



LEICHTMETALL

DATA AND FACTS FOR APPLICATION

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 0,12	Fe 0,15	Cu 1,5 2,0	Mn 0,10	Mg 2,1 2,6	Cr 0,05
Zn 5,7 6,7	Ti 0,06	Ni 0,05	Zr 0,10 0,16	others, each 0,05	others, total 0,15

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

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Mn	
0,4	1,0

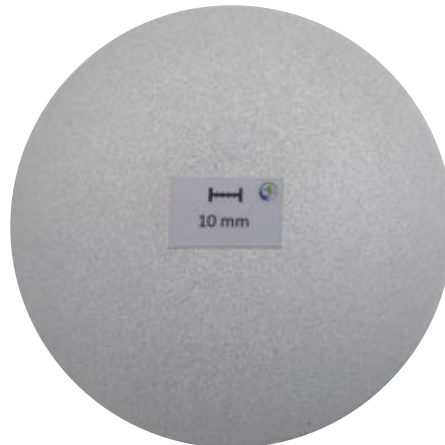
Min-Value

Max-Value

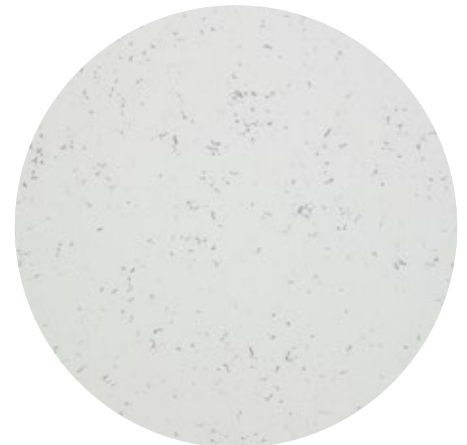
All values in mass %

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 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 518 mm	Ø 607 mm
Ø 682 mm	Ø 750 mm**	Ø 930 mm*	Ø 1150 mm**			

* Q4 2022

** Q2 2023

Turned billets

We can produce all diameters between 140 – 650 mm. From Q2 2023 onwards, we can produce diameters up to 1.100 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. 85 HBW can be named as a guideline for cast material. The homogenized 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 homogenized state (O3). The advantage: a consistent structure as well as good properties for further processing with reshaping processes (forging and extruding). We have summarized typical attainable empirical values from our experience – in relation to the heat treatments and resulting technological properties.

Physical Properties

Density	2,82 g/cm ³
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*

Weldability

WIG	--
MIG	--
Resistance welding	+

Surface Treatment

Anodization 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
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* ++ = 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 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.



Do you have questions?

Please call us at +49 511 89878 475