



## EXTRUSION ALUMINIUM ALLOY

**EN AW- 6061**

Amongst the alloys used for structural applications, alloy type EN AW 6061 finds an enormous range of use thanks to the medium-high resistances reached following hardening and tempering treatments (tempering and artificial aging).

The most frequent applications concern the production of bolts and rivets, standard sections for machining, civil buildings (bridges, towers, piers), structural parts of means of transport (truck chassis, ship structures, railway wagons, aeronautical applications).

### Physical characteristics

|                                     |       |                     |                                      |                             |                         |                        |
|-------------------------------------|-------|---------------------|--------------------------------------|-----------------------------|-------------------------|------------------------|
| Volume mass :                       | 2,70  | g / cm <sup>3</sup> | Thermal conductivity at 20°C         | in state O:<br>in state T6: | 1,72<br>1,55            | W / cm °K<br>W / cm °K |
| Lower melting point:                | 582   | °C                  | Linear thermal expansion coefficient | - 20°C - 100°C:             | 23,4 · 10 <sup>-6</sup> | 1 / °K                 |
| Specific heat between 0° and 100°C: | 962   | J / Kg °K           |                                      | - 20°C - 200°C:             | 24,3 · 10 <sup>-6</sup> | 1 / °K                 |
| Linear modulus of elasticity E:     | 69000 | N / mm <sup>2</sup> |                                      | - 20°C - 300°C:             | 25,4 · 10 <sup>-6</sup> | 1 / °K                 |
| Tangential modulus of elasticity G: | 26000 | N / mm <sup>2</sup> | Electrical resistivity at 20°C       | in state O:<br>in state T6: | 3,83<br>4,31            | μΩ · cm<br>μΩ · cm     |

### Chemical composition according to European Standard EN 573.3

|                   | Si              | Fe         | Cu               | Mn          | Mg               | Cr                | Zn          | Ti          | Others      |             | Al   |
|-------------------|-----------------|------------|------------------|-------------|------------------|-------------------|-------------|-------------|-------------|-------------|------|
|                   |                 |            |                  |             |                  |                   |             |             | Each        | Total       |      |
| <b>EN AW-6061</b> | 0,4<br>÷<br>0,8 | 0,7<br>max | 0,15<br>÷<br>0,4 | 0,15<br>max | 0,8<br>÷<br>0,12 | 0,04<br>÷<br>0,35 | 0,25<br>max | 0,15<br>max | 0,05<br>max | 0,15<br>max | rest |

### Minimum mechanical properties, according to European Standard EN 755.2

| Types of profile | (1) Temper state | Diameter D [mm] for rods or thickness TH [mm] for bars or thickness of walls and for sections |         | Tensile strength Rm [MPa] |     | Limit elasticity load R <sub>p0.2</sub> [MPa] |     | Elongation |                         |
|------------------|------------------|---|---------|---------------------------|-----|---|-----|------------|-------------------------|
|                  |                  |   |         | min                       | max | min   | max | A % min    | A <sub>50mm</sub> % min |
| <b>Full bars</b> | O , H111         | D ≤ 200   | S ≤ 200 | -                         | 150 | -   | 110 | 16         | 14                      |
|                  | T4 (*)           | D ≤ 200   | S ≤ 200 | 180                       | -   | 110   | -   | 15         | 13                      |
|                  | T6 (*)           | D ≤ 200   | S ≤ 200 | 260                       | -   | 240   | -   | 8          | 6                       |
| <b>Pipe</b>      | O , H111         | e ≤ 25  |         | -                         | 150 | -   | 110 | 16         | 14                      |
|                  | T4 (*)           | e ≤ 25  |         | 180                       | -   | 110   | -   | 15         | 13                      |
|                  | T6 (*)           | e ≤ 5<br>5 < e ≤ 25   |         | 260                       | -   | 240   | -   | 8<br>10    | 6<br>8                  |
| <b>Profiles</b>  | T4 (*)           | e ≤ 25  |         | 180                       | -   | 110   | -   | 15         | 13                      |
|                  | T6 (*)           | e ≤ 5<br>5 < e ≤ 25   |         | 260                       | -   | 240   | -   | 9<br>10    | 7<br>8                  |

NOTE (\*) for state F the values of the characteristics are just written as an indication

(1) see chart related to: "Description of the treatments and of the metallurgic states adopted in standard production"