

## SUSTAINABILITY LCA

An LCA (Life Cycle Assessment) is a method of evaluating the environmental impacts of a product or service throughout its life cycle, from raw material extraction to end-of-life disposal or recycling.

Aluminum metal panels are commonly used for exterior and interior building components, such as curtain walls, ceiling and wall panels, sunscreens, and louvers. Aluminum metal panels have some advantages over other materials, such as light weight, high strength, durability, corrosion resistance, and recyclability. However, aluminum metal panels also have some environmental impacts associated with their production, use, and disposal.

According to a study by the Aluminum Association 3, the cradle-to-gate environmental footprint of 1000 kg of semi-fabricated aluminum (extruded, rolled, or casted) in North America is as follows:

- **Primary energy demand:** 66.72 - 135.32 GJ
- **Global warming potential:** 3978.32 - 8455.31 kg CO<sub>2</sub>e
- **Acidification potential:** 13.81 - 36.99 kg SO<sub>2</sub>e
- **Eutrophication potential:** 0.47 - 0.82 kg Ne
- **Smog formation potential:** 184.31 - 273.87 kg O<sub>3</sub>e

These values vary depending on the type of semi-fabricated aluminum and the mix of primary and recycled aluminum used in the production process. The study also shows that using recycled aluminum can significantly reduce the environmental impacts compared to using primary aluminum.

To reduce the life cycle impacts of aluminum metal panels, our action plan includes the following strategies:

- Increase the use of recycled aluminum in the production process.
  - Recycling aluminum saves up to 95% of the energy and reduces up to 95% of the greenhouse gas emissions compared to producing primary aluminum.
  - Custom Architectural Designs uses 60% recycled Aluminum.

- Optimize the design and fabrication of aluminum metal panels to minimize material waste and maximize efficiency.
  - Use modular and standardized components that can be easily assembled and disassembled.
  - Use durable and high-performance coatings that can protect the panels from weathering and corrosion.
  - Custom Architectural Designs uses nesting software to minimize waste factor during pre-production planning.
  - Custom Architectural Designs recycles all material left from punching and cutting and zero material is wasted, all material is recyclable.
- Implement best practices for installation and maintenance of aluminum metal panels to ensure their optimal performance and longevity.
  - Use appropriate fasteners and sealants that can prevent air and water infiltration and thermal bridging.
  - Conduct regular inspections and repairs to prevent damage and deterioration.
  - Custom Architectural Designs installation instructions and maintenance documentation is aimed to protect and extend the life cycle of the installed product to a 30-year life cycle.
- Promote the reuse and recycling of aluminum metal panels at the end of their service life.
  - Establish a take-back program or partner with local recyclers to collect and process the used panels.
  - Ensure that the panels are separated from other materials and contaminants to facilitate recycling.

By following these strategies, the life cycle impacts of aluminum metal panels can be reduced, and their environmental performance can be improved.

Custom Architectural Designs is committed to sustainability and reducing our carbon footprint in the manufacturing process of architectural and commercial metal ceiling systems and grids. We recognize that sustainability is an important aspect among the AEC community and is committed to making a positive impact with products that support healthy indoor environments, making safer, more sustainable, and more resilient products for the built environment.

Custom Architectural's metal ceiling systems are manufactured with recycled content and provide durable long life cycle ceiling systems for sustainable interior and exterior designs. We strive to reduce our carbon footprint by using low-emitting products and reducing energy consumption. We are improving our material acquisition, production, and transportation standard and implementing best practices for a more sustainable future.