

## Development of a Compact Easy-to-Use Carbon Footprint Analysis Software for Food and Beverage Packaging



### CFPack Software (Copyright)

CFPack software was specially developed for packaging designers and manufacturers to estimate carbon footprint of food and beverage packaging products. This is an easy-to-use program to help reducing greenhouse gas (GHG) emissions, and to support your Eco-design products.

The software requires ONLY Microsoft® Excel version 2003 or 2007.

This is available on 5 types of packaging as follows:

1. Plastic containers: food grade e.g. PE, PP, PET, PS.
2. Corrugated box: FEFCO and ESVO standard
3. Glass bottle, and
4. Aluminum can



### Structure of Software

The structure of software is separated into two main spreadsheets, namely input sheet and result sheet, including diagram & graph illustration.

There are five parts to enter data covering the entire product's life cycle to analyze the carbon footprint including:

- Characteristic of packaging
- Raw Material procurement and Manufacturing phase
- Use/Consumption phase
- Transportation phase
- Final disposal

The software will calculate the carbon footprint automatically and display the result in terms of kilograms of carbon dioxide equivalent (kg CO<sub>2</sub>eq) for each phase and for the total product's life cycle in form of table, diagram and graph.

Input

Result (Diagram and Graph)

### Example of input sheet: Raw Material procurement and manufacturing phase

1.1.1A Please select technology in production (secondary database)	Emission Factor (kg CO <sub>2</sub> eq / kg)	1.2771	Go to 1.1.2 Calculate weight of plastic container (Pallet 10)		
Injection moulding					
<b>Comment:</b> The process contains the auxiliary and energy demand for the mentioned conversion process of plastic. The converted amount of plastic is NOT included. 1 kg of this process equals 3.094 kg of injection moulded plastic.					
1.1.2 Calculate Weight of Plastic Container					
10 Weight of plastic container	Please Click to Calculate	25.00	g		
1.1.3 Colour of Body					
11 Colour	Type of Colour	Emission Factor (kg CO <sub>2</sub> eq / kg food)	Weight (g / piece)	Amount	Total Weight (kg)
White	Carbonic resin	1.4216	0.40	1	0.0004
1.2 Packing					
1.2.1 Pallet					
12 Type of Pallet	Emission Factor (kg CO <sub>2</sub> eq / kg)	Weight (kg / pallet)	Amount of Product(s)	Total No pallet (pieces)	Total Weight (kg)
Plastic pallet	2.5100	22	3.440	0.000291	0.006395340
1.2.2 Wrap Film					
13 Type of Wrap Film	Emission Factor (kg CO <sub>2</sub> eq / kg food)	Weight (g / pallet)			Total Weight (kg)
LLDPE film	2.2342	45 0000			1.308146 45

