asics

sound mind, sound body

GEL-LYTE™ III CM 1.95

Carbon Footprint Report

Introduction

It is said that the fashion industry is responsible for between 2-8% of global carbon emissions[1] and is among the industries putting the heaviest burden on the environment. More than 20 billion pairs of shoes are manufactured per year[2] and it is estimated that these account for 1.4% of global greenhouse gas emissions[3]. It is also said that one of the factors behind why the footwear industry has such a significant impact on the environment is the reliance of the shoe manufacturing process on many types of different materials and complicated assembling processes.

To make a positive impact on our environment for the next generation, it is important to understand the environmental impact of the entire lifecycle of our products and make informed efforts to reduce carbon emissions.

Goal of Study

In 2012, in order to understand the environmental impact across a lifecycle of a pair of shoes, ASICS conducted a Lifecyle Assessment (LCA) on a pair of running shoes in partnership with the Massachusetts Institute of Technology (MIT)[4]. Informed by some of the mitigation ideas suggested in this combined research, the mitigation strategies applied in this study include the following: 1) use of recycled material and bio-based material, 2) reduction of the amount of material and parts, 3) reduction of the material loss, and 4) procurement of renewable energy.

The goal of this study is to develop a product using mitigation strategies suggested in the previously conducted collaborative research, to assess the emission reduction impacts of the strategies and to apply the findings from the study to our future products. In doing so, we can accelerate towards our goal to reduce greenhouse gas emissions 63% by 2030 from a 2015 base year and net-zero emissions by 2050.

Summary

A cradle-to-grave analysis was used to appraise the overall environmental impact of the shoes, which included the lifecycle of a pair of shoes from material and product manufacturing, transport, use, and end-of-life.

The study was conducted based on the methodology developed in the collaborative research with MIT, in compliance with ISO14067:2018 and validated by SGS Japan.

Functional Unit

The functional unit is a measure of the function or the service of the studied product that provides a reference to quantified performance of the product.

The functional unit defined in this study is shown in the table below.

What	Footwear – size US M9
How much	One pair of footwear
How well	Wear in good condition with appropriate use
How long*	According to several guidelines, the reference wear time of footwear is considered as one year. At ASICS, durability is one of the most important factors when designing our footwear and we have been conducting various quality tests to ensure it is suitable for longer use.

* The wear time will depend on a variety of individual factors and walking/running conditions which include, but are not limited to, distances covered, surfaces and weather conditions.

Data sources

In principle, primary data is prioritized for every process. Material suppliers provided key data such as LCA results and material composition or material weight, as well as packaging. The site-specific data for manufacturing, transport and end-of-life scenarios were also collected which included all processing details, energy consumptions, losses, distances between related sites and method of disposal.

Secondary data was used for background processes where primary data was not available. Publicly available databases such as ecoinvent 3.8 were referred to for the study.

The data quality was reviewed by an external verifier, SGS Japan, per the requirements defined in ISO 14067:2018 and SGS Japan confirmed that the quality meets the required standard.

System Boundaries

The system boundaries determine which unit processes should be included in the study.
The following table explains the system boundaries of this study.

Materials & Manufacturing

Processes to get finished materials used for shoes and packaging including raw material extraction, yarn formation, textile formation, dyeing, finishing and processes to get materials for sole making.

And processes for shoe manufacturing including cutting, sewing, stock fitting, assembling and finishing.

Transportation

Transportation during material manufacturing stages, from material suppliers to shoe factories, from shoe factories to distribution centers, and from distribution centers to directly-managed retail stores or customers.

And transportation of returns and transportation of losses and used shoes to disposal facilities.

Use

According to several industrial guidelines, impacts associated with product care are difficult to measure. Therefore, standardized care scenarios are to be used and the impacts associated with footwear care are not included in the guidelines.

In this study, we have set a scenario based on our recommended care method, which includes three times hand washes with cold water using mild detergent, followed by an air dry during a lifecycle.

End-of-life

Since ASICS' products are sold in many countries worldwide, the ratio of disposal mode varies between countries. In this research, we used a given scenario with a slight adjustment to reflect the actual situation of shoes waste treatment best (67% landfill, 33% incineration).

Regarding the shoe's packaging materials, a scenario is set considering the paper recycling ratio in some key countries (10.5% landfill, 10.5% incineration, 79% recycling). Another scenario was used for material losses during the shoe manufacturing process based on the latest waste data received from the mass production factory. (41% landfill, 59% recycling)

Result

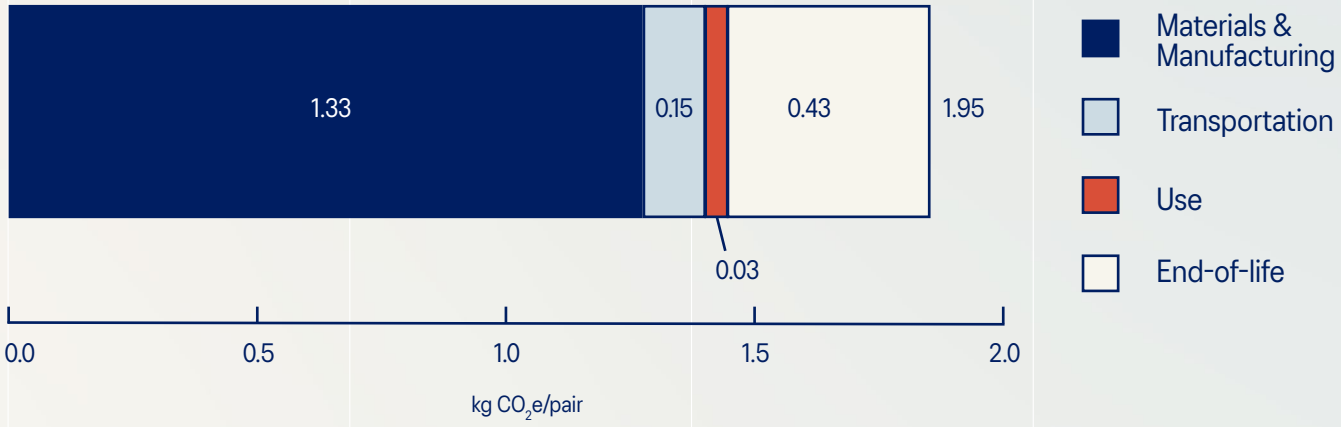
The Carbon Footprint of the GEL-LYTE™ III CM 1.95 through its entire lifecycle including materials and manufacturing, transport, use, and end-of-life is 1.95kg CO_2e/pair*.

Materials & Manufacturing	1.33 kg CO_2e/pair
Transportation	0.15 kg CO_2e/pair
Use	0.03 kg CO_2e/pair
End-of-life	0.43 kg CO_2e/pair

*The total emissions take into account the figures after the third decimal place, therefore it does not equal the sum of each stage in the table.

Emissions from the transport stage can be divided to inbound transport (0.09kg CO_2e/pair), outbound transport (0.04kg CO_2e/pair) and other transport (0.02kg CO_2e/pair).

Key initiatives undertaken to mitigate emissions of the shoe have been made in collaboration with all stakeholders in the value chain, such as renewable energy sourcing, recycling efforts at our manufacturing facility, and a biofuel shipment offering from a shipping company.



Features

Diagram 1

1. Recycled and solution dyed polyester for upper knit
2. Recycled and solution dyed polyester for sock lining mesh
3. **Carbon negative foam made with bio-based material ***
4. Carbon negative foam made with bio-based material for sock lining
5. Reduction of parts number and minimization of parts size
6. Cutting loss reduction by arranging the parts shape
7. Embroidery design with recycled and solution dyed thread
8. Recycled polyester for reinforcement materials in the quarter and heel part
9. Recycled polyester textile for collar lining
10. Recycled polyester shoelace
11. Recycled polyester for the base layer of synthetic lining
12. Hotmelt made of recycled TPU
13. Optimization of packaging material (recycled box, removing wrapping paper and paper in shoes)
14. Renewable energy sourcing in the manufacturing process
15. Transportation strategy of using bio-fuel plan for the shipment
16. Recycling efforts in our partner factory

Diagram 2

Key: Diagram 1 Diagram 2 Not shown

Carbon negative foam

Our carbon negative foam is made from several raw materials, including bio-based ones such as Braskem's Bio-EVA. To improve softness, it also features a Styrenic thermoplastic elastomer "SEPTONTM BIO-series", manufactured by Kuraray CO. Ltd – the first ever use of this feature in a shoe midsole. All these materials combine to help us achieve new levels of sustainability without compromising on comfort and quality.

References

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