TECNOAL

TECNOAL SRL manufactures extruded aluminum profiles in the following alloys::

CHEMICAL COMPOSITION (UNI EN 573-3)

ALLOY CODE (UNI EN 573-2)	CHEMICAL COMPOSITION%									
	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	IMPURITIES	
									Each	Total
EN AW-6060	0,30-0,6	0,10-0,3	0,10	0,10	0,35-0,6	0,05	0,15	0,10	0,05	0,15
EN AW-6063	0,2-0,6	0,1-0,3	0,1	0,1	0,35-0,6	0,05	0,15	0,1	0,05	0,15
EN AW-6082	0,70-1,3	0,5	0,1	0,4	0,6-1,2	0,25	0,2	0,1	0,05	0,15
EN AW-6005	0,6-0,9	0,35	0,10	0,10	0,40-0,6	0,10	0,10	0,10	0,05	0,15

TECNOAL s.r.l. Unipersonale
www.tecnoalsrl.com
Sede leg.: Via Ausa–Cond. 3/C, 70
47853 Cerasolo di Coriano (RN)

Sede Amm.:V.le E. Mattei, 15
61032 Fano (PU)
Tel.0721.802841 Fax0721.804819
E-mail: tecnoal@tecnoalsrl.com

C.F./Nr.Iscr.Reg.Impr./P.IVA: 02108050416
Capitale Sociale € 500.000,00 i.v.
R.E.A. (RN) 308843

MECHANICAL PROPERTIES (UNI EN 755-2)

ALLOY CODE (UNI EN 573-2) **Numbered** (Chemical Symbols)	*Metallurgical State* *(UNI EN 515)*	**Extruded profile** [4] **Size, mm**	**Extruded Tube** [4] Size, mm	**Extruded Bar** [4] Size, mm	Rm MPa	$Rp_{0,2}$ MPa	A %	A_{50mm} %
		e [1]	e [1]	D [2] o S [3]	min.	min.	min.	min.
EN AW-6060 *(EN AW-Al MgSi)*	T4	≤25	≤15	≤150	120	60	16	14
	T5	≤5	≤15	≤150	160	120	8	6
		5< e ≤25			140	100	8	6
	T6 [5]	≤3	≤15	≤150	190	150	8	6
		3 e ≤25			170	140	8	6
	T64 [5]	≤15	≤15	≤50	180	120	12	10
	T66 [5]	≤3	≤15	≤150	215	160	8	6
		3< e ≤25			195	150	8	6
EN AW-6063 *(EN AW-Al Mg0,7Si)*	T5	≤3	≤ 25	≤ 200	175	130	8	6
		3< e ≤25			160	110	7	5
	T6	≤10	≤ 25	≤150	215	170	8	6
		10 < e ≤ 25			195	160	8	6
EN AW-6082 *(EN AW- Al-1Si-0,8Mg-0,7Mn)*	T4	≤50	≤25	≤150	205	260	14	12
	T6	≤50	≤25	≤150	310	260	10	8
EN AW-6005A *(EN AW-Al SiMg)*	Open profile [4]							
	T6 [5]	≤ 5	≤ 5		270	225	8	6
		5 < e ≤ 10	5 < e ≤ 10		260	215	8	6
		10 < e ≤ 25			250	200	8	6
	Hollow profile [4]							
	T6 [5]	≤ 5			255	215	8	6
		5 < e ≤ 15			250	200	8	6
	Extruded bar							
	T6 [5]			≤ 25	270	225	10	8
				25< e ≤ 50	270	225	8	-
				50< e ≤100	260	215	8	-

1)	e	Thickness of metal wall.
2)	D	Diameter of round bars.
3)	S	Key width of square and hexagonal bars, thickness of rectangular bars.
4)		If a profile has different thickness values in different points of it, and such values correspond to different specified values of mechanical properties, minimum specified values of mechanical properties must be taken as valid for the whole profile.
5)		Such properties can be obtained by hardening under press.

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TECHNOLOGICAL PROPERTIES

ALLOY CODE	State	Cold plastic Workability	Weldability		Machinability	Polishing		Resistance to corrosion			Aptitude Oxidation
			MIG/ TIG	Electric Resistance Welding		Mech.	Chem.	Marine & Industrial	Urban & Rural	Internal & Dry	
EN AW-6060	T4	Good	Good	Good	Reduced	Good	Suff.	Good	Good	Excellent	Excellent
	T5	Low			Suff./Good	Good		Excellent	Excellent	Excellent	Excellent
	T6										
	Particularly suitable for construction industry, interior architecture, furniture, land and sea transports, mechanical constructions, chemical and refrigeration industry, conductors for power stations.										
EN AW-6063	T6	Low	Good	Good	Low	Good	Good	Excellent	Excellent	Excellent	Excellent
EN AW-6082	T6	Good	Good	Good	Suff./Good	Good	Good	Good	Good	Good	Good
	Particularly suitable for mechanical works and structures subject to average stress and requiring good resistance to corrosion.										
EN AW-6005	T6	Low	Low	Good	Good	Good	Good	Excellent	Excellent	Excellent	Excellent
	Particularly suitable for mechanical works and structures subject to average stress and requiring good resistance to corrosion.										

EXTRUSION ALUMINIUM ALLOY PHYSICAL PROPERTIES

Proprietà *Properties*			EN AW-6060	EN AW-6005	EN AW-6063	EN AW-6082
Density		kg / dm^3	2,70–2,71	2,70–2,71	2,70–2,71	2,70-2,71
Melting range		°C	600 – 655	615 – 655	600 – 655	570-645
Specific heat capacity	0- 100°C	J / kg K	880 – 900	880 – 900	880 – 900	880-900
Thermal conductivity	20°C	W / m K	200	200	200	174
Linear expansion coefficient	20-100°C	μK^{-1}	23	23	23	23
Modulus of elasticity		kN / mm^2	69	69	69	69
Shear modulus		kN / mm^2	26	26	26	26
Resistivity	20°C	nΩ m	32 – 33	32 – 33	32 – 33	32-33
Conductivity	20°C	% IACS	52	52	52	52

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CODE DESCRIPTION OF METALLURGICAL STATES OF PRODUCTS SUPPLIED BY ALUTITAN S.p.A. (UN EN 515-'96)

Alloy codes for basic metallurgical states of the products are given by letters. In case further subdivisions of such states are necessary, such subdivision are indicated by one or more numbers placed after the letter indicating the basic metallurgical state. These numbers refer to a specific sequence of treatment operations, but the only treatments which have a significant influence on the product properties are indicated. In case a new or different version of the same sequence of basic operations is applied, and it determines new or different properties in the same alloy, additional numbers will be added to the alloy code.

F - Manufactured Raw

This code applies to semi-finished products deriving from such plastic transformation processes (extrusion), where no control on thermal or strain hardening conditions is exercised. For such state, no limit values for mechanical properties are specified.

T - Heat-Treated To Produce Stable States Other Than F

This code applies to semi-finished products which undergo thermal solution treatment, with or without supplementary strain hardening, in order to produce stable metallurgical states. The letter T is always followed by one or more numbers, each one referring to a specific sequence of treatments.

SUBDIVISION OF CODES OF T STATE

First Number After T

The first number after T is used to identify specific sequences of basic treatments. Number have been given as follows:

T4: Cooled after hot plastic processing and naturally aged to a substantially stable condition. T4 applies to semi-finished products that are not subject to plastic cold deformation, once they have cooled after a hot plastic processing; or to semi-finished products in which the effect of plastic deformation resulting from flattening or straightening may not be reflected within the limits of mechanical properties.

T5: Cooled after hot plastic processing and artificially aged.T5 applies to semi-finished products that are not subject to plastic cold deformation, once they have cooled after a hot plastic processing; or to semi-finished products in which the effect of plastic deformation resulting from flattening or straightening may not be reflected within the limits of mechanical properties.

T6: Solution heat treated and artificially aged.T6 applies to semi-finished products that are not subject to plastic cold deformation, after a solution treatment ; or to semi-finished products in which the effect of plastic deformation resulting from flattening or straightening may not be reflected within the limits of mechanical properties.

The 6060 series alloys attain the same mechanical properties here specified, with both oven solution treatment and cooling after a hot plastic processing (extrusion), at a rate sufficient to keep the constituents of the alloy in solid solution. Tecnoal applies such code to products for which mechanical properties must be guaranteed according to agreements or contracts, and be kept inside maximum values tolerances set up as standards and applied by general norms.

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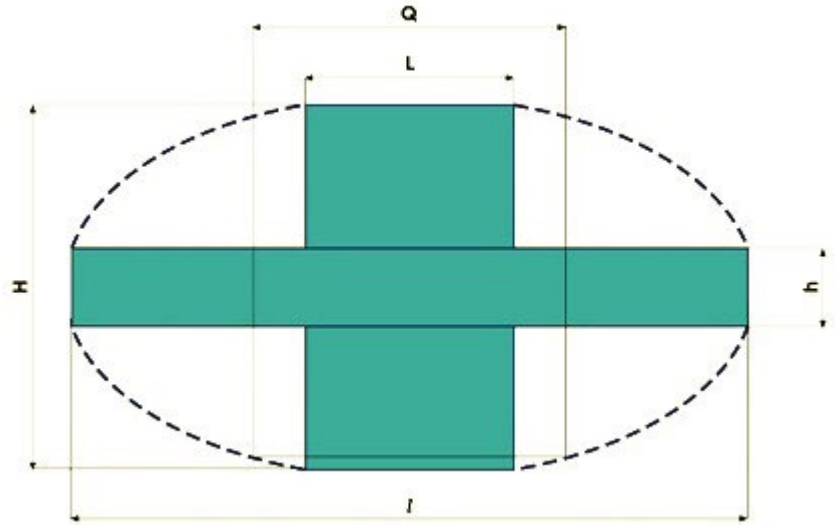
SOME EXAMPLES FOR SIZES OF TECNOAL EXTRUDED PROFILES



	Rectangular Section: Horizontal Placement		Rectangular Section: Vertical Placement		Square Section
	Minimum Height	Maximum Width	Maximum Height	Minimum Width	Maximum Side
Type of Products	h	l	H	L	Q
Hollow Profiles	80	365	130	140	220 x 220
Open Profiles	90	365	130	140	220 x 220

I valori utilizzati sono indicativi. Utilizzare solo per una valutazione di massima.
Le condizioni al limite devono essere verificate da TECNOAL.
I fattori che influenzano la fattibilità di un prodotto sono:

- Ingombro massimo
- Sezione del profilato
- Spessore
- Peso al metro
- Qualità richiesta

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61032 Fano (PU)
Tel.0721.802841 Fax 0721.804819
E-mail: tecnoal@tecnoalsrl.com

C.F./N. Iscr.Reg.Impr./P.IVA: 02108050418
Capitale Sociale € 500.000,00 i.v.
R.E.A. (RN) 308343

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