Aluminum supports industries and people's livelihoods

Aluminum is used in countless ways around the world, from the beverage cans we use every day to automotive parts, building materials, and advanced industrial applications. Despite its short history starting from its first industrial usages about 130 years ago, aluminum is the second most widely used metal today, supporting industries and people's livelihoods worldwide.

Aluminum's diverse properties

Aluminum has tremendous potential thanks to its diverse properties—it is strong yet light in weight, effectively conducts heat and electricity, and is easy to process and recycle. By applying technological expertise to utilize these properties for specific purposes and applications, we can use aluminum in all kinds of ways.

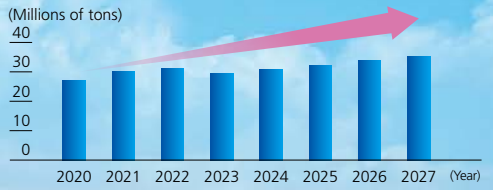
Aluminum's benefits

- Lightweight
- Strong
- Resists corrosion
- Non-magnetic
- Highly electrically conductive
- Excellent heat transmittance
- Highly resistant to low temperatures
- Non-toxic
- Reflects light and heat
- Excellent surface processibility
- Easy to cast
- Easy to process
- Easy to combine
- Useful for vacuum applications
- Easy to recycle

Demand for aluminum products continues to rise

People recognize that the many properties of aluminum can be utilized to help solve various issues facing the world today. Consequently, applications for aluminum are expected to expand in the future and demand is projected to rise. For example, global demand for flat rolled aluminum products is forecast to grow by 3% annually.

Global demand forecast for rolled aluminum products



Source: Research by UACJ

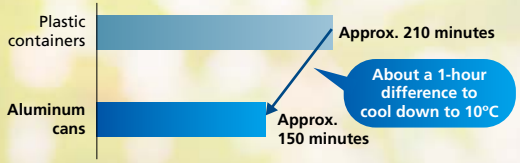
Creating a brighter future with aluminum

By using products that utilize aluminum's diverse properties, we can help reduce environmental impacts. Furthermore, greenhouse gas emissions can be greatly reduced by recycling aluminum or by using renewable energy to produce it.

Aluminum materials offer solutions for environmental issues

Aluminum can help reduce environmental impacts at the product usage stage. Aluminum cans are an excellent example. While their airtight sealing properties have attracted attention for preserving the fresh taste of beverages, the thermal conductivity of aluminum is also important for saving energy. Compared with other containers, aluminum cans require less time to heat up or cool down in vending machines, which saves on energy and, therefore, helps reduce CO_2 emissions.

Time to cool down beverage containers in vending machines

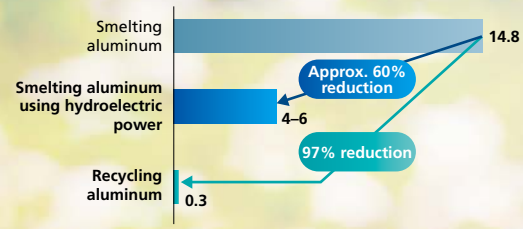


UACJ compared the time needed to cool down beverage containers from 27°C to 10°C in two vending machines stocked with beverages in aluminum cans and plastic containers, respectively.
Source: The study was conducted in Fukui Prefecture in August 2023.

Recycling aluminum reduces greenhouse gas emissions by 97%

Among the processes of producing virgin aluminum, the electrolytic smelting process of extracting aluminum from alumina has the highest environmental impact. A vast amount of electricity is used at this stage, but by supplying electricity from renewable energy sources, greenhouse gas emissions can be greatly reduced. Moreover, by recycling aluminum, greenhouse gas emissions can be reduced by about 97% because electrolytic smelting is unnecessary.

Greenhouse gas emissions from aluminum production
(CO_2 equivalent per ton of aluminum)



Source: UACJ compiled the results using data from the International Aluminium Institute and the Japan Aluminium Association