

Environmental Fact Sheet

EDU Accessories

The aim of this document is to provide relevant and reliable information on the environmental performance of the EDU Accessories. Results reported in this Environmental Information Sheet are based on a Life Cycle Assessment (LCA) carried out by an independent company (Sphera). This environmental information sheet is based on a Life Cycle Assessment (LCA) study conducted according to DIN ISO 14040/44.

All relevant environmental data relating to Climate Change (Carbon Footprint) as well as an overview of other environmental impact categories applying EN 15804+A2 methodology are disclosed in this information sheet.

Manufacturer

Lutron Electronics Co., Inc.
7200 Suter Rd, Coopersburg, PA 18036

Study conducted by

Sphera Solutions GmbH
Hauptstraße 111-113, 70771 Leinfel-den-Echterdingen, Germany

Product description

EDU Accessories delivered together with Roller shades (Wall shade bracket, mounting screws, sub bracket, QED sleeve bearing counterbore, QED inner bearing, inner bearing retainer, pastime pan head torx screw, plastids pan head screw, taptite truss head PH1 screw, bracket - idler adjust, bracket - idler support, A20Q roller tube, designer hembar, hembar endcap).

System description

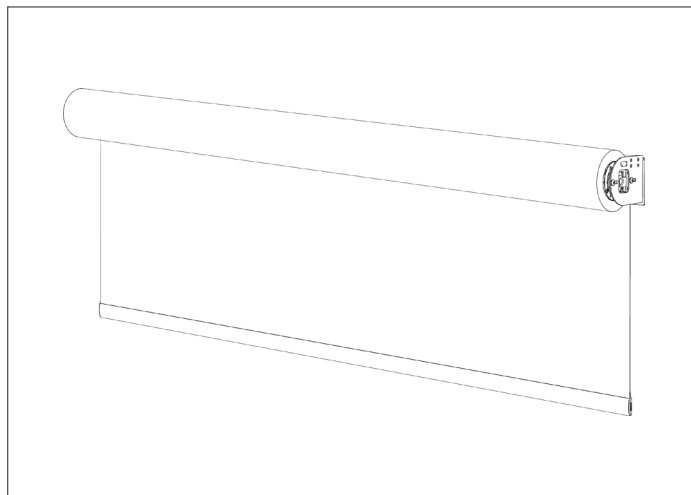
The product system for this study considers the EDU Accessories products delivered together with EDUs for roller shades.

The functional unit and the reference unit for this study is all necessary accessories that are delivered together with an EDU or the mounting and functioning of a roller shade. These consist of mechanical components that are not distributed on their own and always with a roller shade. There is no use phase associated with accessories.

Primary data for the analysis was collected by Lutron. Other relevant data, e.g., upstream processing of polymers, metals, magnets, motor, and others including relevant manufacturing processes according to the Bill of Materials information was taken from Sphera's 2024.2 Managed LCA Content, which is representative of the state-of-the-art processes.

Product reference

The functional unit and the reference unit for this study is all necessary accessories that are delivered together with an EDU. There is no use phase associated with accessories.



Note: This LCA is for the accessories only and does not cover the shade drive (EDU) or fabric.

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Material content

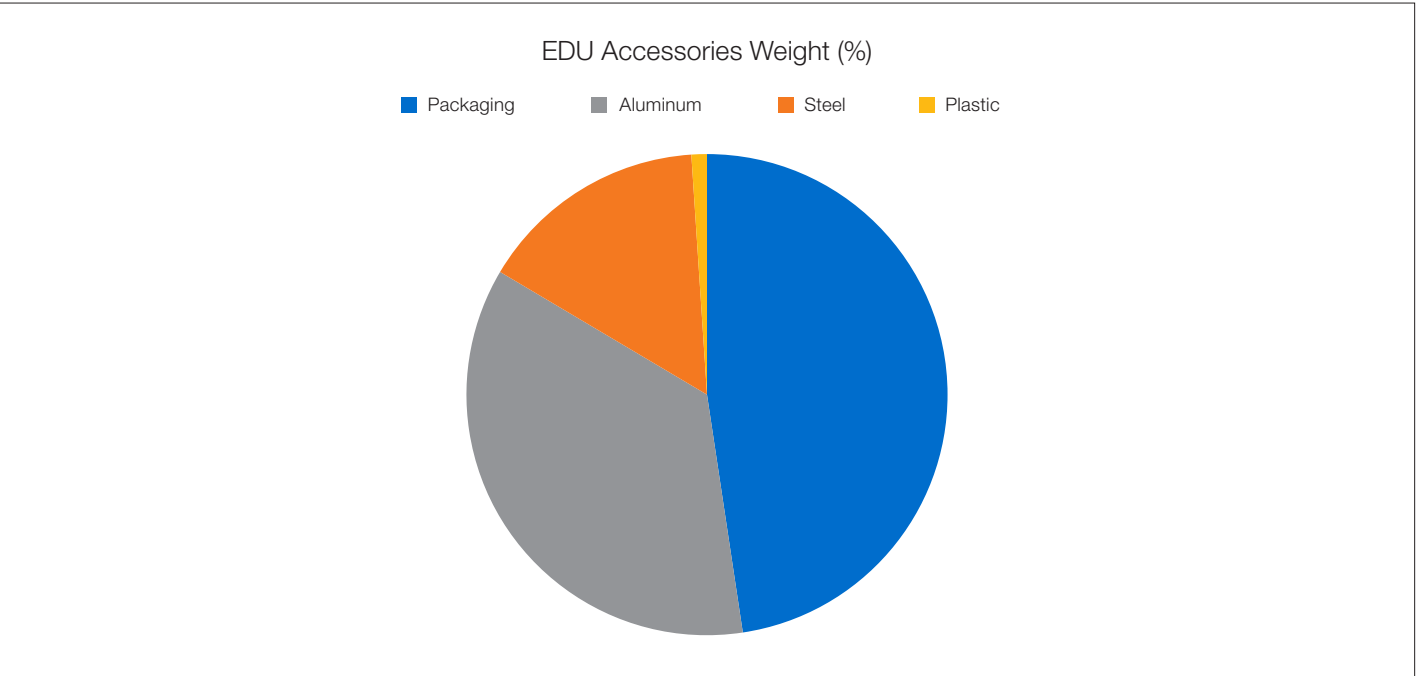


Figure 1: Material Content of Accessories, in weight

Material	% of total weight
Packaging	48%
Aluminum	36%
Steel	15%
Plastic	1%

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Scope of the LCA

A Cradle-to-Grave LCA study was carried out according to DIN ISO 14040/44 using LCA for Experts software. The system boundary includes upstream raw material production in China and US and their transportation to the manufacturing site in Mexico. The Use phase was considered in US, and End-of-Life (EoL) as treatment as base scenarios.

Environmental impacts of the system were calculated following EN15804+A2 methodology with a focus on Climate Change (kg CO₂ eq.), while also addressing other midpoint impact categories.

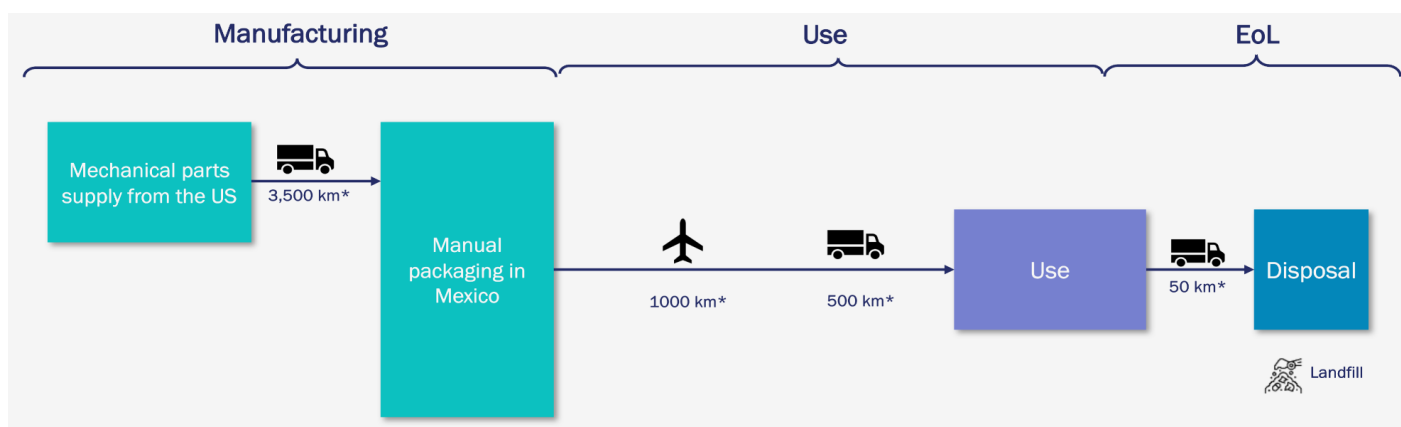


Figure 2: Schematic representation of the EDU Accessories' life cycle
(*Default transportation scenario for continental, intercontinental and domestic transportation)

Parts manufacturing is performed in the US and China. Final assembly is performed in Mexico. Installation, usage and EoL are in the US. Transports have been considered as default scenario (10,000 km air freight and 100 km truck for intercontinental transport, 3,500 km truck for continental transport, and 50 km for domestic transport). Default EoL is considered to be landfill.

Calculation Rules

Calculation Rules consider the following:

- The reference flow associated with the Life Cycle Assessment analysis consists of: the Product and its primary Packaging.
- There is no electricity consumed by the EDU Accessories during the use phase.
- The environmental impact results generated by the life cycle of the reference product with respect to the functional unit are equivalent to the environmental impacts with respect to the declared unit.

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Climate change results for the base scenario

The Climate Change Potential of the EDU Accessories is 35.09 kg CO₂ eq. The manufacturing and use stages contribute to 84.7% and 14.79% of this value respectively, 99.5% together. In particular, EoL (assuming landfilling as default EoL destination) only contributes to 0.50% of the impact over the whole product life cycle and is not presented in more detail here.

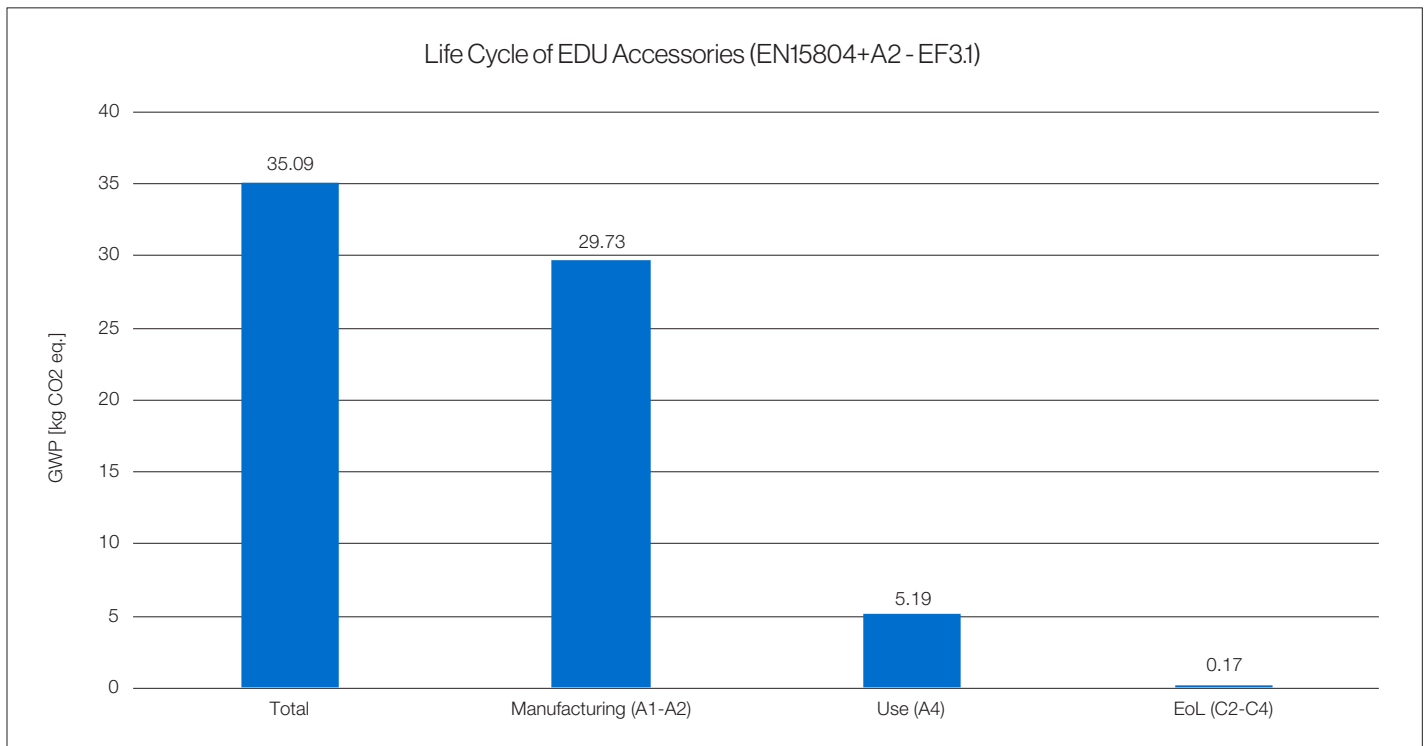


Figure 3: Climate Change Potential of one unit of EDU Accessories

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Climate change results for the base scenario

The manufacturing stage contributes to 84.71% of the total life cycle impacts in terms of climate change. The aluminium parts contribute to 86% of this value.

This product does not have any impact during use (other than A4 - transport to use site as shown in Figure 2) because no batteries are exchanged during the lifetime of the product. Scenarios do not apply to this product.

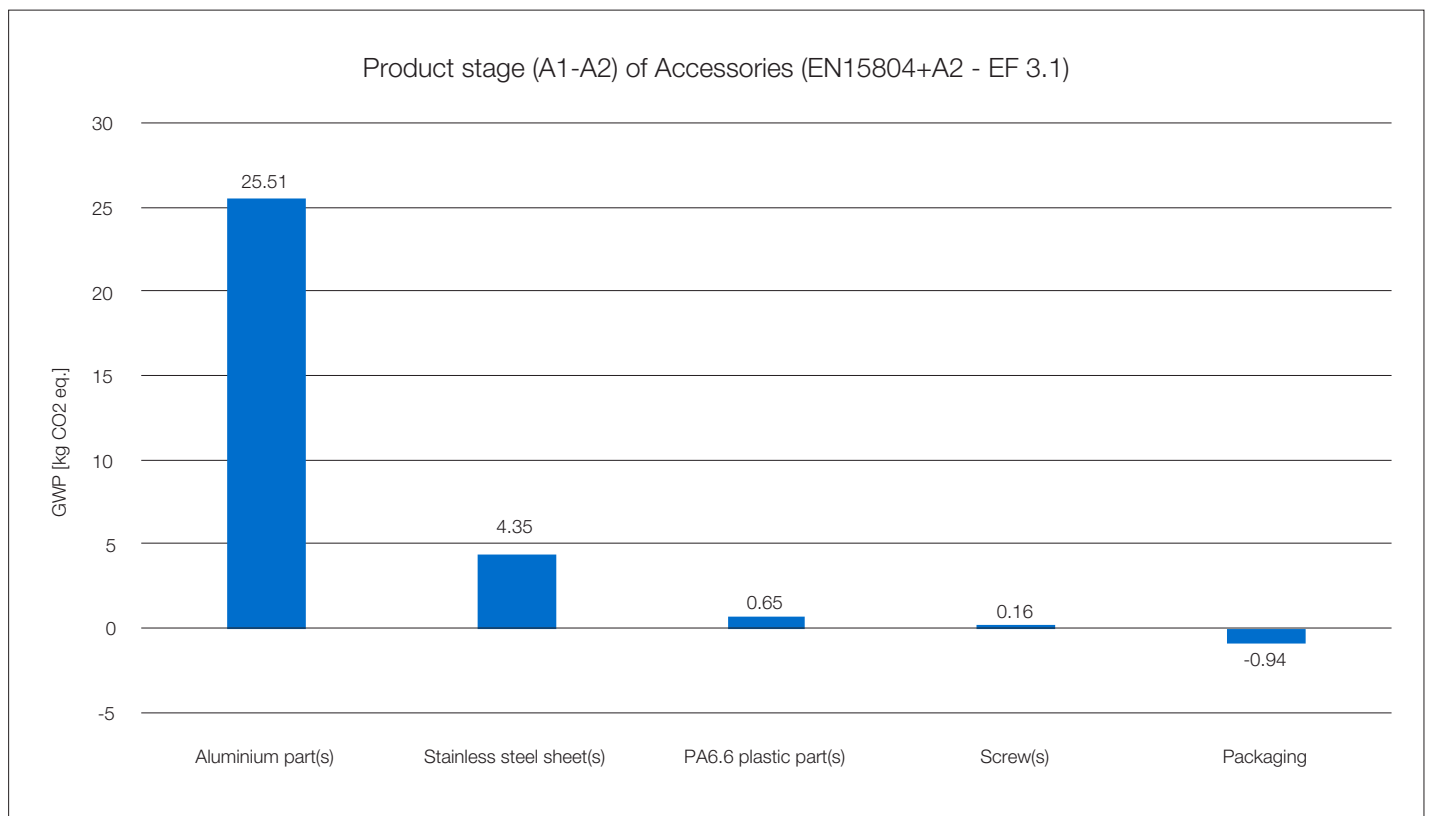


Figure 4: Climate Change Potential in the Manufacturing Stage of the EDU Accessories

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Additional environmental impact indicators

Impact category	A1-Raw Material Supply	A2-Transport (Upstream)	A3 - Manufacturing	A4 - Transport to use site	B6 - Use	C1-C4 - EoL
01 EN15804+A2 (EF 3.1) Climate Change - total [kg CO2 eq.]	2.78E+01	1.91E+00	0.00E+00	5.19E+00	0.00E+00	1.74E-01
02 EN15804+A2 (EF 3.1) Ozone depletion [kg CFC-11 eq.]	2.01E-10	3.21E-13	0.00E+00	3.47E-13	0.00E+00	3.59E-13
03 EN15804+A2 (EF 3.1) Acidification [Mole of H+ eq.]	1.33E-01	3.15E-03	0.00E+00	1.89E-02	0.00E+00	9.22E-04
04 EN15804+A2 (EF 3.1) Eutrophication, freshwater [kg P eq.]	9.85E-05	9.30E-06	0.00E+00	2.26E-06	0.00E+00	3.99E-07
05 EN15804+A2 (EF 3.1) Eutrophication, marine [kg N eq.]	2.94E-02	1.21E-03	0.00E+00	8.48E-03	0.00E+00	2.35E-04
06 EN15804+A2 (EF 3.1) Eutrophication, terrestrial [Mole of N eq.]	3.15E-01	1.40E-02	0.00E+00	9.30E-02	0.00E+00	2.59E-03
07 EN15804+A2 (EF 3.1) Photochemical ozone formation, human health [kg NMVOC eq.]	8.22E-02	3.21E-03	0.00E+00	2.41E-02	0.00E+00	7.15E-04
08 EN15804+A2 (EF 3.1) Resource use, mineral and metals [kg Sb eq.]	1.78E-04	1.90E-07	0.00E+00	1.47E-07	0.00E+00	1.78E-08
09 EN15804+A2 (EF 3.1) Resource use, fossils [MJ]	4.13E+02	2.87E+01	0.00E+00	6.87E+01	0.00E+00	2.64E+00
10 EN15804+A2 (EF 3.1) Water use [m³ world equiv.]	4.83E+00	3.37E-02	0.00E+00	1.25E-02	0.00E+00	8.49E-03

Table 1: Life Cycle Impact of the EDU Accessories in EN 15804+A2 categories

The trend indicated by the carbon footprint (indicator climate change, total, under focus in this document) is reflected in most of the other indicators. In this case, particularly, due to the absence of energy consumption in the use stage. Manufacturing is the hotspot for all indicators.

Impact categories that relate to electricity consumption and fossil fuels behave similar to Climate Change, such as Resource Use fossils and Water use. The Eutrophication categories (which are slightly higher for A1) refer to the Manufacturing Stage's raw material extraction, specifically related to Phosphorus and Nitrogen emissions. Acidification Potential (AP) and POCP are also sensitive to raw material extraction and production processes, particularly copper and precious metals in electronics for AP due to sulfuric ores, and the energy consumption in their production associated with nitrogen oxide emissions. Resource Use, Mineral and Metals are by definition related to the extraction and production of raw materials and is here greatly dominated by the production of electronic components in A1. Ozone Depletion Potential is included for reasons of completeness, but the foreground system does not relate to relevant emissions and the background data have very few and minor non-representative residues left in the LCI, which make a meaningful interpretation impossible.

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Additional environmental impact indicators

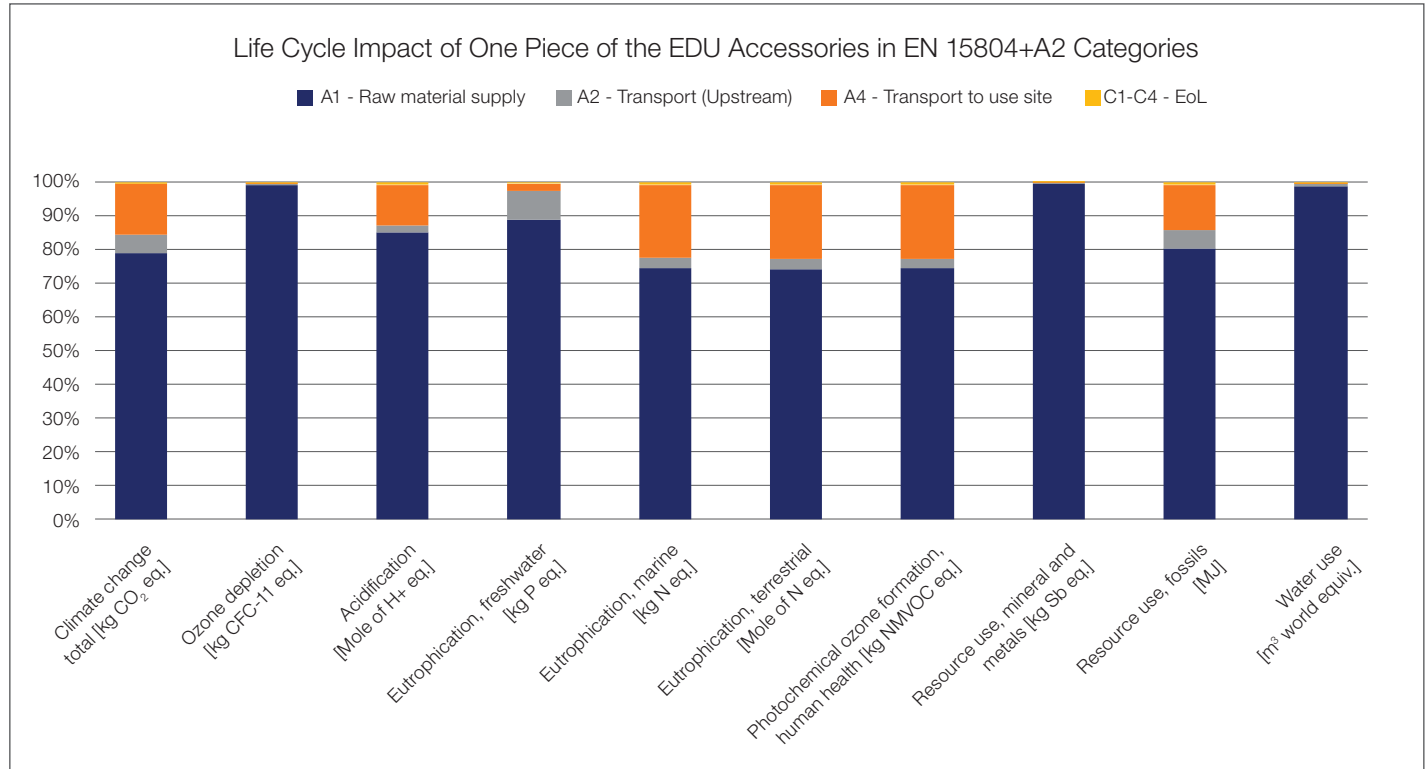


Figure 5: Life Cycle Impact of one piece of the EDU Accessories in EN 15804+A2 categories

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Summary and conclusion

With the aim to assess the environmental impact of the EDU Accessories produced by Lutron, Climate Change Potential was used as a reference indicator in this study due to its stability and global importance.

Climate Change was used as a reference indicator to assess the environmental impact of the EDU Accessories produced by Lutron. The results on all impact categories show that climate change can be used as a good proxy to estimate the environmental impacts of this product and identifying its impacts.

Within the Cradle-to-Grave system boundary of the device, the LCA study shows manufacturing as the main hotspot for Global Warming Potential, followed by the use phase transportation. The observation of the hotspot is seen as a trend in most other environmental categories as well.