LEICHTMETALL

DATA AND FACTS FOR APPLICATION

EN AW-7075

The high-strength alloy, ready for take off

EN AW-7075 – THE HIGH-STRENGTH ONE

Our EN AW-7075 ranks among the high-strength, curable alloys. Correspondingly, a heat treatment such as solution annealing and subsequent artificial aging are necessary so that this alloy can develop its full potential. This can increase the strength by several multitudes.

Due to its high strength, this alloy is used for structural components in defence technology and aviation. Corrosion protection is recommended in external atmosphere.

Chemical Composition*

Si	Fe	Cu	Mn	Mg
0,40	0,50	1,2 2,0	0,30	2,1 2,9

Cr	Zn	Ti	others, each	others, total
0,18 0,28	5,1 6,1	0,20	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 177 mm.

Macrosection, d177 mm: Segregation zone 3,1 mm

Microsection, d177 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 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 are able to 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. 70 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 treaments and resulting technological properties.

Physical Properties

Density	2,8 g/cm3
Solidification range	480-640 °C
Electr. conductivity	19-23 MS/m
Thermal conductivity	130-160 W/(mK)
Modulus of elasticity	72.000 MPa
Specific heat	862 J/(kgK)
Shear modulus	27.100 MPa

Heat Treatment

Soft annealing, Recrystallization annealing	
Annealing temperature	380-420 °C
Heat-up time	2-3 h
Cooling conditions	> 230 °C: ≤ 30 °C + 3-5 h holding time / h ≤ 230 °C: open air

Hardening	
Solution annealing	470-480 °C
Quenching	Water
Natural aging	(unusual)

Artificial aging	
Temperature	(I): 110-125 °C (II): 165-180 °C
Duration	(I): 12-24 h (II): 4-6 h

Mechanical Parameters

Condition	$R_{p0,2}$ (MPa)	R_m (MPa)	A (%)
O	165	275	10
H111	165	275	10
T6	400	470	5

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

Technological Properties*

Weldability	
Gas	--
WIG	--
MIG	--
Resistance welding	+

Surface treatment	
Anodization protection	o
Anodization decorative	--
Coating	o

Cold reshapeability	
Bending	o (Condition O)
Deep-drawing	- (Condition O)
Pressing, Upsetting, Quenching	--

Corrosion resistance	
Atmospheric conditions	-
Seawater	-

Brazeability	
Hard soldering with / without flux	--
Abrasion soldering	--
Soft soldering with flux	--

Hot reshapeability	
Extrusion molding	-
Drop forging / Open die forging	o

Machineability	
Annealed	nA
Work hardened	nA
Hardened	+
Work 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 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.

Do you have questions?

Please call us at +49 511 89878 475

Leichtmetall Aluminium Giesserei Hannover GmbH | Göttinger Chaussee 12-14 | 30453 Hannover | www.leichtmetall.eu