

Life cycle assessment of beverage packaging:

Pathways to a circular, low-carbon future



OVERVIEW

Ball Corporation manufactures billions of aluminum cans each year and aims to be the best steward of their products across their life cycles. To explore and improve sustainability credentials, Ball invested in a thorough and peer-reviewed life cycle assessment (LCA) of their own as well as competing products.

By conducting an LCA study, Ball identified the environmental hotspots of the aluminum can and compared the can with competing beverage packaging options. The assessment captured beverage packaging in Europe, the U.S. and Brazil. The effect of regional collection / recycling rates, recycled content, weight optimization and energy efficiency on environmental impacts and material circularity were assessed.

The findings of the study enabled Ball to align their sustainability strategy with their customers' targets while describing pathways to a circular, low-carbon future. A benchmark against select alternative packaging options allows them to highlight the environmental benefits of aluminum's efficient recyclability to suppliers and customers.



Founded in: 1880



Packaging



Broomfield, CO (HQ)

16,000+

Employees worldwide

\$14.03 billion

Net sales in 2023

100+

Locations

CHALLENGES



Identify environmental improvement

potential of aluminum cans



Provide objective and reliable benchmark

to interested 3rd parties



Inform and enhance

Ball's sustainability strategy



Compare the regional sustainability performance

of aluminum beverage cans with alternatives

"Sphera's Sustainability Consulting services with their long-term LCA expertise helped Ball Corporation to develop a detailed and credible assessment of the environmental impacts and circularity of its own and competing products. Sphera's know-how and engagement proved invaluable on our journey to better understand and promote what constitutes sustainable packaging."

— Björn Kulmann
Global Sustainability Director
Ball Corporation



SOLUTION

SPHERA'S SUSTAINABILITY CONSULTING SERVICES

Ball Corporation worked with Sphera's sustainability experts to assess small-to-medium-sized, single-use beverage packaging in 3 different regions, under various scenarios of end of life recycling, recycled content and using different methodological approaches. Pooling efforts from the various Sphera offices and Ball manufacturing sites, products from Europe, North America and Brazil were selected, weighed and measured to provide a solid basis for the study. Rigorous background data compilation provided the backbone of life cycle models that were constructed using Sphera's Managed LCA Content and LCA for Experts software. The resulting life cycle impact assessment analyzed 4 material options (aluminum cans, PET, glass bottles and beverage cartons) with 2-4 fill volumes, in each of the 3 regions. To confirm the credibility of the outcomes, the study report was subjected to a critical review by a panel of 3 independent experts who verified the results based on the ISO 14040/44 standard.

Sphera's Sustainability Consulting services help organizations drive product sustainability by:

- Informing data-driven decisions during design and planning
- Enabling product innovation and eco-design
- Providing access to high qualitative and representative life cycle inventory (LCI) data
- Improving quality assurance and return on investment

RESULTS

Ball can now show that aluminum cans – under circumstances reflective of today's market realities – are a low-carbon, circular packaging solution. Being the most circular single-use packaging option in all regions (based on their MCI scores), aluminum cans reap further environmental benefits from the high average levels of recycled content used during manufacturing and the high recycling rates at end of life. Further improvement of these parameters, combined with future weight optimization and the use of renewable electricity in can manufacturing, will enable aluminum cans to realize additional improvement potentials in the future.



Top circularity

Aluminum cans are the most circular single-use packaging alternative in all regions



Environmentally sound

Aluminum cans fare well in the close competition across a range of impact categories



Improvement potentials identified

Design for a circular economy, greening of energy supply coupled to weight optimization



Packaging efficiency

(packaging-to-product ratio) is fundamental to product sustainability



Primary packaging

Material manufacturing is often the largest contributor and can be offset by more recycling & recycled content

Is your organization ready to push your environmental sustainability to the next level?

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