EGA LEICHTMETALL

Data and facts for application

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EN AW-6082

The multifaceted alloy

EN AW-6082 – THE ALLROUNDER

EN AW-6082 is a medium-strength, curable alloy, with its most outstanding characteristic being its multifunctionality. Its main properties are: very weather-proof, easily workable and reshapeable and very easily weldable. In order for this alloy to develop its full potential a heat treatment is necessary (solution annealing followed by progressive artificial aging). Ideal application areas: general machinery, the automotive sector as an electrical conductor or heat sink, and in the construction sector. Important: this alloy is not suited for the production of complex profiles.

Chemical composition*

Si	Fe	Cu	Mn	Mg
0,7 1,3	0,50	0,10	0,40 1,0	0,6 1,2

Cr	Zn	Ti	others, each	others, total
0,25	0,20	0,10	0,05	0,15

*according to EN-573-3 or Teal-Sheets (AA)

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Mn 0,4 1,0

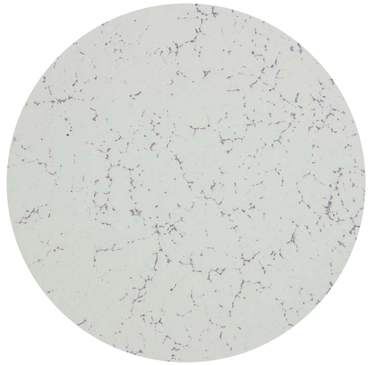
Min-Value Max-Value

All values in mass %

Structure of the billets

Depending on the process, a segregation zone occurs immediately in the marginalized layer of continuously cast billets. Prior to further processing these should be removed – this is already the case for the turned billets from Leichtmetall. Additionally these billets are also subjected to a final quality test by means of an automatic ultrasonic test underwater.
In the case of casting lengths, the depth of the segregation zone is shown by way of example at 178 mm.

Macrosection, d178 mm: Segregation 2,7 mm



Microsection, d178 mm (25 times magnification)

Casting length dimensions

Ø 160 mm	Ø 177 mm	Ø 201 mm	Ø 215 mm	Ø 227 mm	Ø 253 mm	Ø 280 mm
Ø 314 mm	Ø 350 mm	Ø 372 mm	Ø 425 mm	Ø 435 mm	Ø 478 mm	Ø 518 mm
Ø 607 mm	Ø 682 mm	Ø 756 mm	Ø 935 mm	Ø 1135 mm		

Turned billets

We can produce all diameters between 140 - 1080 mm.

Mechanical properties

There is no standard for cast round rods (cast billets / bolts) that defines mechanical properties. A Brinell hardness in the homogenized state of approx. 46 HBW can be named as a guideline for cast material. The homogenised state (=„O3“ according to EN515) is comparable in strength with the annealed state (=„O“) for extruded products. The final strength is essentially adjusted by the reshaping process and/or the heat treatments by our customers.

Profit from our extensive materials experience

We ship billets in the homogenised state (O3). The advantage: a consistent structure as well as good properties for further processing with reshaping processes (forging and extruding). We have summarised typical attainable empirical values from our experience – in relation to the heat treaments and resulting technological properties.

Physcal Properties

Density	2,7 g/cm3
Solidification range	585-650 °C
Electr. conductivity	24-32 MS/m
Thermal conductivity	170-220 W/(mK)
Modulus of elasticity	70.000 MPa
Specific heat	896 J/(kgK)
Shear modulus	26.400 MPa

Heat Treatment

Soft annealing, recrystallization annealing	
Annealing temperature	380-420 °C
Heat-up time	1-2 h
Cooling conditions	> 250 °C: ≤ 30 °C/h ≤ 250 °C: in open air

Hardening	
Solution annealing	525-540 °C
Quenching	air / water
Natural aging	5-8 days

Artificial aging	
Temperature	155-190 °C
Duration	4-16 h

Mechanical Parameters

Condition	$R_{p0,2}$ (MPa)	R_m (MPa)	A (%)
O	110	160	14
T4	110	205	14
T6	240	280	6

(all stated values for extruded round rods D. between 150 - 200 mm)

Technological Properties*

Weldability	
Gas	o
WIG	+
MIG	++
Resistance welding	o

Surface treatment	
Anodisation protection	++
Anodisation decorative	o
Coating	+

Cold reshapeability	
Bending	o (condition T3, T4)
Deep-drawing / Pressing / Upsetting	+ (condition O)
Impact Extrusion	+ (condition O)
Corrosion resistance	
Atmospheric conditions	++
Seawater	+

Brazeability	
Hard soldering	o
Abrasion soldering	+
Soft soldering with flux	o

Hot reshapeability	
Extrusion molding	+
Drop forging / Open die forging	+

Machineability	
Annealed	o
Work-hardened	---
Hardened	+
Use in contact with food	Yes

* ++ = very good --- = not possible

Customer-Specific solutions ...

Upon request we can adapt the analysis presets according to your individual processing needs and quality requirements. Various compositions are possible and similarly very pure alloys can be produced with limited amounts of Natrium, Calcium or Beryllium. We are looking forward to receive your request!

... no problem for Leichtmetall

High strength alloys are our Speciality. Our know-how as a foundry stretches back over 90 years. Today, demanding customers from many branches of industry – for example from Aviation, Automobile, general Machinery and Energy Management use the Premium Alloys made in Hannover, Germany. Particularly close to our hearts, is our commitment to optimized production – saving energy and protecting the environment. To that end, for example, we use secondary aluminium from the circular economy to ensure environmental and climate protection.