	0.155 - 0.157	0.749 - 0.751
0.875 -14	0.124 - 0.126	0.134 - 0.136	0.793 - 0.795
1.000 - 8	0.249 - 0.251	0.155 - 0.157	0.843 - 0.845
1.000 -12	0.129 - 0.131	0.134 - 0.136	0.909 - 0.911
1.000 -14	0.124 - 0.126	0.124 - 0.126	0.918 - 0.920
1.125 - 7	0.247 - 0.249	0.155 - 0.157	0.934 - 0.936
1.125 -12	0.149 - 0.151	0.134 - 0.136	1.034 - 1.036
1.250 - 7	0.252 - 0.254	0.155 - 0.157	1.059 - 1.061
1.250 -12	0.149 - 0.151	0.134 - 0.136	1.159 - 1.161
1.375 - 6	0.249 - 0.251	0.155 - 0.157	1.185 - 1.187
1.375 -12	0.149 - 0.151	0.134 - 0.136	1.284 - 1.286
1.500 - 6	0.249 - 0.251	0.155 - 0.157	1.309 - 1.311
1.500 -12	0.149 - 0.151	0.134 - 0.136	1.409 - 1.411