



## Duni Group product carbon footprint calculator (Food Packaging Solutions)

Duni Group has created a CO2 calculator for food packaging products in order to develop credible carbon footprints for internal and external communications. The carbon footprint has been designed to be relevant in a European context.

### Methodology

Duni has selected international standards to follow when developing the CO2 calculator. Both primary and secondary data has been used in order to include all life-cycle stages. The following table highlights the methodological choices used in the carbon footprint tool.

|                          |                             |
|--------------------------|-----------------------------|
| Functional unit:         | Per one product (gCO2e/pc)  |
| Selected standards:      | ISO 14040/14044 & ISO 14067 |
| System boundary:         | Cradle-Grave                |
| Impact methodology:      | IPCC 2021 GWP               |
| End-of-life methodology: | Cut-off approach            |

### Life cycle inventory

The life-cycle inventory consists of 5 stages: raw materials, manufacturing, upstream & downstream transport, and end-of-life.

Following activities are included in the calculations:

1. Raw material production for products, secondary and tertiary packaging materials.
2. Converting of all product and packaging materials
3. Upstream transport, warehousing, downstream transport
4. End-of-life (based on average European waste handling statistics).

*Both biogenic and land-use-change emissions are included in the final carbon footprint of a product.*

The following is the output of the Duni Group carbon footprint calculator

**Product carbon footprint**

| Article number | 156426 | Art desc                                    | DELIPACK PP TR ROUND LID | % of total |
|----------------|--------|---------------------------------------------|--------------------------|------------|
|                |        | Product life cycle emissions                | gCO2e/pc                 |            |
|                |        | Raw material emissions                      | 7.96                     |            |
|                |        | Manufacturing emissions                     | 1.94                     |            |
|                |        | Upstream transport & distribution emissions | 1.12                     |            |
|                |        | Downstream transport emissions              | 0.64                     |            |
|                |        | EOL emissions                               | 1.96                     |            |
|                |        | <b>Cradle-to-gate carbon footprint</b>      | <b>11.02</b>             |            |
|                |        | <b>Cradle-to-grave carbon footprint</b>     | <b>13.62</b>             |            |

**Emissions breakdown**

|                                            |  | gCO2e/pc |
|--------------------------------------------|--|----------|
| <b>Cradle-to-grave emissions breakdown</b> |  |          |
| Biogenic emissions                         |  | 0.31     |
| LUC emissions                              |  | 0.03     |
| Fossil emissions                           |  | 13.28    |
| <b>Cradle-to-gate emissions breakdown</b>  |  |          |
| Biogenic emissions                         |  | 0.31     |
| LUC emissions                              |  | 0.03     |
| Fossil emissions                           |  | 10.69    |

The table above is an output from Duni Group's Food Packaging Solutions carbon footprint calculator. The model has been assured by Carbon Trust. The model is in accordance with:

- \* ISO 14067:2018 - Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification and communication, and
- \* Product Carbon Footprints: Requirements for Assurance v3.0 (Carbon Trust)



\* Model outputs do not constitute a verified product footprint