Aluminium Alloy Data Sheet - Extruded Product

EN AW-6082 | AlSi1MgMn

EN AW 6082 is a high-strength Al-Mg-Si alloy offering an excellent combination of mechanical performance, corrosion resistance, and good machinability. Due to its superior strength compared to other 6000 series alloys, it is widely used in structural applications, including transportation, marine, and load-bearing constructions where a balance of strength and weight is essential.

Chemical Composition [1] (weight %)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others
0,70-1,3	≤0,5	≤0,10	0,40-1,0	0,6-1,2	≤0,25	≤0,20	≤0,10	Each ≤0,05 Total ≤0,15

[1] according to EN 573-3:2024

Typical Applications

- Structural engineering and building frameworks
- Transport and automotive components (chassis parts, platforms, panels)
- Marine applications (boat structures, shipbuilding elements)
- Cranes, lifting equipment, and mechanical structures
- Railway components and structural profiles
- Pressure equipment and pipeline supports
- Machinery parts requiring good machinability and strength

Mechanical Properties [2,3] (Extruded Profiles)

Temper	Wall Thickness t (mm)	R_m (MPa)	$R_{p0,2}$ (MPa)	A (%)	A_{50mm} (%)	Hardness Typical Value HBW
O, H111	all	max. 160	max. 110	14	12	35
T4[a]	t≤25	205	110	14	12	70
Open Profile T5	t≤5	270	230	8	6	90
Open Profile T6 [a]	t≤5	290	250	8	6	95
	5<t ≤25	310	260	10	8	95
Hollow Profile T5	t≤5	270	230	8	6	90
Hollow Profile T6 [a]	t≤5	290	250	8	6	95
	5<t ≤25	310	260	10	8	95

[2] 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 cross section
[a] Properties may be obtained by press quenching

Temper Designation [4]

O	annealed - products achieving the required annealed properties after hot forming processes may be designated as 0 temper
H111	annealed and slightly strain-hardened during subsequent operations such as stretching or levelling
T4	Solution heat treated and naturally aged
T5	Cooled from an elevated temperature shaping process and then artifically aged
T6	Solution heat treated and artificially aged

[4] according to EN 515:2017

Physical Properties (Typical Values) [5]

Property	Value	Unit
Density	2.70	g/cm^3
Melting Range	555-650	°C
Thermal Conductivity	~180	W/m.K
Electrical Conductivity	23-25	MS/m
Modulus of Elasticity	~70	GPa
Coefficient of Expansion	23.4	$10^{-6}K^{-1}$

[5] The values presented above are typical for Aluminum Alloy 6082 and may vary depending on manufacturing process, temper condition, and specific application. They are intended for general information purposes only and should not be considered as guaranteed specifications

Weldability

AW 6082 exhibits good weldability with conventional welding methods such as TIG (GTAW) and MIG (GMAW). However, due to its higher strength and alloying content compared to other 6xxx series alloys, particular attention must be paid to welding parameters to minimize risks of hot cracking and to control distortion.

- Post-weld mechanical properties may be significantly reduced in the heat-affected zone (HAZ), especially for T6-tempered material.
- Post-weld heat treatment or mechanical processing is often required to restore strength.
- Suitable for structural components where welding is necessary, but design considerations should account for strength reduction in welded zones.

Recommended Storage Condition

Store in dry, covered, and well-ventilated environments.

Protect from direct sunlight, high humidity, and chemical vapours.

Prevent mechanical damage by using proper packaging or vertical stacking when possible