Constellium

2024

AlCu4Mg1

LEAD FREE TO HELP NATURE

Highly machinable alloy from Děčín

General overview & application

- High fatigue strength and high mechanical properties (higher than 2014, 2017A etc.)
- Very good machinability (but longer chips) and good ductility
- Without any contents of lead, tin and bismuth (ELV, RoHS & REACH compatible)
- Low corrosion resistance due to high copper content

- 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 (mm²)	Profiles (mm²)
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	Zn	Ti
Min.	-	-	3,8	0,30	1,2	-	-	-
Max.	0,50	0,50	4,9	0,9	1,8	0,10	0,25	0,15
Remarks	(Zr+Ti max. 0,20 if agreed)				Others: each: 0,05 / total: 0,15			

Typical tempers	T3 (T3510,T3511), T6, T8 (T8510,T8511)

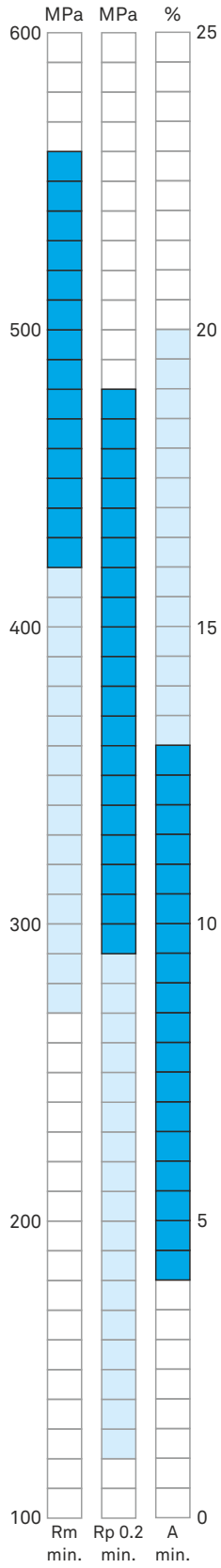
Mechanical properties		Minimal values (EN)			Typical
Product (Temper)	Dimension (mm)	Rm (MPa)	Rp 0.2 (MPa)	A (%)	HBW (2.5/62.5)
Extruded bars (T3, T3510, T3511)	D≤50	450	310	8	120
	50≤D≤125	440	300	8	120
Extruded bars (T8, T8510, T8511)	D≤125	455	380	5	130
Cold drawn bars (T3)	10<D≤80	425	290	9	120
Cold drawn bars (T8)	D≤80	455	400	4	130

Processing properties	
Machinability	●●●●
Machining index (chips #/100g)	3000
MIG-TIG weldability	●
Resistance fusion weldability	●●●●●
Soft soldering & brazing	●
Protective anodising	●●●
Hard anodising	●●●

Corrosion	
Corrosion resistance @ sea water	●●
Corrosion resistance @ atmosphere	●●
Corrosion depth ISO 11846B (µm)	300

Physical properties		
Density	2,78	g/cm³
Young's modulus of elasticity	73000	MPa
Coeff. of thermal expansion (20-100°C)	22,9	x10⁻⁶ /°C
Thermal conductivity at 20°C	130-150	W/m*K
Specific heat capacity	874	J/kg*K
Electrical conductivity at 20°C	18-21	MS/m

Legend:
- ●●●●● Excellent
- ●●●● Good
- ●●● Acceptable
- ●● Conditional
- ● Not recommended



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