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

AMS 5221A

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ALLOY STRIP
Iron Base - 5.2Cr - 42Ni - 2.3Ti - 0.50Al
Solution Treated

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 diaphragms, leaf springs, and helical springs, requiring a precipitation-hardening alloy with a coefficient of modulus of elasticity of -20 to +20 x 10^{-6} per deg Fahr from -50 to +150 F (-36 to +36 x 10^{-6} per deg Cent from -45 to +65 C) after suitable heat treatment.

3. COMPOSITION:

Carbon	0.06 max
Manganese	0.8 max
Silicon	1.0 max
Phosphorous	0.04 max
Sulfur	0.04 max
Chromium	4.90 - 5.75
Nickel + Cobalt	41.0 - 43.5
Cobalt, if determined	1.0 max
Titanium	2.2 - 2.75
Aluminum	0.30 - 0.8
Chromium + (Titanium - 4xCarbon)	7.1 - 8.1
Iron	remainder

4. CONDITION: Solution heat treated at 1750 F ± 25 (954.4 C ± 14) for 15 to 30 min. at temperature.

5. TECHNICAL REQUIREMENTS:

5.1 Tensile Properties: Material 0.020 to 0.250 in., incl, in thickness shall meet the following requirements. Properties of material of other thicknesses shall be as agreed upon by purchaser and vendor:

Tensile Strength, psi	95,000 max
Elongation, % in 2 in.	35 min

5.2 Hardness: Shall be not higher than Rockwell B 80 or equivalent.

5.3 Grain Size: Predominantly 5 or finer with occasional grains as large as 3 permissible, determined in accordance with the issue of ASTM E112 listed in the latest issue of AMS 2350.

5.4 Properties After Precipitation Heat Treatment: Material 0.020 to 0.250 in., incl, in thickness shall be capable of meeting the following requirements after being heated to 1350 F ± 15 (732.2 C ± 8.3), held at heat for 3 hr, and cooled in air. Properties of material of other thicknesses shall be as agreed upon by purchaser and vendor.

5.4.1 Tensile Properties:

Tensile Strength, psi	150,000 min
Yield Strength at 0.2% Offset or at 0.0111 in. in 2 in. Extension Under Load (E = 25,500,000) psi	90,000 min
Elongation, % in 2 in.	15 min

5.4.2 Hardness: Shall be Rockwell C 27 - 35 or equivalent.

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

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

7.1 Thickness:

Ø Nominal Thickness (T) Inch	Thickness Tolerance, Inch, Plus and Minus Width Ranges, Inches: Up to 4.00, incl	Over 4.00 to 5.00, incl
Up to 0.015, incl	0.0005	0.0006
Over 0.015 to 0.025, incl	0.00075	0.0008
Over 0.025 to 0.040, incl	0.001	0.001
Over 0.040	0.025xT	0.025xT

7.1.1 When premium tolerances are specified on the purchase order, material shall conform to the following:

Ø Nominal Thickness (T) Inch	Thickness Tolerance Inch, Plus and Minus Width Ranges, Inches: Up to 4.00, incl	Over 4.00 to 5.00, incl
Up to 0.005, incl	0.0002	0.0003
Over 0.005 to 0.010, incl	0.0003	0.0004
Over 0.010 to 0.015, incl	0.0004	0.0005
Over 0.015 to 0.025, incl	0.0005	0.0005
Over 0.025	0.02xT	0.02xT