

Comparison of Beralcast® Alloys to Commonly Used Materials

(NOTE: All properties listed are typical (or average), ambient temperature (68°F to 77°F (20°C to 25°C)) values unless specified otherwise

Cast Alloys

Wrought Products

Property Description	Units	Beralcast®	Beralcast®	A356-T6	Ti-6Al-4V	AZ91	Beralcast®	AIBeMet	Be	6061 T6
		363	191	Al	(Cast)	Mg	310	HIP'd AM162H	S200F	Al
Density:	g/cm ³ @ 25°C	2.16	2.16	2.69	4.43	1.81	2.16	2.10	1.85	2.70
	lbs/in ³ @ 77°F	0.078	0.078	0.097	0.160	0.066	0.078	0.076	0.067	0.098
Melting Point (Liquidus):	°C	645	645	615	1660	595	645	1082	1185	652
	°F	1193	1193	1135	3020	1005	1193	1980	2345	1206
Coefficient of Thermal Expansion:	μm/m (ppm) @ 25°C	14.2	13.4	21.5	9.0	26.0	Longitudinal 13.2	13.9	11.4	23.6
	μin/in (ppm) @ 77°F	7.9	7.4	11.9	5.0	14.0	7.6	7.7	6.3	13.2
Specific Heat:	J/kg·°K @ 20°C	1250.0	1423.5	963.0	597.0	1046.7	Similar To 191	1506.0	1925.0	896.0
	Btu/lb·°F @68°F	0.30	0.34	0.23	0.14	0.25		0.36	0.46	0.21
Thermal Conductivity:	W/m·°K @ 25°C	105.5	180.0	152.3	7.8	72.7	Longitudinal Similar To 191	210.0	216.3	167.0
	Btu/h·ft·°F @ 77°F	61.0	104.0	88.0	4.5	42.0		121.0	125.0	96.5
Modulus of Elasticity in tension:	Gpa @ 25°C	202.0	202.0	72.4	110.0	44.8	202.0	192.0	303.4	68.3
	mpsi @ 77°F	29.3	29.3	10.5	16.0	6.5	29.3	28.0	44.0	10.0
Specific Stiffness (Modulus/Density):	Gpa-cm ³ /g @ 25°C	93.5	93.5	26.9	24.8	24.8	93.5	--	164.0	25.3
	Mpsi-in ³ /lbs @ 77°F	375.6	375.6	108.2	100.0	98.5	375.6	--	656.7	102.0
Poisson's Ratio:		0.20	0.20	0.33	0.33	0.35	--	0.14	0.18	0.33
Yield Strength:	mpa @ 25°C	213.7	137.9	206.8	890.0	151.7	325.4	192.0	241.3	275.8
	Ksi @ 77°F	31.0	20.0	30.0	129.0	22.0	47.2	28.0	35.0	40.0
Ultimate Tensile Strength:	mpa @ 25°C	289.6	196.5	275.8	1035.0	227.5	426.1	--	--	310.3
	Ksi @ 77°F	42.0	28.5	40.0	150.0	33.0	61.8	--	--	45.0
Specific Strength (UTS/Density):	Mpa-cm ³ /g @ 25°C	134.1	91.0	102.5	233.6	125.7	197.3	--	--	114.9
	Ksi-in ³ /lbs @ 77°F	538.5	365.4	412.4	937.5	500.0	792.3	--	--	459.2
Elongation: 2.54 cm (1 in) Gage:	% @ 25°C	3.0	1.7	3.0	10.0	3.0	Longitudinal 13.2	--	--	17.0
	% @ 77°F	3.0	1.7	3.0	10.0	3.0	13.2	--	--	17.0
Axial Fatigue (R= -1.0), 10 ⁷ Cycles	mpa @ 25°C	117.2	--	144.8	--	137.9	220.6	--	--	96.5
	Ksi @ 77°F	17.0	--	21.0	--	20.0	32.0	--	--	14.0

NOTE: a dash (--) indicates that property data was not available at the time the matrix was generated