XPAK Mailers

from

Environmental Product Declaration

In accordance with ISO 14025

PROGRAMME:	The International EPD® System, www.environdec.com
PROGRAMME OPERATOR:	EPD International AB
EPD REGISTRATION NUMBER:	S-P-09871
PUBLICATION DATE:	2024-03-12
VALID UNTIL:	2029-03-12

The environmental impacts of different EPDs can be compared only taking into account all the technical information supporting the declared/functional unit definition as requested by the PCR.

An EPD should provide current information and may be updated if conditions change.
The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

EPD Programme Information

EPD®

Programme:

The International EPD® System
EPD International AB
Box 210 60
SE-100 31 Stockholm
Sweden
www.environdec.com
info@environdec.com

Owner of the EPD: IPG
Contact: sustainability@itape.com

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable.

Product category rules (PCR): Packaging PCR 2019:13 Version 1.1.2 Valid until: 2024-11-08

PCR review was conducted by: Anna Bortoluzzi, Università degli Studi di Milano - Department of Chemistry, anna.bortoluzzi@unimi.it

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☒ EPD verification

Third party verifier: Maggie Wildnauer, Lydia Schreiber
WAP Sustainability Consulting

In case of recognised individual verifiers:
Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

☒ Yes ☐ No

XPAK Mailer

IPG Company Information

Company
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Additional Information

Headquartered in Sarasota, Florida, IPG is a global provider of packaging and protective solutions across a diversified set of geographies and end-markets. The Company develops, manufactures, and sells a variety of solutions including paper and film-based pressure-sensitive and water-activated tapes, stretch and shrink films, protective packaging, woven and non-woven products and packaging machinery.

Name and location of production site:

XPAK Mailer product line is manufactured at IPG facilities located at 808 E 113th St, Chicago, IL 60628, United States and 330 Humberline Dr, Etobicoke, ON M9W 1R5.

IPG Corporate Headquarters, Sarasota, Florida

IPG Facility, Chicago, Illinois

IPG Facility, Toronto, Ontario

Our Locations

NORTH AMERICA

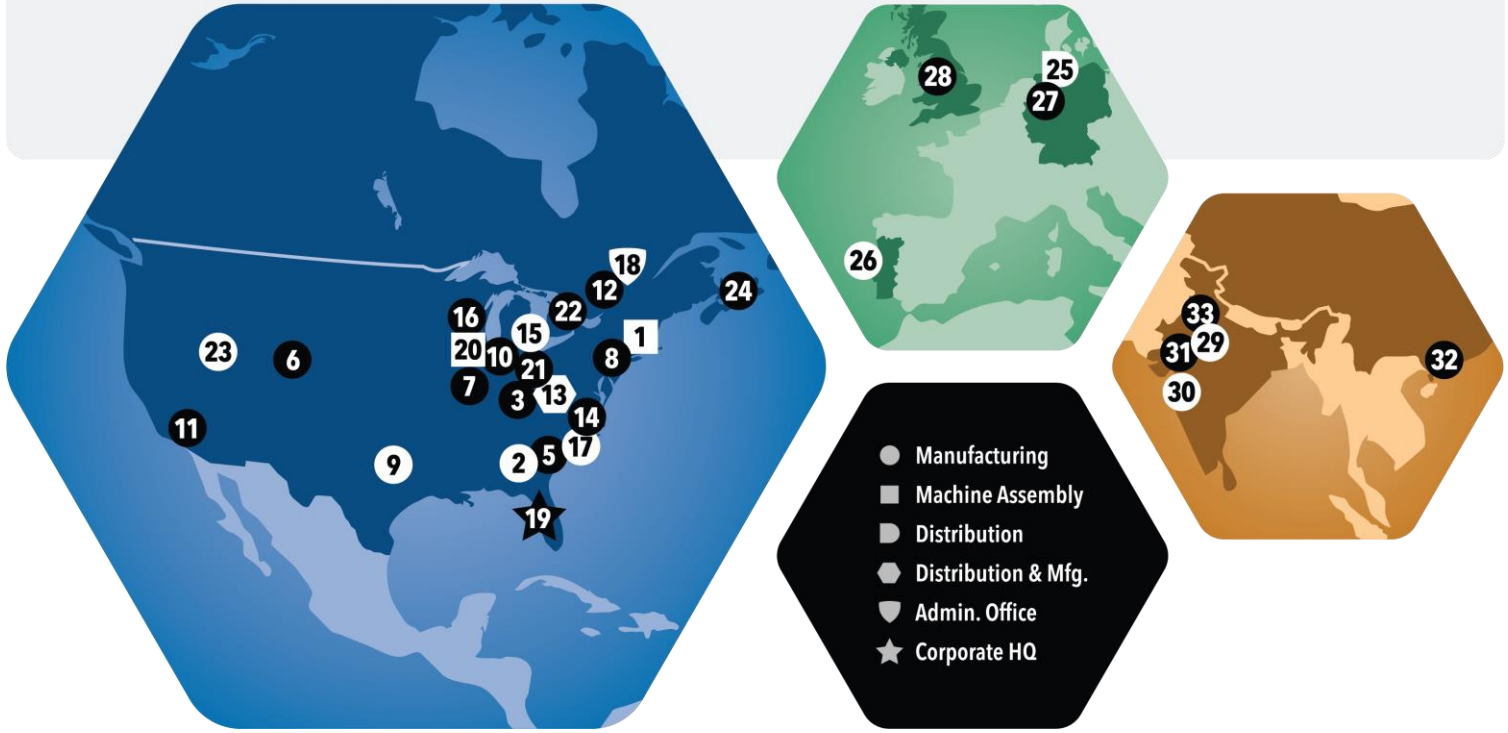
1. Ansonia, CT
2. Atlanta, GA
3. Bardstown, KY (2)
5. Blythewood, SC
6. Brighton, CO
7. Carbondale, IL
8. Carlstadt, NJ
9. Carrollton, TX
10. Chicago, IL
11. Corona, CA
12. Cornwall, ON
13. Danville, VA
14. Everetts, NC
15. Marysville, MI
16. Menasha, WI
17. Midland, NC
18. Montreal, QC
19. Sarasota, FL
20. Schaumburg, IL
21. Springfield, OH
22. Toronto, ON
23. Tremonton, UT
24. Truro, NS

EUROPE

25. Flensburg, Germany
26. Porto, Portugal
27. Soest, Germany
28. Widnes, UK

ASIA

29. Chopanki, India
30. Daman, India
31. Dahej, India
32. Jiangmen City, China
33. Karoli, India



Our Vision


VISION ipg
TO BE THE
GLOBAL LEADER
IN
PACKAGING
AND
PROTECTIVE
SOLUTIONS
VALUES
PASSION
PEOPLE
INTEGRITY
PERFORMANCE
TEAMWORK
STRATEGY
STRENGTHEN THE PRODUCT BUNDLE
EXPAND THE GLOBAL FOOTPRINT
EMBRACE SUSTAINABILITY
DRIVE OPERATIONAL EXCELLENCE

Our Commitment

"At IPG, we remain committed to the development and commercialization of more sustainable packaging solutions, and our partnership with leading organizations such as the Sustainable Packaging Coalition, ENERGY STAR, United Nations Global Compact, and others, is a demonstration of our commitment."

Jay Bolus, Vice President, Sustainability

IPG subscribes to externally developed economic, environmental, and social charters, principles and other initiatives that align with our sustainability efforts.

APR Recycling DEMAND CHAMPIONS

ENERGY STAR AWARD 2023 PARTNER OF THE YEAR Sustained Excellence

SUSTAINABLE PACKAGING COALITION

BUILT FOR BETTER FOR PLANET

CERTIFIED cradle to cradle PRODUCTS PROGRAM

Operation Clean Sweep®

Member of How2Recycle®

THE CLIMATE PLEDGE

ecovadis

SmartWay®

Working with Experts

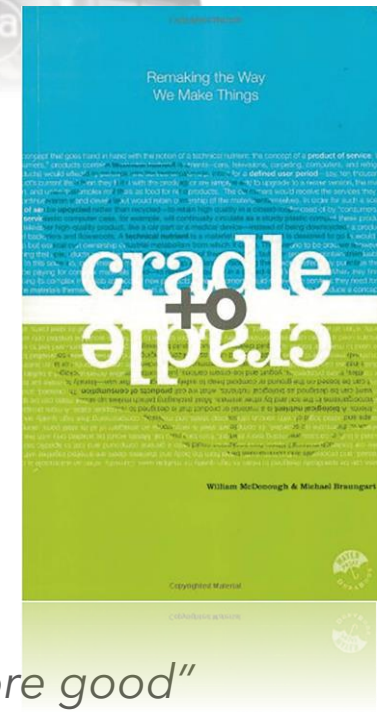
Company

Product

Content Declaration

Environmental Performance

Additional Information



Worked closely with William McDonough

- Author of *Cradle to Cradle*
- Focused on the circular economy
- Complex evaluations and monitoring for improvement

"Making the transition from less bad to more good"
Jay Bolus, VP Sustainability, IPG

Our Circular Economy

Eliminating the concept of waste

Our Sustainable Product Design and Development Vision Statement directs the application of “safe and circular” concepts to our products’ design and development. We are committed to eliminating toxic substances from new and existing products and incorporating recycled and renewable materials while maintaining product performance. Achieving a circular economy is a long-term objective, and we are dedicated to working towards it.

The Circular Economy emulates natural life cycles, and eliminates the concept of waste so all products and their components become “food” for other systems- either biological (returning to nature) or technical (returning to industry).

Product Information

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Product

Product name: XPAK Mailer

Product description:
Polyair's XPAK bubble mailers combine the tear, weather and puncture resistance of a courier envelope with the cushioning of a Duraliner bubble lining. Each XPAK mailer is made from polyethylene and is store drop-off recyclable. Shipping/postage costs for XPAKs are lower than many alternative packages. The white outer surface is ideal for high-quality printing and provides privacy for the customer.

UN CPC code:
UN CPC 3641

Geographical scope:
North America

Product Information

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Product	IPG Production Facility	Dimensions
XPAK4 Mailer	Chicago, IL Toronto, ON	Opening (in) - 9.5" Depth (in) - 13.875" Lip Size (in) - 1.5"
XPAK5 Mailer	Chicago, IL Toronto, ON	Opening (in) - 10.5" Depth (in) - 15.375" Lip Size (in) - 1.5"
XPAK6 Mailer	Chicago, IL Toronto, ON	Opening (in) - 12.5" Depth (in) - 18.375" Lip Size (in) - 1.5"

LCA Information

Chicago results are representing the impacts of products made at both facilities.

Functional unit / declared unit:
per one mailer

Reference service life:
single use

Mass of the Reference Flow:

XPAK4: 1.73E-02 kg/mailer

XPAK5: 2.11E-02 kg/mailer

XPAK6: 2.98E-02 kg/mailer

Internal volume:
XPAK4: 0.00460 m^3
XPAK5: 0.00624 m^3
XPAK6: 0.0106 m^3

Capacity:
2.3 kg max for all mailer sizes

Compression and destacking values:
Compression and stacking values required by the reference PCR are not shown because they are not considered relevant by the market/customer to define the function of the product subject to this EPD.

Time representativeness:
Primary data for electricity and scrap rate at IPG production facility and material composition and supplier information from 2022.

Database(s) and LCA software used:
GaBi LCA Software version 8.0
Sphera database 2022, US LCI Database 2022

Chicago results have highest impacts

LCA Information

Description of system boundaries:

Life cycle stage	Life cycle module	Life cycle module group	EPD Type Functional Unit: Cradle-Grave
Upstream	A1) Raw material supply	A1-A3) Product stage	Declared
Core	A2) Transport		Declared
	A3) Manufacturing		Declared
Downstream	A4) Transport to forming or filling	A4-A5) Forming stage	Module not declared, MND
	A5) Forming		Module not declared, MND
	B1) Filling operation	B1-B5) Use stage	Declared
	B2) Distribution of filled packaging		Declared
	B3) Transport to reconditioning		Module not declared, MND
	B4) Reconditioning		Module not declared, MND
	B5) Transport to re-filling point		Module not declared, MND
	C1) Disassembling/sorting	C1-C3) End of life stage	Declared
	C2) Transport to recovery/disposal		Declared
	C3) Final disposal		Declared

Excluded lifecycle stages: Downstream Module

A4) Transport to Forming or Filling (Module Not Declared, MND)
Product is sold unfilled to the final consumer and shipped to distributor from manufacturing facility

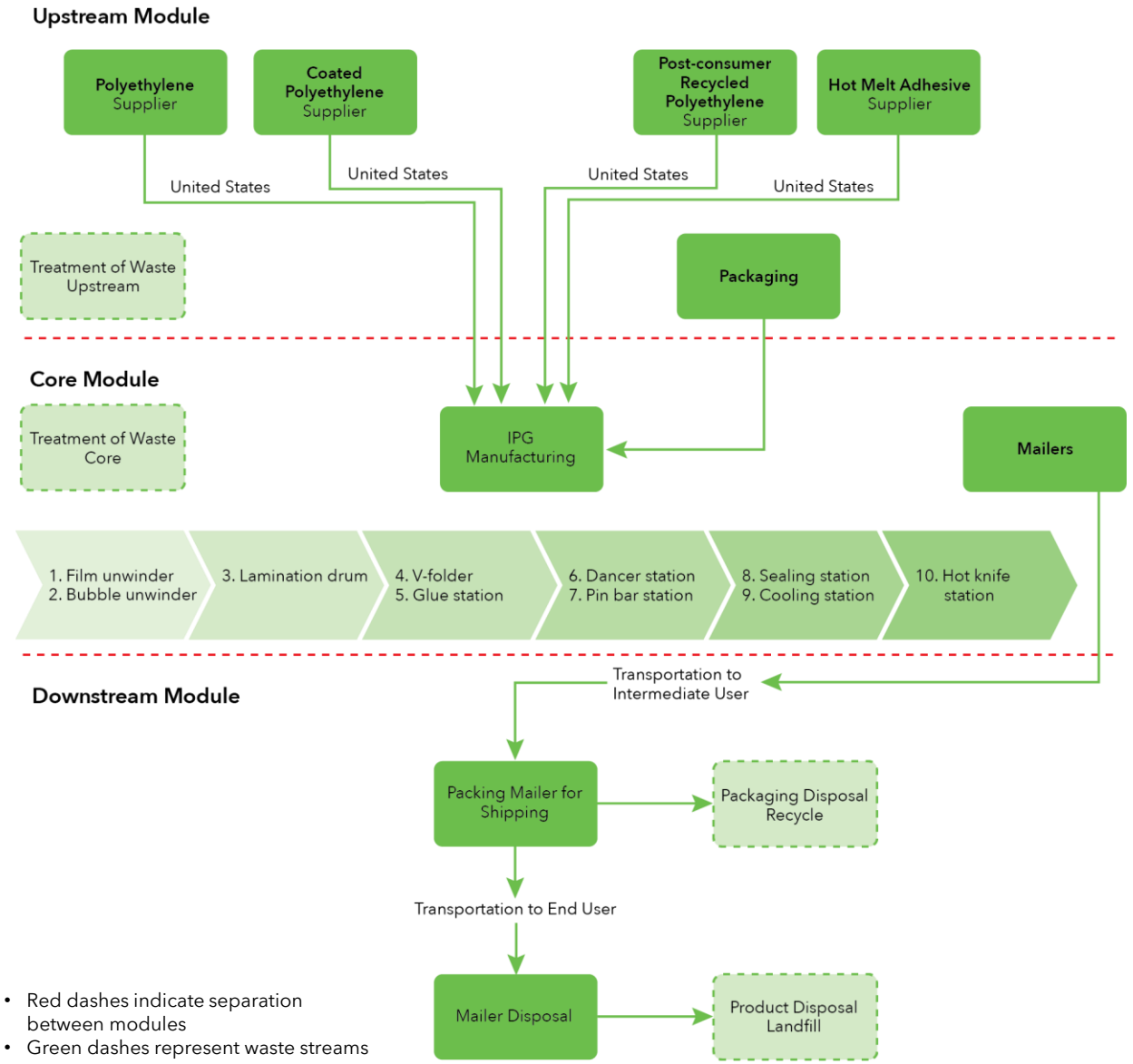
A5) Packaging Forming (Module Not Declared, MND)
Product is formed during manufacturing

B3) Transport to Reconditioning (Module Not Declared, MND)
Product is single use

B4) Reconditioning (Module Not Declared, MND)
Product is single use

B5) Transport to Re-Filling Point (Module Not Declared, MND)
Product is single use

LCA Information XPAK Mailer Process System Diagram



- Red dashes indicate separation between modules
- Green dashes represent waste streams

Content Declaration: XPAK4 Mailer

Product

Materials / chemical substances

Polyethylene (PE) Film

85%

kg 0.01465 per mailer

Coated Polyethylene (PE)

2%

kg 0.0003 per mailer

Hot Melt Adhesive

2%

kg 0.0003 per mailer

Post-consumer Recycled Polyethylene (PE)

12%

kg 0.00205 per mailer

Packaging

Distribution/Consumer packaging:
Corrugated cardboard box weighing 0.00712 kg per mailer.

Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product:
Bubble contains 25% post-consumer recycled (PCR) resin

Environmental Performance: XPAK4 Mailer

Indicator name	Unit	Module			
Core environmental impact indicators		**Upstream**	**Core**	**Downstream**	**Total**
Climate Change - total	kg CO_2 eq.	5.24E-02	1.34E-02	1.37E-02	7.95E-02
Climate Change - fossil	kg CO_2 eq.	5.26E-02	1.33E-02	9.55E-03	7.55E-02
Climate Change - biogenic	kg CO_2 eq.	-2.18E-04	1.51E-04	4.16E-03	4.09E-03
Climate Change - LULUC	kg CO_2 eq.	1.63E-05	4.67E-07	9.92E-08	1.69E-05
Ozone depletion	kg CFC-11 eq.	2.72E-12	1.27E-13	9.79E-14	2.94E-12
Acidification	Mole of H+ eq.	1.43E-04	4.24E-05	4.42E-05	2.30E-04
Eutrophication, freshwater	kg P eq.	9.60E-08	4.13E-08	9.73E-07	1.11E-06
Eutrophication, marine	kg N eq.	3.51E-05	1.49E-05	2.36E-05	7.36E-05
Eutrophication, terrestrial	mol N eq.	3.81E-04	1.59E-04	1.87E-04	7.27E-04
Photochemical ozone formation	kg NMVOC eq.	1.09E-04	4.23E-05	3.90E-05	1.90E-04
Abiotic depletion potential, minerals & metals[1]	kg Sb eq.	6.93E-08	1.46E-09	1.43E-10	7.09E-08
Abiotic depletion potential, fossil resources[1]	MJ	1.40E+00	2.03E-01	5.58E-02	1.66E+00
Water use[1]	m^3 world eq. deprived	1.09E-02	1.50E-03	-4.55E-04	1.19E-02
Indicators describing resource use		**Upstream**	**Core**	**Downstream**	**Total**
Use of renewable primary energy as energy carrier	MJ	4.65E-02	2.26E-02	6.71E-04	6.98E-02
Use of renewable primary energy resources used as raw materials	MJ	6.02E-13	9.48E-13	1.47E-14	1.56E-12
Total use of renewable primary energy	MJ	4.65E-02	2.26E-02	6.71E-04	6.98E-02
Use of non-renewable primary energy as energy carrier	MJ	1.42E+00	2.03E-01	5.61E-02	1.68E+00
Use of non-renewable primary energy resources used as raw materials	MJ	7.65E-06	2.48E-06	4.74E-14	1.01E-05
Total use of non-renewable primary energy resource	MJ	1.42E+00	2.03E-01	5.61E-02	1.68E+00
Secondary material	kg	2.05E-03	0	0	2.05E-03
Renewable secondary fuels	MJ	0	0	0	0
Non-renewable secondary fuels	MJ	0	0	0	0
Net use of fresh water	m^3	2.75E-04	4.59E-05	-1.06E-05	3.10E-04

Environmental Performance: XPAK4 Mailer

Environmental information describing waste categories		Upstream	Core	Downstream	Total
Hazardous waste disposed	kg	2.36E-07	8.89E-11	2.38E-09	2.38E-07
Non-hazardous waste disposed	kg	7.36E-04	5.77E-04	1.51E-02	1.64E-02
Radioactive waste disposed	kg	2.04E-05	1.76E-05	1.37E-07	3.81E-05
Environmental information describing output flows		**Upstream**	**Core**	**Downstream**	**Total**
Components for reuse	kg	0	0	0	0
Material for recycling	kg	0	0	7.12E-03	7.12E-03
Materials for energy recovery	kg	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0

Note: EN 15804 reference package based on EF 3.0

Disclaimer 1 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Content Declaration: XPAK5 Mailer

Product

Materials / chemical substances

Polyethylene (PE) Film

85%

kg 0.0179 per mailer

Coated Polyethylene (PE)

2%

kg 0.00034 per mailer

Hot Melt Adhesive

1%

kg 0.00031 per mailer

Post-consumer Recycled Polyethylene (PE)

12%

kg 0.00253 per mailer

Packaging

Distribution/Consumer packaging:
Corrugated cardboard box weighing 0.00934 kg per mailer.

Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product:
Bubble contains 25% post consumer recycled (PCR) resin

Environmental Performance: XPAK5 Mailer

Indicator name	Unit	Module			
Core environmental impact indicators		**Upstream**	**Core**	**Downstream**	**Total**
Climate Change - total	kg CO_2 eq.	6.36E-02	1.70E-02	1.68E-02	9.74E-02
Climate Change - fossil	kg CO_2 eq.	6.39E-02	1.68E-02	1.17E-02	9.24E-02
Climate Change - biogenic	kg CO_2 eq.	-2.92E-04	1.89E-04	5.06E-03	4.96E-03
Climate Change - LULUC	kg CO_2 eq.	2.08E-05	6.00E-07	1.21E-07	2.15E-05
Ozone depletion	kg CFC-11 eq.	3.31E-12	1.57E-13	1.22E-13	3.59E-12
Acidification	Mole of H+ eq.	1.74E-04	5.28E-05	5.45E-05	2.81E-04
Eutrophication, freshwater	kg P eq.	1.20E-07	5.16E-08	1.18E-06	1.35E-06
Eutrophication, marine	kg N eq.	4.30E-05	1.84E-05	2.89E-05	9.03E-05
Eutrophication, terrestrial	mol N eq.	4.66E-04	1.97E-04	2.30E-04	8.93E-04
Photochemical ozone formation	kg NMVOC eq.	1.34E-04	5.23E-05	4.82E-05	2.35E-04
Abiotic depletion potential, minerals & metals[1]	kg Sb eq.	8.10E-08	1.88E-09	1.74E-10	8.31E-08
Abiotic depletion potential, fossil resources[1]	MJ	1.71E+00	2.58E-01	6.91E-02	2.04E+00
Water use[1]	m^3 world eq. deprived	1.32E-02	1.93E-03	-5.53E-04	1.46E-02
Indicators describing resource use		**Upstream**	**Core**	**Downstream**	**Total**
Use of renewable primary energy as energy carrier	MJ	5.59E-02	2.91E-02	8.16E-04	8.58E-02
Use of renewable primary energy resources used as raw materials	MJ	7.25E-13	1.22E-12	1.79E-14	1.96E-12
Total use of renewable primary energy	MJ	5.59E-02	2.91E-02	8.16E-04	8.58E-02
Use of non-renewable primary energy as energy carrier	MJ	1.73E+00	2.58E-01	6.94E-02	2.06E+00
Use of non-renewable primary energy resources used as raw materials	MJ	9.92E-06	3.19E-06	5.77E-14	1.31E-05
Total use of non-renewable primary energy resource	MJ	1.73E+00	2.58E-01	6.94E-02	2.06E+00
Secondary material	kg	2.53E-03	0	0	2.53E-03
Renewable secondary fuels	MJ	0	0	0	0
Non-renewable secondary fuels	MJ	0	0	0	0
Net use of fresh water	m^3	3.34E-04	5.91E-05	-1.29E-05	3.80E-04

Environmental Performance: XPAK5 Mailer

Environmental information describing waste categories		Upstream	Core	Downstream	Total
Hazardous waste disposed	kg	2.86E-07	1.11E-10	2.90E-09	2.89E-07
Non-hazardous waste disposed	kg	8.57E-04	7.20E-04	1.83E-02	1.99E-02
Radioactive waste disposed	kg	2.47E-05	2.26E-05	1.67E-07	4.75E-05
Environmental information describing output flows		**Upstream**	**Core**	**Downstream**	**Total**
Components for reuse	kg	0	0	0	0
Material for recycling	kg	0	0	9.34E-03	9.34E-03
Materials for energy recovery	kg	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0

Note: EN 15804 reference package based on EF 3.0

Disclaimer 1 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Content Declaration: XPAK6 Mailer

Product

Materials / chemical substances

Polyethylene (PE) Film

85%

kg 0.0254 per mailer

Coated Polyethylene (PE)

1%

kg 0.0004 per mailer

Hot Melt Adhesive

1%

kg 0.00036 per mailer

Post-consumer Recycled Polyethylene (PE)

12%

kg 0.0036 per mailer

Packaging

Distribution/Consumer packaging:
Corrugated cardboard box weighing 0.0136 kg per mailer.

Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product:
Bubble contains 25% post consumer recycled (PCR) resin

Environmental Performance: XPAK6 Mailer

Indicator name	Unit	Module			
Core environmental impact indicators		**Upstream**	**Core**	**Downstream**	**Total**
Climate Change - total	kg CO_2 eq.	8.93E-02	2.13E-02	2.37E-02	1.34E-01
Climate Change - fossil	kg CO_2 eq.	8.97E-02	2.11E-02	1.66E-02	1.27E-01
Climate Change - biogenic	kg CO_2 eq.	-4.12E-04	2.65E-04	7.16E-03	7.01E-03
Climate Change - LULUC	kg CO_2 eq.	2.89E-05	7.02E-07	1.71E-07	2.98E-05
Ozone depletion	kg CFC-11 eq.	4.68E-12	2.17E-13	1.72E-13	5.07E-12
Acidification	Mole of H+ eq.	2.45E-04	7.09E-05	7.70E-05	3.93E-04
Eutrophication, freshwater	kg P eq.	1.67E-07	7.11E-08	1.67E-06	1.91E-06
Eutrophication, marine	kg N eq.	6.03E-05	2.52E-05	4.09E-05	1.26E-04
Eutrophication, terrestrial	mol N eq.	6.55E-04	2.70E-04	3.26E-04	1.25E-03
Photochemical ozone formation	kg NMVOC eq.	1.87E-04	7.16E-05	6.81E-05	3.27E-04
Abiotic depletion potential, minerals & metals[1]	kg Sb eq.	1.04E-07	2.20E-09	2.46E-10	1.06E-07
Abiotic depletion potential, fossil resources[1]	MJ	2.41E+00	3.19E-01	9.76E-02	2.83E+00
Water use[1]	m^3 world eq. deprived	1.84E-02	2.25E-03	-7.82E-04	1.99E-02
Indicators describing resource use		**Upstream**	**Core**	**Downstream**	**Total**
Use of renewable primary energy as energy carrier	MJ	7.45E-02	3.40E-02	1.15E-03	1.10E-01
Use of renewable primary energy resources used as raw materials	MJ	9.50E-13	1.42E-12	2.54E-14	2.40E-12
Total use of renewable primary energy	MJ	7.45E-02	3.40E-02	1.15E-03	1.10E-01
Use of non-renewable primary energy as energy carrier	MJ	2.44E+00	3.19E-01	9.81E-02	2.86E+00
Use of non-renewable primary energy resources used as raw materials	MJ	1.38E-05	3.73E-06	8.16E-14	1.75E-05
Total use of non-renewable primary energy resource	MJ	2.44E+00	3.19E-01	9.81E-02	2.86E+00
Secondary material	kg	3.60E-03	0	0	3.60E-03
Renewable secondary fuels	MJ	0	0	0	0
Non-renewable secondary fuels	MJ	0	0	0	0
Net use of fresh water	m^3	4.65E-04	6.89E-05	-1.82E-05	5.16E-04

Environmental Performance: XPAK6 Mailer

Environmental information describing waste categories		Upstream	Core	Downstream	Total
Hazardous waste disposed	kg	4.06E-07	1.55E-10	4.10E-09	4.10E-07
Non-hazardous waste disposed	kg	1.08E-03	1.00E-03	2.59E-02	2.80E-02
Radioactive waste disposed	kg	3.45E-05	2.64E-05	2.36E-07	6.11E-05
Environmental information describing output flows		**Upstream**	**Core**	**Downstream**	**Total**
Components for reuse	kg	0	0	0	0
Material for recycling	kg	0	0	0.0132	1.32E-02
Materials for energy recovery	kg	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0

Note: EN 15804 reference package based on EF 3.0

Disclaimer 1 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

References

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Thanks!