

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
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## STEEL, CORROSION RESISTANT 16Cr - 2Ni (SAE 51431)

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 requiring corrosion resistance at operating temperatures up to 800 F.
4. COMPOSITION:

### Check Analysis Under Min or Over Max

Ø	Carbon	0.12 - 0.17	0.01	0.01
	Manganese	0.30 - 0.80	0.03	0.03
	Silicon	0.20 - 0.60	0.05	0.05
	Phosphorus	0.040 max	--	0.005
	Sulfur	0.030 max	--	0.005
	Chromium	15.50 - 17.00	0.20	0.20
	Nickel	1.50 - 2.50	0.07	0.07

### 5. CONDITION:

5.1 Bars and Forgings: Unless otherwise specified, bars and forgings shall be supplied in a machinable condition, and as follows:

5.1.1 Bars 2.75 in. and Under in Diameter or Distance between Parallel Sides: Cold finished, having hardness of Brinell 229-285 or equivalent.

5.1.2 Hot Finished Bars: Having hardness of Brinell 229-277 or equivalent.

5.1.3 Forgings: Having hardness of Brinell 229-277 or equivalent.

5.2 Forging Stock: As ordered by the forging manufacturer.

### 6. TECHNICAL REQUIREMENTS:

6.1 Hardenability: Material shall be capable of meeting the following test:

6.1.1 Specimens with sections 1 in. in thickness, cut from a bar or forging shall be placed in a furnace which is at 1800 F  $\pm$  10, allowed to heat to 1800 F  $\pm$  10, held at heat 25 min., and quenched in commercial paraffin oil (100 SUS at 100 F) at room temperature. Specimens shall have hardness not lower than Rockwell C 40.

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