

Alloy 165 (C17000) Plate

Alloy 165 plate from Materion Performance Alloys provides strength close to that of Alloy 25, with slightly lower beryllium content. This alloy features high fatigue strength and resistance to wear, corrosion, galling, and stress relaxation. Typical applications include wear plates and resistance welding components.

CHEMICAL COMPOSITION (weight percent)

Alloy	Beryllium	Nickel + Cobalt	Nickel + Cobalt + Iron	Copper
C17000	1.60 – 1.85	0.20 min.	0.6 max.	Balance

PHYSICAL PROPERTIES*

Elastic Modulus	Melting Point (Solidus)	Electrical Conductivity/ Resistivity	Density**	Thermal Expansion Coefficient	Thermal Conductivity (25 °C)
19,000 ksi 131 GPa	1600°F 870°C	25-30% IACS 5.8-6.9 μΩ-cm	0.304 lb/in ³ 8.41 g/cm ³	9.7x10 ⁻⁶ in/in °F 17.0x10 ⁻⁶ m/m °C	60 BTU/ft hr °F 105 W/m K

*Properties specified for the precipitation age hardened (heat treated) condition

** Density in the un-heat treated condition is 0.302 lbs/in³ (8.36 g/cm³)

MECHANICAL PROPERTIES*

Temper**	Plate Thickness		Heat Treatment Required	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation Percent
	inch	mm		ksi	MPa	ksi	MPa	
A (TB00)	0.5-8	12.7-203.2	Before Heat Treatment	20-35	130-250	60-85	410-590	20-60
H (TD04)	0.188-0.375	4.8-9.5	Before Heat Treatment	75-105	520-720	90-130	620-900	8-20
H (TD04)	>0.375-1	>9.5-25.4		75-105	520-720	90-125	620-860	8-20
H (TD04)	>1-2	>25.4-51		75-105	520-720	85-120	590-830	8-20
H (TD04)	>2-3	>51-76		75-105	520-720	85-120	590-830	8-20
AT (TF00)	0.5-8	12.7-203.2	After 3 hours	130-155	890-1070	150-190	1030-1310	3-10
HT (TH04)	0.188-0.375	4.8-9.5	After 2 hours	135-165	930-1140	170-210	1170-1450	2-5
HT (TH04)	>0.375-1	>9.5-25.4	After 2 hours	135-165	930-1140	170-210	1170-1450	2-5
HT (TH04)	>1-2	>25.4-51	After 2 hours	135-165	930-1140	165-200	1140-1380	2-5
HT (TH04)	>2-3	>51-76	After 2 hours	125-165	860-1140	160-190	1100-1310	2-5

*Properties may vary by thickness

FORMS AVAILABLE

Alloy 165 plate is supplied in lengths from 24 to 126 inches (610 to 3200 mm), and in widths from 12 to 22 inches (305 to 559 mm). Solution annealed tempers are available in thicknesses ranging from 0.5" to 8" (12.7 to 203.2 mm) and hard drawn tempers are available from 0.188" to 3" (4.8 mm to 76 mm). Alloy 165 is also available in strip, rod, bar, tube and parts finished by drawing, extrusion, and machining.

SPECIFICATIONS AND STANDARDS

C17000, ASTM B-194, SAE J 461, SAE J 463, JIS H3130

TOLERANCES

Plate Thickness (inches)		Standard Thickness Tolerance (inches)		Plate Thickness (mm)		Standard Thickness Tolerance (mm)	
Over	Including	Plus	minus	Over	Including	Plus	Minus
0.188	0.205	0.020	0	5.0	8.0	0.60	0
0.205	0.300	0.024	0	8.0	13.0	0.80	0
0.300	0.500	0.030	0	13.0	20.0	1.00	0
0.500	0.750	0.038	0	20.0	30.0	1.20	0
0.750	1.00	0.046	0	30.0	40.0	1.40	0
1.00	1.50	0.056	0	40.0	60.0	1.70	0
1.50	3.00	0.066	0	60.0	203.2	3.175	0
3.00	8.00	0.125	0				

Additional tolerances are per ASTM B 194. Please specify the exact tolerances that you require when you place your order. Tighter tolerances may be available at additional cost. Please contact your local sales engineer to confirm the requested capability.

RELATED INFORMATION

Additional technical information on Alloy 165 plate may be obtained by phoning 800-375-4205. For pricing and availability, phone 800-521-8800 or the local sales number listed on the bottom of this page.

North American Service Centers – Sales Inquiries

For bar, tube, plate/sheet >0.060" (1.5 mm) thick
and rod >0.5" (12.7 mm) diameter:

Warren, MI

TOLL FREE: 800-521-8800
LOCAL: +(1) 586-772-2700
FAX: +(1) 586-772-2472

International Sales Offices

CHINA/HONG KONG

TEL: + (852) 2318-1960 / 1907
brushalloysHK-info@materion.com

CHINA/SHANGHAI

TEL: + (86) 21-5237-2328
brushalloysCN-info@materion.com

GERMANY

TEL: + (49) 711-830-930
brushalloysDE-info@materion.com

JAPAN

TEL: + (81) 33 230 2961
brushalloysJP-info@materion.com

REPUBLIC OF KOREA

TEL: + (82) 32-811-2171
brushalloysKR-info@materion.com

SINGAPORE/ASEAN

TEL: + (65) 6842-4456
brushalloysSG-info@materion.com

TAIWAN, R.O.C.

TEL: + (886) 2-2747-8800 x-121
brushalloysTW-info@materion.com

UNITED KINGDOM & IRELAND

TEL: + (44) 118-930-3733
brushalloysUK-info@materion.com