

Alloy EN AW-6060 [Al MgSi]

Technical datasheet - Extruded products

Alloy 6060 offers good strength, slightly lower than 6063, very good corrosion resistance and is suitable for decorative anodizing. Used primarily for structures requiring good strength, very good surface finish and good anodising response, such as profiles for windows, doors, entrance lots, ceilings and furniture. This is also a commonly used alloy for thermal applications such as heat sinks.

Typical Applications

- Architectural and building products
- Door and window frames
- Electrical components and conduit
- Heat sinks
- Railings and furniture
- Pipe and tube for irrigation systems
- Truck and trailer flooring
- Ladders

Chemical Composition¹

| Si | | Fe | | Cu | | Mn | | Mg | | Cr | | Zn | | Ti | | Pb | | Bi | Sn | Others | |
|------|------|------|------|------|-----|------|-----|------|------|------|-----|------|-----|------|-----|-----|-----|-----|-----|--------|------|
| Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Max | Max | Each | Tot |
| 0.30 | 0.60 | 0.10 | 0.30 | 0.10 | | 0.10 | | 0.35 | 0.60 | 0.05 | | 0.15 | | 0.10 | | | | | | 0.05 | 0.15 |

¹ Chemical composition in weight-% according to EN-573-3:2013

Mechanical Properties²

| Temper | Wall thickness t [mm] | R _{p0.2} [MPa] | R _m [MPa] | A [%] | A _{50mm} [%] | HBW ^c TYPICAL VALUE | Vickers ^c TYPICAL VALUE | Webster ^c TYPICAL VALUE |
|--------------------|-----------------------|-------------------------|----------------------|-------|-----------------------|--------------------------------|------------------------------------|------------------------------------|
| T4 ^a | t ≤ 25 | 60 | 120 | 16 | 14 | 50 | 56 | 9 |
| T5 | t ≤ 5 | 120 | 160 | 8 | 6 | 60 | 68 | 12 |
| | 5 < t ≤ 25 | 100 | 140 | 8 | 6 | 60 | 68 | 12 |
| T6 ^a | t ≤ 5 | 150 | 190 | 8 | 6 | 70 | 80 | 14 |
| | 5 < t ≤ 25 | 140 | 170 | 8 | 6 | 70 | 80 | 14 |
| T64 ^{a b} | t ≤ 15 | 120 | 180 | 12 | 10 | 60 | 68 | 12 |
| T66 ^a | t ≤ 5 | 160 | 215 | 8 | 6 | 75 | 86 | 14 |
| | 5 < t ≤ 25 | 150 | 195 | 8 | 6 | 75 | 86 | 14 |

² Properties according to EN 755-2:2016 for extruded profile, minimum values unless else specified

³ If a profile cross section comprises different thickness which fall in more than one set of specified mechanical property values, the lowest specified value shall be considered as valid for the whole profile section

^a Properties may be obtained by press quenching

^b Bending quality

^c Brinell hardness values for information only. Vickers and Webster converted from Brinell value and should be considered approximate

Temper Designations⁴

| | |
|-----|---|
| T4 | Solution heat treated and naturally aged |
| T5 | Cooled from an elevated temperature shaping process and then artificially aged |
| T6 | Solution heat treated and then artificially aged |
| T64 | Solution heat treated and then artificially aged in underageing conditions (between T6 and T61) to improve formability |
| T66 | Solution heat treated and then artificially aged – mechanical property level higher than T6 achieved through special control of the process |

⁴ Temper designations according to EN 515:1993

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Physical Properties⁵

| Temper | Modulus of Elasticity [GPa] | Modulus of Rigidity [GPa] | Melting Range [°C] | Density [g/cm ³] | Thermal Conductivity [W/m·K] | Specific Heat Capacity [J/kg·K] | Electrical Resistivity [nΩm] | Coefficient of linear expansion [10 ⁻⁶ K ⁻¹] |
|--------|-----------------------------|---------------------------|--------------------|------------------------------|------------------------------|---------------------------------|------------------------------|---|
| T6 | 69 | 26 | 615 - 655 | 2.70 | 200 | 901 | 32 | 23.4 |

⁵ Reference: MNC Handbok nr 12, version 2, SIS, 1989. Typical properties at room temperature 20°C

Comparative Characteristics of Related Alloys⁶

| Property | 6060 | 6063 | 6005 | 6005A | 6082 |
|--------------------------------------|------|------|------|-------|------|
| Tensile strength | 1 | 2 | 3 | 3 | 4 |
| Impact strength | 2 | 2 | 1 | 3 | 4 |
| Surface finish | 5 | 4 | 3 | 3 | 2 |
| Suitability for decorative anodizing | 5 | 5 | 4 | 3 | 2 |
| Corrosion resistance | 5 | 5 | 4 | 4 | 4 |
| Machinability | 2 | 3 | 4 | 4 | 5 |
| Coldforming | 5 | 5 | 4 | 4 | 3 |
| Weldability | 5 | 5 | 5 | 5 | 4 |

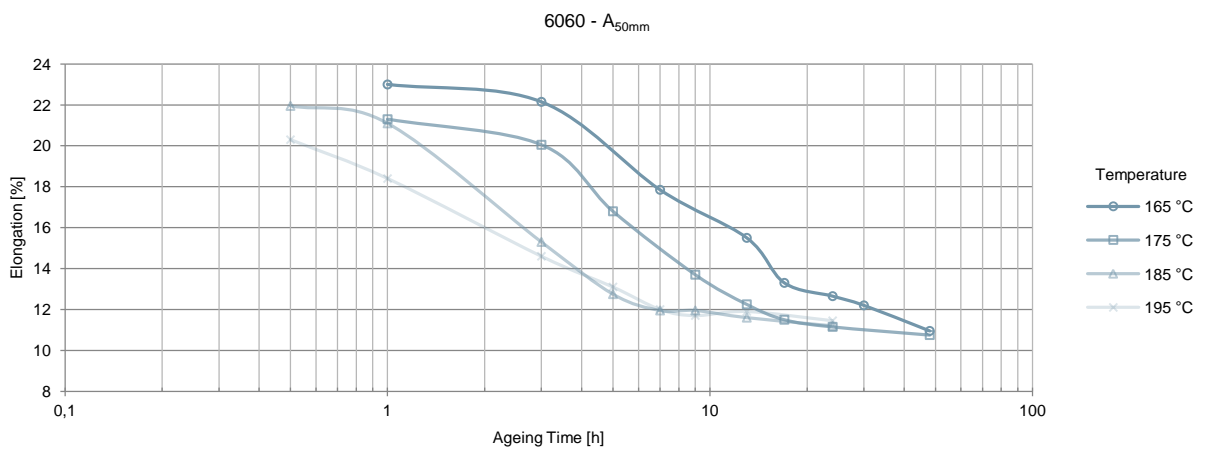
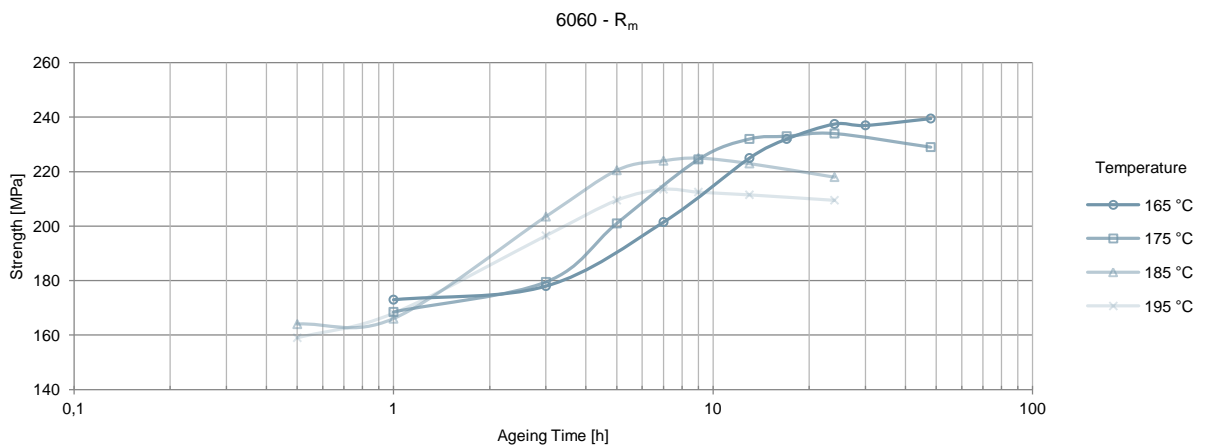
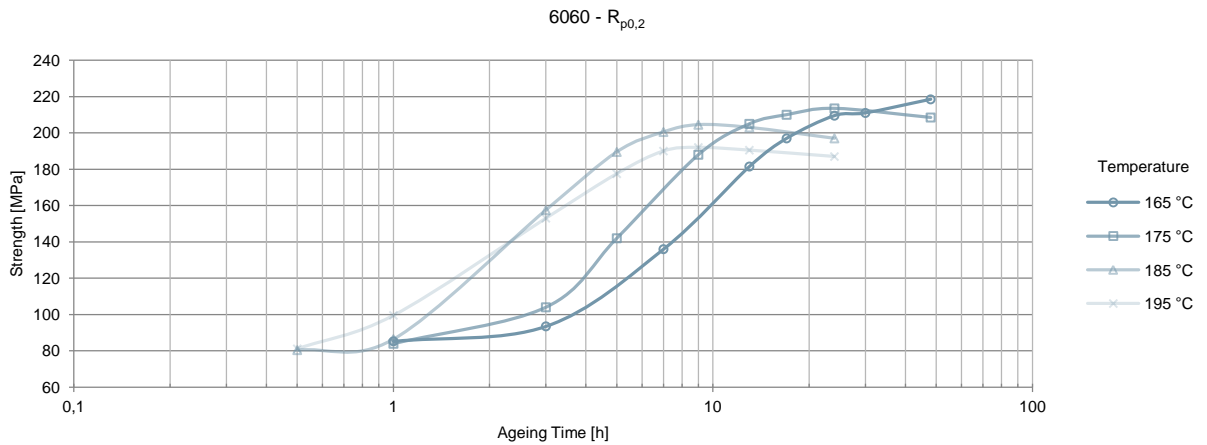
⁶ Relative grading, 5 = top grade

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Heat Treatment Response⁸

Example of heat treatment response for alloy 6060.



⁸ Solid profile, 200 x 3mm, air quenched after extrusion, 24h natural ageing prior to artificial ageing, properties in extrusion direction