EGA LEICHTMETALL

Data and facts for application

Leichtmetall Aluminium Giesserei Hannover GmbH | Göttinger Chaussee 12-14 | 30453 Hannover
T +49 511 89878 475 | www.leichtmetall.eu

EN AW-7010

The fatigue resistant alloy

EN AW-7010 - THE FATIGUE RESISTANT ALLOY

The alloy EN AW-7010 is one of the heat treatable alloys. Accordingly, heat treatment such as solution annealing and subsequent artificial aging is necessary. Only then can the alloy develop its full potential. Areas of application for this alloy are aerospace and mechanical engineering components that must withstand the highest loads. It should be noted that alternative joining techniques must be used, as this alloy cannot be welded.

Chemical composition*

Si	Fe	Cu	Mn	Mg	Cr
0,12	0,15	1,5 2,0	0,10	2,1 2,6	0,05

Zn	Ti	Ni	Zr	others, each	others, total
5,7 6,7	0,06	0,05	0,10 0,16	0,05	0,15

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

Index

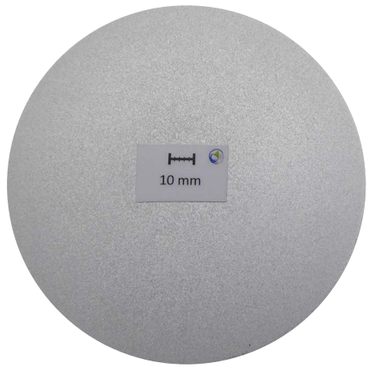
Mn
0,4 1,0

Min-Value Max-Value

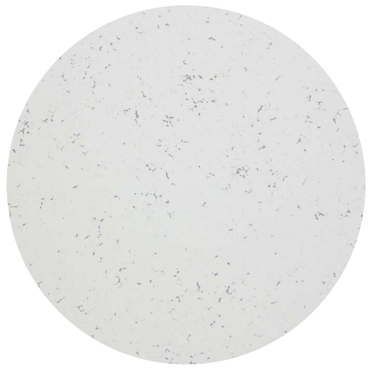
All values in mass %

Structure of the billets

Depending on the process, a segregation zone occurs immediately in the marginalised 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 159 mm.



Macrosection, d159 mm: Segregation 2 mm



Microsection, d159 mm (25 times magnification)

Casting length dimensions

Ø 159 mm	Ø 177 mm	Ø 201 mm	Ø 215 mm	Ø 227 mm	Ø 252 mm	Ø 278 mm
Ø 314 mm	Ø 350 mm	Ø 372 mm	Ø 424 mm	Ø 434 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 homogenised state of approx. 85 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.

Physical properties

Density	2,82 g/cm³
Solidification range	480 - 630 °C
Electr. conductivity	18.000.000 - 34.000.000 S/m
Thermal conductivity	121 - 170 W/(mK)
Modulus of elasticity	72.000 MPa
Specific heat	795 – 1050 J/(kgK)
Shear modulus	27.100 MPa

Mechanical parameters

Condition	$R_{p0,2}$ (MPa)	R_m (MPa)	A (%)
T6	435	470	1

(all values for extruded round rods D. between 250 -300 mm)

Technological properties*

Welability	
WIG	--
MIG	--
Resistance welding	+
Surface Treatment	
Anodisation protective	+
Anodisieren decorative	--
Coating	o
Cold reshapeability	
Bending	-
Deep-drawing / Pressing / Upsetting	--
Impact Extrusion	-
Corrosion resistance	
Atmospheric conditions	+
Seawater	o
Brazeability	
Hard soldering	+
Abrasion soldering	-
Soft soldering with flux	-
Hot reshapeability	
Extrusion molding	o
Drop forging / Open die forging	+
Machineability	+
Use in contact with food	No

* ++ = 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 chemical compositions are possible and similarly very pure alloys can be produced with limited amounts of Natrium, Calcium or Beryllium. We are looking forward to receiving 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 optimised 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.