

# INDUSTRIAL ALUMINIUM PROFILES

## MIEN HUA PRECISION MECHANICAL CO., LTD

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MIEN HUA PRECISION MECHANICAL CO., LTD.



# ABOUT MIENHUA

Mien Hua is the member of Ynghua Group, where is a 100% Taiwan company, including 4 companies and 5 factories.

**YNGHUA VIETNAM CO.,LTD**

**MIENHUA PRECISION MECHANICAL CO., LTD,**

**MIANLAN PRECISION MECHANICAL CO., LTD**

**ASEAN ALUMINUM CO., LTD**

We are proud of being one of the leading aluminium profile Manufacturer in VietNam in terms of capacity and specializing in aluminum extrusion including:

- + Industrial profile
- + Door & window profile, curtain wall, patrition, rolling doors systems
- + Interior decoration
- + Transportations
- + Furniture profile
- + Finishing: Anodizing,
- + PVDF, Power coating
- + Wooden printing

With total capacity of 5000 tons per month.  
The Market is shared by 70% for local market and 30% for exporting.



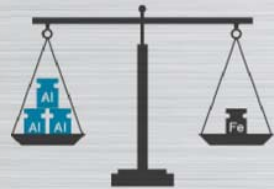
# ALUMINIUM AS A MATERIAL

## \* STRONG AND LIGHT

2.7 (g/cm<sup>3</sup>) = 1/3 the weight of steel

Low weight means reduced energy consumption in transportation

Low weight is an advantage during assembly in buildings and in many other applications.



**1/3** the weight of steel



## \* PERFECT FOR FOOD PACKAGING

Aluminium foil is completely impermeable – no taste, aroma or light gets in or out

Widely used in food and drink packaging

Efficient conservation of food reduces wastage

Low weight reduces packaging in transportation

Impermeability also reduces cooling needs.

## \* FIRE-PROOF

Aluminium in buildings, construction and transport is fire-proof

Will only burn if shaped as very thin film

Will melt at 660° C without releasing any gases.

## \* EASY TO FORM

Aluminium is ductile and has a low melting point

Easy to process in cold and hot condition

This allows design flexibility and integration in advanced transport and building industries.



**Only 5%** of the energy required to produce the primary metal initially is needed in the recycling process

Total loss in the re-melting is less than **3%**

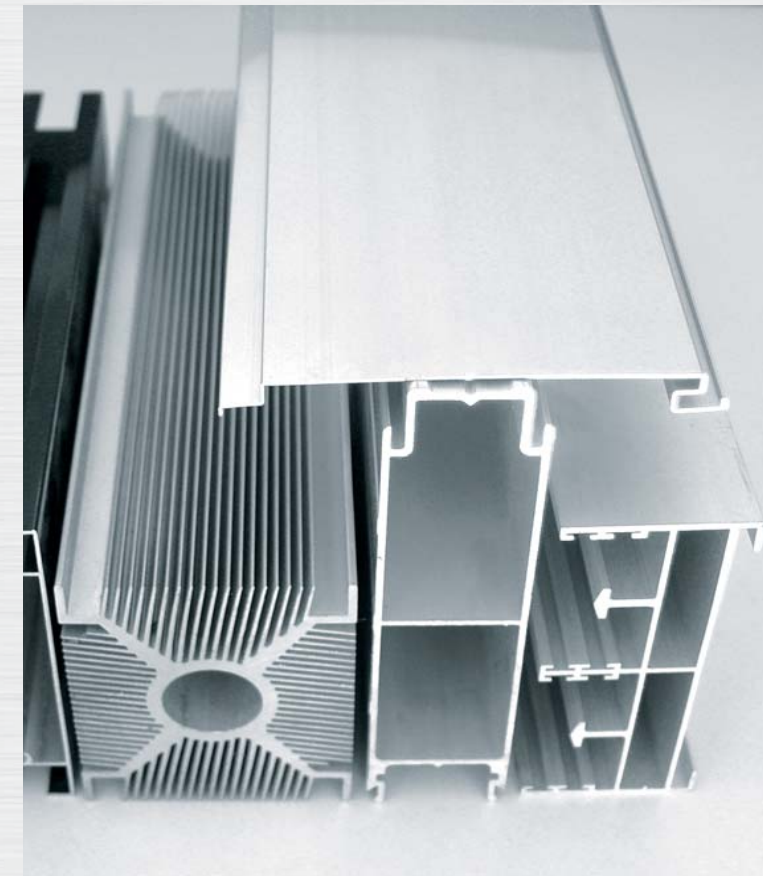


**About 75%** of aluminium ever produced is still in use

## \* SUPERCONDUCTOR FOR HEAT AND ELECTRICITY

Twice as good a conductor as copper

This makes aluminium the best choice for energy-efficient systems for electrical transmission, such as transfer components



*The aluminium process is a unique combination of properties which make it extremely attractive and versatile construction material with universal application.*

## \*Great reflector

Can reflect both heat and light

Combined with its light weight, this makes aluminium ideal for reflectors like light fittings

High energy efficiency in the reflectors reduces energy consumption.

## \*Long life – low maintenance

Aluminium forms a protective oxide coating that makes it highly corrosion resistant

This prolongs the life of aluminium in cars and buildings

Reduces need for maintenance

Reduces environmental impacts due to replacements and maintenance.



## \*Easy to recycle

Re-melting of aluminium requires little energy; total loss in the re-melting process is less than three percent

Only five percent of the energy required to produce the primary metal initially is needed in the recycling process

About 75 percent of all aluminium ever produced is still in use



# DESIGN OF ALUMINIUM PROFILES

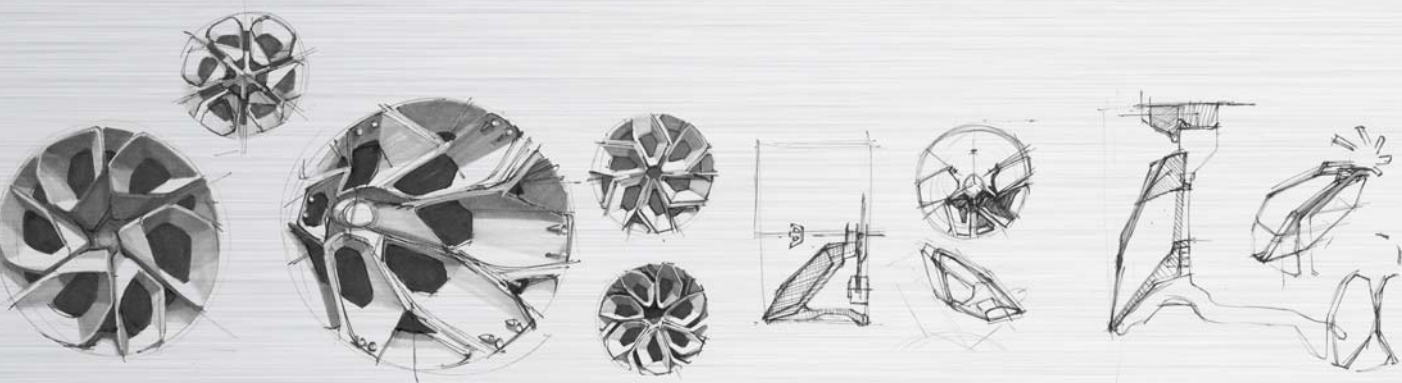
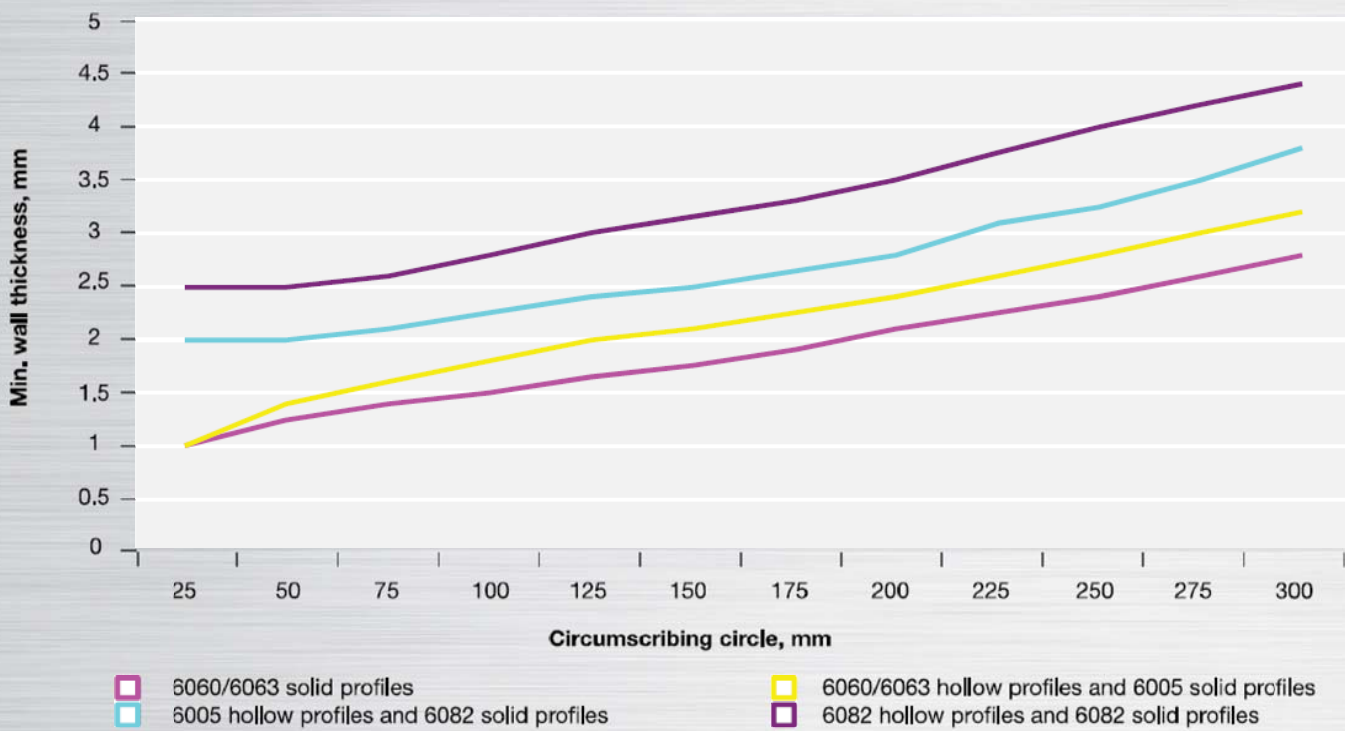
Aluminum is the material that gives almost unlimited possibility to design different forms of profiles.

To increase the extrudability, functionality and productivity of the profiles it is necessary to follow some basic design rules.

WALL THICKNESSES

The decrease of the wall thicknesses cannot be unlimited. It depends on the profile's shape and the circumscribing circle.

Recommended minimum material thickness is shown below:





# PRODUCTION

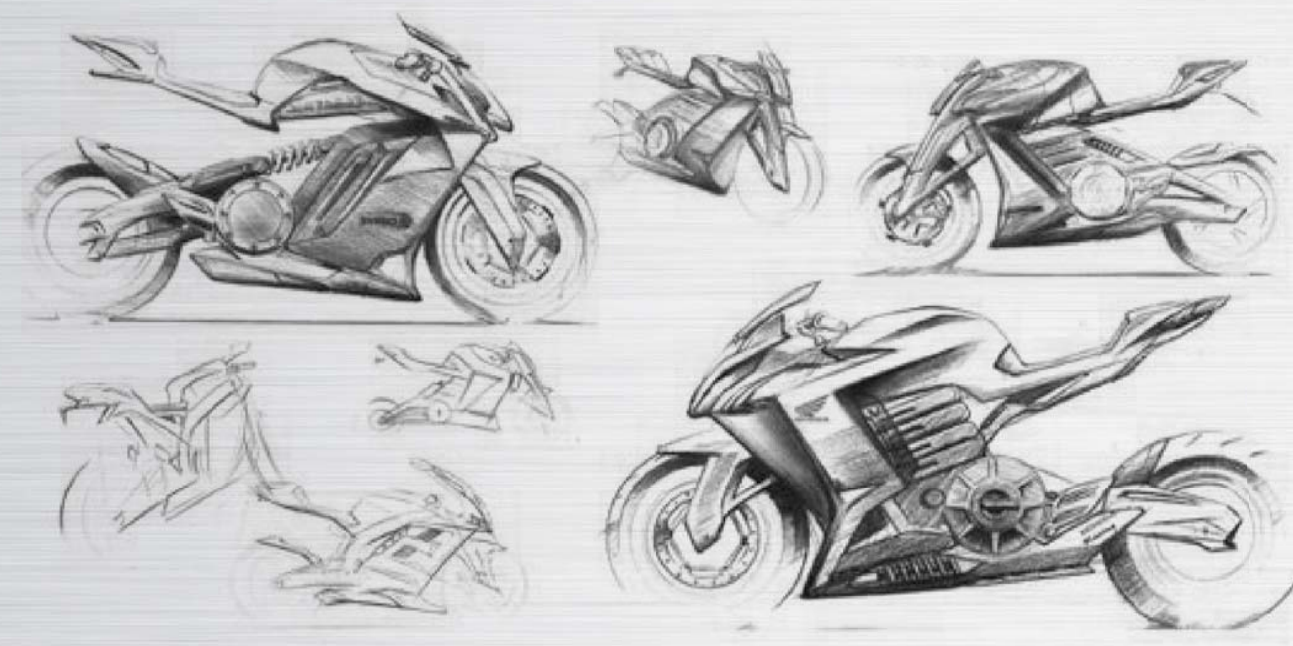
## EXTRUSION

With five production facilities, in Long An, Dong Nai, and Ha Nam provinces , MIEN HUA guarantees continuous and uninterrupted delivery to all its customers.

Our production plants are equipped with 40 modem extrusion presses with capacity ranging from 1,500 tones to 5,000 tones for a total monthly capacity of over 40 000 tones, producing a wide range of standard aluminium profiles with more than 10,000 different cross-profiles in the following groups: L-profiles; flat bar profiles; round, rectangular and square tubes; T-profiles; U-profiles. The modern equipment allows us to produce high-tech custom profiles, precisely matching the client's drawings.

All profiles are produced according to the European standard EN 573-3 from the following alloys:

- EN AW - 1050 (Al 99.5)
- EN AW - 6060 (Al Mg Si)
- EN AW - 6063 (Al Mg 0.7 Si)
- EN AW - 6005 (Al Si Mg)
- EN AW - 6082 (Al Si Mg Mn)



## WORKING STANDARDS IN ETEM

### EN 573

Aluminium and aluminium alloys. Chemical composition and form of wrought products;

### EN 755

Aluminium and aluminium alloys. Extruded rod/bar, tube and profile;

### EN 12020

Aluminium and aluminium alloys. Extruded precision profiles in alloys EN AW-6060 and EN AW-6063;

### DIN 17611

Anodized products from aluminium and aluminium alloys;

### EN 22768

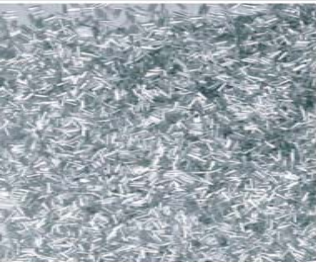
General tolerances. Tolerances for linear and angular dimensions and Geometrical tolerances for features without individual tolerance indications (Applied to fabrication).

# AL2011

## PRESENTATION:

This alloy is the most often selected for high speed automatic lathes. It offers the following advantages:

- a. easy machining with any equipment.
- b. cutting stress lower than most of other alloys.
- c. longer life of cutting tools.
- d. high mechanical properties
- e. possibility to anodize finished parts in several colors.



## MAIN APPLICATIONS:

screws, bolts, nuts, threaded bars.

## PROPERTIES:

Properties	T3/T6				T8			
Machinability								
Protective Anodizing								
Decorative Anodizing								
Hard Anodizing								
Resistance to atmospheric corrosion								
Resistance to marine corrosion								
MIG-TIG weldability								
At resistance weldability								
Brazing weldability								
Plastic formability when cold								
Plastic formability when hot								



Legend					Excellent
					Good
					Acceptable
					Not recommended

Chemical Composition		Physical Characteristics		Mechanical Properties					
Si ≤0.40		Density kg/dm3 2.83		Extruded	Temper	Rm Mpa	Rp 0.2 Mpa	A%	HBW
Fe ≤0.70									
Cu 5.00 ÷ 6.00									
Mn		Modulus of Elasticity Mpa 70,000			T6	310	230	230	110
Mg					T6*	360	245	245	120
Cr									
Ni		Coefficient of thermal expansion x10-6/°C 22.9		Drawn	T3	320	270	270	90
Zn ≤0.3									
Ti									
Zr		Thermal Conductivity at 20°C W/mk T3:151, T8:171			T3*	370	280	280	115
Pb 0.20 ÷ 0.40					T8	370	270	270	115
Bi 0.20 ÷ 0.60									
Al Rem.		Electrical Resistivity at 20°C Ωmm2 / m T3:0.038, T8: 0.043							
				T8*	400	310	310	125	



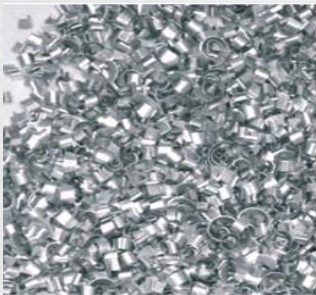
# AL2007

## PRESENTATION:

Among aluminium alloys for high speed automatic lathes, 2007 and 2030 have the highest mechcnical characteristics.

This alloy is the most often selected when it is required to have a good combination of machinability and high mechanical properties.

It has low corrossion resistance; therefore it is recommended to have a protective anodizing of finished products.



## MAIN APPLICATIONS:

screws, bolts, nuts, threaded bars.

## PROPERTIES:

Properties	T3/T4			
Machinability				
Protective Anodizing				
Decorative Anodizing				
Hard Anodizing				
Resistance to atmospheric corrosion				
Resistance to marine corrosion				
MIG-TIG weldability				
At resistance weldability				
Brazing weldability				
Plastic fomability when cold				
Plastic formability when hot				



Legend					Excellent
					Good
					Acceptable
					Not recommended

Chemical Composition	Physical Characteristics	Mechanical Properties					
Si ≤0.80	Density kg/dm3 2.85	Extruded	Temper	Rm Mpa	Rp 0.2 Mpa	A%	HBW
Fe ≤0.80							
Cu 3.30 ÷ 4.60							
Mn 0.50 ÷ 1.00	Modulus of Elasticity Mpa 71,000		T4	370	250	8	95
Mg 0.40 ÷ 1.80							
Cr ≤0.10							
Ni ≤0.20	Coefficient of thermal expansion x10-6/°C 23.5	Drawn	T3	370	240	7	95
Zn ≤0.80							
Ti ≤0.20							
Zr	Thermal Conductivity at 20°C W/mk 140	T3*	465	410	8	125	
Pb 0.80 ÷ 1.00							
Bi ≤0.20	Electrical Resistivity at 20°C Ωmm2 / m 0.057						
Sn ≤0.20							
Al Rem.							

# AL2017A

## PRESENTATION:

This alloy has high mechanical properties and excellent resistance to fatigue. During machining, it creates quite long chips. Therefore, it is not well suited for automatic lathes.

It can be replaced by 2030 which has the same mechanical properties but has better machinability, allowing higher productivity.



## MAIN APPLICATIONS:

High structural resistance components for aviation, defence, high resistance components, screws and bolts.

## PROPERTIES:

Properties	T3/T4			
Machinability				
Protective Anodizing				
Decorative Anodizing				
Hard Anodizing				
Resistance to atmospheric corrosion				
Resistance to marine corrosion				
MIG-TIG weldability				
At resistance weldability				
Brazing weldability				
Plastic fomability when cold				
Plastic formability when hot				



Legend					Excellent
					Good
					Acceptable
					Not recommended

Chemical Composition	Physical Characteristics	Mechanical Properties					
Si ≤0.80	Density kg/dm3 2.79	Extruded	Temper	Rm Mpa	Rp 0.2 Mpa	A%	HBW
Fe ≤0.70							
Cu 3.50 ÷ 4.50							
Mn 0.40 ÷ 1.00	Modulus of Elasticity Mpa 75,000		T4	390	260	9	105
Mg 0.40 ÷ 1.00							
Cr ≤0.10			T4*	410	260	11	115
Ni	Coefficient of thermal expansion x10-6/°C 23.6	Drawn	T3	400	250	10	105
Zn ≤0.5							
Ti							
Zr	Thermal Conductivity at 20°C W/mk 134	T3*	470	390	11	135	
Pb							
Bi							
Sn	Electrical Resistivity at 20°C Ωmm2 / m 0.051						
Al Rem.							



# AL2024

## PRESENTATION:

This alloy has high mechanical properties and excellent resistance to fatigue. During machining, it creates quite long chips, therefore it is not well suited for automatic lathes.

It can be replaced by 2030 which has the same mechanical properties but has better machinability, allowing higher productivity.



## MAIN APPLICATIONS:

High structural resistance components for aviation, defence, high resistance components, screws and bolts.

## PROPERTIES:

Properties	T3/T4			
Machinability				
Protective Anodizing				
Decorative Anodizing				
Hard Anodizing				
Resistance to atmospheric corrosion				
Resistance to marine corrosion				
MIG-TIG weldability				
At resistance weldability				
Brazing weldability				
Plastic fomability when cold				
Plastic formability when hot				



Legend					Excellent
					Good
					Acceptable
					Not recommended

Chemical Composition	Physical Characteristics	Mechanical Properties					
Si ≤0.50	Density kg/dm3 2.79	Extruded	Temper	Rm Mpa	Rp 0.2 Mpa	A%	HBW
Fe ≤0.50							
Cu 3.80 ÷ 4.90							
Mn 0.90 ÷ 0.90	Modulus of Elasticity Mpa 70,000		T4	440	300	8	120
Mg 1.20 ÷ 1.80							
Cr ≤0.10		T4*	490	380	8	130	
Ni	Coefficient of thermal expansion x10-6/°C 23.1	Drawn	T3	425	290	9	120
Zn ≤0.80							
Ti ≤0.1.5							
Zr	Thermal Conductivity at 20°C W/mk 120	T3*	520	420	10	140	
Pb							
Bi							
Sn	Electrical Resistivity at 20°C Ωmm2 / m 0.057						
Al Rem.							

# AL6061

## PRESENTATION:

This alloy presents medium mechanical properties and an excellent resistance to corrision and good weldability properties.



## MAIN APPLICATIONS:

Stressed structures such as towers and shafts, carpentry, components for railroad, nautical, defence, aviation means of transport. For cars, extrusions for seat guide, bumpers, ABS parts and sub frame.

## PROPERTIES:

Properties	T6			
Machinability				
Protective Anodizing				
Decorative Anodizing				
Hard Anodizing				
Resistance to atmospheric corrosion				
Resistance to marine corrosion				
MIG-TIG weldability				
At resistance weldability				
Brazing weldability				
Plastic fomability when cold				
Plastic formability when hot				



Legend					Excellent
					Good
					Acceptable
					Not recommended

Chemical Composition	Physical Characteristics	Mechanical Properties					
Si 0.40 ÷ 0.80	Density kg/dm3 2.71	Extruded	Temper	Rm Mpa	Rp 0.2 Mpa	A%	HBW
Fe ≤0.70			T4	260	240	8	95
Cu 0.15 ÷ 0.40							
Mn ≤0.15	Modulus of Elasticity Mpa 69,000		T4*	360	320	11	110
Mg 0.80 ÷ 1.20		Drawn	T3	290	240	10	95
Cr 0.04 ÷ 0.35							
Ni	Coefficient of thermal expansion x10-6/°C 23.5		T3*	370	330	10	110
Zn ≤0.25							
Ti ≤0.15		Thermal Conductivity at 20°C W/mk 173					
Zr							
Pb							
Bi	Electrical Resistivity at 20°C Ωmm2 / m 0.037						
Sn							
Al Rem.							



# AL6082

## PRESENTATION:

This alloy has medium mechanical properties, but high resistance to corrosion and excellent weldability.



## MAIN APPLICATIONS:

Highly stressed structural parts for ground and nautical means of transport, anti-impact lateral bars, door frame, space frame and sub frame for cars, hydraulic systems, stairs and scaffoldings, platforms, screws and rivets, particulars for unclear plants, food industry.

## PROPERTIES:

Properties	T6			
Machinability				
Protective Anodizing				
Decorative Anodizing				
Hard Anodizing				
Resistance to atmospheric corrosion				
Resistance to marine corrosion				
MIG-TIG weldability				
At resistance weldability				
Brazing weldability				
Plastic fomability when cold				
Plastic formability when hot				



Legend					Excellent
					Good
					Acceptable
					Not recommended

Chemical Composition	Physical Characteristics	Mechanical Properties					
Si ≤0.40 ÷ 0.80	Density kg/dm3 2.72	Extruded	Temper	Rm Mpa	Rp 0.2 Mpa	A%	HBW
Fe ≤0.70			T6	260	240	10	90
Cu 0.15 ÷ 0.40							
Mn ≤0.15	Modulus of Elasticity Mpa 69,000		T6*	350	320	10	110
Mg 0.80 ÷ 1.20							
Cr 0.04 ÷ 0.14							
Ni	Coefficient of thermal expansion x10-6/°C 23.4	Drawn	T6	290	240	10	90
Zn ≤0.25			T6*	350	295	12	95
Ti ≤0.15							
Zr	Thermal Conductivity at 20°C W/mk 172		T8	345	315	4	95
Pb 0.20 ÷ 0.40			T8*	375	355	10	105
Bi 0.40 ÷ 0.80							
Al Rem.	Electrical Resistivity at 20°C Ωmm2 / m 0.039	T9	360	330	4	95	
		T9*	385	370	7	110	

# AL7075

## PRESENTATION:

This alloy has extremely high mechanical properties and high resistance to fatigue. Moreover it has good resistance to corrosion and attitude to hard, protective and decorative anodizing.



## MAIN APPLICATIONS:

High resistance structural parts for mechanical industry, aviation, military and automotive.

## PROPERTIES:

Properties	T6			
Machinability				
Protective Anodizing				
Decorative Anodizing				
Hard Anodizing				
Resistance to atmospheric corrosion				
Resistance to marine corrosion				
MIG-TIG weldability				
At resistance weldability				
Brazing weldability				
Plastic fomability when cold				
Plastic formability when hot				



Legend					Excellent
					Good
					Acceptable
					Not recommended

Chemical Composition	Physical Characteristics	Mechanical Properties					
Si 0.40 ÷ 0.80	Density kg/dm3 2.80	Extruded	Temper	Rm Mpa	Rp 0.2 Mpa	A%	HBW
Fe ≤0.70							
Cu 0.15 ÷ 0.40							
Mn ≤0.15	Modulus of Elasticity Mpa 72,000		T4	560	500	7	150
Mg 0.80 ÷ 1.20							
Cr 0.04 ÷ 0.35			T4*	580	510	7	160
Ni	Coefficient of thermal expansion x10-6/°C 23.5	Drawn	T3	540	480	7	150
Zn ≤0.25							
Ti ≤0.15							
Zr	Thermal Conductivity at 20°C W/mk 130	T3*	590	530	7	160	
Pb							
Bi							
Sn	Electrical Resistivity at 20°C Ωmm2 / m 0.025						
Al Rem.							

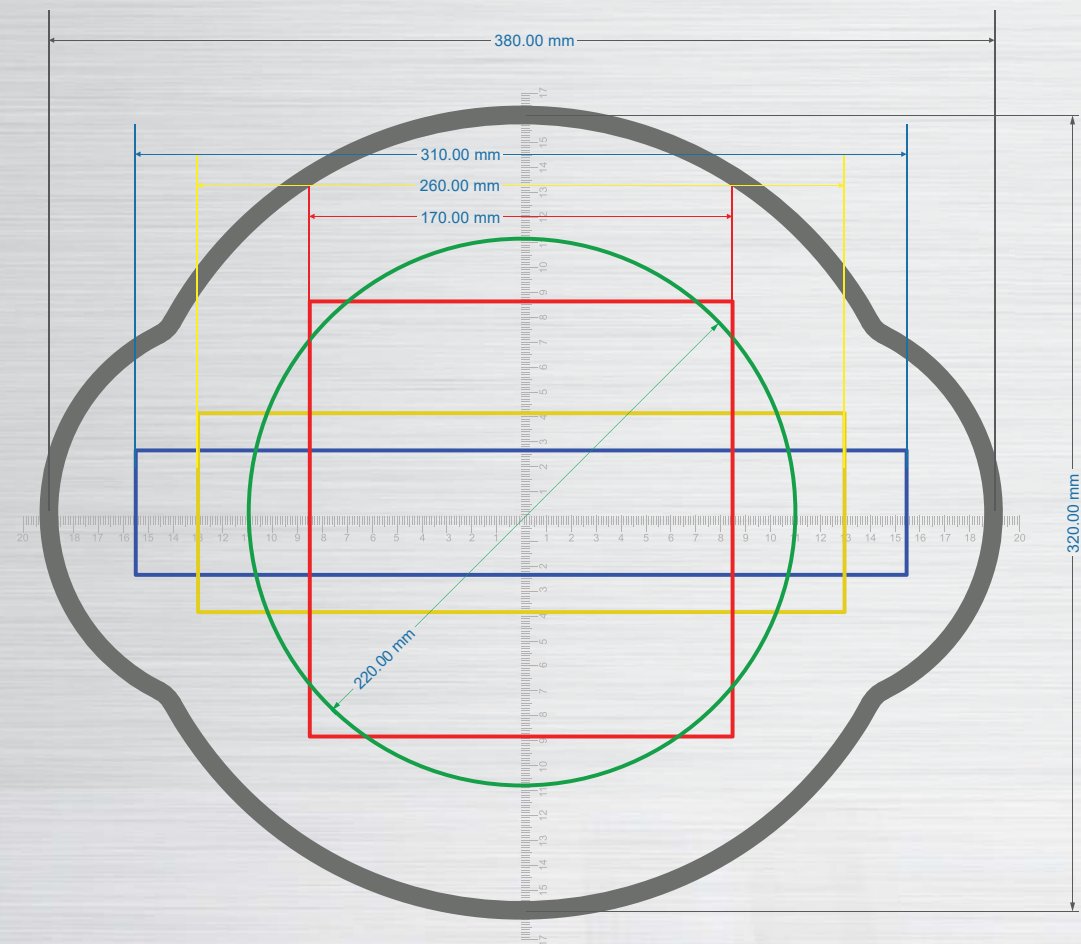


# MAXIMUM DIMENSIONS OF EXTRUDED PROFILES

Maximum dimensions of profiles vary depending on the aluminium alloy, wall thickness, complexity of profile and tolerances.

Minimum profile wall thickness depends on circumscribing circle diameter and alloy.As lower limit is accepted 0,85 mm Maximum profile length is 14 m

Profile weight:0,085 + 13,5 kg/m



Open profiles	Hollow profiles	Solid profiles
Overall hatched zone	Square tubes max 150 x l 50 mm	Orthogonal bars max 70 x 70
	Rectangular tubes max 300 x 50 mm	Round bars max diameter 100 mm
	Round tubes max diameter 200 mm	



## QUALITY AND CERTIFICATES

Our ambition is to deliver right products right on time and right on the spot to reach the ultimate satisfaction of the clients. With the introduction of the quality management system we set the following strategic objectives, the achievement of which is with crucial meaning for the organization:

- To meet the requirements of our customers
- To preserve and expand the market share of our company
- To work with a competent and loyal staff
- To reduce nonconformities and losses due to poor quality
- To maintain mutually beneficial relationships with our partners and suppliers
- To develop and to use the quality management system of as a tool for achieving our objectives

ISO 9001:2008

QCVN 16: 2014/BXD

CNS AND JIS

AAMA 2603-2604-2605

JIS H8601-H8602

Quality Management System

National Technical Regulations on Products, Goods of Building Materials

Chinese and Japanese Aluminum Alloys

American Quality sign for paint, lacquer and powder coatings on aluminium for architectural application

Combined Coatings of Anodic Oxide And Organic Coatings on Aluminum and Aluminum Alloy



**QUATEST 3** TRUNG TÂM KỸ THUẬT TIÊU CHUẨN VÀ CƯỜNG CHẤT LƯỢNG 3  
**QUALITY ASSURANCE & TESTING CENTER 3**

**PHIẾU KẾT QUẢ THỬ NGHIỆM**  
**TEST REPORT**

1. Tên mẫu: **NGUYÊN THẠNH ANH 25**  
 2. Số lượng mẫu: **01 cái x 11 x 110 mm**  
 3. Ngày nhận mẫu: **12/04/2019**  
 4. Ngày trả kết quả: **12/04/2019**  
 5. Nơi gửi mẫu: **CÔNG TY TNHH CƠ KHÍ CHÍNH SẮC MIEN HUA**  
**QUỐC LỘ 1A, TÂN KHUÊ, TÂN AN, LONG AN**  
 6. Nội dung thử nghiệm: **Thử độ bền kéo đứt của trục thép 42 mm**  
**Thử độ bền kéo đứt của trục thép 20 mm**  
**Thử độ bền kéo đứt của trục thép 10 mm**  
 7. Phương pháp thử: **ASTM B 373 - 15a: Standard Test Methods of Tensile Testing**  
**Strength and Elongation of Magnesium Alloy Products**  
**ASTM E 103 - 08: Test Method for Optical Coatings**  
**Spectrometric Analysis of Chromium and Chromium Alloys by**  
**the weight loss method, Polarized Plane, Spectroscopy**  
 8. Kết quả thử nghiệm: **Đạt yêu cầu**  
**Đạt yêu cầu**

**ĐẠI DIỆN CÔNG TY VÀ NGƯỜI THỬ NGHIỆM**  
**NGUYỄN VĂN AN**

**TIGER**

**CERTIFICATE OF QUALIFICATION**

MIEN HUA PRECISION MECHANICAL CO., LTD.  
 1A Highway, Tan Khanh Ward, Tan An City,  
 Long An Province, Vietnam

TIGER Coatings Global Audit Standards  
 for TIGER Drylac® Series 25  
 Architectural Powder Coatings

**QUALIFIED**

**CERTTECH**

**Certificate of Registration**  
 Quality Management System - ISO 9001:2008

This is to certify that  
**Mien Hua Precision Mechanical Co., Ltd.**  
 1A, Tan Khanh Ward, Tan An City, Long An Province, Vietnam

The Manufacturer of aluminum alloy products to customer designs

Certificate issued on: October 18, 2019  
 Last review date: October 18, 2019  
 Certification expires: September 18, 2020  
 Renewal due: Not applicable

**CERTTECH REGISTRATION INC**

**PPG**  
 FLUOROPOLYMER SPRAY COATING SYSTEM

**Preliminary Applicator Certificate**  
 This is to certify

**MIAN LAN MECHANICAL CO., LTD**  
 DUC LAP HA WARD - DUC HOA DISTRICT  
 LONG AN PROVINCE

Has successfully demonstrated the ability  
 to apply Duramer according  
 to PPG Industries specifications.

**General Manager**  
**Business Director**

**Industrial Coatings SEA**  
 Approval certificate valid for 6 months from date of issue  
 Expires on 18th Aug 2021