

## Schmolz + Bickenbach UGIMA® 630 Stainless Steel Bar

Category : Metal , Ferrous Metal , Stainless Steel , T 600 Series Stainless Steel

### Material Notes:

Description: 630 UGIMA® is an improved machining martensitic precipitation hardenable grade produced only by Ugitech. It is identical in every way to standard type 630 (17-4), except with respect to machinability. The proprietary UGIMA® manufacturing process "developed exclusively by Ugitech" results in a product that increases productivity and tool life, and improves the surface finish on all types of machined parts. 630 UGIMA® provides a good combination of high strength corrosion resistance, and is often the best solution of stainless steel when high strength is required. Parts machined from solution treated bar stock should be heat treated or aged prior to use. No further heat treatment of machined parts is required when using 630 UGIMA® is one of the precipitation hardened conditions as specified. Applications: Fasteners, Shafts, Valve Bodies, Valves, Valve Trim, Fitting, Machined parts, Medical devices, Aircraft components, and Not recommended for vessels containing liquid or gasses at high pressure. Information provided by Schmolz + Bickenbach

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Schmolz-Bickenbach-UGIMA-630-Stainless-Steel-Bar.php](http://www.lookpolymers.com/polymer_Schmolz-Bickenbach-UGIMA-630-Stainless-Steel-Bar.php)

Physical Properties	Metric	English	Comments
Density	7.75 g/cc	0.280 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	>= 277	>= 277	1400°F for 2 hrs and 1150°F for 4 hrs
	320 - 340	320 - 340	Cold Drawn Bars
	@Thickness <=25.4 mm	@Thickness <=1.00 in	
	320 - 340	320 - 340	Turned Bars
		@Thickness >=25.4 mm	
	>= 255	>= 255	
	@Treatment Temp. 579.4 °C, Time 14400 sec	@Treatment Temp. 1075 °F, Time 4.00 hour	
	>= 255	>= 255	
	@Treatment Temp. 621 °C, Time 14400 sec	@Treatment Temp. 1150 °F, Time 4.00 hour	
	>= 331	>= 331	
	@Treatment Temp. 551.7 °C, Time 14400 sec	@Treatment Temp. 1025 °F, Time 4.00 hour	
	>= 388	>= 388	
	@Treatment Temp. 482	@Treatment Temp. 900	

Mechanical Properties	°C Metric Time 3600 sec	°F English Time 1.00 hour	Comments
Tensile Strength	>= 793 MPa	>= 115000 psi	1400°F for 2 hrs and 1150°F for 4 hrs
	1000 - 1140 MPa @Thickness <=25.4 mm	145000 - 165000 psi @Thickness <=1.00 in	Cold Drawn Bars
	1030 - 1170 MPa @Thickness >=25.4 mm	150000 - 170000 psi @Thickness >=1.00 in	Turned Bars
	>= 931 MPa @Treatment Temp. 621 °C, Time 14400 sec	>= 135000 psi @Treatment Temp. 1150 °F, Time 4.00 hour	
	>= 1000 MPa @Treatment Temp. 579.4 °C, Time 14400 sec	>= 145000 psi @Treatment Temp. 1075 °F, Time 4.00 hour	
	>= 1070 MPa @Treatment Temp. 551.7 °C, Time 14400 sec	>= 155000 psi @Treatment Temp. 1025 °F, Time 4.00 hour	
	>= 1310 MPa @Treatment Temp. 482 °C, Time 3600 sec	>= 190000 psi @Treatment Temp. 900 °F, Time 1.00 hour	
Tensile Strength, Yield	>= 517 MPa	>= 75000 psi	1400°F for 2 hrs and 1150°F for 4 hrs
	>= 862 MPa @Temperature 1075 °C, Time 14400 sec	>= 125000 psi @Temperature 1967 °F, Time 4.00 hour	
	>= 862 MPa @Temperature 1150 °C, Time 14400 sec	>= 125000 psi @Temperature 2100 °F, Time 4.00 hour	
	>= 1070 MPa @Temperature 1025 °C, Time 14400 sec	>= 155000 psi @Temperature 1877 °F, Time 4.00 hour	
	>= 1170 MPa @Temperature 900 °C, Time 3600 sec	>= 170000 psi @Temperature 1650 °F, Time 1.00 hour	

Mechanical Properties	Metric	English	Comments
	931 - 931 MPa	135000 - 135000 psi	
	@Strain 0.200 %, Thickness >=25.4 mm	@Strain 0.200 %, Thickness >=1.00 in	Turned Bars
	931 - 1070 MPa	135000 - 155000 psi	
	@Strain 0.200 %, Thickness <=25.4 mm	@Strain 0.200 %, Thickness <=1.00 in	Cold Drawn Bars
Elongation at Yield	>= 18 %	>= 18 %	1400Å°F for 2 hrs and 1150Å°F for 4 hrs
	>= 0.00 %	>= 0.00 %	
	@Thickness <=25.4 mm	@Thickness <=1.00 in	Cold Drawn Bars
	>= 12 %	>= 12 %	
	@Thickness >=25.4 mm	@Thickness >=1.00 in	Turned Bars
	>= 10 %	>= 10 %	
	@Treatment Temp. 482 Å°C, Time 3600 sec	@Treatment Temp. 900 Å°F, Time 1.00 hour	
	>= 12 %	>= 12 %	
	@Treatment Temp. 551.7 Å°C, Time 14400 sec	@Treatment Temp. 1025 Å°F, Time 4.00 hour	
	>= 13 %	>= 13 %	
	@Treatment Temp. 579.4 Å°C, Time 14400 sec	@Treatment Temp. 1075 Å°F, Time 4.00 hour	
	>= 16 %	>= 16 %	
	@Treatment Temp. 621 Å°C, Time 14400 sec	@Treatment Temp. 1150 Å°F, Time 4.00 hour	
Reduction of Area	>= 55 %	>= 55 %	1400Å°F for 2 hrs and 1150Å°F for 4 hrs
	>= 40 %	>= 40 %	
	@Thickness >=25.4 mm	@Thickness >=1.00 in	Turned Bars
	>= 50 %	>= 50 %	
	@Thickness <=25.4 mm	@Thickness <=1.00 in	Cold Drawn Bars
	>= 34 %	>= 34 %	
	@Treatment Temp. 482 Å°C, Time 3600 sec	@Treatment Temp. 900 Å°F, Time 1.00 hour	

Mechanical Properties	Metric	English	Comments
	@Treatment Temp. 551.7 Å°C, Time 14400 sec	@Treatment Temp. 1025 Å°F, Time 4.00 hour	
	>= 50 %	>= 50 %	
	@Treatment Temp. 579.4 Å°C, Time 14400 sec	@Treatment Temp. 1075 Å°F, Time 4.00 hour	
	>= 50 %	>= 50 %	
	@Treatment Temp. 621 Å°C, Time 14400 sec	@Treatment Temp. 1150 Å°F, Time 4.00 hour	
<b>Modulus of Elasticity</b>	<b>197 GPa</b>	<b>28600 ksi</b>	<b>Tension</b>
	>= 20.3 J	>= 15.0 ft-lb	
<b>Charpy Impact</b>	@Treatment Temp. 551.7 Å°C, Time 14400 sec	@Treatment Temp. 1025 Å°F, Time 4.00 hour	
	>= 40.7 J	>= 30.0 ft-lb	
	@Treatment Temp. 579.4 Å°C, Time 14400 sec	@Treatment Temp. 1075 Å°F, Time 4.00 hour	
	>= 40.7 J	>= 30.0 ft-lb	
	@Treatment Temp. 621 Å°C, Time 14400 sec	@Treatment Temp. 1150 Å°F, Time 4.00 hour	
	>= 74.6 J	>= 55.0 ft-lb	
	@Treatment Temp. 760 Å°C, Time 7200 sec	@Treatment Temp. 1400 Å°F, Time 2.00 hour	
	>= 74.6 J	>= 55.0 ft-lb	
	@Treatment Temp. 621 Å°C, Time 14400 sec	@Treatment Temp. 1150 Å°F, Time 4.00 hour	

Thermal Properties	Metric	English	Comments
	10.8 Åµm/m-Å°C	6.00 Åµin/in-Å°F	
<b>CTE, linear</b>	@Temperature 20.0 - 200 Å°C	@Temperature 68.0 - 392 Å°F	
	34.3 W/m-K	238 BTU-in/hr-ftÅ²-Å°F	
<b>Thermal Conductivity</b>	@Temperature 20.0 Å°C	@Temperature 68.0 Å°F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.070 %	<= 0.070 %	
Chromium, Cr	15 - 17.5 %	15 - 17.5 %	
Copper, Cu	3.0 - 4.0 %	3.0 - 4.0 %	
Iron, Fe	>= 70.46 %	>= 70.46 %	
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Nickel, Ni	3.0 - 5.0 %	3.0 - 5.0 %	
Niobium, Nb (Columbium, Cb)	0.15 - 0.45 %	0.15 - 0.45 %	
Phosphorous, P	<= 0.040 %	<= 0.040 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.030 %	<= 0.030 %	
Tantalum, Ta	0.15 - 0.45 %	0.15 - 0.45 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000800 ohm-cm	0.0000800 ohm-cm	

Processing Properties	Metric	English	Comments
Annealing Temperature	1040 Â°C	1900 Â°F	
Hot-Working Temperature	98.9 - 1200 Â°C	210 - 2190 Â°F	Then more rapidly
	801.7 Â°C	1475 Â°F	Slow heating
	949 - 1200 Â°C	1740 - 2190 Â°F	Forging range

Descriptive Properties	Value	Comments
Corrosion Resistance	Acetic Acid	2/4
	Humidity	4/4
	NaCl (Saline Mist)	3/4
	Nitric Acid	3/4
	Sodium Carbonate	2/4

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