

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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Revised

STEEL, HIGH EXPANSION
5.5Mn - 9.5Ni (0.55-0.65C)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. FORM: Bars.
3. APPLICATION: Primarily for bolts and screws requiring a coefficient of expansion approaching that of aluminum alloys.
4. COMPOSITION:

		<u>Check Analysis</u>	
		Under Min	or Over Max
Carbon	0.55 - 0.65	0.02	0.02
Manganese	5.00 - 6.00	0.04	0.04
Silicon	1.00 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Nickel	8.50 - 10.50	0.15	0.15

5. CONDITION: Cold finished.

6. TECHNICAL REQUIREMENTS:

6.1 Tensile Properties:

Nominal Diameter or Distance between Parallel Sides Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 29,000,000)		Elongation % in 4D min	Reduction of Area %, min
		psi, min	Extension Under Load in. in 2 in.		
1.00 and under	125,000	100,000	0.0109	16	30
Over 1.00	120,000	90,000	0.0102	16	30

6.2 Hardness: Material shall have hardness as follows or equivalent:

Nominal Diameter or Distance Between Parallel Sides Inches	Hardness, Brinell
1.00 and under	255-331
Over 1.00	248-331

6.3 Coefficient of Thermal Expansion: Material shall be capable of showing a coefficient of thermal expansion not lower than 11.5×10^{-6} per deg Fahr over the temperature range 72-600 F.

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