LAMINERIES MATTHEY
NOTZ group advanced metal solutions

Aluminium 1050

		EN	UNS (ASTM)	DIN	LMSA
Designation	**Al 1050 (99.5)**	AW-1050A	A91050	3.022	**B760**

Chemical composition

Al	Si	Fe	Cu	Mn	Mg	Zn	Ti
99.5 min	≤ 0.25	≤ 0.40	≤ 0.05	≤ 0.05	≤ 0.05	≤ 0.07	≤ 0.05

Values (Weight %). In order to achieve maximum homogeneity and consistent quality, the actual manufacturing tolerances are tighter and more precisely than the composition indicated.

Main technical properties and features

Aluminum 1050 is part of the high commercially pure aluminum series grade containing a minimum of 99.5 % Al, it is well known and commonly used. The unique properties of aluminum and its alloys make this material one of the most versatile, economical and attractive metallic materials on the market. After steel, aluminum alloys are the most widely used in structural applications. Aluminum is a lightweight material, with a density approximately three times lower than steel. In addition, thanks to a self-healing and nanometric layer of aluminum oxide (Al_2O_3) formed on the surface, aluminum has good corrosion resistance to sea water, salt, and other environments.

Aluminum 1050 is known to have very high ductility, but low mechanical strength. It displays excellent electrical and thermal conductivity, and a highly reflective surface. Aluminum 1050 presents a high formability, thus it can be easily cold rolled. Aluminum is ferromagnetic, non-toxic and widely used in the food industry. Aluminum 1050 has poor machinability. It can be easily welded by conventional methods (TIG, MAG). Aluminum 1050 is hardenable by cold work, but shall not be used in applications where strength is a prime consideration.

Typical uses

Electrical industry, chemical industry, food industry (equipment's and packaging for food), pharmaceutical industry, architecture and construction, packaging machinery.

Typical manufacturing range

		Thickness (mm)	Width (mm)	Length (mm)
Rolled products	Strip in coils [1]	0.005 - 1.000	1.5 - 200.0	-
	Strip as sheets [1]	0.005 - 1.500	10.0 - 200.0	100 - 3000

[1] Not all our production possibilities are presented here. Other dimensions or product forms available upon request. Some combinations of thicknesses and widths are not possible.

Mechanical properties of strips

Temper			R_m (N/mm^2)	$Rp_{0.2}$ (N/mm^2)	A_{50mm} (%)	Hardness HV
R65	H30	annealed	65 - 95	20 min.	15 min.	30 max.
R110	H25	hard	110 - 220	60 min.	-	25 - 70

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Physical properties

Modulus of elasticity	kN/mm²	70
Poisson ratio		0.33
Density	g/cm³	2.71
Melting point	°C	650 - 658
Linear dilatation coefficient	10^{-6}·/ °C	24
Thermal conductivity at 20°C	W/m °K	222
Specific heat at 25°C	J/(kg. K)	899
Electrical resistivity	μΩcm	0.029
Electrical conductivity	MS/m	34.5
Electrical conductivity	% IACS	59.5
Magnetic properties		Non-magnetic

Tolerances (strip and foil)

Thickness

The table shown is an outline of our typical thickness tolerances available. They are tighter than industry standards.

Our "LMSA Precision" and "LMSA Extreme" tolerances are available upon request.

Thickness (mm)		EN Standard		Lamineries MATTHEY		
≥	<	10140 Precision	10258 Precision	LMSA Standard	LMSA Precision	LMSA Extreme
-	0.025	-	-	-	-	± 0.001
0.025	0.050	-	-	± 0.003	± 0.002	± 0.0015
0.050	0.065	-	± 0.003	± 0.003	± 0.0025	± 0.002
0.065	0.100	-	± 0.004	± 0.004	± 0.0035	± 0.003
0.100	0.125	± 0.005	± 0.006	± 0.005	± 0.004	± 0.003
0.125	0.150	± 0.005	± 0.006	± 0.005	± 0.005	± 0.004
0.150	0.250	± 0.010	± 0.008	± 0.008	± 0.006	± 0.004
0.250	0.300	± 0.010	± 0.009	± 0.009	± 0.007	± 0.005
0.300	0.400	± 0.010	± 0.010	± 0.010	± 0.007	± 0.005
0.400	0.500	± 0.015	± 0.012	± 0.012	± 0.008	± 0.006
0.500	0.600	± 0.015	± 0.014	± 0.014	± 0.010	± 0.007
0.600	0.800	± 0.015	± 0.015	± 0.015	± 0.010	± 0.007
0.800	1.000	± 0.015	± 0.018	± 0.018	± 0.012	± 0.009
1.000	1.200	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012
1.200	1.250	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012
1.250	1.500	± 0.020	± 0.020	± 0.020	± 0.015	± 0.014

Width

Our width tolerances "Standard" is +0.2, -0.0 (or ± 0.1 mm upon request). They are available for slit widths < 125 mm and thicknesses < 1.00 mm. Special tolerances upon request.

Camber

Our tolerance "LMSA Standard" respects the EN Standard 1654 (Length of measurement 1000 mm).
Other tolerances upon request.

Width (mm)		Camber max. (mm/m)			
		LMSA Standard		LMSA Extreme	
>	≤	≤ 0.5 mm	> 0.5 mm	≤ 0.5 mm	> 0.5 mm
3	6	12	-	6	-
6	10	8	10	4	5
10	20	4	6	2	3
20	250	2	3	1	1.5

Surface

Special surface qualities upon request

Flatness

Special requirement on the longitudinal or transversal flatness upon request

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