



DATA SHEETS

Aluminium

Special Material:

FORMODAL® BM-400

High-strength rolled plates

Applications:

- tool making, mould making, model making
- blow moulds and injection moulds
- laminating tools
- moulds for elastomer materials
- moulds and heat-stressed parts
- moulds with welded construction
- refrigeration technology



ALUMINIUM

COPPER

BRASS

BRONZE

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BIKAR
METALLE



CHEMICAL COMPOSITION

Aluminium and aluminium alloys

High-strength rolled plates

Size range up to a thickness of 700 mm



Alloy designation:

EN AW	Material is not included in the EN standard. The material was developed specifically for the high requirements standards in tool making, mould making and model making and is very suitable for long-term use at high temperatures up to 200 °C!
Old designation	
Material no. according to DIN	
Great Britain BS	
Italy UNI	
Spain	
Sweden	
Norway	
France AFNOR	
Colour code	

Typical physical properties:

Density [g/cm³]		2,84
Elastic modulus [GPa]		73,8
Thermal conductivity [W/m*K]		130
Thermal expansion coefficient[K ⁻¹ *10 ⁻⁶]	-50°C – 20°C	
	20°C – 100°C	22,5
	20°C – 200°C	
	20°C – 300°C	
Specific heat J/(kg * K)		864
Electrical conductivity [m/Ω*mm²]		17,4

Chemical composition*:

Specifications in % Remainder: Aluminium												Other	
Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Note	Individual	Total²
0,30	0,40	5,8 – 6,8	0,20 – 0,40	0,10	0,05	-	0,10	0,02 – 0,10	-	-	-	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.

Special features of this material:

- Plates: according to thickness rolled, stretched, forged, compressed
- Very high strength values - for thick plates and also tool making, mould making and model making in the core area
- Very good machinability
- Very good welding properties
- Good corrosion resistance
- Size range up to a thickness of 700 mm

Applications:

- Tool making, mould making and model making
- Blow moulds and injection moulds
- Laminating tools
- Moulds for elastomer materials
- Moulds and heat-stressed parts
- Moulds with welded construction
- Refrigeration technology

Available forms:

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

Heat treatment:

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

Other data:

Processing / machinability

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

Surface treatment

Anodising - (protective anodisation)	2 ^{a)}
Special anodising quality (EQ) ^{EQ}	-
Anodising - decorative	5
Painting / coating	-
Polishing	2

Welding

Filler metal	
Gas	-
WIG	2 S Al 2319
MIG	2 S Al Cu6 Mn ZrTi
Resistance welding	2

Solder

Brazing with flux	5
Brazing without flux	5
Abrasion soldering	-
Soft soldering with flux	4

Legend:

- 1 very good
- 2 good
- 3 moderate
- 4 poor
- 5 unsuited
- a) The anodising operation should be referred to the high Cu content! Different colourations occur on the welded materials after anodising.
- b) The highest strength values compared with other forms of construction materials at temperatures up to a max. 200 °C
- EQ anodising quality must be ordered separately and confirmed

Hardening

Solution annealing	-
Quenching	-
Natural ageing treatment	-
Artificial ageing treatment	-

Corrosion resistance

In a normal atmosphere/ weather conditions	3
Sea water atmosphere	3

Metal forming

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

Suitable for food industry according to DIN EN 602

no

Working temperatures

Long-term to 200°C ^{b)}

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 anodisation result and the colour formation for decorative applications. The same applies to the corrosion resistance. Special arrangements must be made in writing.

FORMODAL® BM-400 rolled · forged



Aluminium and aluminium alloys

High-strength rolled plates

Size range up to a thickness of 700 mm



Typical mechanical properties:

Delivery condition	Nominal thickness mm		Tensile strength R_m MPa		Elastic limit $R_{p0.2}$ MPa		Elongation % min.		Bending radius ⁹		Hardness ⁹ HBW
T851 T852	over	to	min.	max.	min.	max.	A50 mm	A	180°	90°	130
	100	200	415	457	305	353	5,0-7,5	-	-	-	
	200	300	370	441	270	336	3,0-6,5	-	-	-	
	300	400	340	408	240	322	1,5-3,5	-	-	-	
	400	500	320	368	240	309	1,5-2,5	-	-	-	
	500	600	310	347	230	297	0,5-1,5	-	-	-	
	600	700	-	399	-	319	1,5-3,5	-	-	-	
⁹	For information only										

We supply aluminium sheets and plates of alloy FORMODAL® BM-400 in the following dimensions:

Thickness mm	Length x Width mm
100 – 700	3.020 x 1.520

Available forms:

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