

DATA SHEETS

Aluminum



New Material:

FORMODAL[®] 036

high-strength cast plates

Applications:

- tool making, mold making, model making
- injection molds
- blow molds
- machine and fixture construction
- base plates, table tops and mounting plates



ALUMINUM

COPPER

BRASS

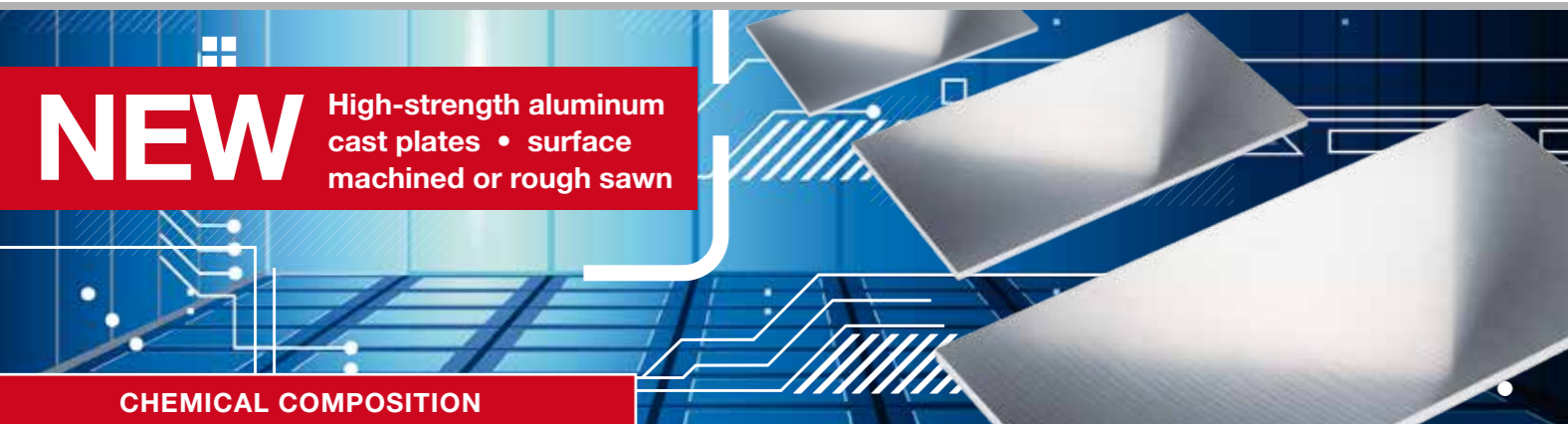
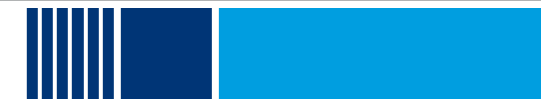
BRONZE

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BIKAR
METAL
NORTH AMERICA



NEW High-strength aluminum cast plates • surface machined or rough sawn

CHEMICAL COMPOSITION

Aluminum and aluminum alloys
High-strength aluminum cast plates
precision milled or rough sawn



Alloy designation:

Type - 7021
Heat-treated and stress relieved annealed

Typical physical properties:

Density [lb./in ³]	0.1004
Modulus of Elasticity	10.443 ksi
Thermal conductivity	86.7 Btu/ft x h x °F
Coeff. of Thermal Exp.	12.78
Specific heat	163 ft lbf / lb °F
Electrical conductivity	34 - 41 IACS

Special features of this material:

- High-strength aluminum cast plates
- Surface machined and PVC coated or rough sawn
- Very good dimensional stability
- Low internal stresses
- Good welding properties
- Good corrosion resistance

Applications:

- Tool making, mold making and model making
- Injection molds¹
- Blow molds
- Machine and fixture construction
- Base plates, table tops and mounting plates

¹ FORMODAL® 036 can be used for injection molds. Complex geometries (sharp radiusses, cores with higher slender ratios) or moving elements have to be avoided. For such applications, wrought products are recommended.

Available forms:

Sheets • Plates • Cuttings • Circular blanks • Rings • Parts from drawings

Homogenization:

Soft annealing / recrystallization annealing	
Annealing temperature	-
Heating-up time	-
Cooling conditions	-

Hardening	
Solution annealing	-
Quenching	-
Natural aging treatment	-
Artificial aging treatment	-

Other data:

Processing / machinability

Soft annealed	-
Work-hardened	-
Heat-treated	1
Dimensional stability	1
Erosion	1

Surface treatment

Anodizing - (protective anodization)	2
Special anodizing quality (EQ) ^{EQ}	-
Anodizing - decorative	5
Painting / coating	-
Polishing	-

Welding

		Filler metal
Gas	5	AA-5183
WIG	2	
MIG	5	
Resistance welding	1	

Solder

Brazing with flux	-
Brazing without flux	-
Abrasion soldering	-
Soft soldering with flux	-

Corrosion resistance

In a normal atmosphere/ weather conditions	2
Sea water atmosphere	4 - 5

Metal forming

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

Suitable for food industry according to DIN EN 602	no
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Heating the alloy can result in loss of strength of properties or of capability for fabrication, assembly or application in a particular case. Whenever a new application of this alloy is contemplated, and if this application involves special properties such as corrosion resistance, toughness, fatigue strength, it is strongly recommended that the user should consult the producer in order to make a precise and appropriate selection of the material.

Legend:

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

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.

FORMODAL[®] 036 high-strength • heat-treated



MECHANICAL PROPERTIES

Aluminum and aluminum alloys

High-strength aluminum cast plates
precision milled or rough sawn



Typical mechanical properties:

Delivery condition	Nominal thickness in.		Typical Tensile Strength ksi	0.2% Yield Strength	Typical Elongation %	Hardness ⁹ HBW
	over	to				
T6					A1.97"	
	0.394"	23.622"	Surface: 48.6 - 51.5 1/4 Thickness: 50.0 - 52.2 1/2 Thickness: 47.1 - 48.6	Surface: 42.1 - 45.7 1/4 Thickness: 44.2 - 47.9 1/2 Thickness: 43.5 - 44.7	Surface: 6 - 8 1/4 Thickness: 3.5 - 4.5 1/2 Thickness: 1.5 - 3.0	149 - < 400: 135 > 400: 130

⁹ For information only

Tolerances:

Available from 0.394" thickness
Rough sawn: -0/ +0.118"
Surface machined plates are also available.

Machined plates:

thickness in.	flatness ¹ in.	thickness in.
> 0.59"	< 0.01"	± 0.004"

Other dimensions on request.

¹ This specification refers to the total area; not only to sections of a plate or a pre-cut part.
By dividing the surface, the flatness is not reduced proportionately.

Surface roughness:	R _a 15.75 μm
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We supply aluminum sheets and plates of alloy FORMODAL[®] 036 in the following dimensions:

■ 99.21" x 57.09" x 23.62"	■ 118.90" x 79.53" x 19.69"	■ 138.58" x 57.09" x 23.62"
From this material, we can cut to your exact size requirements.		

Available forms:

Sheets • Plates • Cuttings • Circular blanks • Rings • Parts from drawings