Aluminum Alloy Data Sheet - Extruded Product

EN AW-5083 | AlMg4,5Mn0,7

EN AW 5083 is a high-strength, non-heat-treatable aluminum–magnesium–manganese alloy (AlMg4.5Mn0.7) specifically developed for applications requiring exceptional corrosion resistance, particularly in marine and chemically aggressive environments. Its superior performance in both mechanical strength and stress corrosion resistance under as-welded conditions makes it one of the most reliable choices for structural applications subjected to harsh conditions. The alloy exhibits excellent weldability, good cold formability, and retains high strength after welding, making it highly suitable for shipbuilding, offshore structures, cryogenic vessels, pressure equipment, and transport tanks. Due to its resistance to saltwater and industrial atmospheres, EN AW 5083 is frequently specified in defense, transportation, and civil engineering sectors. The alloy is commonly delivered in tempers such as O, H111, H116, and H321, depending on performance requirements.

Chemical Composition [1] (weight %)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others
≤0,40	≤0,40	≤0,10	0,40-1,0	4,0-4,9	0,05-0,25	≤0,25	≤0,15	Each ≤0,05 Total ≤0,15

[1] according to EN 573-3:2024

Typical Applications

Marine and Shipbuilding

- Hulls, superstructures, decks, and bulkheads of commercial and naval vessels
- Offshore platforms, gangways, and pontoon structures
- Ballast tanks and structural reinforcements exposed to seawater

Transportation and Automotive

- Cryogenic and chemical tankers (road and rail)
- Pressure vessels and fuel tanks
- Structural floor panels and load-bearing chassis components in trailers and military vehicles

Aerospace and Defense

- Armored vehicle plating (due to ballistic resistance)
- Ground support and maintenance platforms exposed to aggressive environments

Chemical and Process Industries

- Storage tanks and silos for corrosive media
- Piping, ducting, and reactor components in chemical processing plants

Construction and Architecture

- Bridge components and structural frames in corrosive environments
- Cladding panels and building envelope solutions in coastal or industrial areas

Energy Sector

- LNG and LPG storage tanks
- Wind and solar infrastructure components with environmental exposure

Mechanical Properties [2] (Extruded Rod/bar, Tube, Profiles)

Temper	Wall Thickness t (mm)	R_m (MPa)	$R_{p0,2}$ (MPa)	A (%)	A_{50mm} (%)	Hardness Typical Value HBW
F [a]	all [b]	270	110	12	10	70
O, H111	all [b]	270	110	12	10	70
H112	all [b]	270	125	12	10	70

[2] according to EN 755-2:2016 for extruded profile, minimum values unless else specified
[a] F Temper: property values are for information only.
[b] For rod/bar Diameter ≤200 mm

Temper Designation [3]

F	as fabricated (no mechanical property limits specified)
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
H112	slightly strain-hardened from working at an elevated temperature or from a limited amount of cold work (mechanical property limits specified)

[3] according to EN 515:2017

Physical Properties (Typical Values) [4]

Property	Value	Unit
Density	2,66-2,68	g/cm^3
Melting Range	570-640	°C
Thermal Conductivity	~121	W/m.K
Electrical Conductivity	16-19	MS/m
Modulus of Elasticity	~70	GPa
Coefficient of Expansion	25.8	$10^{-6}K^{-1}$

[4] The values presented above are typical for Aluminum Alloy 5083 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 5083 exhibits excellent weldability, particularly when welded using MIG (GMAW) or TIG (GTAW) processes. The alloy is well-known for its ability to retain high strength in the as-welded condition, which is critical for structural applications in marine, transport, and pressure vessel industries.

Minimal susceptibility to hot cracking

Good resistance to stress corrosion MIG vcracking in the heat-affected zone (HAZ)

No post-weld heat treatment required; mechanical strength remains sufficient for many structural uses

Weld discoloration and oxidation can be minimized with proper shielding and surface preparation

Note: EN AW 5083 is non-heat-treatable, so its strength derives from strain hardening and cold working rather than precipitation hardening. Welding may reduce local strength in strain-hardened tempers (e.g., H116, H321), but the overall corrosion resistance remains excellent.

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

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

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

Aluminium Alloy Data Sheet - Extruded Product

EN AW-6060 | AlMgSi

EN AW-6060 is a medium-strength aluminium alloy from the 6xxx series, primarily used for architectural and structural applications. It offers good corrosion resistance, excellent surface finish, and is well-suited to anodizing. The alloy is typically supplied in extruded form and is available in tempers such as T5 and T6, providing a balance of strength and formability.

Chemical Composition [1] (weight %)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others
0,30-0,60	0,10-0,30	≤0,10	≤0,10	0,35-0,60	≤0,05	≤0,15	≤0,10	Each ≤0,05 Total ≤0,15

[1] according to EN 573-3:2024

Typical Applications

- Architectural and building products
- Door and window frames
- Electrical components and conduit
- Heat sinks, railings, ladders, and furniture
- Pipe and tube for irrigation systems
- Truck and trailer flooring

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
T4[a]	t≤25	120	60	16	14	50
T5	t≤5	160	120	8	6	60
	5<t ≤25	140	100	8	6	60
T6 [a]	t≤5	190	150	8	6	70
	5<t ≤25	170	140	8	6	70
T64 [a b]	t≤15	180	120	12	10	60
T66 [a]	t≤5	215	160	8	6	75
	5<t ≤25	195	150	8	6	75

[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
[b] Bending Quality

Temper Designation [4]

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
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 6000 series alloys)

[4] according to EN 515:2017

Physical Properties (Typical Values) [5]

Property	Value	Unit
Density	2.70	g/cm^3
Melting Range	610-650	°C
Thermal Conductivity	200-220	W/m.K
Electrical Conductivity	27-32	MS/m
Modulus of Elasticity	69	GPa
Coefficient of Expansion	23.4	$10^{-6}K^{-1}$

[5] The values presented above are typical for Aluminum Alloy 6060 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

The alloy is suitable for welding using TIG, MIG or laser welding processes. Recommended filler materials include AlMg5, AlSi5, and AlMg3, particularly when anodizing is required.

Note: Mechanical properties may be reduced in the heat-affected zone after welding.

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

Aluminium Alloy Data Sheet - Extruded Product

EN AW-6063 | AlMg0,7Si

EN AW 6063 is a silicon and magnesium-based Al-Mg-Si alloy distinguished by its excellent surface finish, good formability, and moderate mechanical strength, making it a preferred material in architectural and structural applications. Its high suitability for anodizing processes ensures widespread use in façade systems and decorative profile production in compliance with international standards.

Chemical Composition [1] (weight %)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others
0,20-0,60	≤0,35	≤0,10	≤0,10	0,45-0,90	≤0,10	≤0,10	≤0,10	Each ≤0,05 Total ≤0,15

[1] according to EN 573-3:2024

Typical Applications

- Architectural curtain walls and window frames
- Interior and exterior decorative profiles
- Balustrades and railing systems
- Sign frames and exhibition structures
- Heat sinks and electronic housings
- Furniture components and lighting fixtures
- Transportation trim parts and bicycle frames

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
T4[a]	t≤25	130	65	14	12	50
T5	t≤10	175	135	8	6	65
	10<t ≤25	160	110	7	5	65
T6 [a]	t≤10	215	170	8	6	75
	10<t ≤25	195	160	8	6	75
T64 [a b]	t≤15	180	120	12	10	65
T66 [a]	t≤10	245	200	8	6	80
	10<t ≤25	225	180	8	6	80

[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
[b] Bending Quality

Temper Designation [4]

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
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 6000 series alloys)

[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	~200	W/m.K
Electrical Conductivity	28-31	MS/m
Modulus of Elasticity	~69	GPa
Coefficient of Expansion	23.4	$10^{-6}K^{-1}$

[5] The values presented above are typical for Aluminum Alloy 6063 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 6063 offers excellent weldability with all conventional welding methods, including TIG (GTAW), MIG (GMAW), laser welding and resistance welding. It exhibits good fusion characteristics and minimal susceptibility to hot cracking. Post-weld heat treatment or mechanical finishing may be applied to restore mechanical properties in the heat-affected zone, especially for T6-tempered materials.

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

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