



ALUMINIUMS Alloys Aluminium - Copper 2024

Chemical composition

| % | Si | Fe | Cu | Mn | Mg | Cr | Zn | Ti | Bi | Ti+Zr | Others | Al |
|---------|------|------|------|------|------|------|------|------|----|-------|--------|------|
| Minimum | | | 3,80 | 0,30 | 1,20 | | | | | | | |
| Maximum | 0,50 | 0,50 | 4,90 | 0,90 | 1,80 | 0,10 | 0,25 | 0,15 | | 0,20 | 0,15 | rest |

International Equivalences

| Europe | USA | Spain | France | Germany | G.B. | Italy | Sweden | Switzerland | Japan |
|------------|------|---------------|--------|---------------|------|-------------|--------|-------------|--------|
| E.N. 573 | A.A. | U.N.E. | AFNOR | D.I.N. | B.S. | U.N.I. | S.I.S. | V.S.M. | J.I.S. |
| EN AW 2024 | 2024 | 38.314 L-3140 | A-U4G1 | ALCuMg2 31355 | | 3583 9002/4 | | AlCu4Mg1.5 | A 2024 |

Mechanical properties of sheets Standard: EN 485-2 Aluminium EN AW-2024 [Al Cu4Mg1]

| Treatment state | Nominal thickness mm | | R _m MPa | | R _{p0,2} MPa | | Min. elongation % | | Bending radius | | Hardness HBS |
|-----------------|----------------------|-------|--------------------|------|-----------------------|------|-------------------|----|----------------|-------|--------------|
| | Greater than | up to | min. | max. | min. | max. | A _{50mm} | A | 180° | 90° | |
| O | ≥0,4 | 1,5 | | 220 | | 140 | 12 | | 0,5 t | 0 t | 55 |
| | 1,5 | 3,0 | | 220 | | 140 | 13 | | 2,0 t | 1,0 t | 55 |
| | 3,0 | 6,0 | | 220 | | 140 | 13 | | 3,0 t | 1,5 t | 55 |
| | 6,0 | 9,0 | | 220 | | 140 | 13 | | | 2,5 t | 55 |
| | 9,0 | 12,5 | | 220 | | 140 | 13 | | | 4,0 t | 55 |
| | 12,5 | 25,0 | | 220 | | | | 11 | | | 55 |
| T4 | ≥0,4 | 1,5 | 425 | | 275 | | 12 | | 4,0 t | | 120 |
| | 1,5 | 6,0 | 425 | | 275 | | 14 | | 5,0 t | | 120 |
| T3 T351 | ≥0,4 | 1,5 | 435 | | 290 | | 12 | | 4,0 t | 4,0 t | 123 |
| | 1,5 | 3,0 | 435 | | 290 | | 14 | | 4,0 t | 4,0 t | 123 |
| | 3,0 | 6,0 | 440 | | 290 | | 14 | | 5,0 t | 5,0 t | 124 |
| | 6,0 | 12,5 | 440 | | 290 | | 13 | | | 8,0 t | 124 |
| T351 | 12,5 | 40,0 | 430 | | 290 | | | 11 | | | 122 |
| | 40,0 | 80,0 | 420 | | 290 | | | 8 | | | 120 |
| | 80,0 | 100,0 | 400 | | 285 | | | 7 | | | 115 |
| | 100,0 | 120,0 | 380 | | 270 | | | 5 | | | 110 |
| | 120 | 150,0 | 360 | | 250 | | | 5 | | | 104 |
| | ≥0,4 | 6,0 | 425 | | 260 | | 15 | | | | 119 |
| | 6,0 | 12,5 | 425 | | 260 | | 12 | | | | 119 |
| | 12,5 | 25,0 | 420 | | 260 | | | 8 | | | 118 |
| T8 T851 | ≥0,4 | 1,5 | 460 | | 400 | | 5 | | | | 138 |
| | 1,5 | 6,0 | 460 | | 400 | | 6 | | | | 138 |
| | 6,0 | 12,5 | 460 | | 400 | | 5 | | | | 138 |
| T851 | 12,5 | 25,0 | 455 | | 400 | | | 4 | | | 137 |
| | 25,0 | 40,0 | 455 | | 395 | | | 4 | | | 136 |



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Mechanical properties

Standard: EN 755-2

Alloy: EN AW-2024 [Al Cu4Mg1]

Extruded bar

| Treatment state | Measurements mm | | R _m MPa | | R _{p0,2} MPa | | A % | A _{50 mm} % | Hardness HBS |
|------------------|-----------------|-----------------|--------------------|------|-----------------------|------|-----|----------------------|--------------|
| | D ¹⁾ | S ²⁾ | min. | max. | min. | max. | min | min. | |
| O, H111 | ≤ 200 | ≤ 200 | – | 250 | – | 150 | 12 | 10 | 55 |
| T3, T3510, T3511 | ≤ 50 | ≤ 50 | 450 | – | 310 | – | 8 | 6 | 120 |
| | 50 < D ≤ 100 | 50 < S ≤ 100 | 440 | – | 300 | – | 8 | – | 120 |
| | 100 < D ≤ 200 | 100 < S ≤ 200 | 420 | – | 280 | – | 8 | – | 120 |
| | 200 < D ≤ 250 | 200 < S ≤ 250 | 400 | – | 270 | – | 8 | – | 120 |
| T8, T8510, T8511 | ≤ 150 | ≤ 150 | 455 | – | 380 | – | 5 | 4 | 138 |

Extruded tube

| Treatment state | Measurements mm e ³⁾ | R _m MPa | | R _{p0,2} MPa | | A % | A _{50 mm} % |
|------------------|---------------------------------|--------------------|------|-----------------------|------|-----|----------------------|
| | | min. | max. | min. | max. | min | min. |
| O, H111 | ≤ 30 | – | 250 | – | 150 | 12 | 10 |
| T3, T3510, T3511 | ≤ 30 | 420 | – | 290 | – | 8 | 6 |
| T8, T8510, T8511 | ≤ 30 | 455 | – | 380 | – | 5 | 4 |

Extruded profile

| Treatment state | Measurements mm e ³⁾ | R _m MPa | | R _{p0,2} MPa | | A % | A _{50 mm} % |
|------------------|---------------------------------|--------------------|------|-----------------------|------|-----|----------------------|
| | | min. | max. | min. | max. | min | min. |
| O, H111 | all | – | 250 | – | 150 | 12 | 10 |
| T3, T3510, T3511 | ≤ 15 | 395 | – | 290 | – | 8 | 6 |
| | 15 < e ≤ 50 | 420 | – | 290 | – | 8 | – |
| T8, T8510, T8511 | ≤ 50 | 455 | – | 380 | – | 5 | 4 |

1) D = Diameter of circular section bars.

2) S = Distance between faces for square-section and hexagonal bars, thickness for rectangular section bars.

3) e = Wall thickness.

Physical properties

| Modulus of elasticity N/mm ² | Specific weight g/cm ³ | Melting temperature °C | Linear expansion coefficient 1/10 ⁶ K | Thermal conductivity W/mK | Electrical resistivity at 20°C - μΩ cm | Electrical conductivity% IACS | Dissolution potential V |
|--|--------------------------------------|---------------------------|---|------------------------------|--|-------------------------------|-------------------------|
| 73.000 | 2,79 | 500-650 | 23,1 | 121-193 | T0-3,4 T3/T4-5,7 | T0-50 T3/T4-30 | -0,69 |

Technological suitabilities

| Welding | | Natural behaviour | | Anodized | | Mechanization | State T3 | State T4 |
|--------------------------------|----|------------------------------|---|----------------|---|--------------------|----------|----------|
| | | | R | | R | | B | B |
| Under flame | B | In a rural environment | R | For protection | R | Chip fragmentation | B | B |
| At the arc under argon gas | B | In an industrial environment | M | Decorative | M | Surface gloss | B | B |
| Owing to electrical resistance | MB | In a marine environment | M | Hard anodized | R | | | |
| Brazed | B | In sea water | M | | | | | |

Thermal treatments

Products

Observations and applications

Forging temperature interval:
380°-460°C.

Total annealing: 420°C. Annealing
against acidity: 340°C

Bars, extruded profiles,
tubes, wire, sheets, plates.

High-resistance alloy. Mainly used in aeronautics,
the military and arms' industry, structural elements
requiring high level mechanical characteristics, iron
fittings, screws, bolts, dies, moulds, tools etc.