Packaging Calculator

Version 3.2, December 2021

ZETTI (Fair Trade)

01.12.2022

The methodological requirements, applicable for the calculation tool, are in conformity with ISO 14040 (2006) and ISO 14044 (2006). The documentation explains the methodological approaches, integrated in the model architecture. Dekra does not approve or is responsible for numbers filled in by the customer.

CERTIFICATE

CRITICAL REVIEW

DEKRA Assurance Service GmbH hereby confirms that a critical review has been carried out for the software tool '**GaBi Packaging Calculator**' developed by:

Sphera Solutions GmbH
Hauptstraße 111-113, 70771 Leinfelden-Echterdingen

It can be confirmed that the tool is generated in a professional manner and the accompanying documents are well-structured. The LCA tool can be considered as reliable and meets the defined goal and scope.

The audit is based on the following documents of the GaBi Packaging Calculator:

- GaBi software model 01/05/2021, v1.0
- GaBi i-report EN_GPC_3.2_EU 18-11-2021.gbp
- Documentation of the software tool, v1.0, 19/11/2021
- 2-in-1: LCA and MCI Assessment Tool, User Manual, v3.1, 19/11/2021

The following aspects were part of the critical review:

- the methods used to carry out the algorithms in the tool for calculating a Life Cycle Assessment (LCA) are consistent with the relevant International Standards (ISO 14040 and ISO 14044),
- the methods and inventory modelling applied in the tool to carry out the LCA are scientifically and technically valid,
- the data and model resulting from the tool calculation are appropriate and reasonable in relation to the goal of the study,
- the documentation referring to the calculation tool are transparent and consistent,
- the technical support in form of a manual and tool internal information for the user is unambiguously understandable and helps to avoid mistakes of the user.

Further details can be found in the critical review statement dated 24 November 2021 that provides a detailed overview of critical review.

This certificate 991221077 is valid for software version named above. The certificate is valid until 23 November 2022. DEKRA does not approve and is not responsible for numbers filled in by the customer. The verification of the specific LCI model generated by users of the tool is outside the scope of this critical review

Stuttgart, 14 December 2021

Certificate-ID: 991221077

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The Packaging Calculator is intended for the following purposes:

(1) Create life cycle assessments of your packaging and compare them with alternative designs, even as a non-expert

(1) Get comprehensive results on the potential environmental impacts of each alternative, instantly

(1) Quantify how circular your packaging product is, without having to use another tool

(1) Communicate your results through automatically generated reports

The results generated by this tool are based upon a life cycle assessment model and data from the GaBi databases developed by Sphera, with all reasonable skill and diligence. Although the tool results can be comparative in nature, it has not undergone any form of external conformity assessment. As such, results should be viewed as indicative environmental performance indicators and cannot be used in isolation to support environmental marketing claims without further documentation and external assurance.

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Sphera, 1. July 2021

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1 Project summary

1.1 Unit of Assessment

The unit of assessment defines the basis for any analysis. Especially when comparing two products, in this case packaging alternatives, it is important to use a unit of assessment that is most meaningful for the question at hand. For a consumer a single consumer package or the contents (i.e. net product filling weight) are the most likely useful functional units. For manufacturers, it may be more meaningful to assess full shipment packages or tons of product content with the respective amount of packaging.

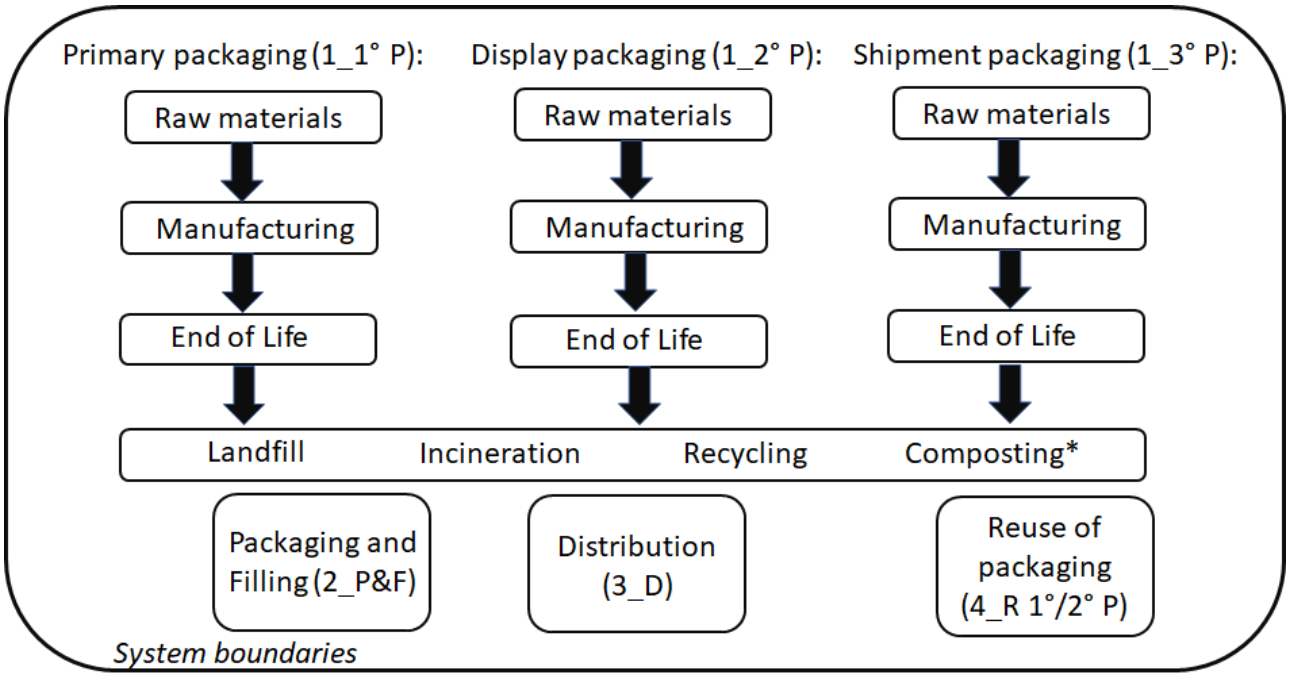
Therefore two important values need to be pinned down, the product level at which the assessment takes place (net product weight, consumer package, display package or shipment package) and the amount of units taken into consideration. These are summarized below and hold valid for all the analyses provided in this and following chapters.

Global parameters		
Unit of assessment	Primary packaging	Select packaging level at which to view results
Number of assessment units	1	Min=1; Define number of units of assessment (e.g. 1000 primary packages)

The serving unit in consumer packaging is defined as **Eine (1) Tafel Schokolade.**

1.2 System boundaries

The system boundaries are shown in the graphic below. Please note that energy and the use of auxiliary materials used to process the materials as well as the transport of the packaging from the manufacturer and treatment of manufacturing waste are included in the model.



*Composting only valid for compostable materials

1.3 Scenario overview

The following table gives an overview of the key physical parameters of the different scenarios, for the Functional Unit selected (see in Chapter 2).

	Baseline	Alternative
Name of Scenario	Papier, Alufolie, Hotmelt	Plastik
Product Net Weight	1 g	1 g
Package Mass, Total Package	3.08 g	2 g
Total Mass of Packaged Product	4.08 g	3 g

1.4 Packaging indicator overview

The following table gives an overview of packaging weight and utilisation ratios of the different scenarios. A short definiton of the weight ratio and cube utilisation can be found in chapter 4.3.

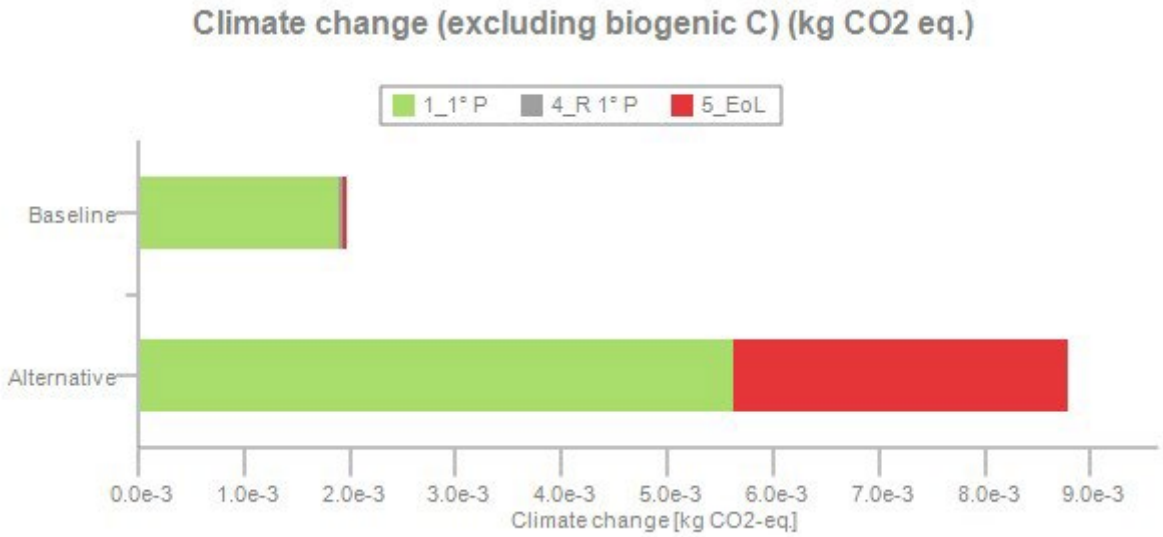
	Papier, Alufolie, Hotmelt	Plastik
Weight Ratio Total Packaging to Product [g/g]	3.08	2
Cube Utilisation of Consumer Package in Shipment Package [%]	76	76
Cube Utilisation of Consumer Package in Display Package [%]	76	76
Cube Utilisation of Display Package in Shipment Package [%]	76	76
Cube Utilisation of Product in Shipment Package [%]	43.9	43.9

2 Overview of environmental results

The environmental evaluation of the packaging scenarios compared in this report is calculated using the cut-off methodology. More on this methodology can be found in the official User Manual.

The environmental assessment is based on the defined impact categories for the study. Impact categories measure the contribution from the packaging life cycle to relevant environmental issues such as climate change or water scarcity etc. The lower the impact category result, the better the environmental performance. For more information on each impact category, please consult chapter 4 entitled Background information.

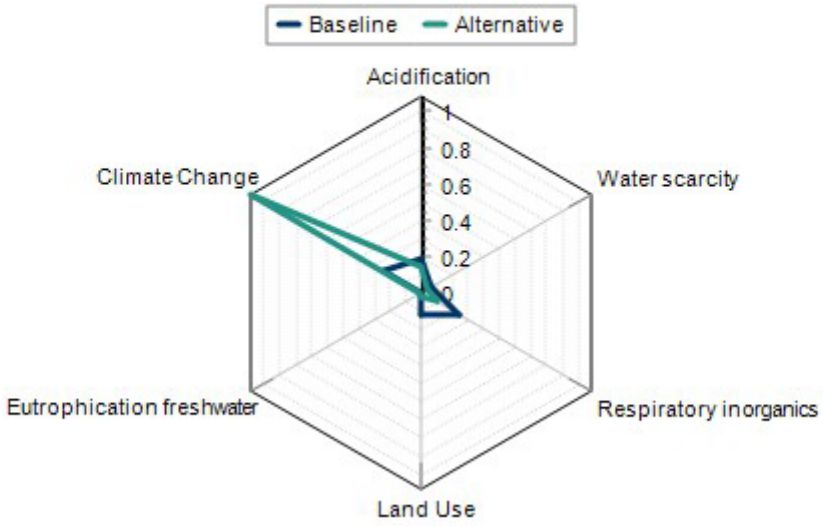
The EF 3.0 single score of Papier, Alufolie, Hotmelt is **1.57E-005,** whereas the same for Plastik is **5.37E-005.** The single score is made up of 16 impact categories, each weighted according to their robustness (reliabilty of the method of calculation) and relevance (impact on the environment of today) and normalised for European conditions. The impact category with the highest weighting in the single score is climate change, shown in the following diagram.



Key: 1_1° P - Primary packaging; 1_2° P - Secondary packaging; 1_3° P - Tertiary packaging; 2_P&F - Packaging and Filling; 3_D - Distribution (transports); 4_R 1° P- Reuse of primary packaging; 4_R 2° P - Reuse of secondary packaging; 5_EoL - End of Life of packaging

The following spider graph highlights some of the most robust and/or relevant impact categories along with climate change, all contributors to the EF 3.0 single score. The spider graph shows normalised results, without any weightings.

Spider graph showing selected EF 3.0 impact categories after normalisation



2.1 What do results mean?

Climate change The impact of the Papier, Alufolie, Hotmelt is equivalent to driving a passenger car for **0.0103kms,** whereas the impact of Plastik is equivalent to **0.0461kms**. The calculation is based on a car complying with the EURO6 emission standard with an engine size betweeen 1.4 and 2 liters, consuming 0.0505 kg gasoline per km.

Water The water consumption of the Papier, Alufolie, Hotmelt is equivalent to drinking **0.0156 Liter** tap water in Europe, whereas the Plastik equates to drinking **0.00929 Liter** tap water. While water scarcity is generally of lower concern in most parts of Europe, the Liter-equivalents go up in regions of high aridity / low rainfall.

Acidification This impact contributes to both acid rain and increases acidification in the ocean. The amount released by the Papier, Alufolie, Hotmelt is equivalent to damaging **1.25E-005kg** of coral reefs or other calcium-carbonate based minerals like historic monuments. In contrast, the Plastik can potentially damage about **9.37E-006kg** of the same.

Freshwater Eutrophication Overfertilization (also known as eutrophication) means that excessive amounts of nutrients are released into water bodies and/or soils. The emissions reported in Papier, Alufolie, Hotmelt could lead to problematic algal bloom in a water body with a maximum size of **9.38E-005m³** of water, while in scenario Plastik the same may happen in a pond with a maximum size of **0.000111m³**. Phophorous concentrations above 0.1mg/liter may cause potentially harmful excessive algal growth.

Respiratory inorganics This impact category refers to the damaging effects of small particulate matter that increases the incidence primarily of respiratory illnesses. The amount of particulate matter released by the Papier, Alufolie, Hotmelt is equivalent to driving a diesel-driven car over **0.192kms,** whereas the Plastik equates to driving the same car over **0.0788kms**.

Land use This impact category provides a unitless measure of land use based on the LANCA method. The Papier, Alufolie, Hotmelt scenario equals the production of **0.000972kg** corn in Europe, whereas the Plastik corresponds to about **0.000131kg** of the same.

2.2 Material Circularity Indicator

A circular economy aims to maintain the value of products, materials and resources for as long as possible by returning them into the product cycle at the end of their use, while minimizing the generation of waste. The fewer products we discard, the less virgin materials we extract, the better for our environment. This process starts at the very beginning of a product's lifecycle: smart product design and production processes can help save resources, avoid inefficient waste management and create new business opportunities.
The Circularity Indicator shows how circular your product is, where 0.1 means that your product is completely linear and a number close to 1 means that you have a circular product. The calculation used in this report is based on the methodology developed by the Ellen MacArthur Foundation & Granta Design published in "Circularity Indicators: An Approach to Measuring Circularity", Ellen MacArthur Foundation and Granta Design, 2019 Revision. Further information can be found at https://www.ellenmacarthurfoundation.org/assets/downloads/Circularity-Indicators-Methodology.pdf

The Material Circularity Indicator (MCI) Score of the scenario Papier, Alufolie, Hotmelt product is **0.958**. In comparison the MCI of the scenario Plastik is **0.297**.

2.3 Details of environmental impact categories

Table 1 - Selected impact categories and indicators over the full life cycle of both scenarios

	Baseline	Alternative
Acidification [Mole of H+ eq.]	1E-005	7.9E-006
Climate Change [kg CO2 eq.]	0.0019	0.0088
Eutrophication freshwater [kg P eq.]	9.4E-009	1.1E-008
Ionising radiation [kBq U235 eq.]	0.00029	0.00038
Land Use [Pt]	0.1	0.014
Photochemical ozone formation [kg NMVOC eq.]	5.7E-006	7.8E-006
Respiratory inorganics [Disease incidences]	1.4E-010	5.8E-011
Water scarcity [m³ world equiv.]	0.00067	0.0004
Primary energy demand, non-renewable [MJ]	0.026	0.17
Primary energy demand, renewable [MJ]	0.023	0.018
Primary energy demand, total [MJ]	0.048	0.19
Blue water consumption [kg]	0.032	0.029

The fields in the above table are coloured in GREEN when an alternative has a value that is 20% lower than that of the product in the first column and are coloured in RED when an alternative has a value that is 20% higher than that of the first product. Note: climate change impact categories shown here exclude biogenic carbon

2.3.1 Breakdown by packaging level and life cycle stage

This section shows the results for the different packaging levels and life cycle stages. The compared scenarios are shown in two separate tables below (Baseline Scenario and Alternative Scenario).

Table 2 - Baseline scenario: Papier, Alufolie, Hotmelt

	1_1° P	4_R 1° P	5_EoL
Acidification [Mole of H+ eq.]	1E-005	1.2E-007	1.8E-008
Climate Change [kg CO2 eq.]	0.0019	4.9E-005	1.8E-006
Eutrophication freshwater [kg P eq.]	8.6E-009	7.9E-010	2.5E-012
Ionising radiation [kBq U235 eq.]	0.00027	1.8E-005	1.5E-007
Land Use [Pt]	0.1	0.00024	5.6E-006
Photochemical ozone formation [kg NMVOC eq.]	5.6E-006	7.6E-008	1.7E-008
Respiratory inorganics [Disease incidences]	1.4E-010	9.8E-013	1.2E-013
Water scarcity [m³ world equiv.]	0.00065	9.6E-006	7.2E-006
Primary energy demand, non-renewable [MJ]	0.025	0.00094	2.3E-005
Primary energy demand, renewable [MJ]	0.022	0.00034	4E-006
Primary energy demand, total [MJ]	0.047	0.0013	2.7E-005
Blue water consumption [kg]	0.031	0.00039	0.00017

Key: 1_1° P - Primary packaging; 1_2° P - Secondary packaging; 1_3° P - Tertiary packaging; 2_P&F - Packaging and Filling; 3_D - Distribution (transports); 4_R 1° P- Reuse of primary packaging; 4_R 2° P - Reuse of secondary packaging; 5_EoL - End of Life of packaging

Note: climate change impact categories shown here exclude biogenic carbon

Table 3 Alternative scenario: Plastik

	1_1° P	5_EoL
Acidification [Mole of H+ eq.]	7.6E-006	3.1E-007
Climate Change [kg CO2 eq.]	0.0056	0.0031
Eutrophication freshwater [kg P eq.]	1.1E-008	3.1E-011
Ionising radiation [kBq U235 eq.]	0.00037	3.5E-006
Land Use [Pt]	0.014	0.00011
Photochemical ozone formation [kg NMVOC eq.]	7.6E-006	2E-007
Respiratory inorganics [Disease incidences]	5.6E-011	1.8E-012
Water scarcity [m³ world equiv.]	0.00011	0.00029
Primary energy demand, non-renewable [MJ]	0.17	0.00038
Primary energy demand, renewable [MJ]	0.018	7.6E-005
Primary energy demand, total [MJ]	0.19	0.00046
Blue water consumption [kg]	0.022	0.0068

Key: 1_1° P - Primary packaging; 1_2° P - Secondary packaging; 1_3° P - Tertiary packaging; 2_P&F - Packaging and Filling; 3_D - Distribution (transports); 4_R 1° P- Reuse of primary packaging; 4_R 2° P - Reuse of secondary packaging; 5_EoL - End of Life of packaging

Note: climate change impact categories shown here exclude biogenic carbon

2.3.2 Breakdown by packaging level and material type

The following table displays Climate change impacts per packaging level and material group. The values for each material group includes raw material extraction, manufacturing and transport to the packaging site. Material groups and packaging levels where no relevant impacts occur have been omitted.

Table 4 - Climate change [kg CO_2 eq.] of manufacturing

	Baseline	Alternative
1_1° P	0.0019	0.0056
Metals (CP)	0.0018	
Natural Fibres (CP)	0.00012	
Plastics (CP)		0.0056

Key: 1_1° P - Primary packaging; 1_2° P - Secondary packaging; 1_3° P - Tertiary packaging;

3 Parameter list

3.1 Parameter included

The following table documents all of the parameters used in the generation of the results contained in this report.

Scenario parameters			
	Baseline	Alternative	
General overview			
Units in primary package	1	1	Number of servings or units per primary packaging (min. value: 1)
Primary per secondary packaging	1	1	Number of consumer packages per secondary packaging (or tertiary packaging, if secondary packaging is not used)
Secondary per tertiary packaging	1	1	Number of display packages per tertiary packaging (min. value: 1); enter 1 if no secondary packaging is used
Primary package headspace	24	24	[%] Headspace in Primary packaging
Secondary package headspace	24	24	[%] Headspace in Secondary packaging
Tertiary package headspace	24	24	[%] Headspace in Tertiary packaging
Product net weight	1	1	[g] Net weight of product in primary package
Primary (consumer) packaging			
Plastics			
Region of manufacturing	EU28	EU28	Select manufacturing location
Plastic 1			
Mass of plastic	0	2	[g] Mass of selected plastic type per primary packaging
Plastic	EVOH	PP oriented	Select plastics type
Compounding	No	Yes	Is there a compounding step included (to homogenize granulate, fillers and dyes)?
Manufacturing	Blow moulding	Extrusion	Select manufacturing method (for BOPP and BOPA only 'film' should be used)
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail

Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Plastic 2			
Mass of plastic	0	0	[g] Mass of selected plastic type per primary packaging
Plastic	EVOH	EVOH	Select plastics type
Compounding	No	No	Is there a compounding step included (to homogenize granulate, fillers and dyes)?
Manufacturing	Blow moulding	Blow moulding	Select manufacturing method (for BOPP and BOPA only 'film' should be used)
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Plastic 3			
Mass of plastic	0	0	[g] Mass of selected plastic type per primary packaging
Plastic	EVOH	EVOH	Select plastics type
Compounding	No	No	Is there a compounding step included (to homogenize granulate, fillers and dyes)?
Manufacturing	Blow moulding	Blow moulding	Select manufacturing method (for BOPP and BOPA only 'film' should be used)
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane

Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Bioplastics			
Region of manufacturing	EU28	EU28	Select manufacturing location
Bioplastic 1			
Mass of bioplastic	0	0	[g] Mass of selected bioplastic type per primary packaging
Bioplastic	HDPE (corn)	HDPE (corn)	Select bioplastics type
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Compounding	No	No	Is there a compounding step included (to homogenize granulate, fillers and dyes)?
Manufacturing	Blow moulding	Blow moulding	Select manufacturing method
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Bioplastic 2			
Mass of bioplastic	0	0	[g] Mass of selected bioplastic type per primary packaging
Bioplastic	HDPE (corn)	HDPE (corn)	Select bioplastics type
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Compounding	No	No	Is there a compounding step included (to homogenize granulate, fillers and dyes)?
Manufacturing	Blow moulding	Blow moulding	Select manufacturing method

Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Laminate			
Region of manufacturing	EU28	EU28	Select manufacturing location
Laminate 1			
Mass of laminate	0	2	[g] Mass of laminate material per primary packaging
Adhesive used	Acrylate	None	Choose the adhesive used to glue layers together
Solvent used	Ethanol	None	Choose the solvent used for the lamination process
Materials in laminate			
Aluminium foil			
Thickness	0	0	[µm] Enter thickness value of Aluminium foil
Bio LLDPE film			
Thickness	0	0	[µm] Enter thickness value of bio-LLDPE film from sugar cane
Bio LDPE film			
Thickness	0	0	[µm] Enter thickness value of bio-LDPE film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
Bio PET film			
Thickness	0	0	[µm] Enter thickness value of bio-PET film

Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
Bio PP film			
Thickness	0	0	[µm] Enter thickness value of bio-PP film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
Bio PVC film			
Thickness	0	0	[µm] Enter thickness value of bio-PVC film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
BOPA film			
Thickness	0	0	[µm] Enter thickness value of BOPA film
BOPP film			
Thickness	0	0	[µm] Enter thickness value of BOPP film
EVOH film			
Thickness	0	0	[µm] Enter thickness value of EVOH film
Recycled content	0	0	[%] Recycled content EVOH
OPP film			
Thickness	0	0	[µm] Enter thickness value of OPP film
PA (nylon) film			
Thickness	0	0	[µm] Enter thickness value of PA film
Recycled content	0	0	[%] Recycled content PA

Paper			
Thickness	0	0	[µm] Enter thickness value of paper
Recycled content	0	0	[%] Recycled content paper
PE low density (LDPE) film			
Thickness	0	0	[µm] Enter thickness value of LDPE film
Recycled content	0	0	[%] Recycled content LDPE
PE linear low density (LLDPE) film			
Thickness	0	0	[µm] Enter thickness value of LLDPE film
Recycled content	0	0	[%] Recycled content LLDPE
PE high density (HDPE) film			
Thickness	0	0	[µm] Enter thickness value of HDPE film
Recycled content	0	0	[%] Recycled content HDPE
PET film			
Thickness	0	0	[µm] Enter thickness value of PET film
Recycled content	0	0	[%] Recycled content PET
PLA film			
Thickness	0	0	[µm] Enter thickness value of PLA film
PP film			
Thickness	0	0	[µm] Enter thickness value of PP film

Recycled content	0	0	[%] Recycled content PP
PS Film			
Thickness	0	0	[µm] Enter thickness value of PS film
Recycled content	0	0	[%] recycled content PS
PVC film			
Thickness	0	0	[µm] Enter thickness value of PVC film
Recycled content	0	0	[%] Recycled content PVC
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Laminate 2			
Mass of laminate	0	0	[g] Mass of laminate material per primary packaging
Adhesive used	Acrylate	Acrylate	Choose the adhesive used to glue layers together
Solvent used	Ethanol	Ethanol	Choose the solvent used for the lamination process
Materials in laminate			
Aluminium foil			
Thickness	0	0	[µm] Enter thickness value of aluminium foil
BioLLDPE film			

Thickness	0	0	[µm] Enter thickness value of bio-LLDPE film from sugar cane
Bio LDPE film			
Thickness	0	0	[µm] Enter thickness value of bio-PE film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
Bio PET film			
Thickness	0	0	[µm] Enter thickness value of bio-PET film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
Bio PP film			
Thickness	0	0	[µm] Enter thickness value of bio-PP film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
Bio PVC film			
Thickness	0	0	[µm] Enter thickness value of bio-PVC film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
BOPA film			
Thickness	0	0	[µm] Enter thickness value of BOPA film
BOPP film			
Thickness	0	0	[µm] Enter thickness value of BOPP film
EVOH film			
Thickness	0	0	[µm] Enter thickness value of EVOH film

Recycled content	0	0	[%] Recycled content EVOH
OPP film			
Thickness	0	0	[µm] Enter thickness value of OPP film
PA (nylon) film			
Thickness	0	0	[µm] Enter thickness value of PA film
Recycled content	0	0	[%] Recycled content PA
Paper			
Thickness	0	0	[µm] Enter thickness value of paper
Recycled content	0	0	[%] Recycled content paper
PE low density (LDPE) film			
Thickness	0	0	[µm] Enter thickness value of LDPE film
Recycled content	0	0	[%] Recycled content LDPE
PE linear low density (LLDPE) film			
Thickness	0	0	[µm] Enter thickness value of LLDPE film
Recycled content	0	0	[%] Recycled content LLDPE
PE high density (HDPE) film			
Thickness	0	0	[µm] Enter thickness value of HDPE film
Recycled content	0	0	[%] Recycled content HDPE
PET film			

Thickness	0	0	[µm] Enter thickness value of PET film
Recycled content	0	0	[%] Recycled content PET
PLA film			
Thickness	0	0	[µm] Enter thickness value of PLA film
PP film			
Thickness	0	0	[µm] Enter thickness value of PP film
Recycled content	0	0	[%] Recycled content PP
PS Film			
Thickness	0	0	[µm] Enter thickness value of PS film
Recycled content	0	0	[%] recycled content PS
PVC film			
Thickness	0	0	[µm] Enter thickness value of PVC film
Recycled content	0	0	[%] Recycled content PVC
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Glass			
Mass of glass	0	0	[g] Mass of glass per primary packaging
Recycled content	52	52	[%] recycled content [must be between 30

			and 70]
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Metals			
Region of manufacturing	EU28	EU28	Select region manufacturing location
Metal 1			
Mass of metal	1.05	0	[g] Mass of metal per primary packaging
Metal	Al foil	Al can	Select metal type
Recycled content	0	0	[%] Recycled content (valid for all except for tinplate, see handbook; Because of used association data, 0% recycled content still includes 18% scrap per default)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Metal 2			
Mass of metal	0	0	[g] Mass of metal per primary packaging
Metal	Al can	Al can	Select metal type
Recycled content	0	0	[%] Recycled content (valid for all except for tinplate, see handbook; Because of used association data, 0% recycled content still includes 18% scrap per default)
Transport to packaging site			
Air	0	0	[km] Transport via airplane

Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Natural materials			
Natural fibre 1			
Mass of natural fibre	2.03	0	[g] Mass of natural fibre material per primary packaging
Natural fibre	Cardboard / paper	Bagasse molded pulp	Select natural fibre material
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Recycled content	0	0	[%] Recycled content (only adjustable for paper & cardboard)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Natural fibre 2			
Mass of natural fibre	0	0	[g] Mass of natural fibre material per primary packaging
Natural fibre	Bagasse molded pulp	Bagasse molded pulp	Select natural fibre material
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Recycled content	0	0	[%] Recycled content (only adjustable for paper & cardboard)
Transport to packaging site			
Air	0	0	[km] Transport via airplane

Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Foams			
Region of manufacturing	EU28	EU28	Select region of manufacturing
Foam 1			
Mass of foam	0	0	[g] Mass of foam per primary packaging
Foam	EPS	EPS	Select foam material
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Foam 2			
Mass of foam	0	0	[g] Mass of foam per primary packaging
Foam	EPS	EPS	Select foam material
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Secondary (display) packaging			

Plastics			
Region of manufacturing	EU28	EU28	Select manufacturing location
Plastic 1			
Mass of plastic	0	0	[g] Mass of selected plastic type per secondary packaging
Plastic	HDPE	HDPE	Select plastics type
Compounding	No	No	Is there a compounding step included (to homogenize granulate, fillers and dyes)?
Manufacturing	Injection moulding	Injection moulding	Select manufacturing method (for BOPP and BOPA only 'film' should be used)
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Plastic 2			
Mass of plastic	0	0	[g] Mass of selected plastic type per secondary packaging
Plastic	EVOH	EVOH	Select plastics type
Compounding	No	No	Is there a compounding step included (to homogenize granulate, fillers and dyes)?
Manufacturing	Blow moulding	Blow moulding	Select manufacturing method (for BOPP and BOPA only 'film' should be used)
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail

Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Bioplastics			
Region of manufacturing	EU28	EU28	Select manufacturing location
Bioplastic 1			
Mass of bioplastic	0	0	[g] Mass of selected bioplastics type per secondary packaging
Bioplastic	HDPE (corn)	HDPE (corn)	Select bioplastics type
Certification ratio	1	1	[0 - 1] Ratio of certified sustainably sourced content
Compounding	No	No	Is there a compounding step included (to homogenize granulate, fillers and dyes)?
Manufacturing	Blow moulding	Blow moulding	Select manufacturing method
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Bioplastic 2			
Mass of bioplastic	0	0	[g] Mass of selected bioplastics type per secondary packaging
Bioplastic	HDPE (corn)	HDPE (corn)	Select bioplastics type
Certification ratio	1	1	[0 - 1] Ratio of certified sustainably sourced content
Compounding	No	No	Is there a compounding step included (to homogenize granulate, fillers and dyes)?
Manufacturing	Blow moulding	Blow moulding	Select manufacturing method
Transport to packaging site			

Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Laminate			
Mass of laminate	0	0	[g] Mass of laminate material per secondary packaging
Manufacturing region	EU28	EU28	Select manufacturing location
Adhesive used	Acrylate	Acrylate	Choose the adhesive used to glue layers together
Solvent used	Ethanol	Ethanol	Choose the solvent used for the lamination process
Materials in laminate			
Aluminium film			
Thickness	0	0	[µm] Enter thickness of aluminium film
BioLLDPE film			
Thickness	0	0	[µm] Enter thickness value of bio-LLDPE film from sugar cane
Bio LDPE film			
Thickness	0	0	[µm] Enter thickness value of bio-PE film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
Bio PET film			
Thickness	0	0	[µm] Enter thickness value of bio-PET film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
Bio PP film			
Thickness	0	0	[µm] Enter thickness value of bio-PP film

Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
Bio PVC film			
Thickness	0	0	[µm] Enter thickness value of bio-PVC film
Feedstock	1	1	1=corn;2=sugar beet;3=sugar cane;4=wheat
BOPA film			
Thickness	0	0	[µm] Enter thickness value of BOPA film
BOPP film			
Thickness	0	0	[µm] Enter thickness value of BOPP film
EVOH film			
Thickness	0	0	[µm] Enter thickness value of EVOH film
Recycled content	0	0	[%] Recycled content EVOH
OPP film			
Thickness	0	0	[µm] Enter thickness value of OPP film
PA (nylon) film			
Thickness	0	0	[µm] Enter thickness value of PA film
Recycled content	0	0	[%] Recycled content PA
Paper			
Thickness	0	0	[µm] Enter thickness of paper film
Recycled content	0	0	[%] recycled content paper
PE low density (LDPE) film			
Thickness	0	0	[µm] Enter thickness value of LDPE film
Recycled content	0	0	[%] Recycled content LDPE

PE linear low density (LLDPE) film			
LLDPE Film thickness	0	0	[µm] Enter thickness value of LLDPE film
Recycled content	0	0	[%] Recycled content LLDPE
PE high density (HDPE) film			
Thickness	0	0	[µm] Enter thickness value of HDPE film
Recycled content	0	0	[%] Recycled content HDPE
PET film			
Thickness	0	0	[µm] Enter thickness value of PET film
Recycled content	0	0	[%] Recycled content PET
PLA film			
Thickness	0	0	[µm] Enter thickness value of PLA film
PP film			
Thickness	0	0	[µm] Enter thickness value of PP film
Recycled content	0	0	[%] Recycled content PP
PS Film			
Thickness	0	0	[µm] Enter thickness value of PS film
Recycled content	0	0	[%] recycled content PS
PVC film			
Thickness	0	0	[um] Enter thickness value of PVC film
Recycled content	0	0	[%] Recycled content PVC
Transport to packaging site			
Air	0	0	[km] Transport via airplane

Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Glass			
Mass of glass	0	0	[g] Mass of glass per secondary packaging
Recycled content	52	52	[%] recycled content [must be between 30 and 70]
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Metals			
Region of manufacturing	EU28	EU28	Select manufacturing location
Metal 1			
Mass of metal	0	0	[g] Mass of metal material per secondary packaging
Metal	Al can	Al can	Select metal
Recycled content	0	0	[%] Recycled content (valid for all except for tinplate, see handbook; Because of used association data, 0% recycled content still includes 18% scrap per default)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Metal 2			
Mass of metal	0	0	[g] Mass of metal material per secondary

			packaging
Metal	Al can	Al can	Select metal material
Recycled content	0	0	[%] Recycled content (valid for all except for tinplate, see handbook; Because of used association data, 0% recycled content still includes 18% scrap per default)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Natural materials			
Natural fibre 1			
Mass of natural fibre	0	0	[g] Mass of natural fibre material per secondary packaging
Natural fibre	Corrugated board	Corrugated board	Select natural fibre material
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Recycled content	0	0	[%] Recycled content (only adjustable for paper & cardboard)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Natural fibre 2			
Mass of natural fibre	0	0	[g] Mass of natural fibre material per secondary packaging

Natural fibre	Bagasse molded pulp	Bagasse molded pulp	Select natural fibre material
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Recycled content	0	0	[%] Recycled content (only adjustable for paper & cardboard)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Foams			
Region of manufacturing	EU28	EU28	Select manufacturing location
Foam 1			
Mass of foam	0	0	[g] Mass of foam per secondary packaging
Foam	EPS	EPS	Select foam material
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Foam 2			
Mass of foam	0	0	[g] Mass of foam per secondary packaging
Foam	EPS	EPS	Select foam material
Recycled content	0	0	[%] Recycled content

Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Tertiary (shipment) packaging			
Region of manufacturing	EU28	EU28	Select manufacturing location
Plastics			
HDPE part (crate, tray etc.)			
Mass of part	0	0	[g] Mass of injection moulded HDPE part per tertiary packaging
Recycled content	0	0	[%] Recycled content
Use cycles	1	1	[-] Number of use cycles (1= single use)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
LDPE film			
Mass of film	0	0	[g] Mass of LDPE film per tertiary packaging
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road

Sea	0	0	[km] Transport via sea
PET straps			
Mass of film	0	0	[g] Mass of PET straps per tertiary packaging
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
LLDPE film			
Mass of film	0	0	[g] Mass of LDPE film per tertiary packaging
Recycled content	0	0	[%] Recycled content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
PVC film			
Mass of film	0	0	[g] Mass of PVC film per tertiary packaging
Recycled content	0	0	[%] mass recycled content PVC
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail

Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Bioplastics			
Bio LDPE film			
Mass of film	0	0	[g] Mass of bio LDPE film (mixed feedstock) per tertiary packaging
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Bio PET film			
Mass of film	0	0	[g] Mass of bio PET film (mixed feedstock) per tertiary packaging
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Bio PVC film			
Mass of film	0	0	[g] Mass of bio PVC film (mixed feedstock) per tertiary packaging
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably

			sourced content
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Foams			
EPS foam			
Mass of foam	0	0	[g] Mass of expanded polystyrene (EPS) foam per tertiary packaging
Use cycles	1	1	[-] Number of use cycles (1= single use)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
LDPE foam			
Mass of foam	0	0	[g] Mass of polyethylene (LDPE) foam per tertiary packaging
Use cycles	1	1	[-] Number of use cycles (1= single use)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road

Sea	0	0	[km] Transport via sea
PU flexible foam			
Mass of foam	0	0	[g] Mass of polyurethane (PU) flexible foam per tertiary packaging
Use cycles	1	1	[-] Number of use cycles (1= single use)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Natural materials			
Corrugated board			
Mass of natural fibre	0	0	[g] Mass of cardboard, corrugated board boxes (rec content 85%) in tertiary packaging
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Use cycles	1	1	[-] Number of use cycles (1= single use)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Cardboard / paper			
Mass of natural fibre	0	0	[g] Mass of cardboard or paper per tertiary packaging
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content

Recycled content	0	0	[%] recycled content paper
Use cycles	1	1	[-] Number of use cycles (1= single use)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Wood			
Mass of natural fibre	0	0	[g] Mass of softwood part per tertiary packaging
Certification ratio	1	1	[0 - 1] Fraction of certified sustainably sourced content
Use cycles	1	1	[-] Number of use cycles (1= single use)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Metals			
Steel nails, screws & other small parts			
Mass of metal	0	0	[g] Mass of steel small parts (nails and screws etc.) per tertiary packaging
Recycled content	0	0	[%] Recycled content (Because of used association data, 0% recycled content still includes 18% scrap per default)
Transport to packaging site			
Air	0	0	[km] Transport via airplane

Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Steel straps & stamped and bent parts			
Mass of metal	0	0	[g] Mass of steel sheet part per tertiary packaging
Recycled content	0	0	[%] Recycled content (Because of used association data, 0% recycled content still includes 18% scrap per default)
Transport to packaging site			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road
Sea	0	0	[km] Transport via sea
Packaging & filling			
Electricity	0	0	[kWh] Electricity for packaging & filling process per functional unit (as defined by the unit of assessment)
CO2 filling gas	0	0	[kg] CO2 gas consumed for packaging & filling process per functional unit
N2 filling gas	0	0	[kg] N2 gas consumed for packaging & filling process per functional unit
Natural gas	0	0	[MJ] Thermal energy for packaging & filling process per functional unit
Water	0	0	[kg] Water consumption for filling process per functional unit
Region of packaging	EU28	EU28	Region in which packaging and filling takes place (relevant for energy provision)
Product distribution			
Air	0	0	[km] Transport via airplane
Rail	0	0	[km] Transport via rail
Road	0	0	[km] Transport via road by 22t truck
Truck utilization	0.61	0.61	[0 - 1] utilisation ratio by mass, default = 0.61
Sea	0	0	[km] Transport via sea
Reuse			

Region of EoL treatment	EU28	EU28	Select location for reuse and end-of-life treatment
Primary packaging			
Use cycles in primary packaging	6	1	[-] Number of use cycles for primary packaging (1= single use)
Transport distance	0	0	[km] distance driven by truck, from collection point to washing & sanitzing
Secondary packaging			
Use cycles in secondary packaging	1	1	[-] Number of use cycles for secondary packaging (1= single use)
Transport distance	0	0	[km] by road
End-of-life of packaging			
EoL plastics			
EoL EVOH			
Landfill	0	0	[0-100%] Plastics to landfill
Incineration	50	50	[0-100%] Plastics to incineration
Recycling	50	50	[0-100%] Plastics to recycling
EoL PA			
Landfill	0	0	[0-100%] Plastics to landfill
Incineration	50	50	[0-100%] Plastics to incineration
Recycling	50	50	[0-100%] Plastics to recycling
EOL PBS			
Landfill	0	0	[0-100%] Plastics to landfill
Incineration	50	50	[0-100%] Plastics to incineration
Recycling	50	50	[0-100%] Plastics to recycling
Composting	0	0	[0-100%] Plastics to composting
EoL PE			
Landfill	0	0	[0-100%] Plastics to landfill
Incineration	50	50	[0-100%] Plastics to incineration
Recycling	50	50	[0-100%] Plastics to recycling
EoL PET			

Landfill	0	0	[0-100%] Plastics to landfill
Incineration	50	50	[0-100%] Plastics to incineration
Recycling	50	50	[0-100%] Plastics to recycling
EoL PP			
Landfill	0	0	[0-100%] Plastics to landfill
Incineration	50	50	[0-100%] Plastics to incineration
Recycling	50	50	[0-100%] Plastics to recycling
EoL PS			
Landfill	0	0	[0-100%] Plastics to landfill
Incineration	50	50	[0-100%] Plastics to incineration
Recycling	50	50	[0-100%] Plastics to recycling
EoL PU			
Landfill	0	0	[0-100%] Plastics to landfill
Incineration	50	50	[0-100%] Plastics to incineration
Recycling	50	50	[0-100%] Plastics to recycling
EoL PVC			
Landfill	0	0	[0-100%] Plastics to landfill
Incineration	50	50	[0-100%] Plastics to incineration
Recycling	50	50	[0-100%] Plastics to recycling
EoL bioplastics			
Landfill	0	0	[0-100%] Bioplastics to landfill
Incineration	50	50	[0-100%] Bioplastics to incineration
Recycling	50	50	[0-100%] Bioplastics to recycling
Composting	0	0	[0-100%] Bioplastics to be composted (only applicable for PLA and bio-PBS)
EoL metals			
EoL steel			

Landfill	5	5	[0-100%] Metals to landfill
Incineration	0	0	[0-100%] Metals to incineration
Recycling	95	95	[0-100%] Metals to recycling
EoL aluminium			
Landfill	12	12	[0-100%] Metals to landfill
Incineration	0	0	[0-100%] Metals to incineration
Recycling	88	88	[0-100%] Metals to recycling
EoL foams			
Landfill	50	50	[0-100%] Foams to landfill
Incineration	50	50	[0-100%] Foams to incineration
EoL natural materials			
EoL paper and cardboard			
Landfill	0	0	[0-100%] Natural fibres to landfill
Incineration	12	12	[0-100%] Natural fibres to incineration
Recycling	88	88	[0-100%] Natural fibres to recycling
Composting	0	0	[0-100%] Natural fibres to be composted
EoL wood			
Landfill	20	20	[0-100%] Natural fibres to landfill
Incineration	50	50	[0-100%] Natural fibres to incineration
Recycling	30	30	[0-100%] Natural fibres to recycling
Composting	0	0	[0-100%] Natural fibres to be composted
EoL textiles			
Landfill	50	50	[0-100%] Natural fibres to landfill
Incineration	50	50	[0-100%] Natural fibres to incineration
Recycling	0	0	[0-100%] Natural fibres to be recycled
Composting	0	0	[0-100%] Natural fibres to be composted
EoL glass			

Landfill	12	12	[0-100%] Glass to landfill
Incineration	0	0	[0-100%] Glass to incineration
Recycling	88	88	[0-100%] Glass to recycling
EoL laminates			
Bioplastics			
Landfill	50	50	[0-100%] Bioplastic laminates to landfill
Incineration	50	50	[0-100%] Bioplastic laminates to incineration
Recycling	0	0	[0-100%] Bioplastic laminates to recycling
Composting	0	0	[0-100%] Bioplastics to be composted (only applicable for PLA and bio-PBS)
Plastics			
Landfill	50	50	[0-100%] Plastic laminates to landfill
Incineration	50	50	[0-100%] Plastic laminates to incineration
Recycling	0	0	[0-100%] Plastic laminates to recycling
Aluminium			
Landfill	50	50	[0-100%] Metal laminates to landfill
Incineration	50	50	[0-100%] Metal laminates to incineration
Recycling	0	0	[0-100%] Metal laminates to recycling
Paper			
Landfill	50	50	[0-100%] Paper laminates to landfill
Incineration	50	50	[0-100%] Paper laminates to incineration
Recycling	0	0	[0-100%] Paper laminates to recycling
Composting	0	0	[0-100%] Paper laminates to composting

4 Background information

Most impact categories shown in the tables in Chapter 2 are EF 3.0 methods from the Environmental Footprint Guide of the European Commission (Product Environmental Footprint Category Rules Guidance, Version 6.3 – May 2018, available at http://ec.europa.eu/environment/eussd/smgp/pdf/PEFCR_guidance_v6.3.pdf). However, some indicators from the total list of 16 EF 3.0 categories have been omitted based on their low overall robustness (e.g., ecotoxicity, human toxicity) or a combination of relevance, ease of interpretation and background data inconsistencies (e.g., resource use and ozone depletion potential).

Additionally to the chosen EF 3.0 indicators, other relevant indicators (primary energy demand and blue water consumption) have been added to display the results.

It is also to mention, that the climate change indicators displayed in this report always *exclude* biogenic carbon, i.e. the amount of carbon uptake during plant growth and release of this biogenic carbon dioxide back into the atmosphere. The reason behind this choice of impact category is that biogenic carbon is only stored in packaging products for a short period of time and released again at their end of life. Due to inefficiencies in recycling, even recycled products (e.g. paper) would eventually release their stored biogenic carbon after a finite number of recycling processes. Biogenic carbon that converts into methane is included into the climate change methodology.

All 16 EF 3.0 impact categories are shown below, with the categories used in this report in boldface type. However, for the EF 3.0 single score, shown in chapter 2, all 16 EF 3.0 impact categories are taken into account, but each impact categorie with a certain weighting factor. The weighting factor is the proportional contribution to the total score and a normalisation factor used to normalise the impact to European Person-Equivalents.

Shortened form	Weighting factors	Normalisation factors	Full name of impact category
Acidification	6.2	0.0180	EF 3.0 Acidification terrestrial and freshwater
Climate change	21.06	0.000124	EF 3.0 Climate change
Eutrophication freshwater	2.8	0.621	EF 3.0 Eutrophication freshwater
Eutrophication marine	2.96	0.0513	EF 3.0 Eutrophication marine
Eutrophication terrestrial	3.71	0.00565	EF 3.0 Eutrophication terrestrial
Ionising radiation	5.01	0.00725	EF 3.0 Ionising radiation - human health
Land Use	7.94	4.48E-07	EF 3.0 Land Use
Ozone depletion	6.31	20.661	EF 3.0 Ozone depletion
Photochemical ozone formation	4.78	0.0246	EF 3.0 Photochemical ozone formation - human health
Resource use, energy carriers	8.32	1.54E-05	EF 3.0 Resource use, energy carriers
Resource use, mineral and metals	7.55	15.723	EF 3.0 Resource use, mineral and metals
Respiratory inorganics	8.96	1680.672	EF 3.0 Respiratory inorganics
Water scarcity	8.51	8.70E-05	EF 3.0 Water scarcity
Cancer human health effects	2.13	53763.4	EF 3.0 Cancer human health effects
Ecotoxicity freshwater	1.92	2.34E-05	EF 3.0 Ecotoxicity freshwater
Non-cancer human health effects	1.84	4347.8	EF 3.0 Non-cancer human health effects

4.1 Life cycle inventory metrics

Primary energy demand [MJ]: A measure of the total amount of primary energy extracted from the earth. PED is expressed in energy demand from non-renewable resources (PED-NR e.g. petroleum, natural gas, etc.), energy demand from renewable resources (PED-R e.g. hydropower, wind energy, solar, etc.) or PED Total (calculated as the sum of PED-NR and PED-R). Efficiencies in energy conversion (e.g. power, heat, steam, etc.) are taken into account.Primary energy demand is often difficult to determine due to the various types of energy source. Primary energy demand is the quantity of energy directly withdrawn from the hydrosphere, atmosphere, geosphere or energy source without any anthropogenic change. For fossil fuels and uranium, this is the amount of resource withdrawn expressed in its energy equivalent (i.e. the energy content of the raw material). For renewable resources, the energy-characterised amount of biomass consumed is reported. For hydropower, it is based on the amount of energy that is gained from the change in the potential energy of the water (i.e. from the height difference). As aggregated values, the following primary energies are designated:

The total **"Primary energy demand, non-renewable"**, given in MJ, essentially characterises the gain from the energy sources natural gas, crude oil, lignite, coal and uranium. Natural gas and crude oil will be used both for energy production and as material constituents e.g. in plastics. Coal will primarily be used for energy production. Uranium will only be used for electricity production in nuclear power stations.

The total **"Primary energy demand, renewable"**, given in MJ, is generally accounted separately and comprises hydropower, wind power, solar energy and biomass.

It is important that the end energy (e.g. 1 kWh of electricity) and the primary energy used are not miscalculated with each other; otherwise the efficiency for production or supply of the end energy will not be accounted for.

The energy content of the manufactured products will be considered as feedstock energy content. It will be characterised by the net calorific value of the product. It represents the still usable energy content.

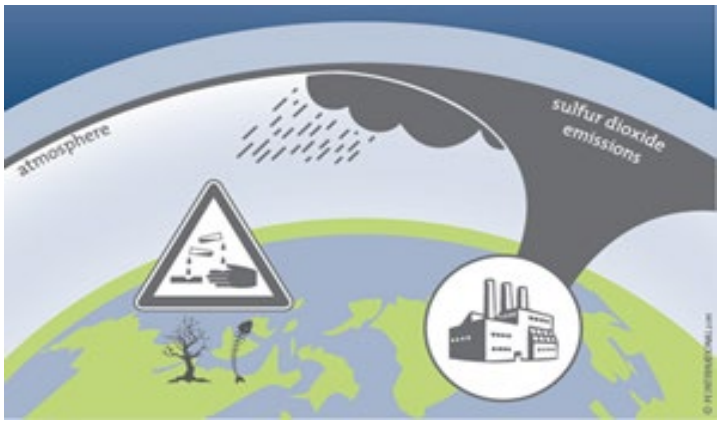
4.2 Life cycle impact assessment categories

As described in chapter 2, environmental impacts listed in this report are largely taken from the EF 3.0 of the European Commission's Environmental Footprint Guide. The EF 3.0 impact categories are explained below.

Acidification [Mole H+ equiv.]: A measure of emissions that cause acidifying effects to the environment. The acidification potential is a measure of a molecule's capacity to increase the hydrogen ion (H+) concentration in the presence of water, thus decreasing the pH value. Potential effects include fish mortality, forest decline, and the deterioration of building materials.The acidification of soils and waters occurs predominantly through the transformation of air pollutants into acids. This leads to a decrease in the pH-value of rainwater and fog from 5.6 to 4 and below. Sulphur dioxide and nitrogen oxide and their respective acids (H_2SO_4 and HNO_3) produce relevant contributions. This damages ecosystems, whereby forest dieback is the most well-known impact.

Acidification has direct and indirect damaging effects (such as nutrients being washed out of soils or an increased solubility of metals into soils). But even buildings and building materials can be damaged. Examples include metals and natural stones which are corroded or disintegrated at an increased rate. Figure 4-1 displays the primary impact pathways of acidification.

The acidification potential is described as the ability of certain substances to build and release H^+ - ions. Certain emissions can also be considered to have an acidification potential, if the given S-, N- and halogen atoms are set in proportion to the molecular mass of the emission.



: **Acidification**

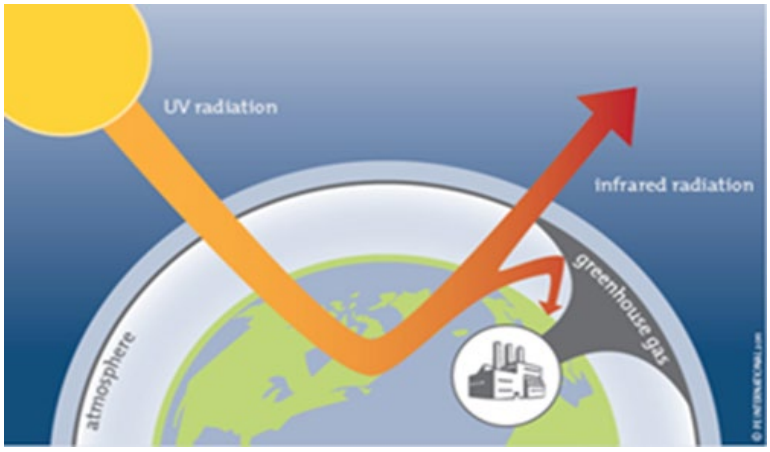
Climate change (aka "carbon footprint" or Global Warming Potential) [kg CO_2 equiv.]: A measure of greenhouse gas emissions, such as CO_2 and methane. These emissions are causing an increase in the absorption of radiation emitted by the earth, magnifying the natural greenhouse effect. This may in turn have adverse impacts on ecosystem health, human health and material welfare. The indicator is calculated for a 100-year time horizon, and represents the sum of the different contributions of the chemical's global warming potentials. This impact category only includes biogenic origin carbon when re-released in the form of other greenhouse gases such as methane, but uptake of CO_2 during the plant's growth and release of the same at the End of Life are not considered.

Packaging products are typically a fast-moving consumer goods; therefore any biogenic carbon sequestered during biomass growth in plant-based products such as paper or bioplastics, will be quickly re-released at end-of-life. Therefore, for this industry sector it is advisable to use the Climate change midpoint excl. biogenic carbon. For this reason, CO_2 from biogenic sources was excluded from the results in this report.

As the name suggests, the mechanism of the greenhouse effect can be observed on a small scale in a greenhouse. These effects are also occurring on a global scale. The occurring short-wave radiation from the sun comes into contact with the earth's surface and is partly absorbed (leading to direct warming) and partly reflected as infrared radiation. The reflected part is absorbed by so-called greenhouse gases in the troposphere and is re-radiated in all directions, including back to earth. This results in a warming effect at the earth's surface.

In addition to the natural mechanism, the greenhouse effect is enhanced by human activities. Greenhouse gases that are considered to be caused, or increased, anthropogenically include carbon dioxide, methane and CFCs. Figure 4-2 shows the main processes of the anthropogenic greenhouse effect. An analysis of the greenhouse effect should consider the possible long term global effects.

The global warming potential is calculated in carbon dioxide equivalents (CO_2-Eq.). This means that the greenhouse potential of an emission is given in relation to CO_2. Since the residence time of the gases in the atmosphere is incorporated into the calculation, a time range for the assessment must also be specified. A period of 100 years is customary.



: Greenhouse effect

Eutrophication (overfertilization) marine [kg N-equiv.], freshwater [kg P-equiv.] and terrestrial [Mole N-equiv.]: Eutrophication covers all potential impacts of excessively high levels of macronutrients, the most important of which are nitrogen (N) and phosphorus (P). Nutrient enrichment may cause an undesirable shift in species composition and elevated biomass production in both aquatic and terrestrial ecosystems. In addition, high nutrient concentrations may also render surface waters unacceptable as a source of drinking. The indicator is calculated by taking into account the natural pathway and consequences of the nutrient arrival to an aquatic environment. Eutrophication is the enrichment of nutrients in a certain place. Eutrophication can be aquatic or terrestrial. Air pollutants, waste water and fertilization in agriculture all contribute to eutrophication.

The result in water is an accelerated algae growth, which in turn, prevents sunlight from reaching the lower depths. This leads to a decrease in photosynthesis and less oxygen production. In addition, oxygen is needed for the decomposition of dead algae. Both effects cause a decreased oxygen concentration in the water, which can eventually lead to fish dying and to anaerobic decomposition (decomposition without the presence of oxygen). Hydrogen sulphide and methane are thereby produced. This can lead, among others, to the destruction of the eco-system.

On overly nutrified soils, an increased susceptibility of plants to diseases and pests is often observed, as is a degradation of plant stability. If the nutrification level exceeds the amounts of nitrogen necessary for a maximum harvest, it can lead to an enrichment of nitrate. This can cause, by means of leaching, increased nitrate content in groundwater. Nitrate also ends up in drinking water.

Nitrate at low levels is harmless from a toxicological point of view. However, nitrite, a reaction product of nitrate, is toxic to humans. The causes of eutrophication are displayed in Figure 4-3. The eutrophication potential is calculated in phosphate equivalents (kg P-equiv.). As with acidification potential, it's important to remember that the effects of eutrophication potential differ regionally.

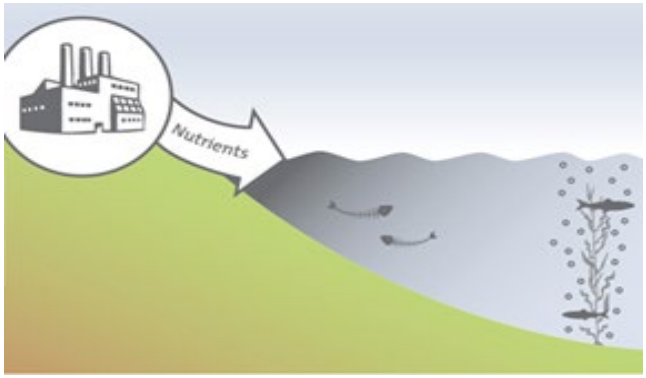


Figure 4-3: Eutrophication

Ionizing radiation [kBq U235 equiv.]: A measure of the emission of high energy radiation. Exposure to large amounts of such radiation may be fatal or result in damage to living tissue, sickness and the development of cancers.

Land use [Dimensionless, points]: This impact category is based on the LANCA method as described by Beck et al. 2010 and Bos et al. 2016. It includes a number of indicators such as soil quality index, biotic production, erosion resistance, mechanical filtration and groundwater replenishment.

Ozone depletion [kg CFC-11 eq]: This impact category quantifies how emissions contribute to the thinning of the ozone layer in the stratosphere (leading to a so-called "ozone hole"). An intact ozone layer in the stratosphere filters out harmful UV radiation.

Photochemical ozone formation ("smog formation") [kg NMVOC equiv.]: A measure of emissions of precursors that contribute to ground level smog formation (mainly ozone O3), produced by the reaction of VOC and carbon monoxide in the presence of nitrogen oxides under the influence of UV light. Ground level ozone may be injurious to human health and ecosystems and may also damage crops. Despite playing a protective role in the stratosphere, at ground-level ozone is classified as a damaging trace gas. Photochemical ozone production in the troposphere, also known as summer smog, is suspected to damage vegetation and material. High concentrations of ozone are toxic to humans.

Radiation from the sun and the presence of nitrogen oxides and hydrocarbons incur complex chemical reactions, producing aggressive reaction products, one of which is ozone. Nitrogen oxides alone do not cause high ozone concentration levels.

Hydrocarbon emissions occur from incomplete combustion, in conjunction with petrol (storage, turnover, refuelling etc.) or from solvents. High concentrations of ozone arise when the temperature is high, humidity is low, when air is relatively static and when there are high concentrations of hydrocarbons. Today it is assumed that the existence of NO and CO reduces the accumulated ozone to NO_2, CO_2 and O_2. This means, that high concentrations of ozone do not often occur near hydrocarbon emission sources. Higher ozone concentrations more commonly arise in areas of clean air, such as forests, where there is less NO and CO (Figure 4-4).

When analysing results, it's important to remember that the actual ozone concentration is strongly influenced by the weather and by the characteristics of the local conditions.

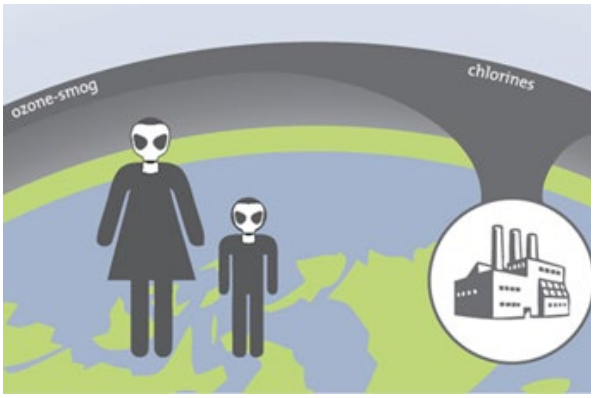


Figure 4-1: Photochemical ozone formation

Resource use: The consumption of non-renewable resources leads to a decrease in the future availability of the functions supplied by these resources based on the method developed by van Oers et al., 2002. Depletion of mineral resources and non-renewable energy resources are reported separately. Depletion of mineral resources is assessed based on ultimate reserves. The abiotic depletion covers all natural resources as metal containing ores, crude oil and mineral raw materials. Abiotic resources include all raw materials from non-living resources that are non-renewable. This impact category describes the reduction of the global amount of non-renewable raw materials. Non-renewable means a time frame of at least 500 years. Resource use is split into two sub-categories:

> **Resource use, mineral and metals** [kg Sb equiv.] covers an evaluation of the availability of natural elements like minerals and ores, incl. uranium ore. The reference substance for the characterisation factors is antimony.
>
> **Resource use, energy** [MJ] includes the fossil energy carriers (crude oil, natural gas, coal resources) and quantifies their use in terms of energy content (net calorific value).

Respiratory inorganics (aka Particulate Matter) [kg PM 2.5 equiv.]: A measure of the emission of small particles with an equivalent impact to releasing particles of 2.5µm in diameter into the atmpsphere. Small particulate matter can have serious effects to human heath as they can be inhaled deep into the lungs, causing a wide range of adverse effects, especially to the heart and lungs.

Water scarcity [m^3 world equiv.]: Environmental quantity based on water consumption, including regional water scarcity values as further characterisation of water consumption, a method called AWARE 100 (based on Boulay et al., 2018). The logic of calculation is deducting degradative outputs from inputs. The flows in turn are multiplied with country specific characterization factors. The unit is expressed as "User Deprivation Potential".

This assessment is predominantly based on PEF Recommendations.

It shall be noted that the above impact categories represent impact potentials, i.e., they are approximations of environmental impacts that could occur if the emissions would (a) actually follow the underlying impact pathway and (b) meet certain conditions in the receiving environment while doing so. In addition, the inventory only captures that fraction of the total environmental load that corresponds to the functional unit (relative approach). LCIA results are therefore relative expressions only and do not predict actual impacts, the exceeding of thresholds, safety margins, or risks.

4.3 Packaging indicator assumptions

Packaging indicator metrics are calculated according to definitions set forth in the Global Protocol on Packaging Sustainability (GPPS) 2.0.

Packaging to product weight ratio: Total packaging mass (primary + secondary + tertiary) per serving (i.e. functional unit) divided by mass of product in one serving.

Cube utilization: Volume of product divided by the tertiary (transport) package cube volume.

5 Dataset documentation

Documentation link	
Acetic acid from methanol (low pressure carbonylation) (Monsanto process)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/80c0f36b-9089-4058-9940-3fa073e8bfc5.xml
Acrylate sealing mass	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/c1966af3-13ce-4e69-9c7a-7542f4c99933.xml
Aluminium die-cast part	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/6a3136f8-142f-4538-a4fa-ae6cd784dc5f.xml
Aluminium foil	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/8dd54976-0163-4d6e-9fe4-fa09f72545ed.xml
Aluminium foil (2014)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/86c4d1c5-19f9-4d43-9bff-0b88b714b93f.xml
Aluminium oxide mix (alumina, Al2O3)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/f49e7088-e5b7-465d-9443-e1059f89cfe9.xml
Aluminium powder (grit)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/287934a3-ba6d-4465-bb71-a9a3b04879c5.xml
Aluminium refining: casting alloy ingot from scrap	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ee5c6b93-b51f-4257-80b5-e51da2b226f3.xml
Aluminium sheet (2015)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/1bfa0b24-db14-4785-bf69-35966f2e807e.xml
Aluminium sheet deep drawing	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ac011c4e-ef9a-49ee-9302-2f8e1ecf4c05.xml
Batch Materials	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ee5667a2-20e4-45c6-aba6-cf495d367653.xml
BF Steel billet / slab / bloom	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/7b79d1c5-6208-49b2-9ef1-5bfe86d310dd.xml
BF Tinplate coil	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/a3db7665-8175-4caa-93ae-9cad26694fe6.xml
Biaxial oriented PA film (BOPA PA6)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/a9ea2ec2-6973-4857-a077-9a8b8dc9603b.xml
Biaxial oriented polypropylene film (BOPP)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/406f3c37-8bfb-42b7-be25-00103e5e1a3e.xml
Carbon dioxide highly pure	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/4c3ceb14-9937-48b9-b6fc-4b7c81b79c57.xml
Carbon monoxide (via synthetic gas)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/831121be-2152-4536-99ec-3c7f5ad706ad.xml
Cargo plane, 65 t payload	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/14cb5d0d-83ce-44aa-ae80-c9eb23b02d2e.xml
Casein glue (PVAC dispersion)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/de090b08-9f49-4a3a-885b-34e01a6c4645.xml
Cellulose (estimation, based on US foreground system)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/cfc131f8-c06e-4a0c-bf74-2f6b6e4c6cc5.xml
Compounding (plastics)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0a31222b-f975-41ea-ae6d-abcdce61e32c.xml
Compressed air 7 bar (low power consumption)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/06b7cba4-aa16-43ab-8031-071

	9079550be.xml
Compressed air 7 bar (medium power consumption)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/591678ea-db78-427a-8b62-f0c2a329c5bb.xml
Container ship, 5,000 to 200,000 dwt payload capacity, ocean going	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/14b21448-160f-4f43-962d-20a65461902a.xml
Corkboard, 1m2, 4 mm (EN15804 A1-A3)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/7292ecbf-9ccb-4f2a-bf49-059aaf570513.xml
Corrugated board (2018), 84,5% recycled fiber	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0bc067c3-6cee-43c2-8ce1-4a181dddf798.xml
Cotton fabric	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/f07f3caa-7329-41bb-85d4-fd237673416e.xml
Detergent (fatty acid sulphonate derivate)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/f1c31cf6-a2d5-434a-a80b-9818d64c5e62.xml
Diesel at refinery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/6a14e8d6-acf8-458e-9aac-4db4b237ef8a.xml
Diesel combustion in construction machine	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/dae81b4f-688f-44cd-906b-9435d3843e65.xml
Diesel mix at refinery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/6ef3da83-86bf-4a29-ab3e-ef8febf74e69.xml
Diesel mix at refinery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/452a3926-2850-47db-809d-753095ed7dac.xml
Diesel mix at refinery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/244524ed-7b85-4548-b345-f58dc5cf9dac.xml
EAF Steel billet / slab / bloom	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/a5f6916a-0412-4794-987e-84e1251c65ad.xml
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Electricity grid mix	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/1598ea72-ae02-42fc-ae87-7dbe90df17ce.xml
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Electricity grid mix	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ceb36eee-1612-4101-81a8-0fb8aeac9032.xml
Electricity grid mix	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/b255d9fc-82ea-4f5c-acf2-30e13df2c86a.xml
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Electricity grid mix	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/e7ca53ec-792e-4573-92ca-9752658e8e9d.xml
Electricity grid mix	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/f0a6c237-873e-474e-a9cb-bcff8a6b3fe2.xml
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Electricity grid mix (Alaska)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/7c4d5ab8-d159-463d-8780-286977907ac7.xml
Electricity grid mix (East)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/1c6f3fef-5c56-43c7-a90b-ee603a028cce.xml
Electricity grid mix (Hawaii)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/7eba1b22-5103-4b6f-a6cf-bcde082f85b9.xml
Electricity grid mix (Texas)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/63c004e9-7126-4e4c-a599-d50c853c415f.xml
Electricity grid mix (West)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/742b8bab-5ec4-4074-bf5b-d66

	968549e7f.xml
Electricity grid mix 1kV-60kV	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/abae7d43-b5f8-47d6-a324-3f98329ad527.xml
Electricity grid mix 1kV-60kV	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/5392d54c-be50-4bb8-8e76-18044518fada.xml
Electricity grid mix 1kV-60kV	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0a1b40db-5645-4db8-a887-eb09300b7b74.xml
Enclosed composting (finished compost)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/82df3e45-bfd8-46d2-9628-96e8959a94e5.xml
EOL: Biological waste to composting	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/dab99dc3-92d4-4ff9-8735-f6510ce96b70.xml
EOL: Biological waste to energy recovery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/2abe0330-104e-4d71-bcd6-342df8828797.xml
EOL: Waste to be recycled	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/fb9a6418-6716-4ce4-ba0d-0d226e296702.xml
EOL: Waste to disposal (e.g. landfill, energy recovery)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/8dd8163b-4ea3-4632-ac74-324cc818cecd.xml
Ethanol	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/07ecf8b3-b571-4a33-82e1-b2d7f37020dc.xml
Ethene (ethylene)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/45e41797-e9a1-4ee9-af29-75ae71d1943f.xml
Ethoxypropanol (approximation)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/613af9c7-0060-40ba-8690-083826f48561.xml
Ethyl acetate by-product polyvinyl butyral (PVB)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ade5eaa0-77d5-4b76-b942-118219fdc892.xml
Ethylene vinyl alcohol copolymer (EVOH)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/bd5fdbec-1105-4064-8218-d820deef8e95.xml
Expanded Polystyrene (PS 25)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0541a534-cebf-4862-acc4-04bd8f883db7.xml
Ferro metals in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0b38db3d-3f3e-4bb4-8df4-2237ed1a15de.xml
Fire proof stones (alumina-rich)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/27ca4286-9cc8-404e-860e-364ad5d99731.xml
Granulator	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ecb15cb5-5d34-4aec-becb-3b1812dd5af7.xml
Heavy fuel oil at refinery (0.3wt.% S)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/a5211ef9-bf86-4578-b48a-be96c0849c58.xml
Heavy fuel oil at refinery (1.0 wt.% S)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0b6b8a7b-a562-4c33-94a0-80067a19e2e8.xml
Heavy fuel oil at refinery (1.0wt.% S)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/50462b0d-7d2b-40d4-843e-9857061e3c08.xml
Hydrogen (Europipeline)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/79db7481-6214-417e-888c-3fb5c1ee4015.xml
Inert matter (Aluminium) on landfill	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/2bb26c32-23c1-459d-929d-f07917830678.xml
Inert matter (Glass) on landfill	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ed41d893-edcd-4b2a-b5e4-e1a992a8a04a.xml
Inert matter (Steel) on landfill	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/05958c80-8334-436b-be65-346

	ab4c83d39.xml
Inert matter (Unspecific construction waste) on landfill	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/68b5b6e9-290b-47c7-a1fa-465588d81906.xml
Inert waste in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/6d42b1ce-d6d0-4ad6-b8d2-4ded71770214.xml
Infrared Thermoforming (LDPE, HDPE, PS, PVC, PMMA, PA-6)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/fb81f05c-84f5-4583-ae68-91d03c894268.xml
INPUT: Material with sustainably sourced biological feedstock content	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/a1d23db7-518a-42b3-86f2-b557ae95bd63.xml
INPUT: Reused material	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/60c49290-5c67-4c68-8aa7-cf6ccd6fc303.xml
INPUT: Virgin material (no recycled/reused content)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0dcb6f5d-45eb-40a4-8739-bd6db6e48636.xml
Isopropanol	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ef44b6f5-5df4-4490-b485-2cd7d6c18167.xml
Jute hessain net	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/be52e770-d459-471d-b8b8-4972e861d571.xml
Kerosene / Jet A1 at refinery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/a2f8e5dd-bc05-47e8-bad7-6c541239d623.xml
Kerosene / Jet A1 at refinery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/cde2da87-2a56-43ab-855f-87ec978b436c.xml
Kerosene / Jet A1 at refinery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/701f8775-bd15-4b91-b3d0-43e7ee04044a.xml
Kraftliner (2018)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/6ac37d3c-caeb-4216-9f1d-c78c1b8c772b.xml
Limestone flour (2mm)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/4993f8d1-677b-4f50-844b-d59d1af77ec5.xml
Lubricants at refinery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/bdfac21c-7415-46af-acbc-8916cb95b9b8.xml
Lubricants at refinery	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/d161bd8f-005c-47af-97fb-82bbcee1f39b.xml
Melting and conditioning phase (mix)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/c0e2eb39-1e5e-43f0-96b5-ada5311d5e9b.xml
Molded pulp loose from bagasse integrated plant case	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ac1f0a59-1dfd-4fbd-850d-6d04c2287896.xml
Molded pulp loose from bagasse stand alone plant case (estimation)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/efc83446-0d40-4f17-9967-e65c63f26f7b.xml
Municipal waste water treatment (mix)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/9805e7ee-b500-46b4-a0f0-37b09e00a3fa.xml
Municipal waste water treatment (sludge treatment mix)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ad10f74d-1310-46b6-86ff-af56896aa9fd.xml
Municipal waste water treatment (sludge treatment mix, for water regionalization) - open energy	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/559035ca-b168-47c1-b8a8-cad3d82ffd5f.xml
Natural gas mix	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/c6387e19-933f-4726-a7ad-7a8050aa418c.xml
Nitrogen (gaseous)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/4a259aec-c66f-4375-aa9e-5b8c745addc0.xml
Oriented Polypropylene film (OPP)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/1fd6ccfc-4170-4c5c-a5b0-71bb

	57af914f.xml
OUTPUT: Manufacturing waste to be recycled	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/78a7f2ba-9dd3-460c-ba15-14ae169999a0.xml
OUTPUT: Manufacturing waste to disposal (e.g. landfill, energy recovery)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/028e5f94-b7df-477c-b91c-287b4738715c.xml
OUTPUT: Product mass and utility	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/8cfee1e5-d3db-499c-8aba-927a9e2f12bd.xml
Paper and board (water 0%) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0730a97b-bda5-4b9b-8632-8f2c52271f92.xml
Paper waste on landfill	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/89863fce-3306-11dd-bd11-0800200c9a66.xml
Pelletizing and compounding	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0f4c3fb4-bc30-43e5-8567-e41ffa5487b0.xml
Plastic compression moulding (parameterized)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/a7e5f59d-a639-4a1b-978e-4cabefd9acea.xml
Plastic extrusion profile (unspecific)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/d26e6276-9582-49f0-bd90-82189d485e1d.xml
Plastic Film (PE, PP, PVC)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/7094f46a-2202-44e5-a1cc-8e939be9ff6b.xml
Plastic granulate secondary (non specific, no metal contamination)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/4f127b01-f126-440b-944e-6fadffec6081.xml
Plastic injection moulding (parameterized)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/aaf7c3a1-6ecd-459e-a493-3f376507e29b.xml
Plastic packaging in municipal waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/df791c88-1c61-4bb2-b21f-01c99806066d.xml
Plastic waste on landfill	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/64197300-3307-11dd-bd11-0800200c9a66.xml
Poly(ethylene-alt-maleic anhydride) / Ethylene-maleic anhydride copolymer	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/f58bef64-b4e8-40e3-a5e3-f5aa251cbd97.xml
Polyamide (PA) 6.6 in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/9aa458f3-3d64-41d5-93b5-af1ba77aad56.xml
Polyamide 6.6 granulate (PA 6.6) (HMDA from acrylonitrile)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/003dc597-a47a-41d9-8fd8-1e1006d72c28.xml
Polybutylene succinate (PBS) (biobased from corn)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/dcd6c006-63aa-49c9-9e01-ba62ed597f52.xml
Polyether polyol	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/58bb2994-a140-4a3a-aef6-becc77623686.xml
Polyethylene (HDPE/PE-HD) blow moulding	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/3979582f-0678-4dfe-8304-1860a797c0b8.xml
Polyethylene (PE) (biobased) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/cc4b53c3-bffa-4285-b2ba-0fb9362f44e6.xml
Polyethylene (PE) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/e0d2ea41-0800-482c-b985-a7dc550ffba6.xml
Polyethylene high density granulate (HDPE/PE-HD)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/5b30a5ab-bc4e-4316-bb18-f6605b382648.xml
Polyethylene High Density Granulate (HDPE/PE-HD)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/b5ea9896-dea8-402e-98c3-3b285a9a32d8.xml
Polyethylene Linear Low Density Granulate (LLDPE/PE-LLD)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/27b2f25c-ccec-43cf-97b9-bc97f

	0f95f49.xml
Polyethylene Linear Low Density Granulate (LLDPE/PE-LLD) (biobased from sugar cane)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/550872be-4508-4600-ae37-b80415e27680.xml
Polyethylene Low Density Granulate (LDPE/PE-LD)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/df6a564c-f46e-4325-9689-022bbfe009db.xml
Polyethylene Low Density Granulate (LDPE/PE-LD)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/6de31fe6-71e3-41f9-a166-4afc89961653.xml
Polyethylene Low Density Granulate (LDPE/PE-LD) (biobased from corn)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/73695947-3a16-4458-8149-a3327e5a7f64.xml
Polyethylene Low Density Granulate (LDPE/PE-LD) (biobased from sugar beet)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/577d0f44-4979-4cc4-a0de-ce15b1c9cb7d.xml
Polyethylene Low Density Granulate (LDPE/PE-LD) (biobased from sugar cane)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ddd963fb-925e-46d4-b8a3-924d0c7de6fc.xml
Polyethylene Low Density Granulate (LDPE/PE-LD) (biobased from wheat)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/963d13f3-4845-4c5a-90fa-288f7c05df34.xml
Polyethylene terephthalate (PET) (biobased) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/4991c328-378a-458e-96ee-355808b257e8.xml
Polyethylene terephthalate (PET) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/61e05c06-d2e3-4026-9d01-12b2f34f997e.xml
Polyethylene terephthalate (PET) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/83963943-31b5-420a-abb6-72be280c1c64.xml
Polyethylene terephthalate bottle grade granulate (PET) via PTA	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/4b2420b3-8f56-45f1-984d-173a9298ef4a.xml
Polyethylene terephthalate bottle grade granulate (PET) via PTA (partially biobased from corn)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/b8c7e89d-5f0c-4bc1-90d8-84c12b6c4d2e.xml
Polyethylene terephthalate bottle grade granulate (PET) via PTA (partially biobased from sugar cane)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/06ae0762-d1cf-4dbc-9468-6e9c34f01b5f.xml
Polyethylene terephthalate bottle grade granulate (PET) via PTA (partially biobased from wheat)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/6272d065-e59e-477e-9611-8f678f641d6e.xml
Polyethylene terephthalate bottle grade granulate (PET) via PTA (partially biobased, sugar beet)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/002092d4-e57c-48b3-afae-ee4fb69752b7.xml
Polyethylene terephthalate granulate (PET via DMT)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/d51b18f9-786f-45fe-8add-c300803d3e13.xml
Polylactic acid (PLA) (Polylactide, continuous process)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/c4f144c3-6c3a-4aa1-a8c8-2d9a1035c27c.xml
Polylactic acid (PLA) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/00b5480b-b622-4acd-8481-812d866e15a9.xml
Polypropylene (PP) (biobased) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/49eaa530-9125-4afb-9929-fba185dac35d.xml
Polypropylene (PP) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/f39b6710-30b8-4672-9a73-cc06607e652d.xml
Polypropylene granulate (PP)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/64c5a926-a337-4b62-bff2-d5ef29ecfae2.xml
Polypropylene granulate (PP) (biobased from corn)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/3ff9a618-18eb-4683-abf2-aa75781d8307.xml
Polypropylene granulate (PP) (biobased from sugar beet)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/549090be-ea00-4742-bdeb-6c8f6e672fa8.xml
Polypropylene granulate (PP)	http://gabi-documentation-2020.gabi-software.com/

(biobased from sugar cane)	xml-data/processes/7bf64d3c-ad21-4f41-9b43-cb6f5d9b5083.xml
Polypropylene granulate (PP) (biobased from wheat)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0917de63-d32d-4a4d-b232-fc82726799c1.xml
Polypropylene granulate (PP) mix	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/313b4865-e554-4f3a-bbaf-ecab7c15c061.xml
Polystyrene (PS) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/aedad692-7ff6-4ad6-bcfd-8cf5141907b2.xml
Polystyrene granulate (PS)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/3f4f513d-f5db-4804-8d5a-645873dbed15.xml
Polystyrene granulate (PS) mix	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/120bbd76-9b55-44f1-ae58-1c7c6efa9998.xml
Polyurethane (PU) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/8b0d08e9-c310-4e5c-aa2f-24aeceb7effa.xml
Polyurethane flexible foam (PU)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/abe71526-b1a0-494f-afd3-98dcd4525833.xml
Polyvinyl chloride (PVC) (biobased) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/7d82432d-a4ad-4957-af5b-f215fe698ebc.xml
Polyvinyl chloride (PVC) in waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/65a3d99a-149d-4862-b6be-c3093b74e970.xml
Polyvinyl chloride granulate (S-PVC) (biobased from corn)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/98931cdc-7583-416b-83ed-ce7351aacd5f.xml
Polyvinyl chloride granulate (S-PVC) (biobased from sugar beet)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/1d23466c-986a-4538-a529-eca0a76ec788.xml
Polyvinyl chloride granulate (S-PVC) (biobased from sugar cane)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/c42fc9b6-528b-4554-bf7f-4187ca571b9c.xml
Polyvinyl chloride granulate (S-PVC) (biobased from wheat)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/32d7f24d-9455-4604-b627-62749aab97ca.xml
Polyvinyl chloride granulate (Suspension, S-PVC)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0b867923-e9d8-4cd0-a206-e1560d271f24.xml
Primary aluminium ingot consumption mix	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/05f94d68-6435-4312-9ae2-091abadc5b24.xml
Process water	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/db009015-338f-11dd-bd11-0800200c9a66.xml
Propylene glycol	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/71c4b641-df53-4cc1-9dcc-ea40b719d6f2.xml
Propylene Oxide (Chlorohydrin Process with Cell Liquor)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/3a9bbfcd-e7c4-46ed-bac0-6f26eea5417a.xml
Punching steel sheet small part	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ea101957-32f1-4219-a5f0-4f7ef3cde6e1.xml
Rail transport cargo - average, average train, gross tonne weight 1,000t / 726t payload capacity	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0b5bac50-540d-421c-a175-84ae4c06c7b0.xml
Soda (Na2CO3)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/404f5795-7a22-40e4-afc5-b07d39bf2bed.xml
Sodium sulphate	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ce623e8c-a807-4acd-b80d-802f99ea1b6e.xml
Solid construction timber (softwood) (EN15804 A1-A3)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ee5edfa5-ae22-4086-8d20-f7e44f1d0f65.xml
Starch glue (for paper/cardboard)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/9647014b-9783-476d-83a5-7d9

	3b9c35a8c.xml
Steel cold rolled coil <1,5mm	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/e4decb5d-6711-42aa-86e9-03204b518ac3.xml
Steel sheet deep drawing (multi-level)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/1c32edbb-3602-4a7a-81cd-244f82ebb3b6.xml
Steel sheet stamping and bending (5% loss)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/35dac06b-ef43-4c33-8c5b-42d422be0ed1.xml
Steel wire rod - open input steel billet	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/9086156f-362f-4cb2-b936-6f6a5d465517.xml
Tap water from groundwater (for regionalization) - open inputs electricity and water	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/eedc91bc-3d44-4793-8b2d-f2d8a74b3190.xml
Tap water from surface water	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/db009014-338f-11dd-bd11-0800200c9a66.xml
Testliner (2018)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/e1f35758-557e-44de-8d73-28be3c87d43f.xml
Testliner (2018)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/a0c91472-04d8-4293-acf5-0ec97a514bfd.xml
Textiles in municipal waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/2aee5e3b-9571-439d-8fc8-911daaff8419.xml
Textiles on landfill	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/89863fd0-3306-11dd-bd11-0800200c9a66.xml
Thermal energy from hard coal	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/5aa7cfd7-b59e-4248-be42-2e3982ae1c6c.xml
Thermal energy from heavy fuel oil (HFO)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/69aa7b8e-842a-41ee-b0bd-dbe368e16f9f.xml
Thermal energy from light fuel oil (LFO)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/a36f4db8-9f95-4aff-88b0-5ce3612aa76f.xml
Thermal energy from light fuel oil (LFO)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/b9113273-c9e1-4d12-b1eb-091ef6de2a56.xml
Thermal energy from light fuel oil (LFO)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/261369f8-8ad9-4cac-81bc-4f308f2d80be.xml
Thermal energy from light fuel oil (LFO)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/647521ce-5514-4ebc-ac9f-0f18f8d0e1b8.xml
Thermal energy from light fuel oil (LFO)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/c1892860-a679-43df-8ab9-190336a0c7c4.xml
Thermal energy from light fuel oil (LFO)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/b5e54d27-7700-42e0-ad2a-edf336ea8bba.xml
Thermal energy from light fuel oil (LFO)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/64d62f39-0610-4d41-9128-c566450ea79f.xml
Thermal energy from light fuel oil (LFO)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/31404fd2-9d91-4bcf-840e-ab089d715dd1.xml
Thermal energy from natural gas	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/885a8641-0eae-4f2f-b191-cec7335325bc.xml
Thermal energy from natural gas	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/cf097986-41f3-480b-8c49-1b237afdd28d.xml
Thermal energy from natural gas	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/d26a9933-2876-4445-a932-dce18420f563.xml
Thermal energy from natural gas	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ded2c35f-2b46-42cf-908e-0a22

	c3b4b8be.xml
Thermal energy from natural gas	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/cfe8972e-6b51-4a17-b499-d78477fa4294.xml
Thermal energy from natural gas	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/388f8c11-8cd0-415c-b141-d457544712db.xml
Thermal energy from natural gas	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ba90481b-0584-43a1-a047-027a2f85e3b5.xml
Thermal energy from natural gas	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/6d45970c-0e42-4edd-b14e-12e2cd63e7ae.xml
Thermoplastic polyurethane (TPU, TPE-U) adhesive	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/9318cb4c-6dc3-44f2-a736-b0809eef9ffe.xml
Truck, Euro 0 - 6 mix, 20 - 26t gross weight / 17.3t payload capacity	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/30eef797-312a-447a-9272-4d271ac60289.xml
Truck, Euro 6, 28 - 32t gross weight / 22t payload capacity	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/659fe88d-fbd9-4139-9820-73c9b07dfaeb.xml
Untreated wood on landfill	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/64197302-3307-11dd-bd11-0800200c9a66.xml
Viscose (cellulose xanthate)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/0c096f8f-7b93-4ec7-9591-1e02fdecd00e.xml
Water (deionised)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/db009017-338f-11dd-bd11-0800200c9a66.xml
Water (desalinated; deionised)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/300e0734-6b74-4225-a078-d64108783da3.xml
Water (desalinated; deionised)	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/ded83dc7-a169-4de2-af43-ed30a5e2bb00.xml
Wood (natural) in municipal waste incineration plant	http://gabi-documentation-2020.gabi-software.com/xml-data/processes/9a8854e3-a953-44a7-9d7a-134c701ea57e.xml