

Extruded products Technical datasheet

Alloy EN AW-6082 [Al Si1MgMn]

Medium strength alloy with higher strength than 6005A. Due to elements like manganese, added to increase toughness, it is less suitable for decorative anodising.

Commonly used for structural applications in engineering and transportation due to good toughness and high yield- and ultimate tensile strength. Examples of applications include seat-rails, bumper beams, scaffolding, train-floors, and valve-blocks.

Typical Applications

- Structural beams
- Bumper rails
- Scaffolding
- Train floors

Chemical Composition ¹

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	Max	Max	Max	Tot
0,70	1,30		0,50		0,10	0,40	1,00	0,60	1,20		0,25		0,20		0,10							0,05	0,15

¹ Chemical composition according to EN-573-3:1994

Mechanical Properties ^{2 3}

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	110	205	14	12	70	80	14
Open Profile T5	t≤5	230	270	8	6	90	105	16
Open Profile T6 ^a	t≤5	250	290	8	6	95	111	16
	5<t≤25	260	310	10	8	95	111	16
Hollow Profile T5	t≤5	230	270	8	6	90	105	16
Hollow Profile T6 ^a	t≤5	250	290	8	6	95	111	16
	5<t≤25	260	310	10	8	95	111	16

² Properties according to EN 755-2:2008 for extruded profile, minimum values unless else specified

³ If a profile cross section is comprised of 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

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

Temper Designations ⁴

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 Properties ⁵

Alloy	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]
6082		70	26	575 - 650	2,71		897		23,1
	T4					150		41	
	T6					172		39	

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

Comparative Characteristics of Related Alloys ⁶

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 anodising	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

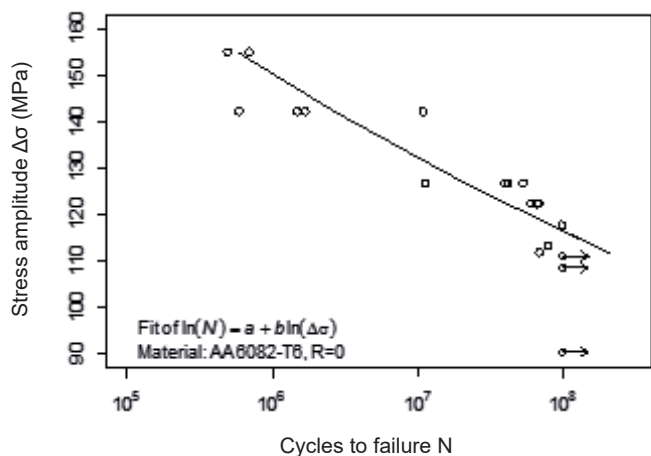
Fatigue Properties

Example of fatigue properties for 6082 in temper T6. Provided for informational purposes only, not to be considered as guaranteed properties.

Results are valid for the investigated specimens taken from a specific sample.

Tests performed at 20 ± 2 °C on 7 mm diameter cylindrical specimens parallel to the extrusion direction by Sapa Technology, Finspång, Sweden.

Axial testing, constant amplitude, sine wave loading at around 100 Hz test frequency. Load ratio (min. stress / max. stress) R = 0. Runouts after 10⁸ cycles are indicated by the arrows.

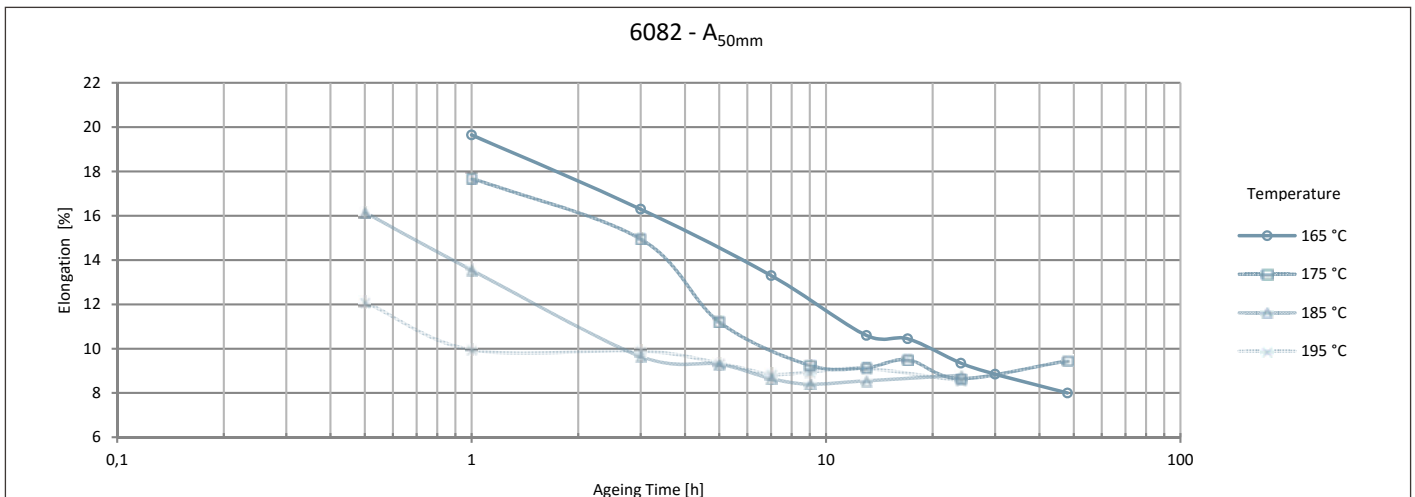
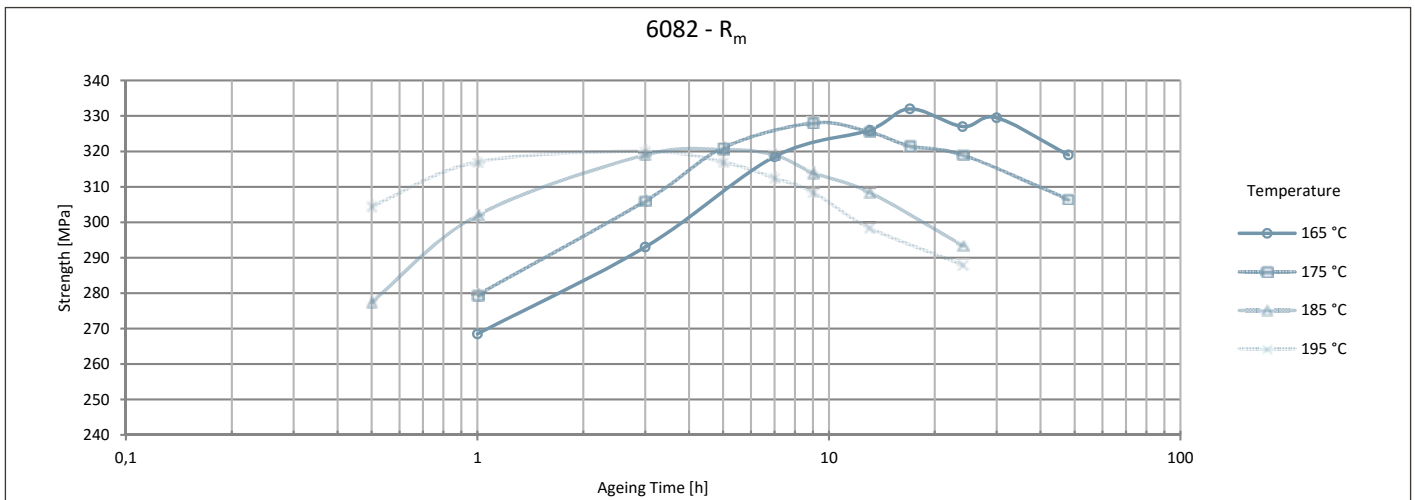
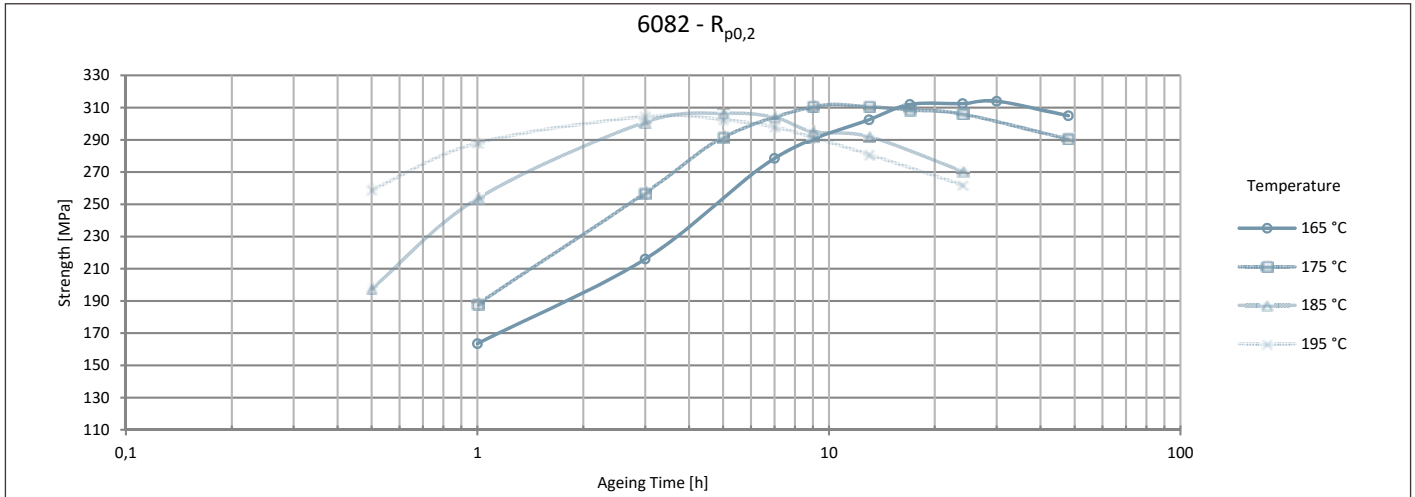


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Heat Treatment Response ⁷

Example of heat treatment response for alloy 6082.



⁷ Solid profile, 200 x 3mm, water quenched after extrusion, 24h natural ageing prior to artificial ageing, samples are taken parallel to extrusion direction