AlBeMet162 Material Properties

Properties for AlBeMet162. AlBeMet162 is a metal matrix composite of 62% beryllium and the balance aluminum.

Mechanical:

	HIP'd		Extruded				Rolled	
Specification Minimums								
			Longitudinal		Transverse			
	ksi	MPa	ksi	MPa	ksi	MPa	ksi	MPa
Ultimate Tensile Strength	38	262	55	379	50	345	56	386
Yield Strength	28	193	40	276	40	276	40	276
Elongation (spec. minimum)	2%	2%	7%	7%	2%	2%	5%	5%
Typical Values								
	ksi	MPa	ksi	MPa	ksi	MPa	ksi	MPa
Young's Modulus	28,500	196,500	29,300	202,000	28,900	199,000	28,000	193,000
Ultimate Tensile Strength	44.3	305	65.5	452	56.2	387	62.1	428
Yield Strength	32.8	226	47.0	324	45.7	315	45.6	314
Elongation	4.7%	4.7%	11.0%	11.0%	5.1%	5.1%	8.7%	8.7%

Physical:

Room Temperature (all vary with temperature)				
Density	2.1	g/cm³	0.08	lb./in³
Electrical Conductivity	49%	IACS (ASTM B193)		
Thermal Conductivity	212	W / m°C		
Poisson's Ratio	0.17			
CTE, Coefficient of Thermal Expansion	13.9	ppm / °C		
Specific Heat @ 20°C J/Kg*°K (BTU/lb*° F)	1506 (0.36)			
Melting Point °C (°F)	1082 (1980)			
(Al/Be Eutectic at 643°C or 1190°F)				
Damping Capacity Q-1				
@25°C and 500 HZ	1.5 x 10^{-3}			

Additional Properties:

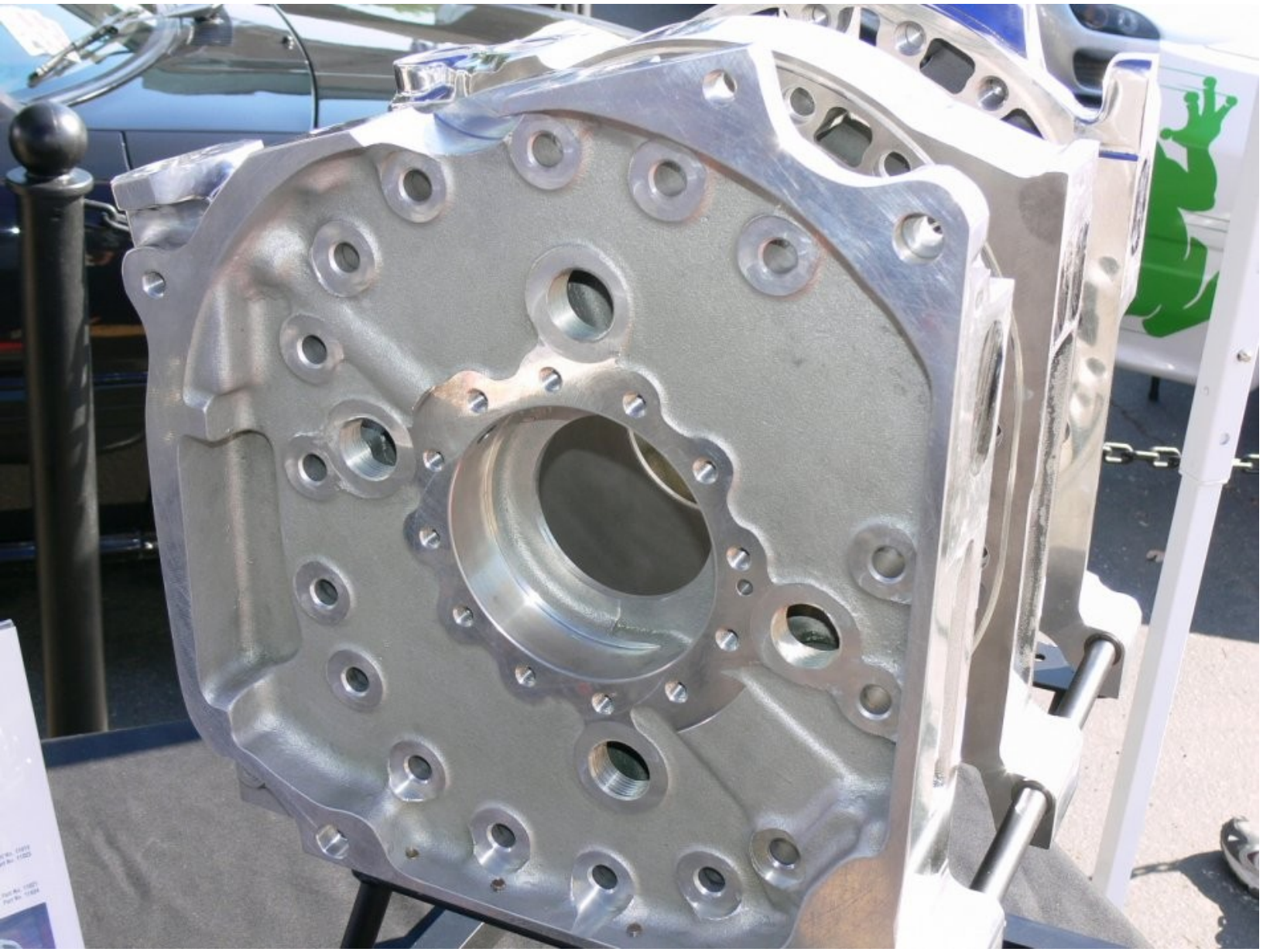
	HIP'd		Extruded				Rolled	
			Longitudinal		Transverse			
	ksi	MPa	ksi	MPa	ksi	MPa	ksi	MPa
Fatigue								
Axial Fatigue, Endurance Limit of 10^7	ITAR	ITAR	NA	NA	NA	NA	30	207
Crack Growth Rate dA/dn	See Chart		See Chart	See Chart	NA	NA	NA	NA
Rotating Beam for 107 Endurance Limit Typical	20	138	30	209	25	175	NA	NA
Fracture Toughness K1c ksi ($in^{1/2}$) & MPa ($m^{1/2}$)	14.4	13.1	21	19	10	9	50	46
Damping Contact BWI for More Information	See Extruded		See Charts				See Extruded	
Microyield (PEL) (Precision Elastic Limit)	3.9	26.6	5.3	36	4.8	33	NA	NA
Hardness			68	HRb	68	HRb		
Creep	See Creep Chart		See Creep Chart		See Creep Chart		NA	

Chemical Composition

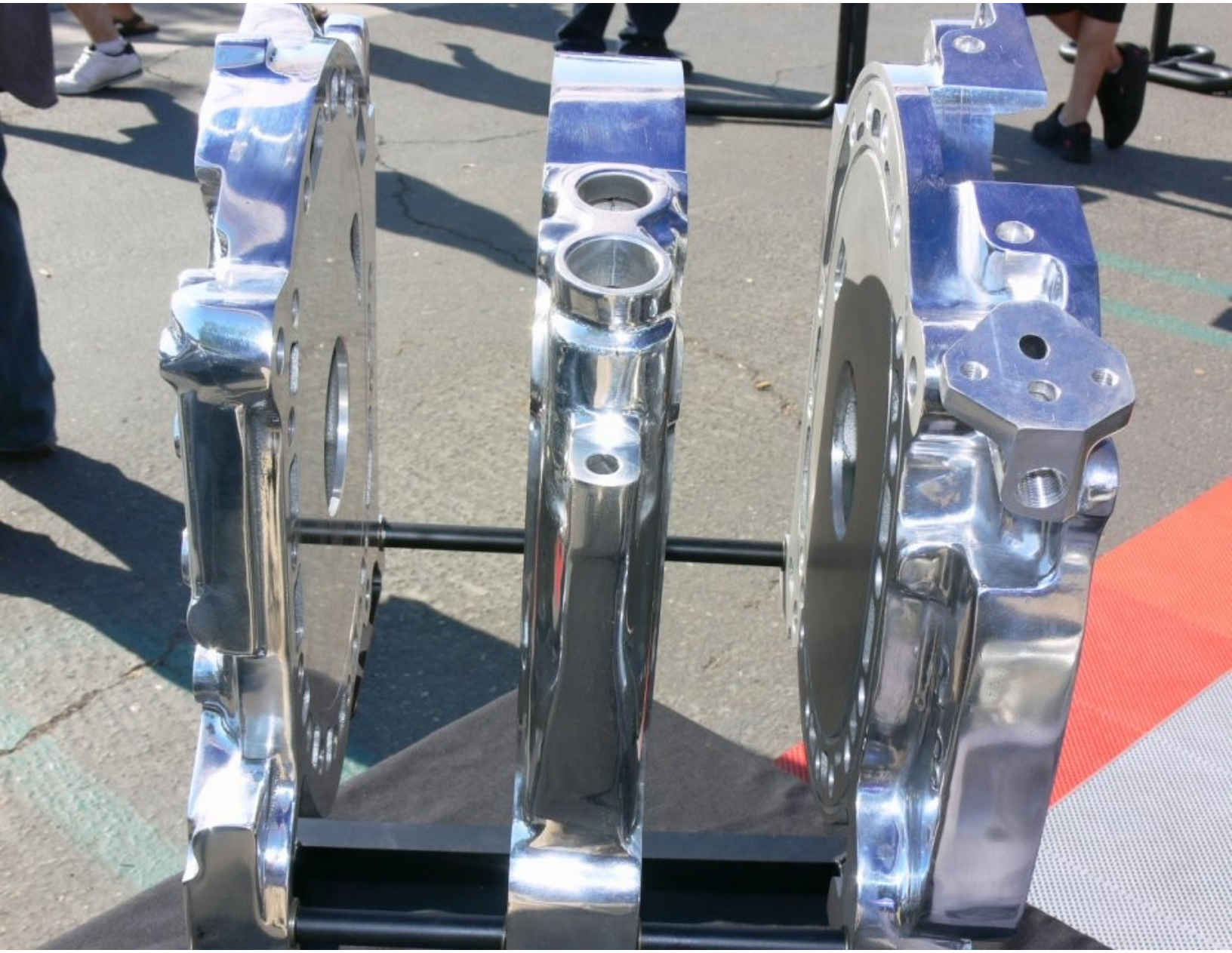
	Min.	Max.
Beryllium %	60	64
Aluminum %	Balance	
Oxygen	---	1.0%
Carbon	---	0.1%
Other metallics, each	---	0.2%

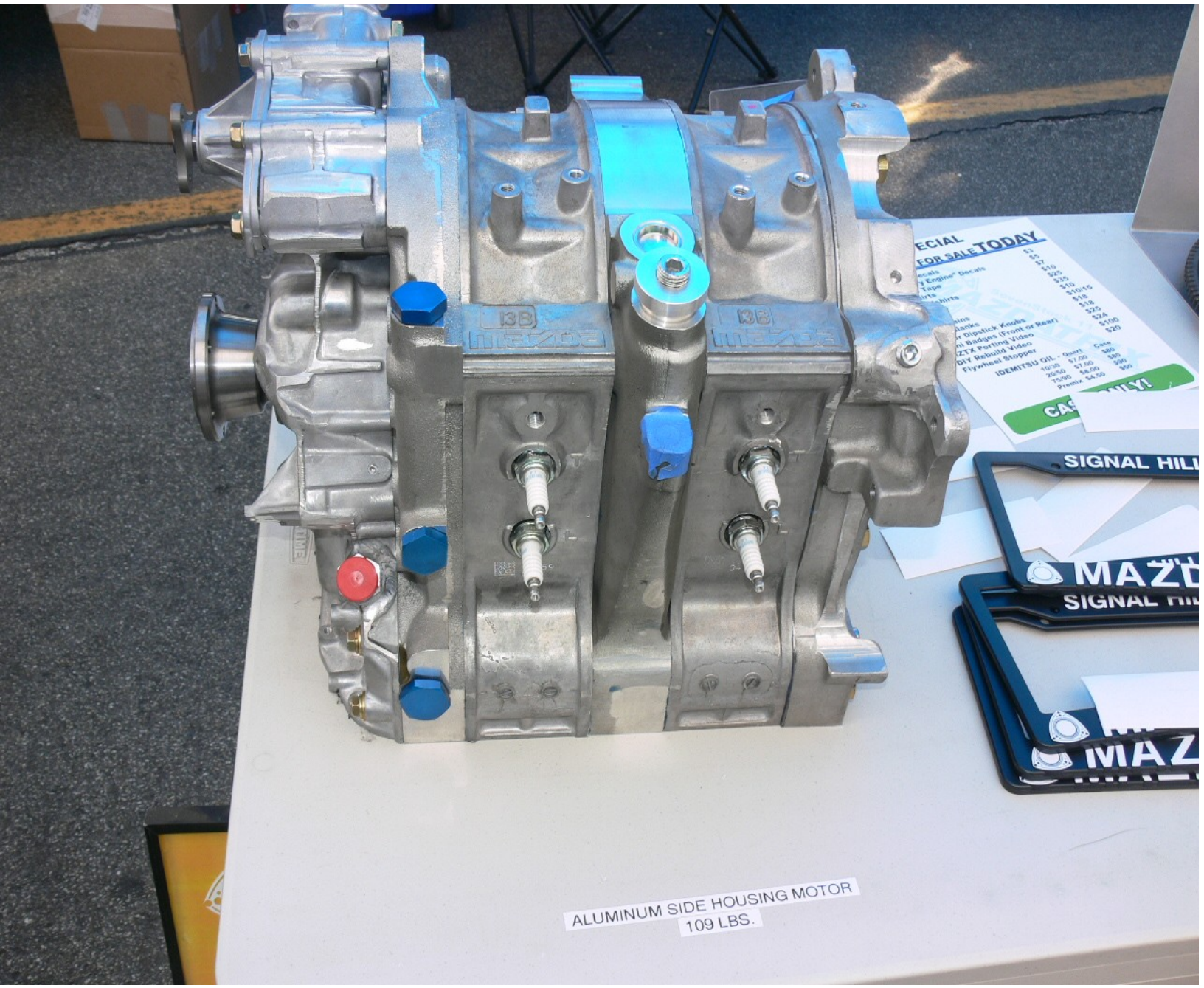
Fabrication Notes

Minimum Bend Radius	For thicknesses under .100" 5T. For thicknesses over .100" 10T
Coatings	
Heat Treating	AlBeMet162 can be stress relieved at 925 °F for 2 hours and furnace cooled There is no temperature-dependent strengthening mechanism








13B
mazda
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mazda
ECIAL
TODAY
SIGNAL HILL
MAZ
ALUMINUM SIDE HOUSING MOTOR
109 LBS.


Earth Steward Institute