Aluminium Alloy Data Sheet - Extruded Product

EN AW-6005 | AlSiMg

EN AW 6005 is an aluminium-magnesium-silicon (AlMgSi) alloy from the 6000 series, offering a balanced combination of moderate strength, good extrudability, and excellent weldability. The alloy is heat-treatable and particularly well-suited for the production of complex profiles, making it a preferred choice in automotive, transportation, construction, and mechanical engineering applications. Positioned between EN AW 6060 and EN AW 6082 in terms of mechanical properties, EN AW 6005 provides higher strength than 6060 while maintaining better formability and surface quality than 6082. It exhibits good corrosion resistance and is compatible with surface treatments such as anodizing.

Chemical Composition [1] (weight %)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others
0,60-0,90	≤0,35	≤0,10	≤0,10	0,40-0,60	≤0,10	≤0,10	≤0,10	Each ≤0,05 Total ≤0,15

[1] according to EN 573-3:2024

Typical Applications

- Structural components in transportation systems (trailer frames, railway cars, truck bodies)
- Mechanical and general-purpose structural applications
- Frames and supports in automation and machinery
- Scaffolding systems and temporary structures
- Modular building components
- Sports and leisure equipment (e.g., bicycle frames, poles)
- Lighting and signage structures

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
Open Profile T4 [a]	t≤25	180	90	15	13	50
Open Profile T6 [a]	t≤5	270	225	8	6	90
	5<t ≤10	260	215	8	6	85
	10<t ≤25	250	200	8	6	85
Hollow Profile T4 [a]	t≤10	180	90	15	13	50
Hollow Profile T6 [a]	t≤5	255	215	8	6	85
	5<t ≤15	250	200	8	6	85

[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]

T4	Solution heat treated and naturally 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	615-655	°C
Thermal Conductivity	~170	W/m.K
Electrical Conductivity	~29	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 6005 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

EN AW 6005 exhibits good weldability using conventional welding techniques such as TIG (GTAW), MIG (GMAW) or laser welding processes. The alloy responds well to arc welding, and filler alloys from the 4000 and 5000 series are typically recommended depending on strength and corrosion resistance requirements. Post-weld mechanical strength is generally reduced due to thermal softening in the heat-affected zone (HAZ), especially in the T6 temper. However, the corrosion resistance in the weld area remains acceptable. Pre-weld cleaning and proper heat input control are essential to minimize porosity and ensure optimal joint quality.

Note: Not suitable for fusion welding in high-load-bearing applications without subsequent heat treatment.

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