

DATA SHEETS

Aluminium



precision milled rolled plates

FORMODAL[®] BM-5083

rolled • precision milled on both sides • PVC coated

Applications:

- Tool making, mould making, model making
- Machine and fixture construction
- Tank and apparatus construction
- Shipbuilding
- Automobile components
- Railed vehicles
- Military technology

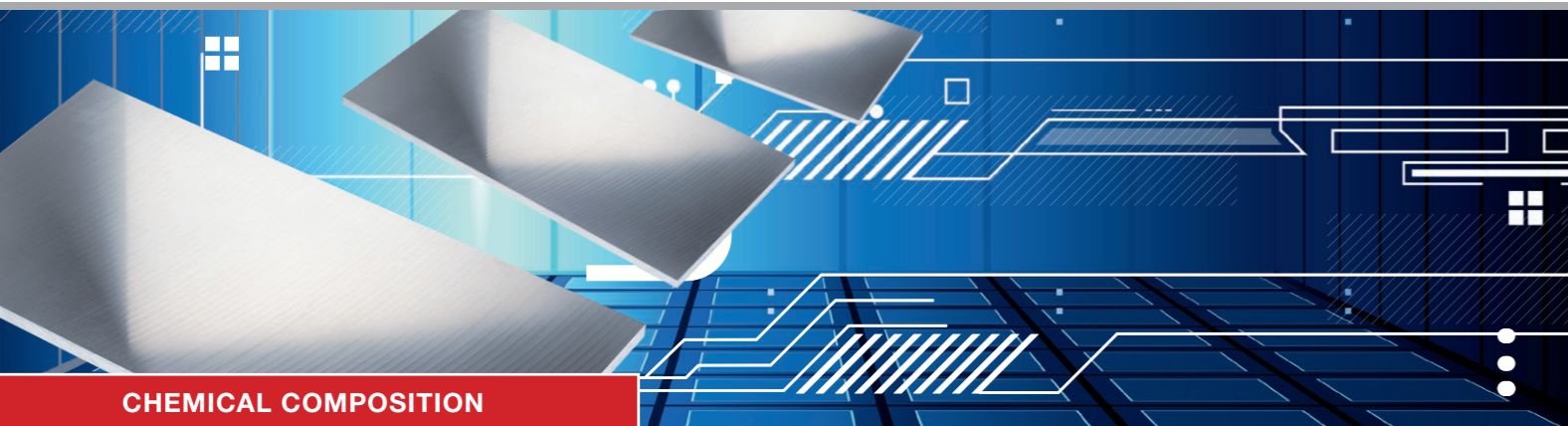
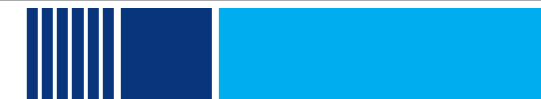


ALUMINIUM

COPPER

BRASS

BRONZE



CHEMICAL COMPOSITION

Aluminium and aluminium alloys

rolled · precision milled on both sides · PVC coated

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Alloy designation:

EN AW	Al Mg4,5 Mn0,7
Old designation	Al Mg4,5 Mn
Material no. according to DIN	3.3547
Great Britain BS	N8
Italy UNI	9005/5
Spain	L-3321
Sweden	144140
Norway	17215
France AFNOR	A-G4,5MC
Colour code	RAL 8002 Signal brown

Typical physical properties:

Density [g/cm³]	2,66	
Elastic modulus [GPa]	71	
Thermal conductivity [W/m*K]	105 – 120	
Thermal expansion coefficient [K ⁻¹ *10 ⁻⁶]	-50°C – 20°C	
	20°C – 100°C	23,8
	20°C – 200°C	
	20°C – 300°C	
Specific heat J/(kg * K)	900	
Electrical conductivity [m/Ω*mm²]	15 – 17	
Shear modulus [GPa]	26,8	

Chemical composition* (EN 573-3):

Specifications in %												Remainder: Aluminium		Other	
Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Note	Individual	Total ²		
0,40	0,40	0,10	0,40 - 1,0	4,0 - 4,9	0,05 - 0,25	-	0,25	0,15	-	-		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:

- Precision milled plates
- Very good corrosion resistance in a normal atmosphere
- Good strength properties
- Cold forming in the O state (Soft annealed)
- Relatively low internal stresses
- Relatively good core strength values even with large dimensions

Applications:

- Tool making, mould making and model making
- Machine and fixture construction
- Tank and apparatus construction
- Shipbuilding
- Automobile components
- Railed vehicles
- Military technology

Available forms:

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

Heat treatment:

Soft annealing / recrystallisation annealing	
Annealing temperature	380°C – 420°C
Heating-up time	1 – 2 hours
Cooling conditions	30°C/h - 50°C/h

Other data:

Processing / machinability

Soft annealed	3
Work-hardened	2
Heat-treated	-
Dimensional stability	1
Erosion	1

Surface treatment

Anodising - (protective anodisation)	2
Special anodising quality (EQ) ^{EQ}	-
Anodising - decorative	2 – 3
Painting / coating	4
Polishing	2

Welding

	Filler metal
Gas	1
WIG	1
MIG	1
Resistance welding	1
	SG-Al 5183
	SG-Al 5356
	SG-Al 5087

Solder

Brazing with flux	4 – 5
Brazing without flux	4 – 5
Abrasion soldering	3
Soft soldering with flux	4 – 5

Legend:

- 1 very good
- 2 good
- 3 moderate
- 4 poor
- 5 unsuited
- 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	1
Sea water atmosphere	2 – 3

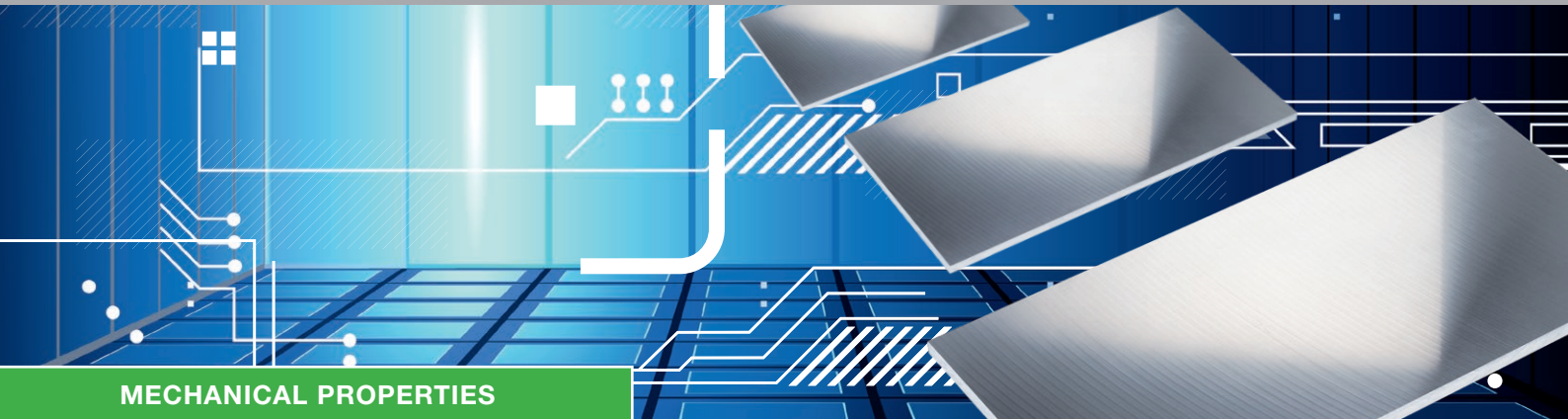
Metal forming

Cold forming		Delivery condition
Bending	2	
Pressure forming	4	
Deep drawing (condition-based)	2	O
Upsetting (condition-based)	2 – 3	O
Impact extrusion	4	
Hot forming		
Drop forging	4 – 5	
Extrusion moulding	4	
Hammer forging	4	

Suitable for food industry according to DIN EN 602	yes
Working temperatures	Long-term approx. 135°C – 145°C Short-term approx. 180°C – 190°C

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.

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MECHANICAL PROPERTIES

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EN 485-2 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
	over	to	min.	max.	min.	max.	min. A 50mm	A	180°	90°	
O H111	6,0	15,0	270	345	115	-	16	-	-	-	-
	15,0	60,0	270	345	115	-	15	-	-	-	-
	60,0	80,0	270	345	115	-	14	-	-	-	-

⁹

For information only

We supply aluminium sheets and plates of alloy FORMODAL® BM-5083 in the following dimensions:

3.020 x 1.520 mm

Tolerances:

	Thickness tolerance	Flatness tolerance ¹
6-20 mm	±0,1 mm	max. 0,35 mm
20-80 mm	±0,1 mm	max. 0,15 mm

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 0,4 μ m

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