# Mechanical Properties for Standard Alloys

| Alloy / Brand Name / EN AW / EN 573-3 | Temper EN 512 (DIN) | | Mech. Values EN 485-2 Tensile strength $R_m$(MPa) min.-max. | Proof stress $R_{p0.2}$(MPa) min.-max. | | Elongation min. $A_{50}$ (%) for nom. gauges over 0.2 0.5 1.5 3.0 6.0 / up to 0.5 1.5 3.0 6.0 10.0 | | | | | min. Bending Radius Factor for nominal gauges and bending up to 90° over 0.2 0.5 1.5 3.0 6.0 / up to 0.5 1.5 3.0 6.0 10.0 (Radius=F x nom. gauge) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | |
| 5754 | 0/H111 | (W19) | 190-240 | 80 | | 12 | 14 | 16 | 18 | 18 | 0 | 0.5 | 1.0 | 1.0 | 2.0 |
| (Al Mg3) | H12 | (F22) | 220-270 | 170 | | 4 | 5 | 6 | 7 | | | | | | |
| | H22/32 | (G22) | 220-270 | 130 | | 7 | 8 | 10 | 11 | | 0.5 | 1.0 | 1.5 | 1.5 | |
| density: | H14 | (F24) | 240-280 | 190 | | 3 | 3 | 4 | 4 | | | | | | |
| 2.671 t/m³ | H24/34 | (G24) | 240-280 | 160 | | 6 | 6 | 7 | 8 | | 1.0 | 1.5 | 2.0 | 2.5 | |
| | H16 | (F27) | 265-305 | 220 | | 2 | 3 | 3 | 3 | | | | | | |
| | H26/36 | (G27) | 265-305 | 190 | | 4 | 4 | 5 | | | 1.5 | 2.0 | 3.0 | | |
| | H18 | (F29) | 290 | 250 | | 1 | 2 | 2 | | | | | | | |
| | H28/38 | | 290 | 230 | | 3 | 3 | | | | | | | | |
| 5086 | 0/H111 | (W24) | 240-310 | 100 | | 11 | 12 | 13 | 15 | 17 | 0.5 | 1.0 | 1.0 | 1.5 | 2.5 |
| (Al Mg4) | H116 | | 275 | 195 | (4-6 mm) | -- | -- | -- | 9 | | | | | 2.5 | |
| | H12 | (F28) | 275-335 | 200 | | 3 | 4 | 5 | 6 | | | | | | |
| density: | H22/32 | (G28) | 275-335 | 185 | | 5 | 6 | 7 | 8 | | 0.5 | 1.5 | 2.0 | 2.5 | |
| 2.657 t/m³ | H14 | | 300-360 | 240 | | 2 | 3 | 3 | 3 | | | | | | |
| | H24/34 | (G30) | 300-360 | 220 | | 4 | 5 | 6 | 7 | | 1.0 | 2.0 | 2.5 | 3.5 | |
| | H16 | | 325-385 | 270 | | 1 | 2 | 2 | | | | | | | |
| | H26/36 | | 325-385 | 250 | | 2 | 3 | 3 | 3* | | | | | | |
| | H18 | | 345 | 290 | | 1 | 1 | 1 | | | | | | | |
| 5182 | 0/H111 | | 255-315 | 110 | | 11 | 12 | 13 | | | | | | | |
| (Al Mg4.5 Mn0.4) | H19 | | 380 | 320 | | 1 | 1 | | | | | | | | |
| density: | | | | | | | | | | | | | | | |
| 2.646 t/m³ | | | | | | | | | | | | | | | |
| 5083 | 0/H111 | (W28) | 275-350 | 125 | | 11 | 12 | 13 | 15 | 16 | 0.5 | 1.0 | 1.0 | 1.5 | 2.5 |
| (Al Mg4.5 Mn0.7) | H16 | | 305 | 215 | (4-6 mm) | -- | -- | -- | 10 | | | | | 2.5 | |
| | H12 | | 315-375 | 250 | | 3 | 4 | 5 | 6 | | | | | | |
| density: | H22/32 | (G31) | 305-380 | 215 | | 5 | 6 | 7 | 8 | | 0.5 | 1.5 | 2.0 | 2.5 | |
| 2.657 t/m³ | H14 | | 340-400 | 280 | | 2 | 3 | 3 | 3 | | | | | | |
| | H24/34 | (G35) | 340-400 | 250 | | 4 | 5 | 6 | 7 | | 1.0 | 2.0 | 2.5 | 3.5 | |
| | H16 | | 360-420 | 300 | | 1 | 2 | 2 | 2 | | | | | | |
| | H26/36 | | 360-420 | 280 | | 2 | 3 | 3 | 3 | | | | | | |
| **Alutrans®** | | | | | | | | | | | | | | | |
| 5182 | H111 | | 280-330 | 125 | (4-9 mm) | -- | -- | -- | 24 | 24 | -- | -- | -- | 1.5 | 1.5 |
| (Al Mg4.5 Mn0.4) | | | | | | | | | | | | | | | |
| nach AD-W 6.1 | | | | | | | | | | | | | | | |
| density: | | | | | | | | | | | | | | | |
| 2.646 t/m³ | | | | | | | | | | | | | | | |
| 8011A | 0/H111 | (W8) | 80-130 | 30 | | 19 | 21 | 24 | 25 | 30 | | | | | |
| (Al Fe Si -A) | H22 | | 105-145 | 90 | | 4 | 5 | 6 | | | | | | | |
| | H14 | (F13) | 125-165 | 110 | | 2 | 3 | 3 | 4 | | | | | | |
| density: | H24 | (G13) | 125-165 | 100 | | 3 | 4 | 5 | 6 | | | | | | |
| 2.713 t/m³ | H16 | | 145-185 | 130 | | 1 | 2 | 3 | 3* | | | | | | |
| | H26 | | 145-185 | 120 | | 2 | 3 | 4 | | | | | | | |
| | H18 | (F17) | 165 | 145 | | 1 | 2 | | | | | | | | |
| 6061 | 0 | (W) | -- 150 | -- 85 | | | 16 | 19 | | | | 0.5 | 1.0 | | |
| (Al Mg1 Si Cu) | T4 | (F21) | 205 -- | 110 | (min. 0.6 mm) | | 12 | 14 | | | | 1.0 | 1.5 | | |
| density: | T6 | (F29) | 290 -- | 240 | (min. 0.6 mm) | | 6 | 7 | | | | 2.5 | 3.5 | | |
| 2.701 t/m³ | | | | | | | | | | | | | | | |
| 6082 | 0 | (W) | -- 150 | -- 85 | | | 14 | 16 | | | | 0.5 | 1.0 | | |
| (Al Si Mg Mn) | T4 | (F21) | 205 -- | 110 | (min. 0.6 mm) | | 12 | 14 | | | | 1.5 | 2.0 | | |
| density: | T6 | (F30/32) | 310 -- | 260 | (min. 0.6 mm) | | 6 | 7 | | | | 2.5 | 3.5 | | |
| 2.702 t/m³ | | | | | | | | | | | | | | | |

(below mentioned max. gauges not always correspond to production facilities)

* marked values are valid for gauges over 3 mm up to 4 mm

## Thermal expansion

The thermal expansion of aluminium between 20 and 100°C e.g. for AW 5005 (Al Mg1) is 0.0236 mm and for AW 5083 (Al Mg4.5 Mn0.7) is 0.0242 mm per degree per meter length.

## Modulus of elasticity

The modulus of elasticity of aluminium is approx. 70,000 MPa.