IAI CLAIM!

INTERNATIONAL ALUMINIUM

Aluminium, shaping a better tomorrow

ALUMINIUM IS INFINITELY RECYCLABLE

Aluminium, like all metals, is composed of atoms bonded together and formed in a crystal structure. This makes aluminium easy to melt and reform into a solid state without changing its fundamental properties.

Aluminium can be recycled repeatedly and back into use with no limitation.

In contrast, plastics are a polymer, a synthetic substance composed of very large molecules, which break down when recycled.

All materials lose some volume as part of the melting and recycling process, though in the case of metals, the material itself is not degraded. In the case of aluminium, a small amount of metal typically oxidizes during melting.

Despite the melt loss, the **metal properties are unchanged**, and it can be **recycled repeatedly**, unlike plastics.

> "...as elements, the material stock is theoretically permanent: once metals are transferred from the natural resource stock and enter the economy, they can be recycled indefinitely, provided their purity is maintained and that systems are in place for their recovery."
>
> – **Jim Fava**, widely regarded as 'the father of modern life cycle assessment', noting in a report why metals distinguish themselves

According to Jim Fava, much of the existing metal stock is still in use:

- Aluminium is continually recycled in closed loops from metal to beverage cans.
- This means that the timescale of the material stock of metals tends to be longer than for other materials.
- Typically, metals in the material stocks and product cycles can last beyond days to decades or even centuries.

REFERENCE DOCUMENTS

A United Nations report notes that metals are different from other materials in that they are inherently recyclable.

This means that, in theory, they can be used over and over again, minimising the need to mine and process virgin materials and thus saving substantial amounts of energy and water while minimising environmental degradation in the process.

This reflects a higher carbon emissions intensity for primary aluminium production outside Europe and North America.

A report by environmental consultancy Carbotech AG developed with the University of Applied Science North Western Switzerland described aluminium and other metals as a "permanent material".

Data sources, links and publications:

- UN: Recycling Rates of Metals: A Status Report
- IAI: The global aluminium cycle, Alucycle
- International Council on Metals and the Environment, 2021: Eco-efficiency and Materials
- Carbotech, 2014: Permanent materials
- Boin, U.M.J., Bertram, M. Melting standardized aluminum scrap: A mass balance model for Europe. JOM 57, 26–33.

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