Aluminium Alloy Data Sheet - Extruded Product

EN AW-6005A | AlSiMg (A)

EN AW 6005A is a medium-strength aluminium alloy belonging to the AlMgSi (aluminium-magnesium-silicon) system, offering an excellent balance of mechanical strength, corrosion resistance, and extrudability. The alloy is heat-treatable and well-suited for the production of complex or large cross-section profiles, making it ideal for applications in transportation, structural engineering, building systems, and electrical enclosures. EN AW 6005A provides higher strength than EN AW 6060 and improved extrusion characteristics compared to EN AW 6082. It also features good weldability and is compatible with various surface finishing processes such as anodizing and powder coating. Its performance and formability make it a versatile choice for both structural and decorative applications.

Chemical Composition [1] (weight %)

Si	Fe	Cu	Mn[a]	Mg	Cr[a]	Zn	Ti	Others
0,50-0,90	≤0,35	≤0,30	≤0,50	0,40-0,70	≤0,3	≤0,2	≤0,10	Each ≤0,05 Total ≤0,15

[1] according to EN 573-3:2024
[a] Mn + Cr = 0,12-050

Typical Applications

- Structural parts in commercial vehicles and railway systems
- Load-bearing elements in architectural and façade systems
- High-performance extruded profiles with complex geometries
- Heat exchanger components and electronic enclosures
- Offshore and marine structures (when anodized or coated)
- Solar panel frames and renewable energy systems
- Ladders, platforms, and access equipment

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	580-650	°C
Thermal Conductivity	160-180	W/m.K
Electrical Conductivity	~29,5	MS/m
Modulus of Elasticity	~69	GPa
Coefficient of Expansion	23.5	$10^{-6}K^{-1}$

[5] The values presented above are typical for Aluminum Alloy 6005A 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 6005A offers very good weldability, with improved performance over EN AW 6005 due to its more refined chemical composition and lower sensitivity to hot cracking. It is compatible with standard welding methods such as MIG, TIG, laser welding and Friction Stir Welding (FSW). Although mechanical properties in the heat-affected zone may degrade post-welding (especially in T6/T66 tempers), strength can be partially recovered through post-weld aging or artificial heat treatment.

Notes:

Offers better weld quality and lower porosity risk than EN AW 6005.

Suitable for structural applications when proper post-weld heat treatment is applied.

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