

Material Data Sheet

Aluminium alloy

 Materials Services
 Technology, Innovation
 & Sustainability

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Material designation:

EN-Material No.

DIN-Material No.

EN AW-5754
[EN AW-Al Mg3]
3.3535

Scope

This data sheet applies to hot and cold-rolled sheets, strips and plates, cold drawn and extruded rod/bar, tubes and profiles made of aluminium magnesium alloy EN AW-5754.

Application

The material EN AW-5754 shows high mechanical properties among the non-heat treatable aluminium alloys and shows a very good atmospheric and seawater corrosion resistance. The material has a good weldability and is used for example in marine and offshore applications.

The material EN AW-5754 is not heat treatable and as anodizing quality it is suitable for decorative anodizing.

Chemical composition in %

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Mn+Cr	Al
≤ 0.40	≤ 0.40	≤ 0.10	≤ 0.50	2.6–3.6	≤ 0.30	≤ 0.20	≤ 0.15	0.10–0.6	Rest

 Others^{a)}: Each: max. 0.05 %

 Total^{b)}: max. 0.15 %

^{a)} "Others" includes listed elements for which no specific limit is shown as well as unlisted metallic elements. The producer may analyze samples for trace elements not specified in the registration or specification. However, such analysis is not required and may not cover all metallic „Other“ elements. Should any analysis by the producer or the purchaser establish that an „Others“ element exceeds the limit of „Each“ or that the aggregate of several „Others“ elements exceeds the limit of „Total“, the material shall be considered non-conforming..

^{b)} The sum of those "Others" metallic elements 0,010 % or more each, expressed to the second decimal place before determining the sum.

Mechanical properties at room temperature (cold drawn rod/bar and tube)

Temper	Dimensions			Yield strength R _{p0,2} [N/mm ²]	Tensile strength R _m [N/mm ²]	Elongation		Hardness ¹⁾ HBW
	D ^{a)} [mm]	S ^{b)} [mm]	t ^{c)} [mm]			A ₅₀ [%]	A [%]	
O/H111	≤ 80	≤ 60	≤ 20	≥ 80	180–250	≥ 14	≥ 16	45
H14, H24, H34	≤ 25	≤ 5	≤ 10	≥ 180	240–290	≥ 3	≥ 4	75
H18, H28, H38	≤ 10	≤ 3	≤ 3	≥ 240	≥ 280	≥ 2	≥ 3	88

Mechanical properties at room temperature (sheet, strip and plate)

Temper	Nominal thickness [mm]	Yield strength $R_{p0,2}$ [N/mm ²]	Tensile strength R_m [N/mm ²]	Elongation		Hardness ¹⁾ HBW
				A_{50} [%]	A [%]	
O/H111	> 0.2–0.5	≥ 80	190–240	≥ 12	-	52
	> 0.5–1.5	≥ 80	190–240	≥ 14	-	
	> 1.5–3.0	≥ 80	190–240	≥ 16	-	
	> 3.0–12.5	≥ 80	190–240	≥ 18	-	
	> 12.5–100.0	≥ 80	190–240	-	≥ 17	
H112	≥ 6.0–12.5	≥ 100	≥ 190	≥ 12	-	62
	> 12.5–25.0	≥ 90	≥ 190	-	≥ 10	58
	> 25.0–40.0	≥ 80	≥ 190	-	≥ 12	52
	> 40.0–80.0	≥ 80	≥ 190	-	≥ 14	52
H12	> 0.2–0.5	≥ 170	220–270	≥ 4	-	66
	> 0.5–1.5	≥ 170	220–270	≥ 5	-	
	> 1.5–3.0	≥ 170	220–270	≥ 6	-	
	> 3.0–6.0	≥ 170	220–270	≥ 7	-	
	> 6.0–12.5	≥ 170	220–270	≥ 9	-	
	> 12.5–40.0	≥ 170	220–270	-	≥ 9	
H14	> 0.2–1.5	≥ 190	240–280	≥ 3	-	72
	> 1.5–6.0	≥ 190	240–280	≥ 4	-	
	> 6.0–12.5	≥ 190	240–280	≥ 5	-	
	> 12.5–25.0	≥ 190	240–280	-	≥ 6	
H16	> 0.2–0.5	≥ 220	265–305	≥ 2	-	80
	> 0.5–6.0	≥ 205	265–305	≥ 3	-	
H18	> 0.2–0.5	≥ 250	≥ 290	≥ 1	-	88
	> 0.5–3.0	≥ 250	≥ 290	≥ 2	-	
H22/H32	> 0.2–0.5	≥ 130	220–270	≥ 7	-	63
	> 0.5–1.5	≥ 130	220–270	≥ 8	-	
	> 1.5–3.0	≥ 130	220–270	≥ 10	-	
	> 3.0–6.0	≥ 130	220–270	≥ 11	-	
	> 6.0–12.5	≥ 130	220–270	≥ 10	-	
	> 12.5–40.0	≥ 130	220–270	-	≥ 9	
H24/H34	> 0.2–1.5	≥ 160	240–280	≥ 6	-	70
	> 1.5–3.0	≥ 160	240–280	≥ 7	-	
	> 3.0–6.0	≥ 160	240–280	≥ 8	-	
	> 6.0–12.5	≥ 160	240–280	≥ 10	-	
	> 12.5–25.0	≥ 160	240–280	-	≥ 8	

Mechanical properties at room temperature (sheet, strip and plate) (continued)

Temper	Nominal thickness [mm]	Yield strength $R_{p0,2}$ [N/mm ²]	Tensile strength R_m [N/mm ²]	Elongation		Hardness ¹⁾ HBW
				A_{50} [%]	A [%]	
H26/H36	> 0.2–1.5	≥ 190	265–305	≥ 4	-	78
	> 1.5–3.0	≥ 190	265–305	≥ 5	-	
	> 3.0–6.0	≥ 190	265–305	≥ 6	-	
H28/H38	> 0.2–1.5	≥ 230	≥ 290	≥ 3	-	87
	> 1.5–3.0	≥ 230	≥ 290	≥ 4	-	

Mechanical properties at room temperature (extruded rod/bar and tube)

Temper	Dimensions			Yield strength $R_{p0,2}$ [N/mm ²]	Tensile strength R_m [N/mm ²]	Elongation		Hardness ¹⁾ HBW
	$D^a)$ [mm]	$S^b)$ [mm]	$t^c)$ [mm]			A_{50} [%]	A [%]	
$F^d)$, H112	≤ 150 150 < D ≤ 250	≤ 150 150 < D ≤ 250	≤ 25 -	≥ 80 ≥ 70	≥ 180 ≥ 180	≥ 12 -	≥ 14 ≥ 13	47
O, H111	≤ 150	≤ 150	≤ 25	≥ 80	180–250	≥ 15	≥ 17	45

Mechanical properties at room temperature (extruded profiles)

Temper	Wall thickness t [mm]	Yield strength $R_{p0,2}$ [N/mm ²]	Tensile strength R_m [N/mm ²]	Elongation		Hardness ¹⁾ HBW
				A_{50} [%]	A [%]	
$F^d)$, H112	≤ 25	≥ 80	≥ 180	≥ 12	≥ 14	47

¹⁾ For information only

^{a)} D = Diameter for round bar

^{b)} S = Width across flats for square and hexagonal bar, thickness for rectangular bar

^{c)} t = Wall thickness for tubes

^{d)} F Temper: property values are for information only

Reference data for some physical properties (for guidance only)

Density at 20 °C [kg/dm ³]	Electrical conductivity [MS/m]	Thermal conductivity [W/m·K]	Specific heat capacity [J/kg·K]	Young's modulus [MPa]	Shear modulus [MPa]
2.66	20–23	140–160	-	70500	26500

Mean linear thermal expansion coefficient [10⁻⁶ K⁻¹]

-50–20 °C	20–100 °C	20–200 °C	20–300 °C
23.9	23.9	23.9	23.9

Guidelines on the temperatures for hot forming and heat treatment

Temperature	Annealing Time to heat up	Cooling conditions
360–380 °C	1.0–2.0 h	Furnace, uncontrolled

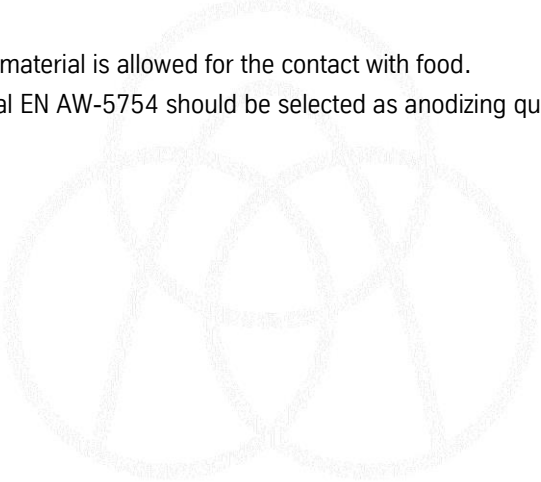
Processing/Welding

The material is very good weldable with the conventional processes (MIG and TIG). As welding filler metal is AlMg3 [Al 5754] or AlMg5Mn [Al 5556A/Al 5556B] recommended. In annealed temper there may arise some difficulties during machining (for example ribbon or thread chips). The machinability improves with the grade of strain hardening.

Remarks

According to EN 602 the use of the material is allowed for the contact with food.

For decorative anodizing the material EN AW-5754 should be selected as anodizing quality acc. to DIN 17611 for quality reason.


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Reference

DIN EN 485-2 : 2016-10	Beuth Verlag GmbH, Postfach, D-10772 Berlin
DIN EN 573-3 : 2013-12	
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Important Note

Information given in this data sheet about the condition or usability of materials respectively products are no warranty for their properties, but act as a description.

The information, we give on for advice, comply to the experiences of the manufacturer as well as our own. We cannot give warranty for the results of processing and application of the products.

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