

Highly machinable alloy from Děčín

AlCu4MgSi(A)

Overview & application

- High mechanical properties and fatigue resistance
- Very good machinability (but longer chips) and good ductility
- No contents of lead, tin and bismuth (ELV, RoHS & REACH compatible)
- Low corrosion resistance, due to high copper contents
- Applied in high strength structural components (aerospace, automotive, defense)
- Alloy future lead compliant with Pb ≤ 0.1% (EU regulation under consideration for later 2020s)



Product range

	Round (mm)	Hexagonal (mm)	Shaped (mm ²)	Profiles (mm ²)
Drawn	6-80	13-80	200-6400	-
Extruded	20-125	15-85	200-14400	500-9900

Chemical composition (Weight %)

	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn
Min.	0,20	-	3,5	0,40	0,40	-	-	-
Max.	0,8	0,7	4,5	1,0	1,0	0,10	-	0,25
Remarks	Zr+Ti max. 0,25			Others: each: 0,05 / total: 0,15				

Typical tempers

T3, T3510, T3511, T4, T4510, T4511

Mechanical properties

Product (Temper)	Dimension (mm)	Minimal values (EN)			Typical
		Rm (MPa)	Rp 0.2 (MPa)	A (%)	HBW (2.5/62.5)
Extruded round bars (T4, T4510, T4511)	25<D≤75	400	270	10	105
	75<D≤125	390	260	9	105
Cold drawn bars (T3)	D≤80	400	250	10	105
Cold drawn bars (T351)	D≤80	400	250	8	105

Processing properties

Machinability	★★★★
Machining index (chips #/100g)	4000
MIG-TIG weldability	★
Resistance fusion weldability	★★★★
Soft soldering & brazing	★

Protective anodising

Protective anodising	★★★
Hard anodising	★★★

Corrosion

Corrosion resistance @ sea water	★★
Corrosion resistance @ atmosphere	★★★
Corrosion depth ISO 11846B (µm)	100



Physical properties

Density	2,79	g/cm ³
Young's modulus of elasticity	72500	MPa
Coeff. of thermal expansion (20-100°C)	23	x10 ⁻⁶ /°C
Thermal conductivity at 20°C	130-200	W/m*K
Specific heat capacity	873	J/kg*K
Electrical conductivity at 20°C	18-28	MS/m

Legend:

- ★★★★★ Excellent
- ★★★★ Good
- ★★★ Acceptable
- ★★ Conditional
- ★ Not recommended

