Technical datasheet - Extruded products
Alloy EN AW-6082 [AlSi1MgMn]

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	Each	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 in weight-% according to EN-573-3:2013; Hydro internal limits are tighter – different variants to fulfill T6 and T66 properties.

Mechanical Properties [2,3]

Temper		Wall thickness t [mm]	$R_{p0,2}$ [MPa]	R_m [MPa]	A [%]	A_{50mm} [%]	HBW [b] TYPICAL VALUE	Vickers [b] TYPICAL VALUE
T4[a]		t≤25	110	205	14	12	70	80
Open Profile T5		t≤5	230	270	8	6	90	95
Open Profile T6[a]		t≤5	250	290	8	6	95	100
		5<t≤25	260	310	10	8	95	100
Hollow Profile T5		t≤5	230	270	8	6	90	95
Hollow Profile T6[a]		t≤5	250	290	8	6	95	100
		5<t≤15	260	310	10	8	95	100
Hydro Special variants - Contact your local Hydro supplier								
Hydro T64[c]	Hollow	all	250	325	15	-	105	110
Hydro T66		all	320	340	8	6	110	115

[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] Brinell hardness values for information only. Vickers converted from Brinell value and should be considered approximate
[c] aged for high elongation

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]

Temper	Modulus of Elasticity [GPa]	Modulus of Rigidity [GPa]	Melting Range [°C]	Density [g/cm³]	Thermal Conductivity [W/m·K]	Specific Heat Capacity [J/kg·K]	Electrical Resistivity [nΩm]	Coefficient of linear expansion [$10^{-6}K^{-1}$]
	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 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

Fatigue Properties

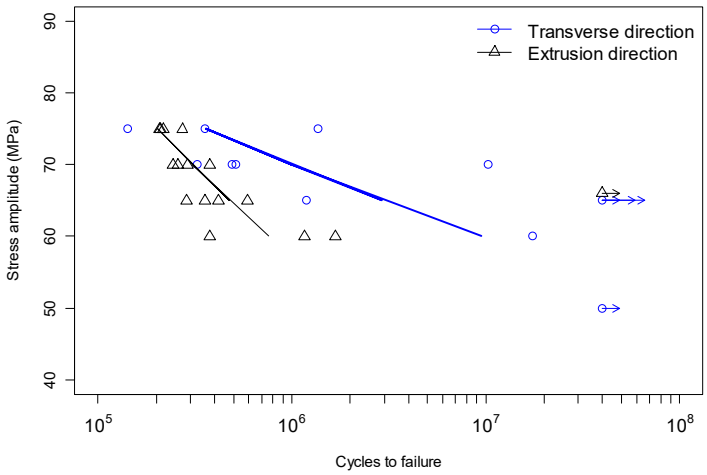
Example of fatigue properties for 6082 in temper T6. Provided for informational purposes only, not to be considered as guaranteed properties. Results are valid for the investigated specimens taken from a specific sample.

Tests performed at 20 ± 2 °C on 6 mm thick flat specimens by Hydro Innovation & Technology, Finspång, Sweden.

Axial testing, constant amplitude, sine wave loading at around 100 Hz test frequency.

Load ratio (min. stress / max. stress) R = 0.5.

Runouts are indicated by the arrows.



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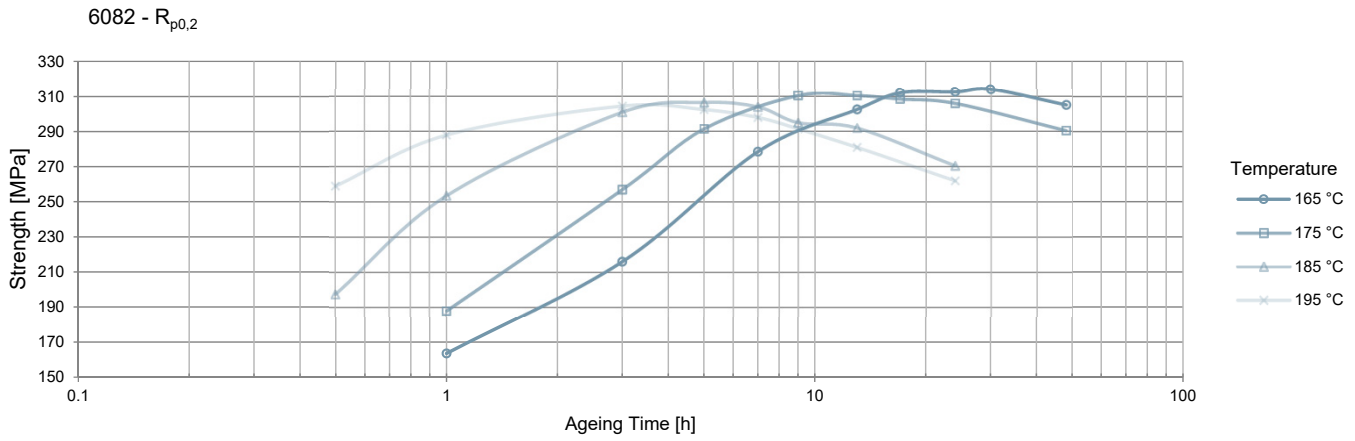
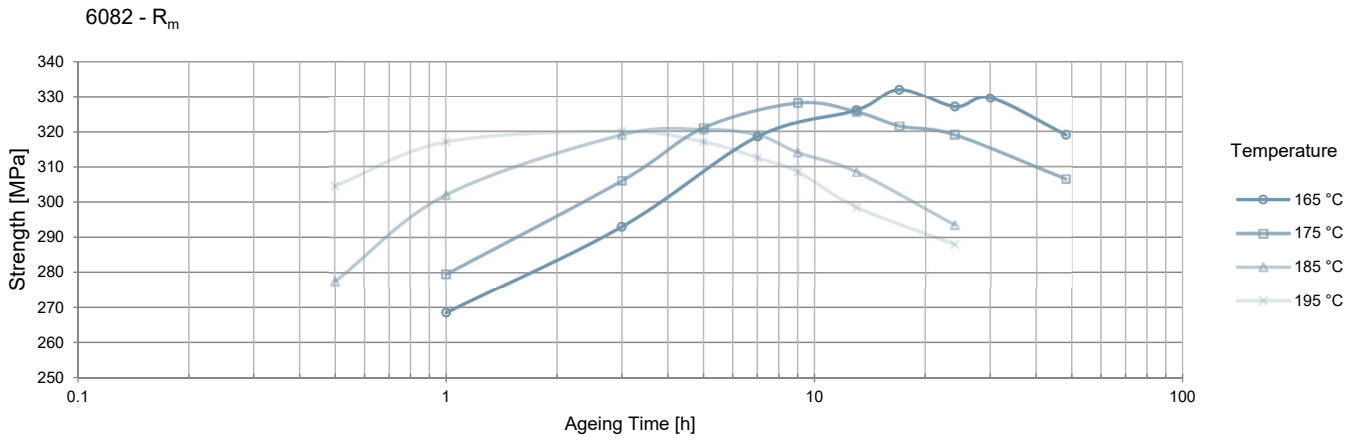
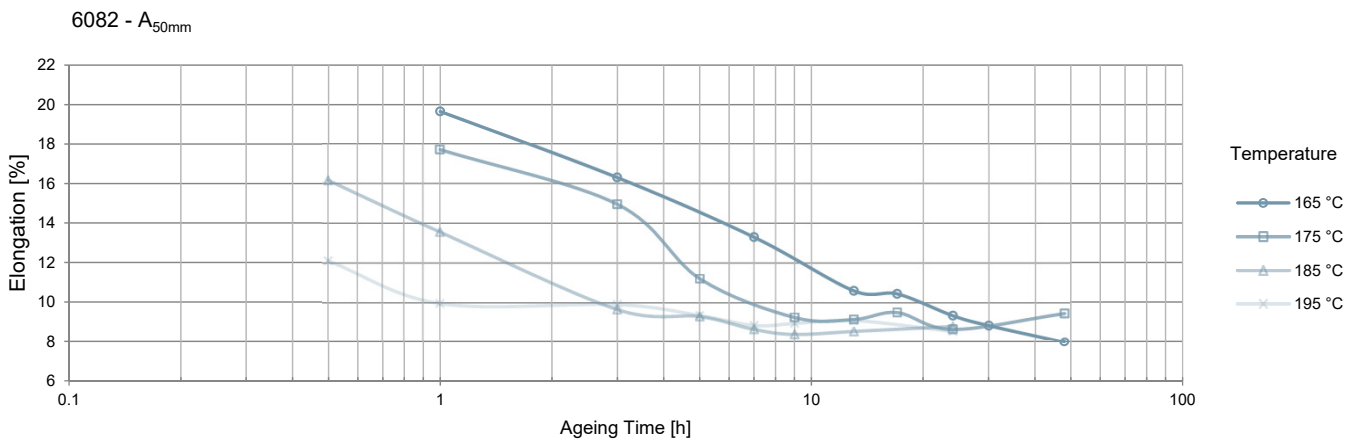
Heat Treatment Response [7]

Example of heat treatment response for alloy 6082.







[7] *Solid profile, 200 x 3 mm, water quenched after extrusion, 24 h natural ageing prior to artificial ageing, properties in extrusion direction*