

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
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STEEL, CORROSION AND MODERATE HEAT RESISTANT  
13Cr - 2Ni - 3W

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, and forging stock.
3. APPLICATION: Primarily for parts and assemblies, such as compressor wheels and blades, requiring oxidation resistance up to 1000 F. Strength at the higher temperatures is superior to that of the standard 12Cr type.
4. COMPOSITION:

Check Analysis  
Under Min or Over Max

Carbon	0.12 - 0.17	0.01	0.01
Manganese	0.50 max	--	0.03
Silicon	0.50 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	12.00 - 14.00	0.15	0.15
Nickel	1.80 - 2.20	0.07	0.07
Molybdenum	0.50 max	--	0.03
Tungsten	2.50 - 3.50	0.10	0.10
Aluminum	0.15 max	--	--
Copper	0.50 max	--	0.03
Tin	0.05 max	--	--

### 5. CONDITION:

- 5.1 Bars: All hexagons, and other bars 2.75 in. and under in diameter or distance between parallel sides shall be cold finished. All bars shall be annealed, in a machinable condition, having hardness not higher than Brinell 311 or equivalent.
- 5.2 Forgings: As ordered.
- 5.3 Forging Stock: As ordered by the forging manufacturer.

### 6. TECHNICAL REQUIREMENTS:

- 6.1 Hardenability: Material 0.375 in. and less in thickness and 0.375 in. thick specimens cut from larger bars and forgings shall be capable of meeting the following test:
  - 6.1.1 Specimens shall be placed in a furnace which is at 1750 F  $\pm$  10, allowed to heat to 1750 F  $\pm$  10, held at heat 25 min., and quenched in commercial paraffin oil (100 SUS at 100 F) at room temperature. Hardness of such specimens shall be not lower than Rockwell C 42.

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