Constellium Unidal® High-Strength Rolled Precision Aluminum Plate, Milled Both Sides

Category : Metal , Nonferrous Metal , Aluminum Alloy , 7000 Series Aluminum Alloy

Material Notes:

Unidal® precision plates offers a combination of dimensional stability and high mechanical strength. The very low internal stress reduces the risk of deformation during machining, thereby reducing the need for extra operations like rough-milling, finishing or rework. Both the flatness and the high quality of the plate surfaces, protected by a plastic film, make surface milling by the end user superfluous. Thanks to the high strength properties, threading is made directly into the metal; thread inserts are not required, thus reducing manufacturing cost and time . Applications include reference plates, transport tables, jigs, robot arms.Information provided by manufacturer

Order this product through the following link:
http://www.lookpolymers.com/polymer_Constellium-Unidal-High-Strength-Rolled-Precision-Aluminum-Plate-Milled-Both-Sides.php

Physical Properties	Metric	English	Comments
Density	2.75 g/cc	0.0994 lb/in³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	125 @Thickness 5.90 - 15.0 mm	125 @Thickness 0.232 - 0.591 in	
	125 @Thickness 15.0 - 35.0 mm	125 @Thickness 0.591 - 1.38 in	
	125 @Thickness 60.0 - 80.0 mm	125 @Thickness 2.36 - 3.15 in	
	125 @Thickness 80.0 - 120 mm	125 @Thickness 3.15 - 4.72 in	
	130 @Thickness 35.0 - 60.0 mm	130 @Thickness 1.38 - 2.36 in	
Tensile Strength	>= 390 MPa @Thickness 60.0 - 80.0 mm	>= 56600 psi @Thickness 2.36 - 3.15 in	Temper T651
	>= 390 MPa @Thickness 80.0 - 120 mm	>= 56600 psi @Thickness 3.15 - 4.72 in	Temper T651

Mechanical Properties	Metric	English	Comments
	>= 400 MPa @Thickness 15.0 - 35.0 mm	>= 58000 psi @Thickness 0.591 - 1.38 in	Temper T651
	>= 400 MPa @Thickness 35.0 - 60.0 mm	>= 58000 psi @Thickness 1.38 - 2.36 in	Temper T651
	405 MPa @Thickness 80.0 - 120 mm	58700 psi @Thickness 3.15 - 4.72 in	Typical Strength
	410 MPa @Thickness 15.0 - 35.0 mm	59500 psi @Thickness 0.591 - 1.38 in	Typical Strength
	410 MPa @Thickness 60.0 - 80.0 mm	59500 psi @Thickness 2.36 - 3.15 in	Typical Strength
	>= 410 MPa @Thickness 5.90 - 15.0 mm	>= 59500 psi @Thickness 0.232 - 0.591 in	Temper T651
	415 MPa @Thickness 35.0 - 60.0 mm	60200 psi @Thickness 1.38 - 2.36 in	Typical Strength
	420 MPa @Thickness 5.90 - 15.0 mm	60900 psi @Thickness 0.232 - 0.591 in	Typical Strength
Tensile Strength, Yield	>= 330 MPa @Strain 0.200 %, Thickness 60.0 - 80.0 mm	>= 47900 psi @Strain 0.200 %, Thickness 2.36 - 3.15 in	Temper T651
	>= 330 MPa @Strain 0.200 %, Thickness 80.0 - 120 mm	>= 47900 psi @Strain 0.200 %, Thickness 3.15 - 4.72 in	Temper T651
	>= 340 MPa @Strain 0.200 %, Thickness 15.0 - 35.0 mm	>= 49300 psi @Strain 0.200 %, Thickness 0.591 - 1.38 in	Temper T651
	>= 340 MPa @Strain 0.200 %, Thickness 35.0 - 60.0 mm	>= 49300 psi @Strain 0.200 %, Thickness 1.38 - 2.36 in	Temper T651

Mechanical Properties	Metric	English	Comments
	@Strain 0.200 %, Thickness 5.90 - 15.0 mm	@Strain 0.200 %, Thickness 0.232 - 0.591 in	Temper T651
	355 MPa @Strain 0.200 %, Thickness 15.0 - 35.0 mm	51500 psi @Strain 0.200 %, Thickness 0.591 - 1.38 in	Typical Strength
	355 MPa @Strain 0.200 %, Thickness 80.0 - 120 mm	51500 psi @Strain 0.200 %, Thickness 3.15 - 4.72 in	Typical Strength
	360 MPa @Strain 0.200 %, Thickness 60.0 - 80.0 mm	52200 psi @Strain 0.200 %, Thickness 2.36 - 3.15 in	Typical Strength
	365 MPa @Strain 0.200 %, Thickness 35.0 - 60.0 mm	52900 psi @Strain 0.200 %, Thickness 1.38 - 2.36 in	Typical Strength
	370 MPa @Strain 0.200 %, Thickness 5.90 - 15.0 mm	53700 psi @Strain 0.200 %, Thickness 0.232 - 0.591 in	Typical Strength
Elongation at Break	>= 7.0 % @Thickness 80.0 - 120 mm	>= 7.0 % @Thickness 3.15 - 4.72 in	Temper T651
	>= 8.0 % @Thickness 5.90 - 15.0 mm	>= 8.0 % @Thickness 0.232 - 0.591 in	Temper T651
	>= 8.0 % @Thickness 15.0 - 35.0 mm	>= 8.0 % @Thickness 0.591 - 1.38 in	Temper T651
	>= 8.0 % @Thickness 35.0 - 60.0 mm	>= 8.0 % @Thickness 1.38 - 2.36 in	Temper T651
	>= 8.0 % @Thickness 60.0 - 80.0 mm	>= 8.0 % @Thickness 2.36 - 3.15 in	Temper T651
	10 %	10 %	

Mechanical Properties	Metric	English	Comments
	@Thickness 80.0 - 120 mm	@Thickness 3.15 - 4.72 in	Typical Elongation
	10.5 % @Thickness 60.0 - 80.0 mm	10.5 % @Thickness 2.36 - 3.15 in	Typical Elongation
	12 % @Thickness 35.0 - 60.0 mm	12 % @Thickness 1.38 - 2.36 in	Typical Elongation
	12.5 % @Thickness 15.0 - 35.0 mm	12.5 % @Thickness 0.591 - 1.38 in	Typical Elongation
	13 % @Thickness 5.90 - 15.0 mm	13 % @Thickness 0.232 - 0.591 in	Typical Elongation
Modulus of Elasticity	71.0 GPa	10300 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	23.6 µm/m-°C @Temperature 20.0 - 100 °C	13.1 µin/in-°F @Temperature 68.0 - 212 °F	
Thermal Conductivity	135 - 150 W/m-K	937 - 1040 BTU-in/hr-ft²-°F	temper T651

Component Elements Properties	Metric	English	Comments
Aluminum, Al	90.9 - 94.75 %	90.9 - 94.75 %	as balance
Chromium, Cr	<= 0.20 %	<= 0.20 %	
Copper, Cu	<= 0.20 %	<= 0.20 %	
Iron, Fe	<= 0.45 %	<= 0.45 %	
Magnesium, Mg	1.5 - 2.5 %	1.5 - 2.5 %	
Manganese, Mn	0.15 - 0.50 %	0.15 - 0.50 %	
Silicon, Si	<= 0.35 %	<= 0.35 %	
Zinc, Zn	3.5 - 4.5 %	3.5 - 4.5 %	
Zr+Ti	0.10 - 0.40 %	0.10 - 0.40 %	

Electrical Properties	Metric	English	Comments

Electrical Properties	Metric	English	Comments
	0.00000430 - 0.00000530 ohm-cm	0.00000430 - 0.00000530 ohm-cm	

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