About Aluminum

ENDURABLE® Building Products

What is Aluminum?

Aluminum (AL) - a silver-white, soft metal, noted for lightness, high reflectivity, high thermal conductivity, high electrical conductivity, nontoxicity, and corrosion resistance. Aluminum is the most abundant metallic element, comprising 1/12th of the earth's crust. However, it is never found in nature as an elemental metal but only combined with oxygen and other elements. In ordinary language, aluminum often means aluminum alloy.

Among all kind of metal materials, aluminum wins out either because its properties and performance are superior or because fabrication techniques enable the finished product to be manufactured at a competitive cost. The usage of aluminum continues to increase and expand; new markets such as the automotive sector are beginning to recognize its true unparalleled benefits.

Key Characteristics of Aluminum

Aluminum, when used in sheet, coil or extruded form has a number of advantages over other metals and materials. Whereas other materials may offer some of the beneficial characteristics of aluminum, they cannot provide the full range of benefits that aluminum can. Aluminum extruding is a versatile metal-forming process that enables designers, engineers, and manufacturers to take full advantage of a wide array of physical characteristics:

Light Weight

Aluminum has specific gravity of 2.7 and weighs only 0.1 pound per cubic inch. It weighs less by volume than most other metals. In fact, it's about one-third the weight of iron, steel, copper, or brass. Lightweight aluminum is easier to handle, less expensive to ship, and is an attractive material for applications in fields such as aerospace, high-rise construction, and automotive design. When used in the transportation field it can yield significant benefits in a reduction of fuel consumption.

High Strength-to-Weight Ratio

Aluminum offers a unique combination of lightweight and high strength. Higher strengths can be obtained by adding one or more of the following: manganese, silicon, copper, magnesium, or zinc. Increases can also be accomplished by specialized heat treatments. Nowadays, the aerospace industry and the automotive industry heavily depend on aluminum as the material of choice.

Corrosion Resistance

The excellent corrosion resistance of aluminum is due to the presence of a thin, hard protective film of aluminum oxide that bonds tenaciously to the surface. This occurs naturally and can reach a thickness of 0.2 millionths of an inch. Further protection can be done by applying paint or an anodize finish. It does not rust like steel.

Non-Combustible

Aluminum will not ignite or burn, and even when at extremely high temperatures it does not produce toxic fumes. Aluminum has a melting point of 1,220 degrees F (or 660 degrees C).

Recyclable

Aluminum can be recycled at a fraction of the initial production costs. It can be recycled over and over without losing any of its characteristics. This appeals to manufacturers, end users and environmental consortiums, and is a factor in contributing to LEED credits in the construction industry.

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