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6061 T651 Aluminum Sheet

Properties

General

Property	Temperature	Value
Density	23.0 °C	2.7 g/cm³

Mechanical

Property	Temperature	Value	Comment
Bending Fatigue Strength	23.0 °C	95 MPa	
Elastic modulus	23.0 °C	69 GPa	
Elongation A100	23.0 °C	5 - 15 %	
Elongation A50	23.0 °C	10 - 12 %	
Hardness, Brinell	23.0 °C	95 [-]	
Plane-Strain Fracture Toughnes	23.0 °C	22 - 35 MPa·√m	Typical for Wrought 6000 Series Aluminium
Poisson's ratio	23.0 °C	0.33 [-]	Typical for Wrought 6000 Series Aluminium
Shear modulus	23.0 °C	26 - 26.5 GPa	Typical for Wrought 6000 Series Aluminium

Tensile strength	23.0 °C	275 - 310 MPa
Yield strength Rp0.2	23.0 °C	240 - 275 MPa

Thermal

Property	Temperature	Value	Comment
Coefficient of thermal expansion	20.0 °C	2.36E-5 1/K	
	100.0 °C	2.36E-5 1/K	
Melting point		580 - 650 °C	
Specific heat capacity	23.0 °C	887 - 963 J/(kg·K)	Typical for Wrought 6000 Series Aluminium
Thermal conductivity	23.0 °C	155 - 180 W/(m·K)	

Electrical

Property	Temperature	Value
Electrical conductivity	23.0 °C	2.30E+7 - 2.70E+7 S/m
Electrical resistivity	23.0 °C	3.7E-8 - 4.35E-8 Ω·m

Chemical properties

Property	Value
Chromium	0.04 - 0.35 %
Copper	0.15 - 0.4 %
Iron	0.7 %

Magnesium	0.8 - 1.2 %
Manganese	0.15 %
Other	each 0.05, total 0.15, Rest Al
Silicon	0.4 - 0.8 %
Titanium	0.15 %
Zinc	0.25 %

Technological properties

Property	
Brazing	general: possible with commercial processes and methods
Corrosion properties	Stress corrosion cracking: no damage during operation and laboratory tests (O, T6, T651, T652, T6510, T6511), no damage during operation, limited damage during laboratory tests (T4, T451, T4510, T4511), general: good, without protection in industrial or seawater atmosphere
General machinability	General: poor (O), sufficient (T4, T451, T4510, T4511, T6, T651, T652, T6510, T6511)
Workability	general (condition): good (O), acceptable (T4, T451, T4510, T4511), poor(T6, T651, T652, T6510, T6511)