

## ALLOY DATA SHEET

### EN-AW 6061 [AlMg1SiCu]

**(Type: High strength structural alloy)**

The alloy EN AW-6061 is a high strength extrusion alloy, for highly loaded structural applications. Typical applications are scaffolding elements, rail coach parts, containers, machine building and aerospace parts. This alloy is equivalent to EN AW-6082, however due to its higher Cu-content, the corrosion resistance is somewhat lower.

#### Chemical composition according to EN573-3 (weight%, remainder Al)

| Si       | Fe       | Cu        | Mn        | Mg      | Cr        | Zn        | Ti        | remarks | others    |           |
|----------|----------|-----------|-----------|---------|-----------|-----------|-----------|---------|-----------|-----------|
|          |          |           |           |         |           |           |           |         | each      | total     |
| 0.40-0.8 | max. 0.7 | 0.15-0.40 | max. 0.15 | 0.8-1.2 | 0.04-0.35 | max. 0.25 | max. 0.15 |         | max. 0.05 | max. 0.15 |

#### Mechanical properties according to EN755-2

| Temper* | Wallthickness<br>e***<br>[mm] | Yield stress<br>Rp <sub>0.2</sub><br>[MPa] | Tensile strength<br>Rm<br>[MPa] | Elongation |                     | Hardness**<br>HB |
|---------|-------------------------------|--|---------------------------------|------------|---------------------|------------------|
|         |                               |  |                                 | A [%]      | A <sub>50</sub> [%] |                  |
| T4      | ≤ 25                          | 110  | 180                             | 15         | 13                  | 65               |
| T6      | ≤ 5                           | 240  | 260                             | 9          | 7                   | 85               |
|         | 5 < e ≤ 25                    | 240  | 260                             | 10         | 8                   | 85               |

\*Temper designation according to EN515: T4-Naturally aged to a stable condition, T6-Solution heat treated, quenched and artificially aged, (T6 properties can be achieved by press quenching)

\*\* Hardness values are for indication only

\*\*\*For different wall thicknesses within one profile, the lowest specified properties shall be considered as valid for the whole profile cross section

#### Physical properties (approximate values, 20°C)

| Density<br>[kg/m <sup>3</sup> ] | Melting range<br>[°C] | Electrical<br>Conductivity<br>[MS/m] | Thermal<br>Conductivity<br>[W/m.K] | Co-efficient of<br>thermal<br>Expansion<br>10 <sup>-6</sup> /K | Modulus of<br>Elasticity<br>[GPa] |
|---------------------------------|-----------------------|--------------------------------------|------------------------------------|--|-----------------------------------|
| 2700                            | 585-640               | 22-30                                | 170-200                            | 23   | ~70                               |

#### Weldability<sup>1</sup>

Gas: 3      TIG: 2      MIG: 2      Resistance welding: 3

Typical filler materials (EN ISO18273): SG-AlMg5Cr(A) or SG-AlMg4.5Mn0.7(A) or AlSi5. Due to the heat input during welding the mechanical properties will be reduced by approximately 50% (ref. EN1999-1).

#### Machining characteristics<sup>1</sup>

T4 temper: 4

T6 temper: 2

#### Coating properties<sup>1</sup>

Hard protecting  
anodising: 1

Bright/colour anodising: 3  
Other: 2

#### Corrosion resistance<sup>1</sup>

General: 1      Marine: 2-3

<sup>1</sup>Relative qualification ranging from 1-very good to 6 unsuitable

