



Aluminium Alloys and Its Manufacturing

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How Aluminium Alloy is Manufactured?

Aluminium is a white silverish metal with very strong resistance towards corrosion. Being easily malleable, highly reflective, and machinable, this light metal relatively of 2.7 specific gravity is known as a good conductor of heat and electricity. To form alloys it is often mixed with other metals like manganese, zinc, copper, magnesium or silicon. These Aluminium alloys carry the qualities of both the elements and thereby make the alloy better than the constituent elements in many regards. They resist corrosion far effectively and are lighter as well.

Extraction of the Aluminum

Aluminium alloy metal is never found existing independently in the environment. Owing to the fact that aluminum is a very reactive metal, it is always found as a compound with other elements like silicon and oxygen and thus has to be extracted from these compounds first. Then it is purified through the Bayer's process to get alumina or the Aluminium oxide. After procuring alumina, Aluminium is extracted by the Hall Heroult process in which it is mixed well with a cryolite and is then subjected to electrolysis. A lot of energy is spent in this entire procedure and is a strenuous exercise for the Aluminium alloy manufacturers.

The Manufacture of Aluminium Alloy

The extraction process used by the **Aluminium alloy manufacturers** is quite comprehensive. The very first step requires the raw material to be charged in the furnace and quality control is done. Then, the alloying element is added to it and checked on spectrometer. Firstly, sample checking is done and then it undergoes the process of de- greasing, grain refining and the final sample checking. After this, it is subjected to ingot casting before it is color coded and thus is ready to dispatch.

Uses of Aluminium Alloys

There are many areas where these Aluminium alloys can be successfully put to use:

- In the construction of various aircrafts
- It is extensively used in making automotive parts, engine parts, wheels, and other vital parts
- In building and construction purposes like for the roofing material, windows, doors, fronts and canopies
- For manufacturing various components of machines that need high tolerance
- For making access equipments and ladders
- For making road signs and barriers
- For making sporting goods
- For constructing office and domestic furniture
- For making the lithographic plates

Mettrade India is one of the leading Aluminium alloy manufacturers, specialized in producing all types of the Aluminium alloys. They have a team of experienced experts who conduct extensive research along with development and keep on

upgrading their products and services. www.mettradeindia.com has all the information regarding aluminum and its alloys.

Aluminum Extrusion Method Used to Extract Aluminum from Its Source

Aluminium extrusion is one of the most preferred method of manufacturing the complicated profile shapes to be used in the industry of aeronautics, construction as well as automotive. Under this process, the billet of aluminum is basically pushed in the die land in order to attain the product shape with the help of RAM. During this process, the most challenging thing in front of the manufacturers is about ensuring the mold cavity of the aluminum alloys in the best possible way, however, temperature is kept quite low.

Aluminium extrusion process also involves application of high pressure so that thermo-mechanical process can be undertaken in the most appropriate way and resultantly, we get small deformations of solid die. The deformations as well as stresses in many cases, affect badly the requirement of specific dimensions which is a necessary condition for the extruded profile of aluminium alloys.

Through this process of **aluminium extrusion manufacturer**, aluminium alloys are added with the properties including shear temperature as well as thinning. Both of these properties help largely in the application of aluminium alloys in different uses including packaging, purity process, electrical transmission, construction of building materials, water treatment, heat sinks for the electrical appliances like CPUs and transistors and powered aluminium alloys for the purpose of paint.

The wide application of aluminium alloys is just because of its versatile characteristics that make the alloys highly usable. First of all, aluminium alloys are highly durable, lightweight, soft and malleable in nature. On the other side they have high resistance to corrosion and are good conductors of electrical as well as thermal conductivity. As far as density of aluminium alloys is concerned, they have high density and are highly ductile in nature. In other words, all these characteristics make aluminium alloys a versatile substance to be used for different applications.

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Aluminium alloys for different industrial applications

Aluminium can be alloyed with different elements like zinc, magnesium, silicon, copper, manganese, as well as lithium. As a result, it can be used for different applications like manufacturing of aluminum foil covering, food packaging industry, food and chemical industry, vehicle paneling, mine cages, air frames, chemical plants, pressure vessels, road tankers, transportation of ammonium nitrate, irrigation pipes and window frames.

Aluminum alloys are treasure of noted properties that make them a perfect choice for different industrial applications. Some of these properties are listed below:

- **Non heat treatable:** First of all, the aluminum alloys are highly resistant to non heat treatments. They are good conductors of heat and electricity and that is why they are being used in different chemical industries for preparation of aluminum products.
- **Hardness:** The aluminum alloys get hardened during the process of reactions. That is why they are highly favorable alloys for the factor of weld ability as well as formability. Also, they are superior for the cryogenic uses even in the condition of annealed treatments.
- **Corrosion resistance:** Another main advantage of using the aluminum alloys is its high resistance to corrosion. They deter it from different harsh chemical treatments and help in retaining its luster and strength. It also has high resistance to sea and ocean water. Therefore, it can be used for different air cages without any hassles.
- **Ductility:** The aluminum alloys can be converted into any form as they are ductile in nature. Be it sheets or wires, they can be drawn into various shapes without any inconvenience.

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The [aluminum alloy manufacturers](#) produce all kinds of products like aluminum linear configurations and shapes and, alloy ingots. This is an ISO 9001-2000 company and that is why can be counted for serving quality products.

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Aluminum alloys: Highly Useful Products

Aluminum is regarded as a versatile metal as it represents a wide range of useful properties that provide intensified utility to it. Be it food packaging industry or vehicle industry, use of aluminum alloys is intensifying in a great degree.

Some of the most discussed properties include:

- **Lightweight:** First of all, aluminum is very light in weight. Through laboratory tests, it has been found that weight of aluminum is equivalent to the volume of brass, steel and copper.
- **Strength:** Aluminum alloys can easily withstand high pressures and heavy loads without any hassles. When aluminum alloys are mixed in the appropriate proportion, it gets the strength equal to that of steel.
- **Ratio of strength to weight:** The tensile alloys of aluminum have high ratio of strength when it is divided by the density factor. Through various tests it has been detected that this ratio is highest in aluminum alloys than in any other metal.
- **Corrosion resistance:** Another noteworthy property of aluminum alloys is that they have high resistance to corrosion. In other words, they are strong enough to resist the influences of water, air and salt.
- **Flexibility and resilience:** In addition to resistance to corrosion, aluminum alloys also have high flexibility factor. They can easily be molded to any shape and can be used in different forms, especially in food packaging industry and automobile industry.
- **Electrical and thermal conductivity:** They have high electrical as well as thermal conductivity. In other words, the aluminum alloys can easily withstand the electrical and cooling effects without any difficulty.

One company to rely for the quality products is **mettradeindia** which is a leading company that deals in almost all the [Manufacturer of aluminum](#) alloys and extrusions. So, you can easily get the products of your choice, even by ordering online. If you are willing to have tin products, then Mettrade is the ultimate company you need to approach. This is because it is the number 1 company that deals in tin products all over India.

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Aluminium Extrusion Company That Offers Quality Aluminium Online

Aluminium Extrusion Process: In a furnace, Aluminium billets are heated to a temperature range of 750 - 900°F. Heating alters the metal into soft solid that can conveniently be pushed through the dies by applying the required pressure. This extrusion procedure is considered to be the most efficient manner of fabricating parts that need to have a uniform cross-sectional area. Once the desired shaped is attained, it is passed through a cooling apparatus, which makes uses of air, water sprays, or water baths to cool the extrusion and solidify the shape.

Properties of Aluminium:

- 1)** This lightweight metal can survive heavy loads and pressure; when alloyed appropriately, its strength comes near to that of steel.
- 2)** The ratio of the tensile strength of aluminium, divided by density, is higher than any other metal.
- 3)** Aluminium has twice the electrical conductivity of an equal weight of copper.
- 4)** This non - toxic metal reflects light and other forms of radiant energy.
- 5)** Its vulnerability to heat and pressure ensures it's perfect for extruding into formed, intricate shapes with ledges, grooves, hinges, screwholes and interlocking parts. This permits the creation of single components, whereas other metals must be manufactured into pieces that must then be assembled to create a final product.

Advantages of Aluminium Extrusion

- 1) High strength-to-weight ratio:** As compared to other metals, Aluminium is the most preferred metal to extrude, as it is very light in weight. Other metals such as Copper, Brass and Steel they are three times heavier than that of Aluminium.
- 2) Anticorrosive nature:** Aluminum in its natural form builds a thin layer of oxide on the surface, which guards it against corrosion. The [Aluminium extrusion](#) process further adds to this oxide layer improving its resistance to corrosion.
- 3) Cost effectiveness:** Aluminium extrusion does not burn a hole in your pocket. After generating total unit or small parts, it can be interlocked with other metals to form a complete structure.

One of the most trusted [Aluminium Extrusion Company](#) that offers quality Aluminium online in India is **Met Trade India Ltd.** This ISO 9001-2000 Aluminium Extrusion Supplier employees most scientific methods and hi-tech technology. Aluminium Extrusion in India has reached new heights, thanks to this Aluminium Extrusion Company. At this Aluminium Extrusion Company that offers quality Aluminium online all your metal needs are met.

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