

ALOUETTE TOILET PAPER 10 ROLLS 3 PLIES KITCHEN TOWEL ALOUETTE 4 ROLLS HANDKERCHIEF ALOUETTE 30X10



International EPD® system operated by the EPD International AB

Based on: PCR 2011:05 Tissue products (Version 2.0)

CPC Code: 32131 - Toilet or facial tissue stock, towel or napkin stock and similar paper, cellulose wadding and webs of cellulose fibres

EPD® registration number: SP-01617

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Geographical scope of application: Germany For more information: www.environdec.com

Independent third party verification of the declaration and data, in compliance with standard ISO 14025:2006

Author of the LCA Study and EPD: Ergo srl, Spin off company of Scuola Superiore Sant'Anna di Pisa, Italy

EPD Owner: Sofidel S.p.A.



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ORGANISATIONAL DESCRIPTION

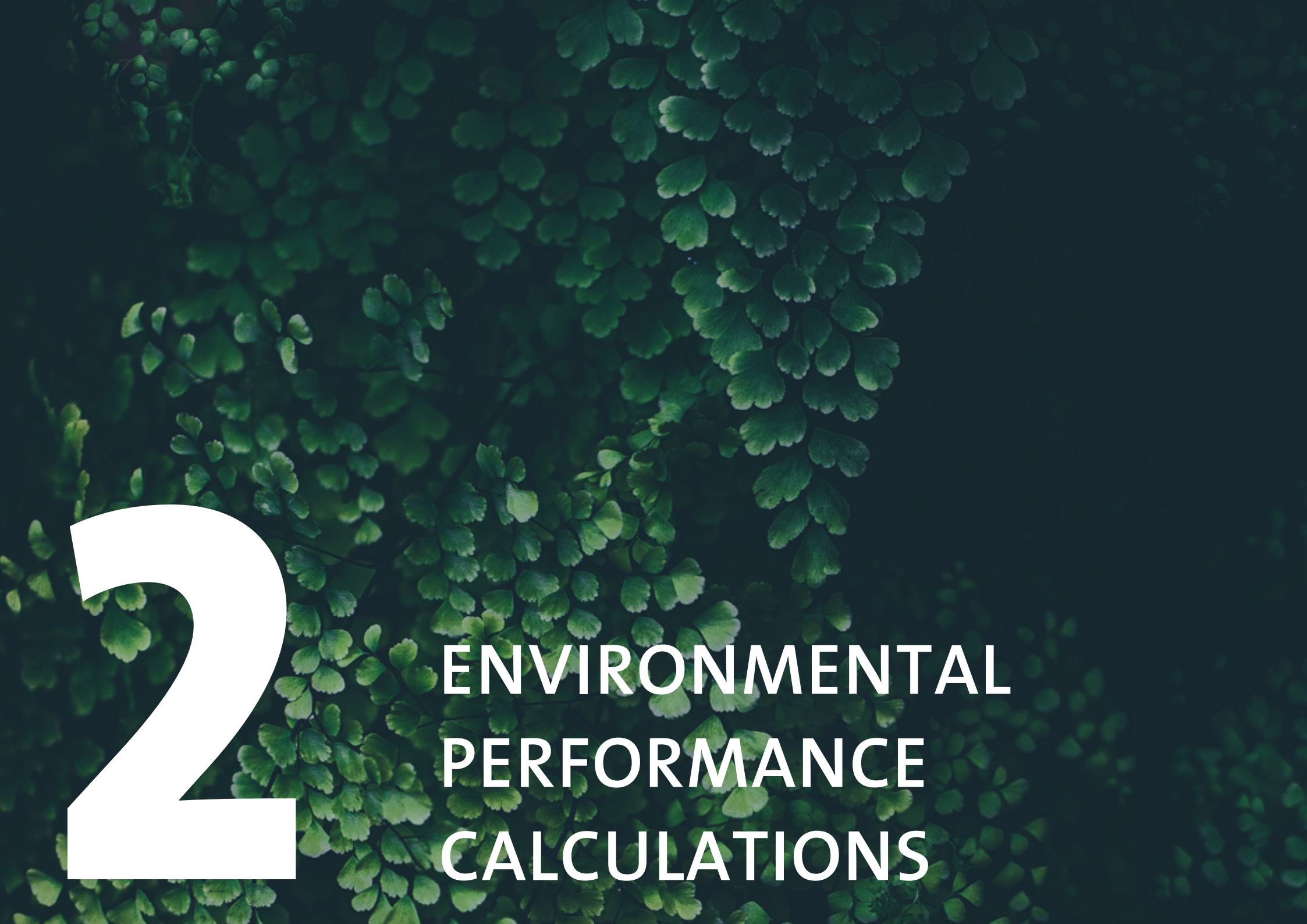
1. ORGANISATIONAL DESCRIPTION

In 1972, Dirk Rossmann opened his first shop in Hanover. To this Day, the Dirk Rossmann GmbH is an owner-managed company and is for the most part owned by the Rossmann family. In Addition, the globally active A.S. Watson Group is involved in the company with 40 percent. The company headquarters are located in Burgwedel near Hanover.

The Dirk Rossmann GmbH is the second largest drugstore chain and, in terms of turnover, is one of the ten most important food retailers in Germany. Rossmann ranks 111th among the 250 largest dealers worldwide. In 2018, the ROSSMANN Group achieved sales worth 9.46 billion euros with 3,930 sales outlets in Germany, Poland, Hungary, the Czech Republic, Albania, Kosovo and Turkey.

The ROSSMANN assortment is highly customer-oriented. The drugstore assortment of the largest sales outlets comprises around 21,400 articles. The range varies according to the size of the sales area and the location of the point of sale.

In addition to the regular drugstore assortment, which focuses on skin and body care, food and luxury foods, baby products, detergents, cleaning agents and hair care, ROSSMANN offers selected promotional items from the ROSSMANN world of ideas, the ROSSMANN photo service and an extensive natural food and wine assortment. A perfume department with around 400 well-known fragrances, toys and stationery as well as extended household goods ranges round off the range, depending on the size of the store.



2

ENVIRONMENTAL PERFORMANCE CALCULATIONS



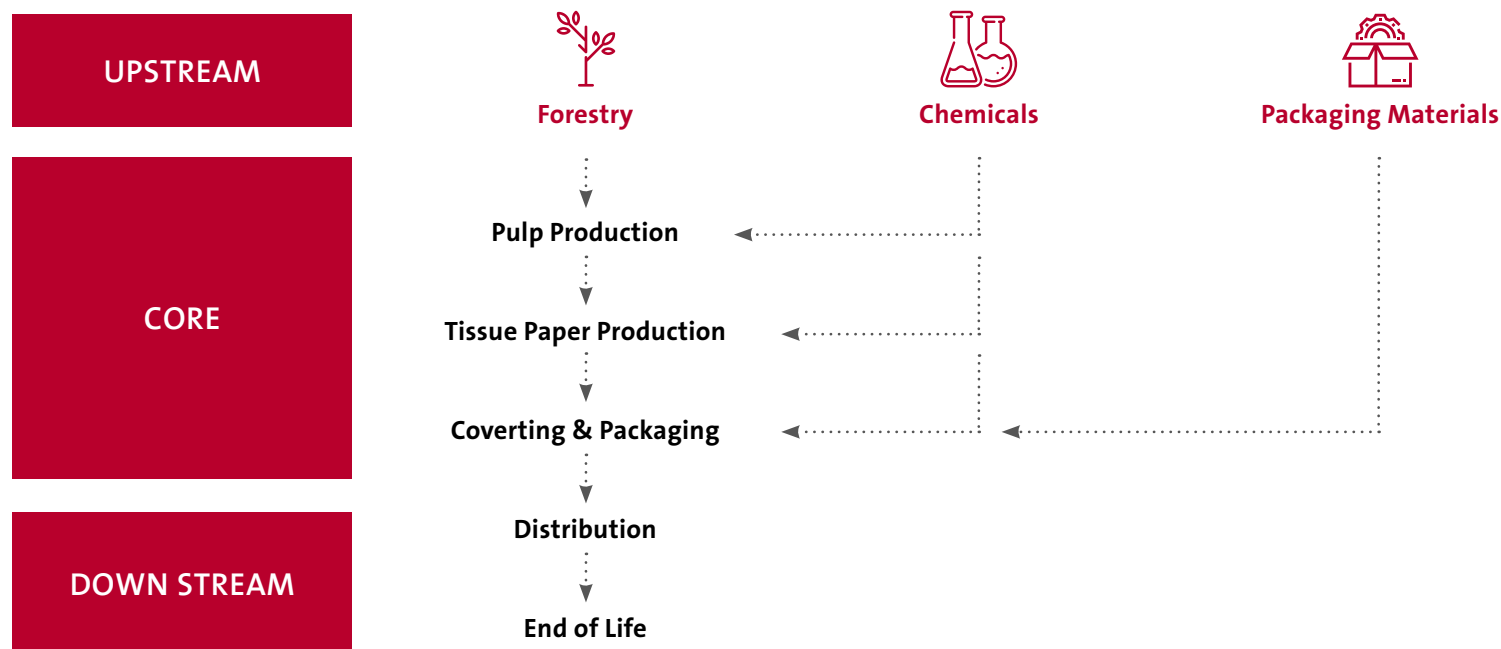
2.1 SCOPE OF DECLARATION

This document, known as an EPD (Environmental Product Declaration), is aimed at those interested in understanding and verifying the environmental impact generated through the entire life cycle of products **Kitchen Towel ALOUETTE 4 Rolls, Handkerchief ALOUETTE 30X10** and **Toilet Paper ALOUETTE 10 Rolls 3 Plies**. The document provides a reliable quantification and certification of the environmental performance of the product, according to a scientific methodology that contemplates the impacts of the product's life cycle, the Life Cycle Assessment (ISO 14040-14044).

2.2 THE BOUNDARIES OF THE ANALYSED SYSTEM

The system boundaries analysed in the LCA study include all phases of the life cycle of production of the tissue products, from the forestry phase to the final disposal of the products and their packaging after consumption.

In particular, the system includes the following life cycle phases: Upstream, Core and Downstream. Excluded from the system boundaries are the environmental loads associated with construction and maintenance of production facilities. The boundaries of the system are schematically represented in the figure below:



2.3 TIME PERIODS AND DATA SOURCES

The comparability between EPDs of different products must also be ensured on the basis of time. To this end, it is clarified that the LCA study that gave rise to this EPD refers to the production of Kitchen Towel ALOUETTE 4 Rolls, Handkerchief ALOUETTE 30X10 and Toilet Paper ALOUETTE 10 Rolls 3 Plies in the establishment in Arneburg, Germany in one calendar year. The base year for the data and indicators presented in this EPD is 2018. Only for pulp mills the data reference year is 2017.

Paper production and converting data used for the LCA were directly measured at the establishment of Arneburg, Germany. Pulp production data were provided directly by the main suppliers of the plant. For all the other data, datasets from Ecoinvent 3.5 have been used. According to *General Programme Instructions* “other generic” data do not exceed 10%.

Excluded from the system are:

- The construction of factory buildings and infrastructure
- Plant and manufacturing equipment maintenance activities
- Production of manufacturing equipment
- Packaging of raw materials
- Personnel activities
- Pallets

All data quantities following relate to the functional unit chosen for the EPD: 1.000 kg of tissue paper as delivered to final consumers.

2.4 FUNCTIONAL UNIT

The functional unit is represented by **1.000 kg of tissue paper** delivered to final consumer in Germany. The packaging used to deliver the product is added to the declared 1.000 kg of tissue paper for impact's calculation.

The functional unit is based on the production during the reference year 2018, and represents the reference unit of all results of this Declaration. Only for pulp mills the data reference year is 2017.





3

PRODUCT
DESCRIPTIONS

CHARACTERISTICS

The product covered by this statement is:

Toilet paper ALOUETTE 10 Rolls 3 Plies

- Three plies - White tissue paper PEFC™
- Dimensions: 9,8 cm x 13,00 cm, 26,00 m long (200 sheets)
- Net weight per roll: 130 g
- Article: 418828
- Function: disposable paper product intended for personal hygiene purposes

produced by Sofidel Group in Arneburg, Germany and intended for sale in Germany. The identifier of the products according to the classification CPC (Central Product Classification) is: 32131 - Toilet or facial tissue stock, towel or napkin stock and similar paper, cellulose wadding and webs of cellulose fibres.

COMPOSITION OF THE PRODUCT



1000 KG Tissue Paper

sulphate chemical pulp, 62,5% short fibre – 33,3% long fibre,
Chemithermomechanical pulp 4,2%

26,65 KG
PE Film

42,45 KG
Paperboard

11,17 KG
Glue

CHARACTERISTICS

The product covered by this statement is:

Kitchen Towel Alouette 4 Rolls

- Three plies - White tissue paper PEFC™
- Dimensions: 25,90 cm x 23,00 cm, 11,73 m long (51 sheets)
- Net weight per roll: 174 g
- Article: 417092
- Function: absorbent towel made for kitchen use, disposable and intended to be used only once

produced by Sofidel Group in Arneburg, Germany and intended for sale in Germany. The identifier of the products according to the classification CPC (Central Product Classification) is: 32131 - Toilet or facial tissue stock, towel or napkin stock and similar paper, cellulose wadding and webs of cellulose fibres.

COMPOSITION OF THE PRODUCT



1000 KG Tissue Paper

sulphate chemical pulp, 75% short fibre
– 25% long fibre

2,1 %
Wet-strength agent

30,84 KG
PE Film

79,03 KG
Paperboard

14,43 KG
Glue

CHARACTERISTICS

The product covered by this statement is:

Handkerchief Alouette 30x10

- White tissue paper PEFC™
- Dimensions: 21,00 cm x 21,00 cm
- Net weight per roll: 0,027 g
- Article: 418837
- Function: disposable facial tissue intended for personal hygiene purposes

produced by Sofidel Group in Arneburg, Germany and intended for sale in Germany. The identifier of the products according to the classification CPC (Central Product Classification) is: 32131 - Toilet or facial tissue stock, towel or napkin stock and similar paper, cellulose wadding and webs of cellulose fibres.

COMPOSITION OF THE PRODUCT



1000 KG Tissue Paper

sulphate chemical pulp, 50% short fibre – 45,8% long fibre,
Chemithermomechanical pulp 4,2%

2,1%

Wet-strength agent

24,14 KG

PE Film

60,25 KG

Paperboard

0,16 KG

Glue

DESCRIPTION OF THE PRODUCTION PROCESS



The products subjects of this Life Cycle Assessment - Kitchen Towel ALOUETTE 4 Rolls, Handkerchief ALOUETTE 30X10, Toilet paper ALOUETTE 10 Rolls 3 Plies - are made from raw materials containing cellulose fibres, which are obtained from plantations (forestry phase) certified under FSC®, PEFC™ forest management schemes e FSC Controlled Wood.

In the second production step, the pulpmill phase, the collected timber is debarked and then chipped into smaller pieces. The chips are then sent with a mixture of water and chemicals to a digester, where they are turned into pulp. The pulp is then processed in order to remove impurities (screening, defibering, deknottling, washing) and, if the case, bleached. The pulp is finally spread on a wire and, once dried, cut into sheets and assembled in bales.

The purchased bales are then transported to the papermill's warehouse for the third manufacturing step. The virgin pulp bales are picked up from the warehouse and sent to the "pulpers" where the fibres are mixed with

water and chemicals. This mixture is then blown onto a screen, and then passed on felt, which carries it to the yankee cylinder. Here, hoods blow hot air to dry the sheet, which is then rolled up to form the jumbo roll. The rolls are wrapped with a plastic film and labelled, then carried to the warehouse where they are stored until they will be processed in the final manufacturing step, the converting plant.

The paper is printed, glued, embossed, punched and, if needed, wound onto cardboard cores to obtain the log, which will then be cut to the required length. In the packaging area the products are wrapped in single packages and then placed in multiple packaging for wholesale. Once placed on pallets for shipping, wrapping and labelling conclude the production process. Personnel retrieve the labelled pallets using fork-lift trucks and store them in the warehouse ready for delivery to the end customer.



3

TOILET PAPER ALOUETTE
10 ROLLS 3 PLIES



ENVIRONMENTAL PERFORMANCE OF THE UPSTREAM PROCESS



3.1. RESOURCES USE¹



Forestry Phase

The wood fibres used for the paper tissues are grown.



Production of Chemicals

The chemicals necessary for the production process are created.



Production of packaging materials

All packaging materials are produced and gathered.



Production of energy for these process phases

The energy necessary for this production step is provided.



¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

3.2. POTENTIAL IMPACT & WASTE PRODUCTION



Forestry Phase

The wood fibres used for the paper tissues are grown.



Production of Chemicals

The chemicals necessary for the production process are created.



Production of packaging materials

All packaging materials are produced and gathered.



Production of energy for these process phases

The energy necessary for this production step is provided.

POTENTIAL IMPACT²

Impact Category	Unit	Value
Global warming potential, fossil	kg CO ₂ eq	225,34
Global warming potential, biogenic	kg CO ₂ eq	0,47
Global warming potential, total	kg CO ₂ eq	225,81
Acidification potential	kg SO ₂ eq	1,00
Photochemical oxidation formation potential	kg NMVOC eq	1,23
Eutrophication potential	kg PO ₄ ³⁻ eq	0,15

WASTE PRODUCTION

Indicator	Unit	Value
non-hazardous waste	kg	41,08
hazardous waste	kg	0,003



Upstream process

Core Process

Downstream process

ENVIRONMENTAL PERFORMANCE OF THE CORE PROCESS

3.3. RESOURCES USE¹



Supply of raw materials and packaging materials

The raw materials and those later used for packaging are delivered.



Pulp production

The pulp that will serve as a basis for the production of the tissues is produced.



Tissue paper production

The tissues are produced.



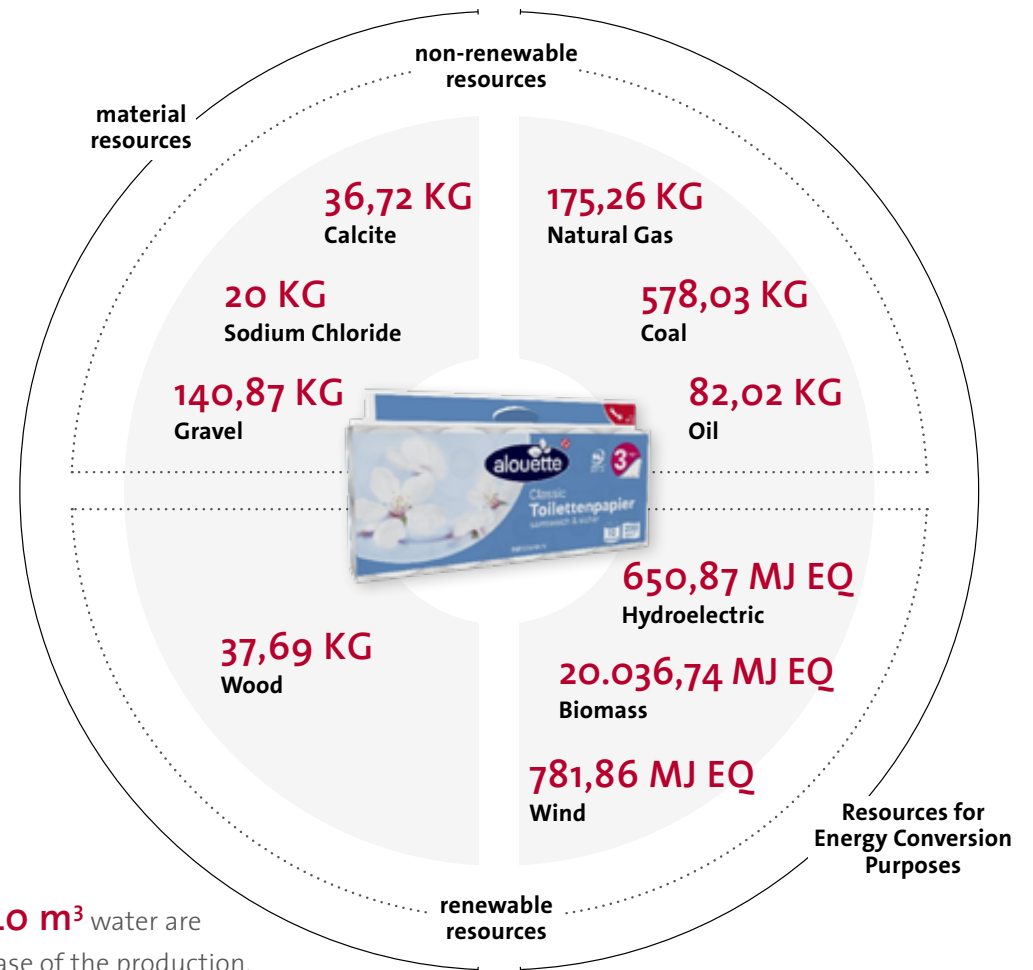
Converting and packaging

The products are prepared for the final delivery.



Production of energy for these process phases

The energy necessary for this production step is provided.



¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

3.4. POTENTIAL IMPACT & WASTE PRODUCTION



Supply of raw materials and packaging materials

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Pulp production

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Tissue paper production

The tissues are produced.



Converting and packaging

The products are prepared for the final delivery.



Production of energy for these process phases

The energy necessary for this production step is provided.

POTENTIAL IMPACT²

Impact Category	Unit	Value
Global warming potential, fossil	kg CO ₂ eq	1,533,24
Global warming potential, biogenic	kg CO ₂ eq	11,63
Global warming potential, total	kg CO ₂ eq	1,544,87
Acidification potential	kg SO ₂ eq	8,61
Photochemical oxidation formation potential	kg NMVOC eq	8,40
Eutrophication potential	kg PO ₄ ³⁻ eq	1,71

WASTE PRODUCTION

Indicator	Unit	Value
non-hazardous waste	kg	137,25
hazardous waste	kg	0,044

² CML-IA baseline 3.05 method for Global Warming Potential and Eutrophication Potential, CML-IA non baseline 3.04 method for Acidification Potential and ReCiPe Midpoint (H) v.1.13 method for Photochemical Oxidant Formation Potential.



Upstream process

Core Process

Downstream process

ENVIRONMENTAL PERFORMANCE OF THE DOWNSTREAM PROCESS



3.5. RESOURCES USE¹



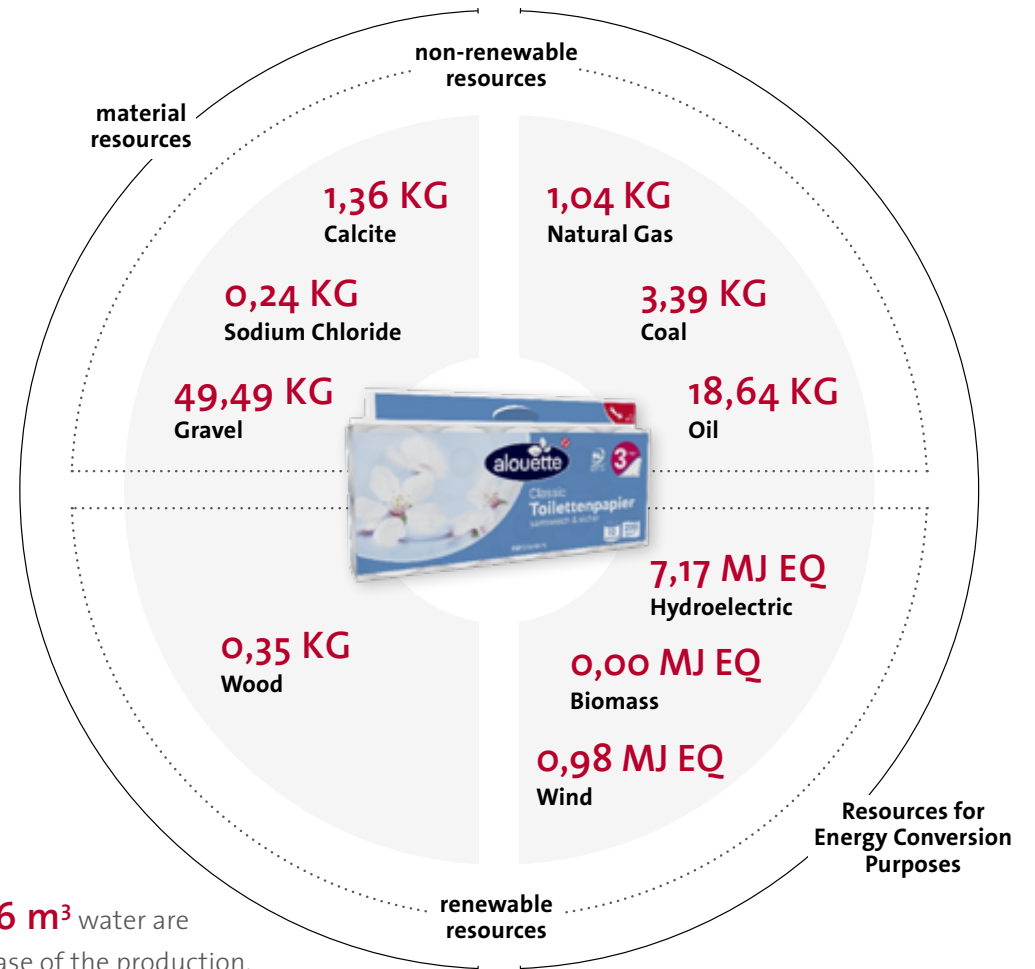
Distribution of the product to the points of sale

The tissues are delivered for them to be sold.



End of life phases of the products and packaging materials

transport to disposal and collection centres, landfill disposal and potential recovery of materials and energy.



¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

3.6. POTENTIAL IMPACT & WASTE PRODUCTION



Distribution of the product to the points of sale

The tissues are delivered for them to be sold.



End of life phases of the products and packaging materials

transport to disposal and collection centres, landfill disposal and potential recovery of materials and energy.

POTENTIAL IMPACT²

Impact Category	Unit	Value
Global warming potential, fossil	kg CO ₂ eq	96,58
Global warming potential, biogenic	kg CO ₂ eq	0,03
Global warming potential, total	kg CO ₂ eq	96,60
Acidification potential	kg SO ₂ eq	0,24
Photochemical oxidation formation potential	kg NMVOC eq	0,28
Eutrophication potential	kg PO ₄ ³⁻ eq	0,05

WASTE PRODUCTION

Indicator	Unit	Value
non-hazardous waste	kg	41,12
hazardous waste	kg	0,001



ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS



3.7 ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS

RESOURCES USE¹

Non-renewable resources	Unit	Total	Upstream	Core	Downstream
Material resources	kg	464,35	203,35	208,29	52,71
Gravel	kg	381,94	191,58	140,87	49,49
Sodium Chloride	kg	24,10	3,85	20,00	0,24
Calcite	kg	41,18	3,10	36,72	1,36
Resources for Energy Conversion Purposes	kg	979,44	120,86	835,51	23,07
Coal	kg	620,11	38,69	578,03	3,39
Natural Gas	kg	207,95	31,66	175,26	1,04
Oil	kg	150,58	49,92	82,02	18,64

¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

3.7 ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS

RESOURCES USE¹

Renewable resources	Unit	Total	Upstream	Core	Downstream
Material resources	kg	2.924,16	2.886,12	37,70	0,35
Wood	kg	2.924,16	2.886,12	37,69	0,35
Resources for enery conversion purposes	MJ	21.612,83	133,81	21.470,82	8,20
Biomass	MJ eq	20.036,74	0,00	20.036,74	0,00
Wind	MJ eq	818,08	35,24	781,86	0,98
hydroelectric	MJ eq	756,54	98,50	650,87	7,17

Water resource	Unit	Total	Upstream	Core	Downstream
Total	m3	73,31	15,07	58,40	-0,16
Direct	m3	-	-	36,55	-

¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

3.7 ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS

POTENTIAL IMPACT²

Impact Category	Unit	Total	Upstream	Core	Downstream
Global warming potential, fossil	kg CO ₂ eq	1,855,15	225,34	1,533,24	96,58
Global warming potential, biogenic	kg CO ₂ eq	12,13	0,47	11,63	0,03
Global warming potential, total	kg CO ₂ eq	1,867,28	225,81	1,544,87	96,60
Acidification potential	kg SO ₂ eq	9,85	1,00	8,61	0,24
Photochemical oxidation formation potential	kg NMVOC eq	9,91	1,23	8,40	0,28
Eutrophication potential	kg PO ₄ ³⁻ eq	1,90	0,15	1,71	0,05

WASTE PRODUCTION

Indicator	Unit	Total	Upstream	Core	Downstream
non-hazardous waste	kg	219,45	41,08	137,25	41,12
hazardous waste	kg	0,048	0,003	0,044	0,001

3.7 TISSUE PAPER END OF LIFE CONTRIBUTION TO POTENTIAL IMPACTS

CONTRIBUTION TO POTENTIAL IMPACTS

Impact Category	Unit	Total
Global warming potential, fossil	kg CO ₂ eq	0,401
Global warming potential, biogenic	kg CO ₂ eq	0,015
Global warming potential, total	kg CO ₂ eq	0,415
Acidification potential	kg SO ₂ eq	0,003
Photochemical oxidation formation potential	kg NMVOC eq	0,002
Eutrophication potential	kg PO ₄ ³⁻ eq	0,012

A close-up photograph of fresh green chives, showing their long, thin, needle-like leaves. The lighting is soft, highlighting the texture and vibrant green color of the herbs.

4

KITCHEN TOWEL
ALOUETTE 4 ROLLS



ENVIRONMENTAL PERFORMANCE OF THE UPSTREAM PROCESS



4.1. RESOURCES USE¹



Forestry Phase

The wood fibres used for the paper tissues are grown.



Production of Chemicals

The chemicals necessary for the production process are created.



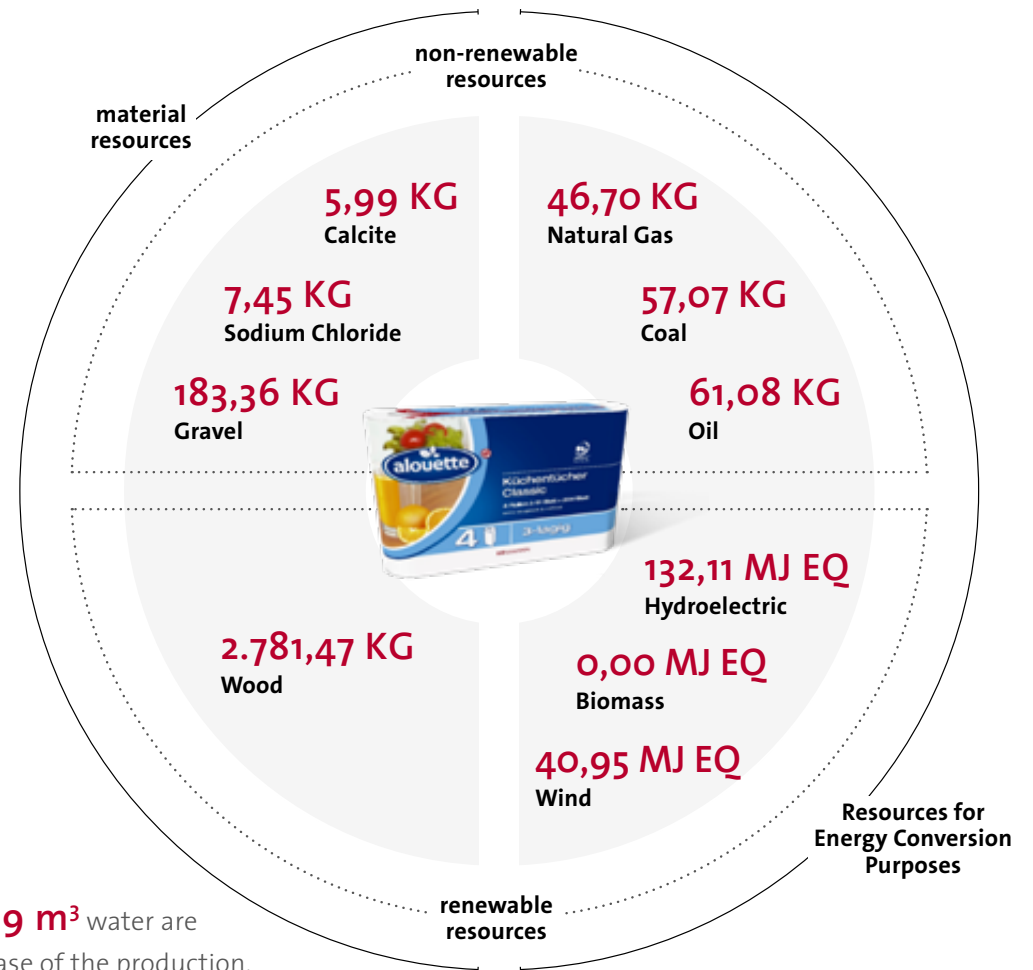
Production of packaging materials

All packaging materials are produced and gathered.



Production of energy for these process phases

The energy necessary for this production step is provided.



¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

4.2. POTENTIAL IMPACT & WASTE PRODUCTION



Forestry Phase

The wood fibres used for the paper tissues are grown.



Production of Chemicals

The chemicals necessary for the production process are created.



Production of packaging materials

All packaging materials are produced and gathered.



Production of energy for these process phases

The energy necessary for this production step is provided.

POTENTIAL IMPACT²

Impact Category	Unit	Value
Global warming potential, fossil	kg CO ₂ eq	325,00
Global warming potential, biogenic	kg CO ₂ eq	0,72
Global warming potential, total	kg CO ₂ eq	325,72
Acidification potential	kg SO ₂ eq	1,31
Photochemical oxidation formation potential	kg NMVOC eq	1,45
Eutrophication potential	kg PO ₄ ³⁻ eq	0,23

WASTE PRODUCTION

Indicator	Unit	Value
Bulk waste	kg	46,02
hazardous waste	kg	0,005



Upstream process

Core Process

Downstream process

ENVIRONMENTAL PERFORMANCE OF THE CORE PROCESS

4.3. RESOURCES USE¹



Supply of raw materials and packaging materials

The raw materials and those later used for packaging are delivered.



Pulp production

The pulp that will serve as a basis for the production of the tissues is produced.



Tissue paper production

The tissues are produced.



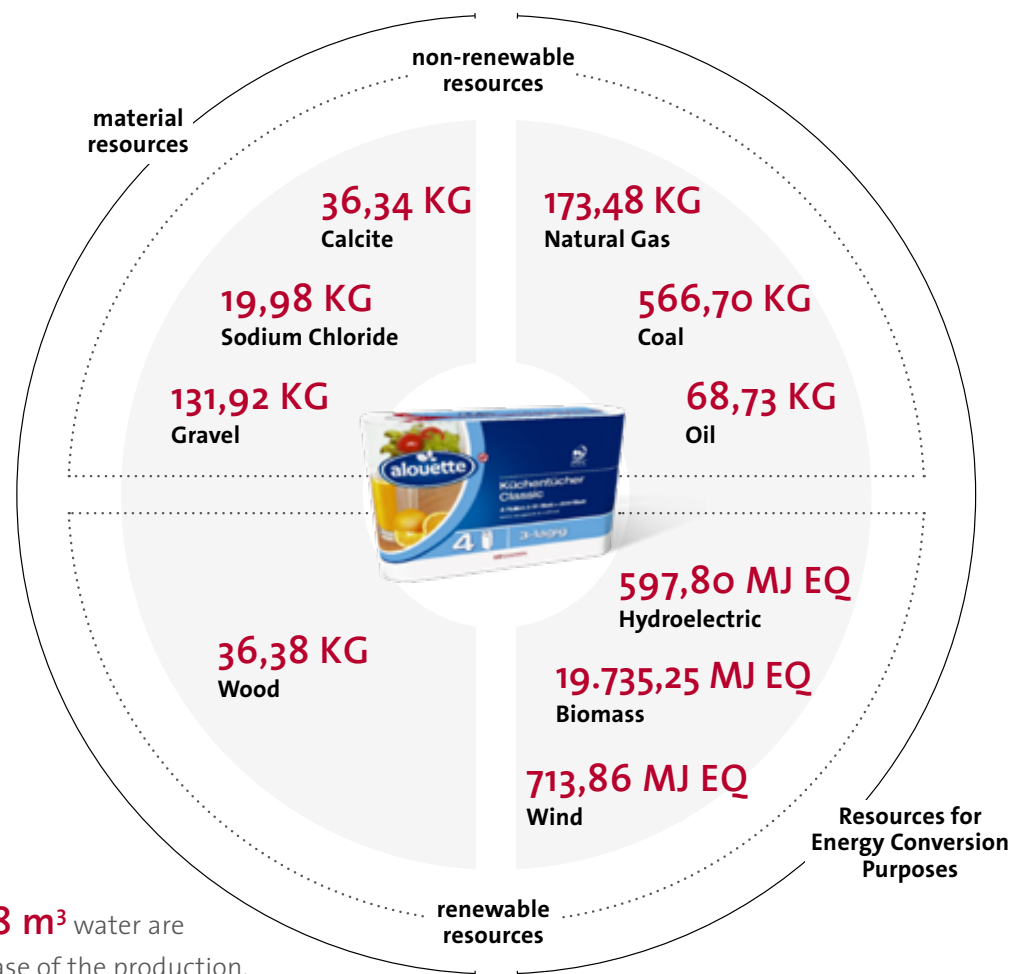
Converting and packaging

The products are prepared for the final delivery.



Production of energy for these process phases

The energy necessary for this production step is provided.



¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

4.4. POTENTIAL IMPACT & WASTE PRODUCTION



Suply of raw materials and packaging materials

The raw materials and those later used for packaging are delivered.



Pulp production

The pulb that will serve as a basis for the production of the tissues is produced.



Tissue paper production

The tissues are produced.



Converting and packaging

The products are prepared for the final delivery.



Production of energy for these process phases

The energy necessary for this production step is provided.

POTENTIAL IMPACT²

Impact Category	Unit	Value
Global warming potential, fossil	kg CO ₂ eq	1.464,87
Global warming potential, biogenic	kg CO ₂ eq	11,50
Global warming potential, total	kg CO ₂ eq	1.476,37
Acidification potential	kg SO ₂ eq	8,17
Photochemical oxidation formation potential	kg NMVOC eq	8,14
Eutrophication potential	kg PO ₄ ³⁻ eq	1,69

WASTE PRODUCTION

Indicator	Unit	Value
Bulk waste	kg	126,43
hazardous waste	kg	0,044

² CML-IA baseline 3.05 method for Global Warming Potential and Eutrophication Potential, CML-IA non baseline 3.04 method for Acidification Potential and ReCiPe Midpoint (H) v.1.13 method for Photochemical Oxidant Formation Potential.



Upstream process

Core Process

Downstream process

ENVIRONMENTAL PERFORMANCE OF THE DOWNSTREAM PROCESS



4.5. RESOURCES USE¹



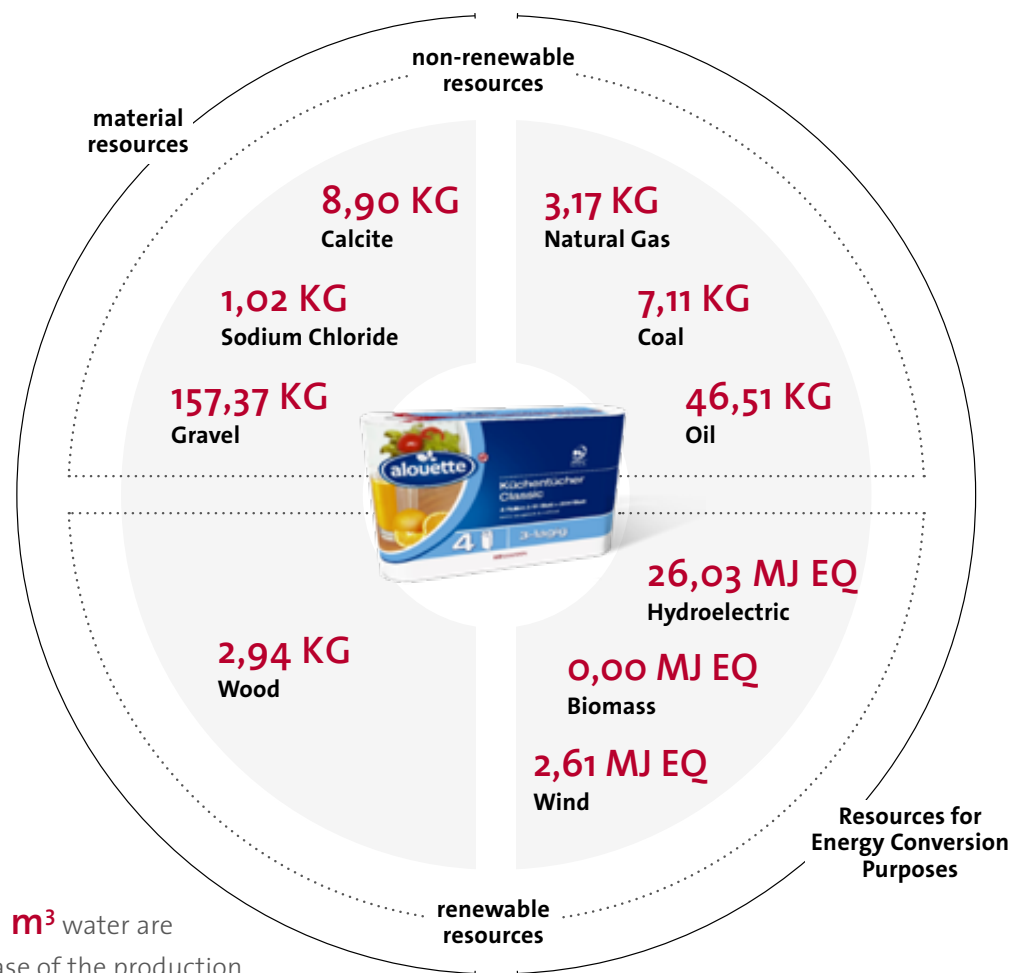
Distribution of the product to the points of sale

The tissues are delivered for them to be sold.



End of life phases of the products and packaging materials

transport to disposal and collection centres, landfill disposal and potential recovery of materials and energy.



¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

4.6. POTENTIAL IMPACT & WASTE PRODUCTION



Distribution of the product to the points of sale

The tissues are delivered for them to be sold.



End of life phases of the products and packaging materials

transport to disposal and collection centres, landfill disposal and potential recovery of materials and energy.

POTENTIAL IMPACT²

Impact Category	Unit	Value
Global warming potential, fossil	kg CO ₂ eq	219,26
Global warming potential, biogenic	kg CO ₂ eq	23,17
Global warming potential, total	kg CO ₂ eq	242,43
Acidification potential	kg SO ₂ eq	1,72
Photochemical oxidation formation potential	kg NMVOC eq	1,27
Eutrophication potential	kg PO ₄ ³⁻ eq	0,25

WASTE PRODUCTION

Indicator	Unit	Value
Bulk waste	kg	133,61
hazardous waste	kg	0,002



ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS



4.7 ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS

RESOURCES USE¹

Non-renewable resources	Unit	Total	Upstream	Core	Downstream
Material resources	kg	574,44	203,52	198,47	172,45
Gravel	kg	472,65	183,36	131,92	157,37
Sodium Chloride	kg	28,45	7,45	19,98	1,02
Calcite	kg	51,23	5,99	36,34	8,90
Resources for Energy Conversion Purposes	kg	1.031,83	165,92	809,11	56,80
Coal	kg	630,87	57,07	566,70	7,11
Natural Gas	kg	223,35	46,70	173,48	3,17
Oil	kg	176,32	61,08	68,73	46,51

¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

4.7 ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS

RESOURCES USE¹

Renewable resources	Unit	Total	Upstream	Core	Downstream
Material resources	kg	2.820,80	2.781,47	36,38	2,94
Wood	kg	2.820,80	2.781,47	36,38	2,94
Resources for enery conversion purposes	MJ	21.250,71	173,15	21.048,21	29,35
Biomass	MJ eq	19.735,25	0,00	19.735,25	0,00
Wind	MJ eq	757,42	40,95	713,86	2,61
hydroelectric	MJ eq	755,93	132,11	597,80	26,03

Water resource	Unit	Total	Upstream	Core	Downstream
Total	m3	83,32	23,89	57,18	2,26
Direct	m3	-	-	36,12	-

¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

4.7 ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS

POTENTIAL IMPACT²

Impact Category	Unit	Total	Upstream	Core	Downstream
Global warming potential, fossil	kg CO ₂ eq	2.009,12	325,00	1.464,87	219,26
Global warming potential, biogenic	kg CO ₂ eq	35,39	0,72	11,50	23,17
Global warming potential, total	kg CO ₂ eq	2.044,52	325,72	1.476,37	242,43
Acidification potential	kg SO ₂ eq	11,20	1,31	8,17	1,72
Photochemical oxidation formation potential	kg NMVOC eq	10,86	1,45	8,14	1,27
Eutrophication potential	kg PO ₄ ³⁻ eq	2,17	0,23	1,69	0,25

WASTE PRODUCTION

Indicator	Unit	Total	Upstream	Core	Downstream
Bulk waste	kg	306,06	46,02	126,43	133,61
hazardous waste	kg	0,050	0,005	0,044	0,002

² CML-IA baseline 3.05 method for Global Warming Potential and Eutrophication Potential, CML-IA non baseline 3.04 method for Acidification Potential and ReCiPe Midpoint (H) v.1.13 method for Photochemical Oxidant Formation Potential.

4.7 TISSUE PAPER END OF LIFE CONTRIBUTION TO POTENTIAL IMPACTS

CONTRIBUTION TO POTENTIAL IMPACTS

Impact Category	Unit	Total
Global warming potential, fossil	kg CO ₂ eq	108,014
Global warming potential, biogenic	kg CO ₂ eq	23,159
Global warming potential, total	kg CO ₂ eq	131,173
Acidification potential	kg SO ₂ eq	1,445
Photochemical oxidation formation potential	kg NMVOC eq	0,933
Eutrophication potential	kg PO ₄ ³⁻ eq	0,209



5

HANDKERCHIEF
ALOUETTE 30X10



ENVIRONMENTAL PERFORMANCE OF THE UPSTREAM PROCESS



5.1. RESOURCES USE¹



Forestry Phase

The wood fibres used for the paper tissues are grown.



Production of Chemicals

The chemicals necessary for the production process are created.



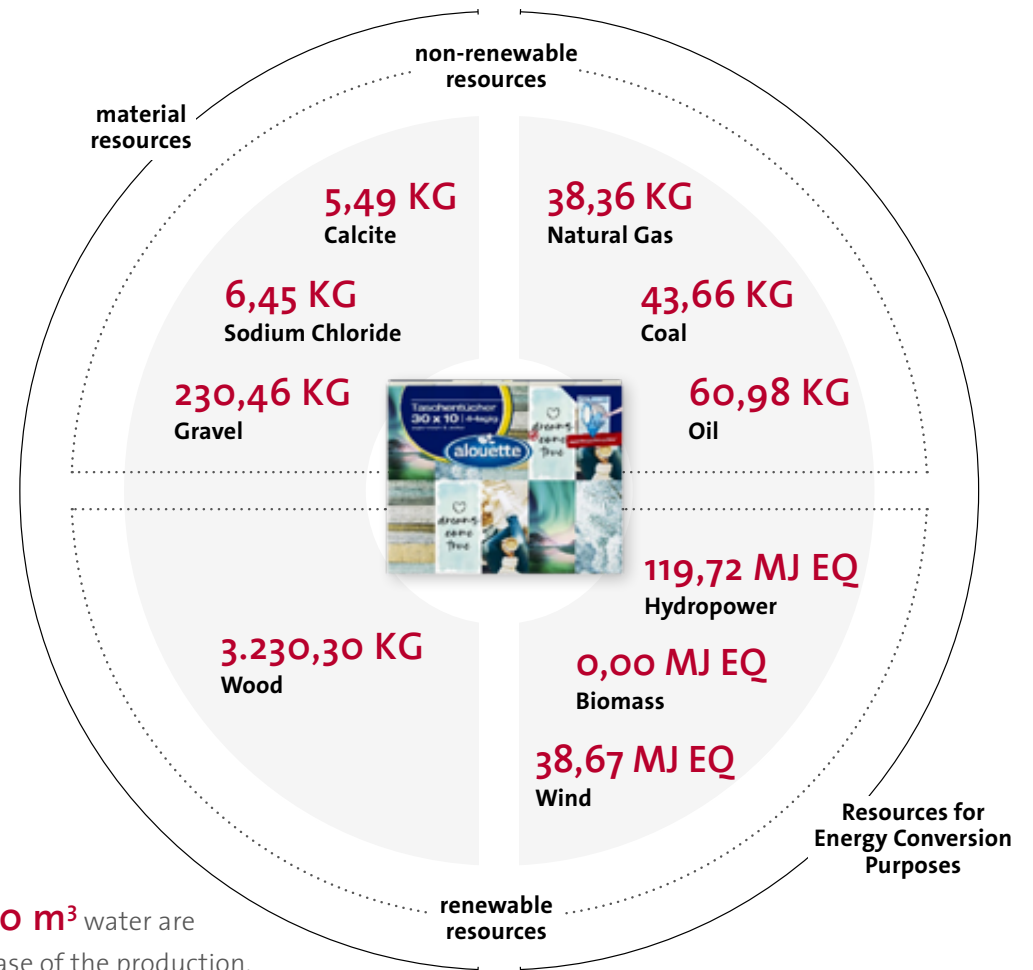
Production of packaging materials

All packaging materials are produced and gathered.



Production of energy for these process phases

The energy necessary for this production step is provided.



¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

5.2. POTENTIAL IMPACT & WASTE PRODUCTION



Forestry Phase

The wood fibres used for the paper tissues are grown.



Production of Chemicals

The chemicals necessary for the production process are created.



Production of packaging materials

All packaging materials are produced and gathered.



Production of energy for these process phases

The energy necessary for this production step is provided.

POTENTIAL IMPACT²

Impact Category	Unit	Value
Global warming potential, fossil	kg CO ₂ eq	287,09
Global warming potential, biogenic	kg CO ₂ eq	0,56
Global warming potential, total	kg CO ₂ eq	287,64
Acidification potential	kg SO ₂ eq	1,17
Photochemical oxidation formation potential	kg NMVOC eq	1,43
Eutrophication potential	kg PO ₄ ³⁻ eq	0,20

WASTE PRODUCTION

Indicator	Unit	Value
Bulk waste	kg	47,84
hazardous waste	kg	0,004



Upstream process

Core Process

Downstream process

ENVIRONMENTAL PERFORMANCE OF THE CORE PROCESS

5.3. RESOURCES USE¹



Supply of raw materials and packaging materials

The raw materials and those later used for packaging are delivered.



Pulp production

The pulp that will serve as a basis for the production of the tissues is produced.



Tissue paper production

The tissues are produced.



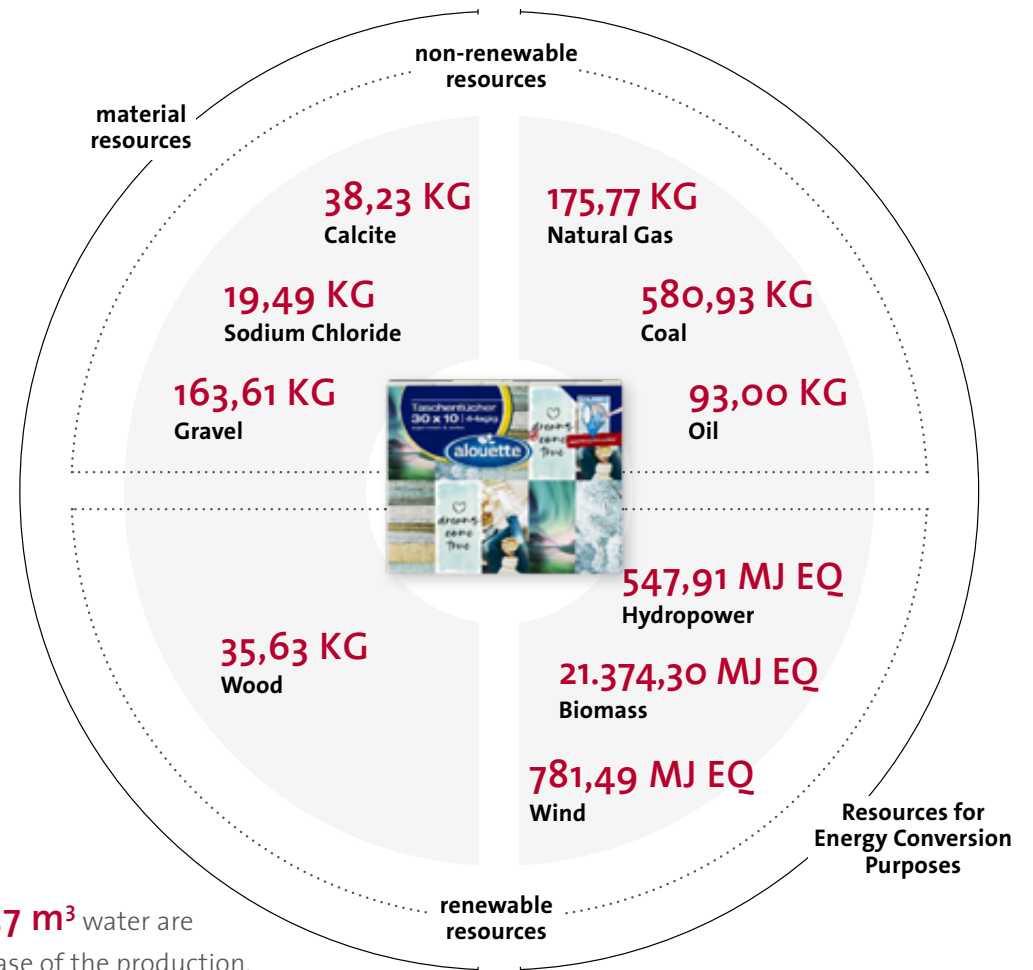
Converting and packaging

The products are prepared for the final delivery.



Production of energy for these process phases

The energy necessary for this production step is provided.



¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

5.4. POTENTIAL IMPACT & WASTE PRODUCTION



Supply of raw materials and packaging materials

The raw materials and those later used for packaging are delivered.



Pulp production

The pulp that will serve as a basis for the production of the tissues is produced.



Tissue paper production

The tissues are produced.



Converting and packaging

The products are prepared for the final delivery.



Production of energy for these process phases

The energy necessary for this production step is provided.

POTENTIAL IMPACT²

Impact Category	Unit	Value
Global warming potential, fossil	kg CO ₂ eq	1,573,76
Global warming potential, biogenic	kg CO ₂ eq	11,96
Global warming potential, total	kg CO ₂ eq	1,585,71
Acidification potential	kg SO ₂ eq	8,99
Photochemical oxidation formation potential	kg NMVOC eq	8,90
Eutrophication potential	kg PO ₄ ³⁻ eq	1,74

WASTE PRODUCTION

Indicator	Unit	Value
Bulk waste	kg	157,33
hazardous waste	kg	0,044



Upstream process

Core Process

Downstream process

ENVIRONMENTAL PERFORMANCE OF THE DOWNSTREAM PROCESS



5.5. RESOURCES USE¹



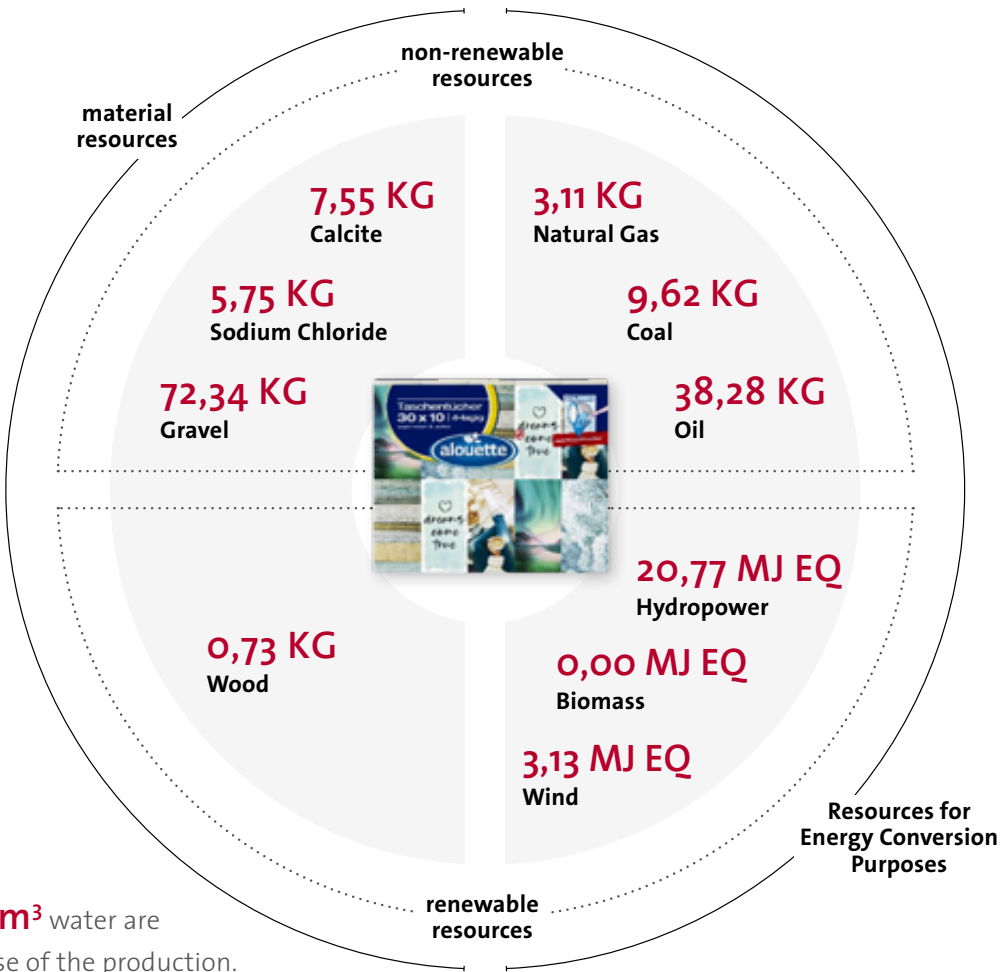
Distribution of the product to the points of sale

The tissues are delivered for them to be sold.



End of life phases of the products and packaging materials

transport to disposal and collection centres, landfill disposal and potential recovery of materials and energy.



¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

5.6. POTENTIAL IMPACT & WASTE PRODUCTION



Distribution of the product to the points of sale

The tissues are delivered for them to be sold.



End of life phases of the products and packaging materials

transport to disposal and collection centres, landfill disposal and potential recovery of materials and energy.

POTENTIAL IMPACT²

Impact Category	Unit	Value
Global warming potential, fossil	kg CO ₂ eq	190,88
Global warming potential, biogenic	kg CO ₂ eq	0,22
Global warming potential, total	kg CO ₂ eq	191,09
Acidification potential	kg SO ₂ eq	0,97
Photochemical oxidation formation potential	kg NMVOC eq	1,43
Eutrophication potential	kg PO ₄ ³⁻ eq	0,17

WASTE PRODUCTION

Indicator	Unit	Value
Bulk waste	kg	80,65
hazardous waste	kg	0,002



ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS



5.7 ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS

RESOURCES USE¹

Non-renewable resources	Unit	Total	Upstream	Core	Downstream
Material resources	kg	570,30	248,11	232,57	89,62
Gravel	kg	466,41	230,46	163,61	72,34
Sodium Chloride	kg	31,69	6,45	19,49	5,75
Calcite	kg	51,27	5,49	38,23	7,55
Resources for Energy Conversion Purposes	kg	1.044,63	143,82	849,80	51,02
Coal	kg	634,21	43,66	580,93	9,62
Natural Gas	kg	217,24	38,36	175,77	3,11
Oil	kg	192,25	60,98	93,00	38,28

¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

5.7 ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS

RESOURCES USE¹

Renewable resources	Unit	Total	Upstream	Core	Downstream
Material resources	kg	3.266,66	3.230,30	35,63	0,73
Wood	kg	3.266,66	3.230,30	35,63	0,73
Resources for enery conversion purposes	MJ	22.887,50	158,47	22.705,07	23,95
Biomass	MJ eq	21.374,30	0,00	21.374,30	0,00
Wind	MJ eq	823,28	38,67	781,49	3,13
hydropower	MJ eq	688,40	119,72	547,91	20,77

Water resource	Unit	Total	Upstream	Core	Downstream
Total	m3	81,55	19,20	59,57	2,78
Direct	m3	-	-	37,95	-

¹ The tables shows individually the resources that contribute at least 5% of the total for each subcategory. Difference between total value of subcategory and the sum of single resources is due to resources that individually contribute to less than 5%.

5.7 ENVIRONMENTAL PERFORMANCE OF THE ENTIRE PROCESS

POTENTIAL IMPACT²

Impact Category	Unit	Total	Upstream	Core	Downstream
Global warming potential, fossil	kg CO ₂ eq	2.051,72	287,09	1.573,76	190,88
Global warming potential, biogenic	kg CO ₂ eq	12,73	0,56	11,96	0,22
Global warming potential, total	kg CO ₂ eq	2.064,45	287,64	1.585,71	191,09
Acidification potential	kg SO ₂ eq	11,13	1,17	8,99	0,97
Photochemical oxidation formation potential	kg NMVOC eq	11,76	1,43	8,90	1,43
Eutrophication potential	kg PO ₄ ³⁻ eq	2,11	0,20	1,74	0,17

WASTE PRODUCTION

Indicator	Unit	Total	Upstream	Core	Downstream
Bulk waste	kg	285,82	47,84	157,33	80,65
hazardous waste	kg	0,050	0,004	0,044	0,002

² CML-IA baseline 3.05 method for Global Warming Potential and Eutrophication Potential, CML-IA non baseline 3.04 method for Acidification Potential and ReCiPe Midpoint (H) v.1.13 method for Photochemical Oxidant Formation Potential.

5.7 TISSUE PAPER END OF LIFE CONTRIBUTION TO POTENTIAL IMPACTS

CONTRIBUTION TO POTENTIAL IMPACTS

Impact Category	Unit	Total
Global warming potential, fossil	kg CO ₂ eq	83,888
Global warming potential, biogenic	kg CO ₂ eq	0,204
Global warming potential, total	kg CO ₂ eq	84,092
Acidification potential	kg SO ₂ eq	0,716
Photochemical oxidation formation potential	kg NMVOC eq	1,129
Eutrophication potential	kg PO ₄ ³⁻ eq	0,129



6

REFERENCES



6.1 INFORMATION FROM THE CERTIFICATION BODY

Product category rules (PCR):

PCR: 2011:05, CPC 32131 Tissue products Version 2.0, valid until: 01-10-2019

PCR Review conducted by:

Technical Committee of the International EPD System

Review chair: Rita Schenck

e-mail: info@environdec.com

Independent verification of the declaration and data, according to ISO 14025:2010

☐ EPD process certification

☒ EPD verification

Third party auditor:

SGS Italia S.p.A., via Caldera 21, 20153 – Milano

Tel. +39 02.73931 - Fax +39 02.70124630

www.it.sgs.com

Accredia registration n.006H

It should be remembered that EPD developed according to different programmes may not be comparable.

This EPD and all regarding information are available on website: www.environdec.com.

6.2 REFERENCES

For LCA study and EPD declaration fulfilment, the following documents were used:

- General Programme Instructions (GPI) for Environmental Products Declarations (Version 2.5);
- PCR 2011:05 (Version 2.0);
- Life Cycle Assessment of products: Toilet paper ALOUETTE 10 Rolls 3 Plies, Kitchen Towel ALOUETTE 4 Rolls and Handkerchief ALOUETTE 30X10 Produced by Sofidel Group in Arneburg, Germany, Rev.01 22/05/2019
- Ecoinvent 3.5 Database (<http://www.ecoinvent.ch>);

For additional information related to this environmental declaration, please contact EPD Owner:

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55016 Porcari (LU), Italy

Reference person: Marco Simoncini – marco.simoncini@sofidel.com

6.3 CHANGES FROM FIRST PUBLISHED VERSION ON 12/07/2019

Update of the article codes and photos of:

- Toilet paper Alouette 10 Rolls 3 Plies;
- Handkerchief Alouette 30x10

after a packaging redesign.