

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
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### STEEL SHEET AND STRIP, CORROSION AND HEAT RESISTANT 18 Chromium - 8 Nickel

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1. ACKNOWLEDGMENT: A vendor must mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. COMPOSITION:

Carbon	.10 max
Manganese	2.50 max
Silicon	1.50 max
Phosphorus	0.04 max
Sulphur	0.04 max
Chromium	17.00 min
Copper	0.50 max
Nickel	7.00 min
Columbium	8 x C min
or	
Titanium	4 x C min
3. CONDITION: (a) Solution heat treated and pickled.  
(b) Tensile Test specimens shall be pulled at a rate of .05 inch per minute and shall conform to the following requirements:

Tensile Strength lb/sq in.	100,000 max
Elongation, % in 2 in.	40 min

For widths 9 inches or over, tensile test specimens shall be taken with the axis perpendicular to the direction of rolling. For widths less than 9 inches, tensile test specimens shall be taken with the axis parallel to the direction of rolling.

(c) Bend test specimens shall withstand cold bending in any direction of the sheet, without cracking through an angle of 180° over a diameter equal to the thickness of the specimen.
4. QUALITY: (a) This material must be uniform in quality, free from surface or internal defects and must not reveal material defects during fabrication.  
(b) All sheets or strips shall be commercially straight, smooth and free from grease or other foreign matter.
5. EMBRITTLEMENT: The material shall be capable of meeting the following test but the actual conducting of the test is an option of the purchaser:

After being heated to 1200°F for two hours and air cooled, embrittlement test specimens shall withstand a 48 hour boiling in 10% copper sulphate, 10% sulphuric acid solution without evidence of intercrystalline surface attack. After such immersion, the specimens must withstand cold bending through an angle of 180° over a diameter equal to the thickness of the specimen without cracking.
6. TOLERANCE: The following variations in thickness are permissible. All dimensions are in inches;

TABLE I

STANDARD SHEET TOLERANCES  
Thickness Tolerances  
All Finishes

Ordered Thickness Inch	Tolerance Plus or Minus Inch
0.005 .....	0.001
0.006 to 0.007 .....	0.0015
0.008 to 0.0160 .....	0.002
0.0161 to 0.026 .....	0.003
0.027 to 0.040 .....	0.004
0.041 to 0.058 .....	0.005
0.059 to 0.072 .....	0.006
0.073 to 0.083 .....	0.007
0.084 to 0.098 .....	0.008
0.099 to 0.114 .....	0.009
0.115 to 0.130 .....	0.010
0.131 to 0.145 .....	0.012
0.146 to 0.176 .....	0.014

TABLE II  
STAINLESS STRIP STEEL  
COLD-ROLLED  
Thickness Tolerances

Measured 3/8 inch in from edge on 1 inch or wider; and on narrower than 1 inch at any place on the strip. Tolerances given are in inches.

Ordered Thickness Inch	Width Range																				
	Under 1/2 to 3/16		Under 1 to 1/2		Under 1 1/2 to 1		Under 3 to 1 1/2		Over 3 to 6		Over 6 to 9		Over 9 to 12		Over 12 to 16		Over 16 to 20		Over 20 to 23-15/16		
	To	and	To	and	To	and	To	and	To	and	To	and	To	and	To	and	To	and	To	and	
From incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	incl.	
	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	+ & -	
0.249	0.161	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.005	0.006	0.006										
0.160	0.100	0.002	0.002	0.002	0.002	0.003	0.004	0.004	0.004	0.005	0.005										
0.099	0.069	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.004	0.004	0.004										
0.068	0.050	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.004	0.004										
0.049	0.040	0.002	0.002	0.002	0.002	0.0025	0.003	0.003	0.003	0.004	0.004										
0.039	0.035	0.002	0.002	0.002	0.002	0.0025	0.003	0.003	0.003	0.003	0.003										
0.034	0.032	0.0015	0.0015	0.0015	0.0015	0.002	0.0025	0.0025	0.0025	0.003	0.003										
0.031	0.029	0.0015	0.0015	0.0015	0.0015	0.002	0.0025	0.0025	0.0025	0.003	0.003										
0.028	0.026	0.001	0.001	0.0015	0.0015	0.0015	0.002	0.002	0.002	0.0025	0.003										
0.025	0.023	0.001	0.001	0.001	0.001	0.0015	0.002	0.002	0.002	0.0025	0.0025										
0.022	0.020	0.001	0.001	0.001	0.001	0.0015	0.002	0.002	0.002	0.0025	0.0025										
0.019	0.017	0.001	0.001	0.001	0.001	0.001	0.0015	0.0015	0.002	0.002	0.002										
0.016	0.015	0.001	0.001	0.001	0.001	0.001	0.0015	0.0015	0.0015	0.002	0.002										
0.014	0.013	0.001	0.001	0.001	0.001	0.001	0.0015	0.0015	0.0015	0.002	0.002										
0.012	.....	0.001	0.001	0.001	0.001	0.001	0.001	0.0015	0.0015	0.0015	0.0015										
0.011	.....	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0015	0.0015										
0.010	.....	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0015	0.0015										

0.009" to 0.006" + or -0.00075")  
Under 0.006" + or -0.00050") Apply only on 6 inch or narrower