



ASM Aerospace Specification Metals Inc.

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**AISI Type S21904 (Alloy 21-6-9) Stainless Steel, 152 by 152 mm section annealed bar, tested in longitudinal direction**

**Subcategory:** Ferrous Metal; Heat Resisting; Metal; Stainless Steel; T S20000 Series Stainless Steel

**Close Analogs:** AISI Type S21900

**Key Words:** UNS S21904, AMS 5595, AMS 5656, ASME SA412, ASTM A269 (XM-11), ASTM A276 (XM-11), ASTM A314 (XM-11), ASTM A412 (XM-11), ASTM A473 (XM-11), ASTM A580 (XM-11)

Component	Wt. %	Component	Wt. %	Component	Wt. %
C	Max 0.04	Mn	9	P	Max 0.06
Cr	20	N	0.23	S	Max 0.03
Fe	64	Ni	6	Si	Max 1

### Material Notes:

Austenitic, high strength, excellent corrosion resistance, and low magnetic permeability. Applications include aircraft applications such as ducting and bellows systems, tail pipes and exhaust systems, clamps, fasteners, flanges, and hydraulic tubing.

Physical Properties	Metric	English	Comments
Density	<u>7.83 g/cc</u>	0.283 lb/in <sup>3</sup>	

### Mechanical Properties

Tensile Strength, Ultimate	<u>685 MPa</u>	99400 psi	
Tensile Strength, Yield	<u>450 MPa</u>	65300 psi	at 0.2% offset
Elongation at Break	<u>48 %</u>	48 %	in 50 mm
Modulus of Elasticity	<u>200 GPa</u>	29000 ksi	Typical for stainless steel
Machinability	<u>30 %</u>	30 %	Based on 100% machinability for AISI 1212 steel.

### Electrical Properties

Electrical Resistivity [7.3e-005 ohm-cm](#) 7.3e-005 ohm-cm

### Thermal Properties

CTE, linear 20°C [16.7  \$\mu\text{m}/\text{m}\cdot^\circ\text{C}\$](#)  9.28  $\mu\text{in}/\text{in}\cdot^\circ\text{F}$  at 25-95°C, 17.3  $\mu\text{m}/\text{m}\cdot^\circ\text{C}$  at 25-205°C. Annealed

CTE, linear 250°C [18.2  \$\mu\text{m}/\text{m}\cdot^\circ\text{C}\$](#)  10.1  $\mu\text{in}/\text{in}\cdot^\circ\text{F}$  at 25-315°C. Annealed

CTE, linear 500°C [19.1  \$\mu\text{m}/\text{m}\cdot^\circ\text{C}\$](#)  10.6  $\mu\text{in}/\text{in}\cdot^\circ\text{F}$  at 25-540°C, 20.0  $\mu\text{m}/\text{m}\cdot^\circ\text{C}$  at 25-760°C, 20.0  $\mu\text{m}/\text{m}\cdot^\circ\text{C}$  at 25-870°C, 20.5  $\mu\text{m}/\text{m}\cdot^\circ\text{C}$  at 25-980°C. Annealed

Specific Heat Capacity [0.48  \$\text{J}/\text{g}\cdot^\circ\text{C}\$](#)  0.115 BTU/lb-°F Typical value for stainless steel.

Thermal Conductivity [13.8  \$\text{W}/\text{m}\cdot\text{K}\$](#)  95.8 BTU-in/hr-ft<sup>2</sup>-°F 13.8 at 95°C, 7.8  $\text{W}/\text{m}\cdot^\circ\text{C}$  at -180°C, 10.9  $\text{W}/\text{m}\cdot^\circ\text{C}$  at -73°C, 16.1  $\text{W}/\text{m}\cdot^\circ\text{C}$  at 205°C, 18.2  $\text{W}/\text{m}\cdot^\circ\text{C}$  at 315°C, 20.2  $\text{W}/\text{m}\cdot^\circ\text{C}$  at 425°C, 22.5  $\text{W}/\text{m}\cdot^\circ\text{C}$  at 540°C, 24.7  $\text{W}/\text{m}\cdot^\circ\text{C}$  at 650°C, 26.8  $\text{W}/\text{m}\cdot^\circ\text{C}$  at 760°C, 28.9  $\text{W}/\text{m}\cdot^\circ\text{C}$  at 870°C

### References for this datasheet.

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.