

AEROSPACE

MATERIAL SPECIFICATIONS

AMS 5717A

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

485 Lexington Ave., New York 17, N.Y.

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ALLOY BARS, FORGINGS, AND RINGS, HEAT RESISTANT 25Cr - 45Ni - 3.2Co - 3.2Mo - 3.2W

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. **FORM:** Bars, forgings, flash welded rings, and stock for forgings or flash welded rings.
3. **APPLICATION:** Primarily for parts and assemblies requiring heat and oxidation resistance and where such parts may require welding during fabrication. Material is oxidation resistant up to 2150 F (1175 C).
4. **COMPOSITION:**

	min	max
Carbon	—	0.08
Manganese	—	2.00
Silicon	0.75	— 1.50
Phosphorus	—	0.030
Sulphur	—	0.030
Chromium	24.00	— 27.00
Nickel	44.00	— 47.00
Cobalt	2.50	— 4.00
Molybdenum	2.50	— 4.00
Tungsten	2.50	— 4.00
Copper	—	0.50
Tin	—	0.025
Lead	—	0.025
Iron	remainder	

- 4.1 **Check Analysis:** Composition variations shall meet the requirements of the latest issue of AMS 2248.

5. CONDITION:

- 5.1 **Bars, Forgings, and Flash Welded Rings:** Solution heat treated as in 6.1.1, unless otherwise specified.

- 5.1.1 **Bars:** Unless otherwise specified, shall be supplied hot finished, except that bars under 0.25 in. in diameter or distance between parallel sides may be cold finished.

- 5.1.2 Flash welded rings shall not be supplied unless specified or permitted on purchaser's part drawing. When supplied, they shall be manufactured in accordance with the latest issue of AMS 7490, unless otherwise specified.

- 5.2 **Stock for Forgings or Flash Welded Rings:** As ordered by the forging or flash welded ring manufacturer.

Section 8.3 of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no requirement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and applying technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

6. TECHNICAL REQUIREMENTS:**6.1 Bars, forgings, and Flash Welded Rings:**

6.1.1 **Heat Treatment:** The product shall be solution heat treated by heating to $\varnothing 2000\text{ F} \pm 50$ ($1093.3\text{ C} \pm 28$), holding at heat for 10 min. per inch of cross-section, and either quenching in water or cooling rapidly in air.

6.1.2 Tensile Properties:

Tensile Strength, psi	110,000 max
Yield Strength at 0.2% offset or at 0.0069 in.	
in 2 in. Extension Under Load ($E = 28,000,000$), psi	40,000 min
Elongation, % in 2 in. or 4D	30 min

6.1.3 **Hardness:** Shall be not higher than Rockwell B 95 or equivalent.

7. **QUALITY:** Material shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.

8. **TOLERANCES:** Unless otherwise specified, tolerances shall conform to all applicable requirements of the latest issue of AMS 2241.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each heat in the shipment. This report shall include the purchase order number, heat number, material specification number, size, and quantity from each heat. If forgings are supplied, the part number and size of stock used to make the forgings shall also be included.

9.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

10. IDENTIFICATION:

10.1 **Bars:** Individual pieces or bundles shall have attached a metal or plastic tag embossed with the purchase order number, AMS 5717A, nominal size, and heat number, or shall be boxed and the box marked with the same information. In addition to the above identification, bars 0.5 in. and over in diameter or distance between parallel sides shall be stamped with the heat number within 2 in. of one end.

10.2 **Forgings:** Shall be identified in accordance with the latest issue of AMS 2808.