

DATA SHEETS

Aluminum



New Material:

FORMODAL[®] BM-500 plain

rolled • surface machined • PVC coated

Specially for:

- tool making, mold making, model making

Very high strength



ALUMINUM

COPPER

BRASS

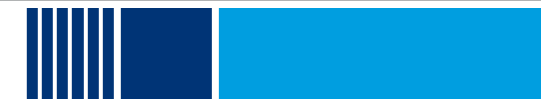
BRONZE

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**BIKAR
METAL**
NORTH AMERICA



CHEMICAL COMPOSITION

Aluminum and aluminum alloys

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Alloy designation:

EN AW	Al Zn5.5 Mg Cu
Old designation	Al Zn Mg Cu1.5
Material no. according to DIN	3.4365
Great Britain BS	2L95
Italy UNI	9007/2
Spain	
Sweden	
Norway	
France AFNOR	A-Z5GU
Color code	RAL 4005 Blue Lilac

Typical physical properties:

Density [lb./in³]	0.1012	
Modulus of Elasticity	10443 ksi	
Thermal conductivity	75 - 92 Btu/ft x h x °F	
Coeff. of Thermal Exp.	-58°F – -4°F	11.67
	68°F – 212°F	12.78
	68°F – 392°F	13.33
	68°F – 572°F	13.89
Specific heat	160 ft lbf / lb °F	
Electrical conductivity	33 - 40 IACS	

Chemical composition* (EN 573-3):

Specifications in %												Remainder: Aluminum		Other	
Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Note	Individual	Total ²		
0.40	0.50	1.2 – 2.0	0.30	2.1 – 2.9	0.18 – 0.28	-	5.1 – 6.1	0.20	-	-	³	0.05	0.15		

^x Chemical specifications as perc. of weight. If no ranges are specified, the alloy content has the maximum value.
² Includes all items listed for which no limit values are specified.
³ Sum for Zr+Ti max. 0.25. This applies to forged or extruded products when the value has been agreed upon between the customer and supplier.

Special features of this material:

- Surface machined plates
- Heat treatable alloy
- Very high strength
- Good machinability

Applications:

- Tool making, mold making and model making
- Aerospace
- Military technology

Available forms:

Plates · Cuttings · Circular blanks · Rings · Parts from drawings

Homogenization:

Soft annealing / recrystallization annealing	
Annealing temperature	716°F - 788°F
Heating-up time	2 – 3 hours
Cooling conditions	<= 86°F/h to 446°F +3-5 hours hold time, below 446°F in air

Other data:

Processing / machinability

Soft annealed	-
Work-hardened	-
Heat-treated	2
Dimensional stability	4 – 5
Erosion	1

Surface treatment

Anodizing - (protective anodization)	3
Special anodizing quality (EQ) ^{EQ}	-
Anodizing - decorative	5
Painting / coating	3
Polishing	1

Welding

		Filler metal
Gas	5	
WIG	5	
MIG	5	
Resistance welding	2	

Solder

Brazing with flux	5
Brazing without flux	5
Abrasion soldering	5
Soft soldering with flux	5

Legend:

- 1 very good
- 2 good
- 3 moderate
- 4 poor
- 5 unsuited
- EQ anodizing quality must be ordered separately and confirmed

Hardening	
Solution annealing	878°F - 896°F
Quenching	water
Natural aging treatment	artificial aging is usual
Artificial aging treatment	1. stage 230°F – 257°F · 12 – 24 hours 2. stage 329°F – 356°F · 4 – 6 hours

Corrosion resistance

In a normal atmosphere/ weather conditions	4
Sea water atmosphere	4

Metal forming

Cold forming		Delivery condition
Bending	4	O
Pressure forming	5	
Deep drawing (condition-based)	4 – 5	O
Upsetting (condition-based)	5	
Impact extrusion	5	
Hot forming		
Drop forging	4	
Extrusion molding	4 – 5	
Hammer forging	4	

Suitable for food industry according to DIN EN 602	no
Working temperatures	Long-term approx. 194°F Short-term approx. 230°F - 257°F

The specifications in our data sheets are subject to correction and are only valid as references. Liability is excluded in this regard. We reserve the right to make changes to the standards and informative values. The agreements of our order confirmation are always authoritative. With regard to anodic oxidisability, we point out that we accept no liability for the anodization result and the color formation for decorative applications. The same applies to the corrosion resistance. Special arrangements must be made in writing.

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MECHANICAL PROPERTIES

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EN 485-2 Mechanical properties:

Delivery condition	Nominal thickness in.		Typical Tensile Strength ksi		0.2% Yield Strength ksi		Typical Elongation		Bending radius ⁹		Hardness ⁹ HBW
	over	to	min.	max.	min.	max.	A _{50 mm}	A	180°	90°	
T7351	≥ 0.059	0.118	66.7	-	55.8	-	7	-	-	-	137
	0.118	0.236	66.7	-	55.8	-	8	-	-	-	137
	0.236	0.492	68.9	-	56.6	-	7	-	-	-	140
	0.492	0.984	68.9	-	56.6	-	-	6	-	-	140
	0.984	1.968	68.9	-	56.6	-	-	5	-	-	140
	1.968	2.362	66	-	52.2	-	-	5	-	-	133
	2.362	3.150	63.8	-	49.3	-	-	5	-	-	129
	3.150	3.937	62.4	-	49.3	-	-	5	-	-	126

⁹

For information only

We supply aluminum sheets and plates of alloy FORMODAL® BM-500 plain in the following dimensions:

Standard dimensions: **118.897 x 59.842 in.**

Tolerances:

	Thickness tolerance in.	Flatness in.
0.394 – 0.590 in.	± 0.004	< 0.031
0.709 – 3.543 in.	± 0.004	< 0.02

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