

6060**EN AW-6060 - EN AW-AI Mg Si****ALMET MARINE****Chemical composition :**

According to : EN 573-3:2009(F)

Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	remarks	Others		Aluminium min
												Each	Total	
0,30 - 0,60	0,10 - 0,30	0,10	0,1	0,35 - 0,60	0,05	...	0,15	0,1	0,05	0,15	Balance

Typical physical properties :

According to : "mill products general properties" Pechiney

1MPa = 1N/mm²

Density g/cm ³	2,7	Poisson ratio	0,33
Melting range °C	615 - 655	Thermal conductivity (0 to 100°C)- W/m °C (T5 temper)	200
Coefficient of linear expansion (0 to 100°C)-°C ⁻¹ x 10(6)	23,4	Resistivity at 20°C - μΩ cm (Etat T5)	3,3
Modulus of elasticity MPa (average)	69 500	Specific heat (0 to 100°C) J/kg °C	945

Technological properties :

According to : "mill products general properties" Pechiney

(A)-Very good (B)-Good (C)-Acceptable (D)-Poor or not recommended

Welding:

Electron beam
Inert gas (TIG or MIG)
Resistance welding
Soldering

A
B
A
A

Deep drawing

Annealed
1/2 hard
4/4 hard
Spinning O temper

Normal behaviour

Atmospheric corrosion
Marine environments
Machinability T5 temper
Break-up of chip

A
B
C

Anodizing

Protective
Bright
Hard

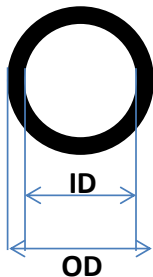
A
B
A

Tolerances on diameters:

According to : EN 755-8 (F)

Extracts from EN standard, please refer to EN standard for full specifications.

Dimensions in millimeters

ROUND PIPE:

Diameter diameter)		OD.(Outside diameter)	Tolerances on diameter			
diameter)		ID.(Inside diameter)	Maximum allowable deviation of the average diameter compared with the specified diameter (f)	Maximum allowable deviation of the diameter measured at any point of the specified diameter (a)		
Superior to	Inferior or equal to			Non heat treated and non annealed tube (b)	Heat treated tube (c)	Annealed tube (d)
>= 8	18		± 0,25 (e)	± 0,40 (e)	± 0,60 (e)	± 1,50 (e)
18	30		± 0,30	± 0,50	± 0,70	± 1,80
30	50		± 0,35	± 0,60	± 0,90	± 2,20
50	80		± 0,40	± 0,70	± 1,10	± 2,60
80	120		± 0,60	± 0,90	± 1,40	± 3,60
120	200		± 0,90	± 1,40	± 2,00	± 5,00
200	350		± 1,40	± 1,90	± 3,00	± 7,60
350	450		± 1,90	± 2,80	± 4,00	± 10,00

(a) Not applicable to tubes that have a thickness inferior to 2,5% of the specified OD (see EN standard for these special conditions).

(b) Applies to all alloys in F or H112 tempers

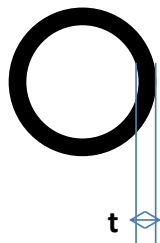
(c) Applies to all alloys in T4, T5, T6, T64, T66 and Tx510 tempers

(d) Applies to all alloys in O, H111 and Tx510 tempers

(e) This tolerance applies only to outside diameter

(f) Shall not apply to Tx510 or Tx511 tempers

Thickness tolerances:



NOTE : round tube dimensions can be expressed in three different ways:

- Outside diameter (OD) x wall thickness (t)
- Inside diameter (ID) x wall thickness (t) t is the nominal thickness
- Outside diameter (OD) x inside diameter (ID)

For tubes specified in OD x t or ID x t, values are variables permitted at any point.

For tubes specified in OD x ID, below values are variables permitted from the calculated average wall thicknesses.

TOLERANCES ONLY APPLY TO 2 PARAMETERS, NOT TO 3
... (OD ; ID ; t)

Nominal wall thickness t (mm)		Tolerance on the variation of the wall thickness (excentricity) %		
Superior to	Inferior or equal to	For OD<150	>=150 OD <300	OD >= 300
...	3	± 7	± 9	± 11
3	5	± 6	± 8	± 10
5	...	± 5	± 7	± 9

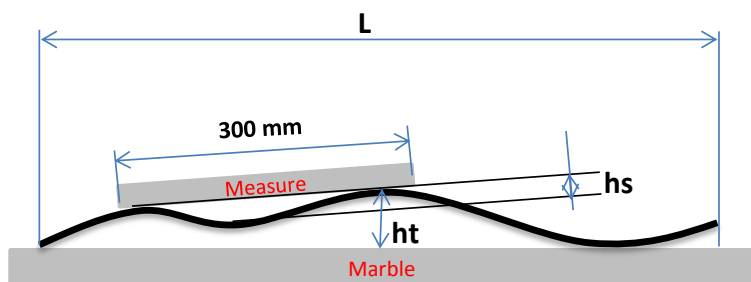
Straightness tolerances:

NOTE : Straightness tolerance for tubes that have a wall thickness inferior to 1,5% of the specified diameter must be agreed between buyer and supplier.

Straightness deviations, hs and ht, must be measured as shown below with the tube positionned on an horizontal marble.

Straightness tolerance ht applies to the entire length, ie, for a 6-meter length, maximum straightness deviation ht is the value of the board multiplied by 6.

Local straightness deviations hs shall not exceed 0,6mm/300mm length.



Outside Diameter		Maximum straightness deviation per meter length ht/length mm/m	Maximum distorsion shown on the entire part of 300mm hs
Superior to	Inferior or equal to		
>= 8	150	1,5	0,8
150	250	2,5	1,3
250	450	3,5	1,8

Mechanical properties at room temperature :

According to: EN 755-2 : 2008 (F) in MPA 1mpa = 1 N/m/m2

* Values offered merely as a guide

Extruded Tube

Product	Temper	Thickness t mm	TENSILE PROPERTIES					Hardness		
			Rm-UTS min (Mpa)	Rm-UTS max (Mpa)	Rp0,2MPa-0,2%ps	A% min	A% 50mm	HBW *		
6060 Extruded tube	T4 c)	<= 15	120	„„	60	16	14			50
6060 Extruded tube	T5	<= 15	160	„„	120	8	6			60
6060 Extruded tube	T6 c)	<= 15	190	„„	150	8	6			70
6060 Extruded tube	T64 c)d)	<= 15	180	„„	120	12	10			60
6060 Extruded tube	T66 c)	<= 15	215	„„	160	8	6			75

c) Characteristics can be obtained by press quenching

d) Bending quality