

## TIMET TIMETAL® 21S Titanium Alloy (Ti-15Mo-3Nb-3Al-0.2Si, ASTM Grade 21); Aged at 593°C

Category : Metal , Nonferrous Metal , Titanium Alloy , Beta Titanium Alloy

### Material Notes:

High-Strength, Oxidation Resistant Strip Alloy Features: Offers the good cold formability and weldability of a beta strip alloy, but with greatly improved oxidation resistance and creep strength. Aerospace applications include engine exhaust plug and nozzle assemblies. The alloy's resistance to aircraft hydraulic fluids, such as Skydrol, is excellent at all temperatures. It is well suited for metal matrix composites because it can be economically rolled to foil, is compatible with most fibers, and is sufficiently stable up to 816°C. Typical heat treatment for this alloy: Solution treatment: 816-843°C for 3-30 min, air cool. Age treatment: 510-679°C for 8-16 hrs. Data provided by TIMET.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_TIMET-TIMETAL-21S-Titanium-Alloy-Ti-15Mo-3Nb-3Al-02Si-ASTM-Grade-21-Aged-at-593C.php](http://www.lookpolymers.com/polymer_TIMET-TIMETAL-21S-Titanium-Alloy-Ti-15Mo-3Nb-3Al-02Si-ASTM-Grade-21-Aged-at-593C.php)

Physical Properties	Metric	English	Comments
Density	4.94 g/cc	0.178 lb/in <sup>3</sup>	Typical

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1100 MPa	160000 psi	Typical
Tensile Strength, Yield	1035 MPa @Strain 0.200 %	150100 psi @Strain 0.200 %	Typical
Elongation at Break	10 %	10 %	Typical
Modulus of Elasticity	100 GPa	14500 ksi	Typical

Thermal Properties	Metric	English	Comments
CTE, linear	7.07 µm/m-°C	3.93 µin/in-°F	
	@Temperature 38.0 °C	@Temperature 100 °F	
	8.90 µm/m-°C	4.94 µin/in-°F	
	@Temperature >=316 °C	@Temperature >=601 °F	
	9.50 µm/m-°C	5.28 µin/in-°F	
	@Temperature 538 °C	@Temperature 1000 °F	
Specific Heat Capacity	0.490 J/g-°C	0.117 BTU/lb-°F	
Thermal Conductivity	7.60 W/m-K	52.7 BTU-in/hr-ft <sup>2</sup> -°F	
Maximum Service Temperature, Air	816 °C	1500 °F	Use in metal matrix composites
Beta Transus	800 °C	1470 °F	

Thermal Properties	Metric	English	Comments
Component Elements Properties	Metric	English	Comments
Aluminum, Al	2.5 - 3.5 %	2.5 - 3.5 %	
Carbon, C	<= 0.050 %	<= 0.050 %	
Hydrogen, H	<= 0.015 %	<= 0.015 %	
Iron, Fe	<= 0.40 %	<= 0.40 %	
Molybdenum, Mo	14 - 16 %	14 - 16 %	
Niobium, Nb (Columbium, Cb)	2.4 - 3.2 %	2.4 - 3.2 %	
Nitrogen, N	<= 0.050 %	<= 0.050 %	
Oxygen, O	0.11 - 0.17 %	0.11 - 0.17 %	
Silicon, Si	0.15 - 0.25 %	0.15 - 0.25 %	
Titanium, Ti	76 - 80.8 %	76 - 80.8 %	Calculated as remainder

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000135 ohm-cm	0.000135 ohm-cm	

## Contact Songhan Plastic Technology Co.,Ltd.

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