



LEICHTMETALL

DATA AND FACTS FOR APPLICATION

# EN AW-2033

The lead-free alternative of the 2000 group

# EN AW-2033 – THE ALTERNATIVE

The alloy EN AW-2033 is one of the heat treatable alloys. Accordingly, a heat treatment such as solution annealing and subsequent artificial aging is necessary. Only then can the alloy develop its full potential.

This alloy has higher strengths and is optimized for machining. Due to the poor corrosion resistance, a protective coating is recommended for exterior applications.

## Chemical Composition\*

<b>Si</b> 0,10 1,2	<b>Fe</b> 0,7	<b>Cu</b> 2,2 2,7	<b>Mn</b> 0,40 1,0	<b>Mg</b> 0,20 0,6	<b>Cr</b> 0,15
<b>Zn</b> 0,50	<b>Ti</b> 0,10	<b>Ni</b> 0,15	<b>Bi</b> 0,05 0,8	others, each 0,05	others, total 0,15

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

## Index

<b>Mn</b>	
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 252 mm.



Macrosection, d252 mm: Segregation 5,5 mm



Microsection, d252 mm (25 times magnification)

## Casting Length Dimensions

Ø 160 mm	Ø 178 mm	Ø 201 mm	Ø 215 mm	Ø 227 mm	Ø 252 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. 65 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	2,77 g/cm <sup>3</sup>
Electr. conductivity	nA
Electrical resistance	0,046 Ωmm <sup>2</sup> /m
Thermal conductivity	151-173 W/(mK)
Modulus of elasticity	70.000 MPa
Therm. linear expansion coefficient	22,9 * 10 <sup>-6</sup> 1/K
Specific heat	nA
Shear modulus	nA

### Mechanical Parameters

Condition	R <sub>p0,2</sub> (MPa)	R <sub>m</sub> (MPa)	A (%)
T6	220	340	8

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

### Technological Properties\*

Weldability	
WIG	--
MIG	--
Resistance welding	+

Surface Treatment	
Anodization protective	o
Anodization decorative	o
Coating	o

Cold reshapeability	
Bending	o
Deep-drawing, Pressing, Upsetting	o
Impact Extrusion	o

Corrosion resistance	
Atmospheric conditions	o
Seawater	--

Brazeability	
Hard soldering	-
Abrasion soldering	+
Soft soldering with flux	nA

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

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 Sodium, 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