



ENVIRONMENTAL
PRODUCT
DECLARATION



High barrier Mono PET film for packaging applications

(MY-250, MY-450)

BASED ON	CERTIFICATION N°	PROGRAMME	DATE OF ISSUE
PCR 2019:13 version 1.11, 2020-12-17 ISO 14025	S-P-05784	The International EPD System www.environdec.com	2022/05/31
CPC CODE	PROGRAMME OPERATOR	REFERENCE YEAR	DATE OF VALIDITY
36390	EPD International AB	2020	2027/05/10

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 REFERENCES

EPD OWNER: AMB Spa, Via San Martino 28, 33038, San Daniele del Friuli, Udine (Italy)

PROGRAMME OPERATOR: EPD INTERNATIONAL AB, BOX 21060, SE-100 31 STOCKHOLM, SWEDEN; INFO@ENVIRONDEC.COM

INDEPENDENT VERIFICATION

The declaration has been developed referring to the International EPD® System, following the General Programme Instructions v.3.01. Further information and the document itself are available at: www.environdec.com. EDP document valid within the following geographical area: Global according to sales market conditions

PCR 2019:13 version 1.1, 2020-12-17

PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.

Independent third-party verification of the declaration and data, according to EN ISO 14025:2010

EPD process certification
(Internal)

EPD verification
(External)

Third-party verifier:

SGS Italia S.p.A (accreditation number of SGS Italy: 006H), Via Caldera 21, 20153, Milano (MI), Italy
Accredited by: Accredia

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

YES

NO

The EPD owner has the sole ownership, liability and responsibility of the EPD.

EPDs published within the same product category but from different programmes may not be comparable. 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.

CONTACTS

For additional information relative to the activities of AMB Spa or in regard to this environmental declaration, please contact sustainability@ambpackaging.com or visit the website www.ambpackaging.com



Technical support to AMB Spa was provided by Life Cycle Engineering, Italy
(info@studiolce.it, www.lceengineering.eu).



AMB in a nutshell



LEADER in UE
in form-fill-seal (FFS)



LEADER in UK
in thermoforming



+378
employees (UK and IT division)



4
production sites through Italy and UK



1
design & tooling center



~30,000
smq dedicated to production activities



~16,000
smq dedicated to warehouse/logistic activities



AMB is an international leader in food packaging industry, making a unique contribution to the industry.

Geographical plants

AMB in the UK



EXTRUSION, GATESHEAD, UK
3 Princes Park, Princesway North,
Team Valley Trading Estate,
Gateshead, Tyne & Wear, NE11 0NF

AMB in the UK



DESIGN & TOOLING, GATESHEAD, UK
Unit 232 Dukesway,
Team Valley Trading Estate,
Gateshead, NE11 0PZ

AMB in Germany



SALES, GAUTING, GERMANY
Ledererstraße e 11
D-82131 Gauting

AMB in Italy



EXTRUSION, PRINTING, SAN DANIELE DEL FRIULI (UD), ITALY
Via San Martino, 28
33038 San Daniele del Friuli (UD)

AMB in Italy



EXTRUSION, AMARO (UD), ITALY
Via Cooperativa Carnica, 2
33020 Amaro (UD) Italy



AMB Milestones

1969

Founded by Clotilde Manfrin-Polano and Renata Polano Marin producing LDPE bags.

1988

Installation of the first multi-layer coextrusion line for the production of food packaging.

1997

The first 8-colour C.I. printer is produced

2005

The Marin family acquires 100% of the company. Start up line 3.

2008

Installation of the new 7-layer coextrusion blown film machine.

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1982

AMB installs the first blown technology coextrusion machine

1993

The first solventless laminator.

1998

Certification ISO 9001:2015

2006

Start up of PET Coex Lines number 4&5. Construction of the new blown technology department begins.

2009

Commissioning of PET Coex Lines number 6.

How we got where we are

This is our journey, starting over 50 years ago we have never stopped moving.
This energy continues within the business.

2010

Certification
BRC Packaging.
Commissioning
of PET Coex
Lines number 7.

2014

AMB becomes the
first company at
European level to
start a water based
production.

2017

Acquires and opens its second
production plant in AMARO (UD)
making AMB closer to the main
traffic routes connecting all Europe.
EUR 12 million investment in
production and logistic.

2020

AMB acquires PTS
Verpackungen, Bavaria
(Germany). Second
print line in San
Daniele and installation
of a new extrusion line
in the UK (B4).

2022

Set up of a new line
in the UK (B5).

2013

The ethical code
is introduced.

2016

The new 9-layers
blown film extruder
is installed.

2019

AMB acquires TDX (Europe) Limited,
leader in the UK market for the design,
prototyping, tooling and film supply for
thermoformed packaging.
This creates a complete food
packaging solution with a one-supplier
relationship with all customers.

2021

AMB reached an agreement
for a majority controlling
investment from private equity
funds managed by Peak Rock
Capital.
New extrusion line installed in
Amaro (line 10).

AMB end-to-end partner

Different to the rest.
A unique offering all in one place

From packaging design through to film production under one roof, a complete end2end process for our customers. In this context, AMB has developed a one-stop shop for packaging, providing everything in from film production to packaging design under one roof:

Design | Prototyping | Tooling | Rigid PET Films | Flexible Films | Printed & Laminated Films

DESIGN: Expert design team dedicated to customers tooling needs

PROTOTYPING: CNC machining centres dedicated to rapid mould prototyping

TOOLING: Sampling machines – thermoforming service

BLOWN EXTRUSION: Lines up to 9 layers to guarantee food shelf life and maximizing gas barrier according to customer specification and legal requirements

CAST EXTRUSION LINES: In UK and IT - manufacturing coextruded or thermo laminated sheets

RECYCLING PROCESSES: In-house recycling processes

PRINTING: Fully in-house printing on both flexible films and rigid sheets

Flexo 8 colour water based printing, delivering rich colour tones & photographic detail with precise registration. In house design department for experience based understand on design articulation for printing.

LAMINATION: Water based adhesives & coating

DESIGN

PROTOTYPING

TOOLING

RIGID PET FILMS

FLEXIBLE FILMS

PRINTING & LAMINATION

“LESS IS MORE” sustainability pillars



Circularity, eco-design, and attention to product lifecycle:

- **Reduce** packaging material through an intelligent downgauging
- **Simplify** unrecyclable products through innovation and eco-design
- **Eliminate** problematic or unnecessary plastic packaging



Reduce the use of natural resources: recycled materials



Reduce environmental impacts: emissions, waste, scraps



Zero workers injuries and take actions to eliminate hazards and minimize the risk of Incidents



Zero food safety incidents

AMB sustainability path

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In our world where the environment and our place in the sustainable circular economy have become more important than ever, we have an active agenda to meet expectations of our customers and help solve some of the most complex sustainability challenges within packaging production.

We're committed to minimising our environmental impact and supporting our customer's needs. Our goals are described in our sustainability report that is under develop and is being published in 2022. We expect the highest ethical standards throughout our business, supply chain, products & services. Sustainability progress isn't just the right thing to do for the planet — it's also good for all of us.

The Products

AMBAR 38HB
TS MY250

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AMBAR 38HB
TS MY450



Product information

AMB HB Mono PET: High barrier film for bottom trays have usually the structure PET/PE/EVOH/PE where the EVOH layer provides the improved oxygen barrier properties. The high barrier mono PET is a coextruded mono PET with an oxygen scavenger that increases the oxygen barrier of the film without the need to have the PE/EVOH/PE layers.

Product name	Monolayer high barrier PET film
Product description	The high barrier mono PET is a coextruded mono PET with an oxygen scavenger that inhibits the passing through of the oxygen molecules within the film
Product classification	The product examined in this study has an industrial function and falls into the category of «industrial type packaging» because it is sold in the form of reels without branded printing. The product is designed to be converted into trays and used for packaging food products.
Product identification	The product is manufactured in different thicknesses varying within the range: 200 µm – 800 µm. This EPD covers monolayer PET film with high barrier of 250 and 450 µm thickness: <ul style="list-style-type: none"> • PET HB-250 µm (AMBAR 38HB TS MY250); • PET HB-450 µm (AMBAR 38HB TS MY450).
Application and intended use	This material is easily thermoformable for the production of trays for modified atmosphere gases (MAP) and food packaging. The PET HB-250 µm is suitable for use as packaging for processed meat and ham products. The product PET-HB 450 µm is ideal for packaging fresh pasta and meat.
Production site	The manufacturing stage is divided into two production sites: the extrusion and the primary cutting of the rolls take place in the plant located in San Daniele (Udine, Italy), while the secondary cutting and the packaging of the finished products are located in Amaro (Udine, Italy).

Scope and type of EPD

Declared Unit: The declared unit is **1 m² of film**. This EPD refers to the product High Barrier Mono PET manufactured in two different thicknesses: 250 µm and 450 µm.

Type of EPD: Product EPD for High Barrier Mono PET film for packaging applications.

Geographical scope of the EPD: World according to sales market conditions.

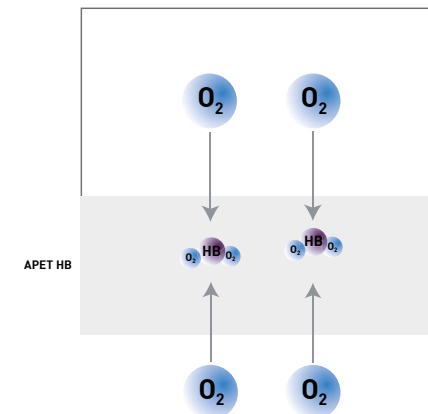
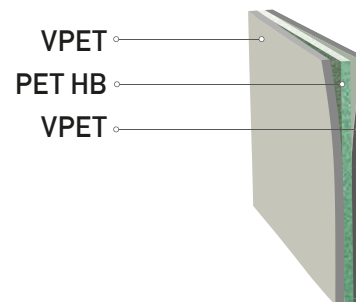
Reference year: 2020

Software: Simapro 9.3.0.2

Main Database: Ecoinvent 3.8, PlasticsEurope

Environmental impacts: The characterisation models and factors used for the declared impact categories are consistent with what is requested in the reference PCR 2019:13 v.1.1 and The General Programme Instructions v.3.0. The characterisation factors used to calculate the results reported in this EPD are: CML-IA 2001 baseline method January 2016 (GWP, EP, ADP-e, ADP-f). CML-IA 2001 non-baseline method January 2016 (AP). Lotos-Euros as applied in ReCiPe 2008 (POPF). WULCA model for WDP 2015-2017.

Report LCA: Life Cycle Assessment (LCA) applied to multilayer and monolayer plastic films (multilayer PET/PE/EVOH/PE peel film and monolayer PET HB film) to be used for packaging applications, v.4, 2022-04-27.



Information	PET HB-MY250	PET HB-MY450
Base/rigid film	Mono APET	Mono APET
Oxygen barrier	Oxygen scavenger	Oxygen scavenger
Thickness	250 µm	450 µm
Unit weight	334 g/m ²	603 g/m ²
Color	Transparent	Transparent
OTR (23°C / 0% RH)	<1,0 cc/m ² /day	<1,0 cc/m ² /day
WVTR (38°C / 90% RH)	/	2,7 cc/m ² /day

Content declaration

All the materials in direct contact with food comply with existing legislation (EU 10/2011). Compliance to Regulation (EC) no. 1907/2006 of 18/12/2006 (REACH) and to Regulation (EC) no.1272/2008 of 16/12/2018 (CLP). The materials used for the investigated item do not contain:

- Restricted substances designated in Annex XVII of REACH Regulation;
- Substances designated in REACH candidate list;
- Substances listed in Annex XIV of REACH Regulation.

5-10%

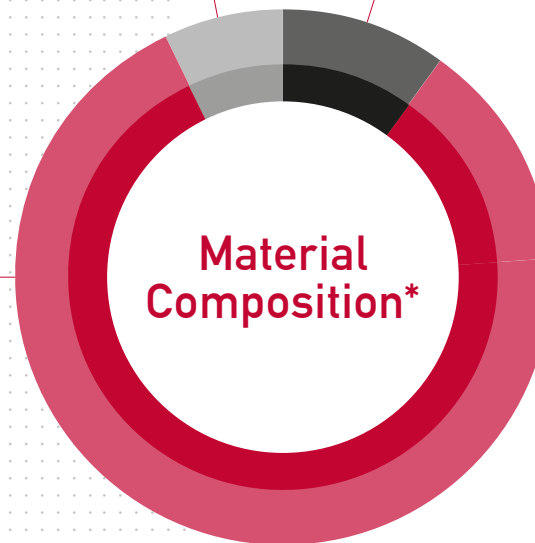
ADDITIVES

12%

VIRGIN PET

78-83%

POST-CONSUMER RECYCLED PET



*Any request of additional information on products' recipes can be submitted to sustainability@ambpackaging.com

Recycled content

The investigated products contain a percentage of recycled content ranging **from 78 to 83%**, calculated in accordance with ISO 14021:2016 principles.

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Secondary packaging

The film is supplied on a reel (with cardboard core) which is placed on top of a wooden pallet.

Wooden wedges are also used to facilitate safe and secure handling of the reel. Stretch wrapping film, pluriball film and plastic bags are used to cover and protect the item from external pollutants during transport.



The system boundaries

According to the PCR Packaging, as the products selected for this EPD are considered as industrial packaging, a cradle-to-gate with options life cycle assessment study has been performed with a declared unit. Modules which are not declared are marked as "Module Not Declared, (MND)".

Life cycle stages	Life cycle modules	Products covered by this EPD
Upstream	A1) Raw material supply	x
Core	A2) Transport	x
	A3) Manufacturing	x
Downstream	A4) Transport	x
	A5) Forming	MND
	B1) Filling operations	MND
	B2) Distribution final packaging	MND
	B3) Transport to reconditioning	MND
	B4) Reconditioning	MND
	B5) Transport to re-filling point	MND
	C1) Disassembling/sorting	x
	C2) Transport to recovery/disposal	x
	C3) Final disposal	x

Life Cycle Stages

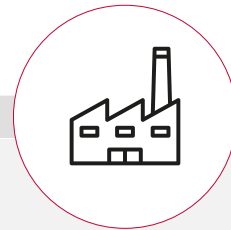
Upstream



The upstream process includes:

- The extraction, production and supply of virgin PET pellets and additives used in the manufacturing process;
- Post-consumer PET recycling processes;
- Production of auxiliary materials;
- Manufacturing of intermediate and secondary packaging.

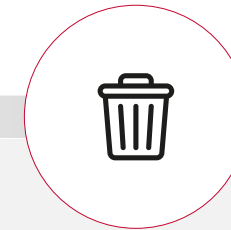
Core



The core process includes:

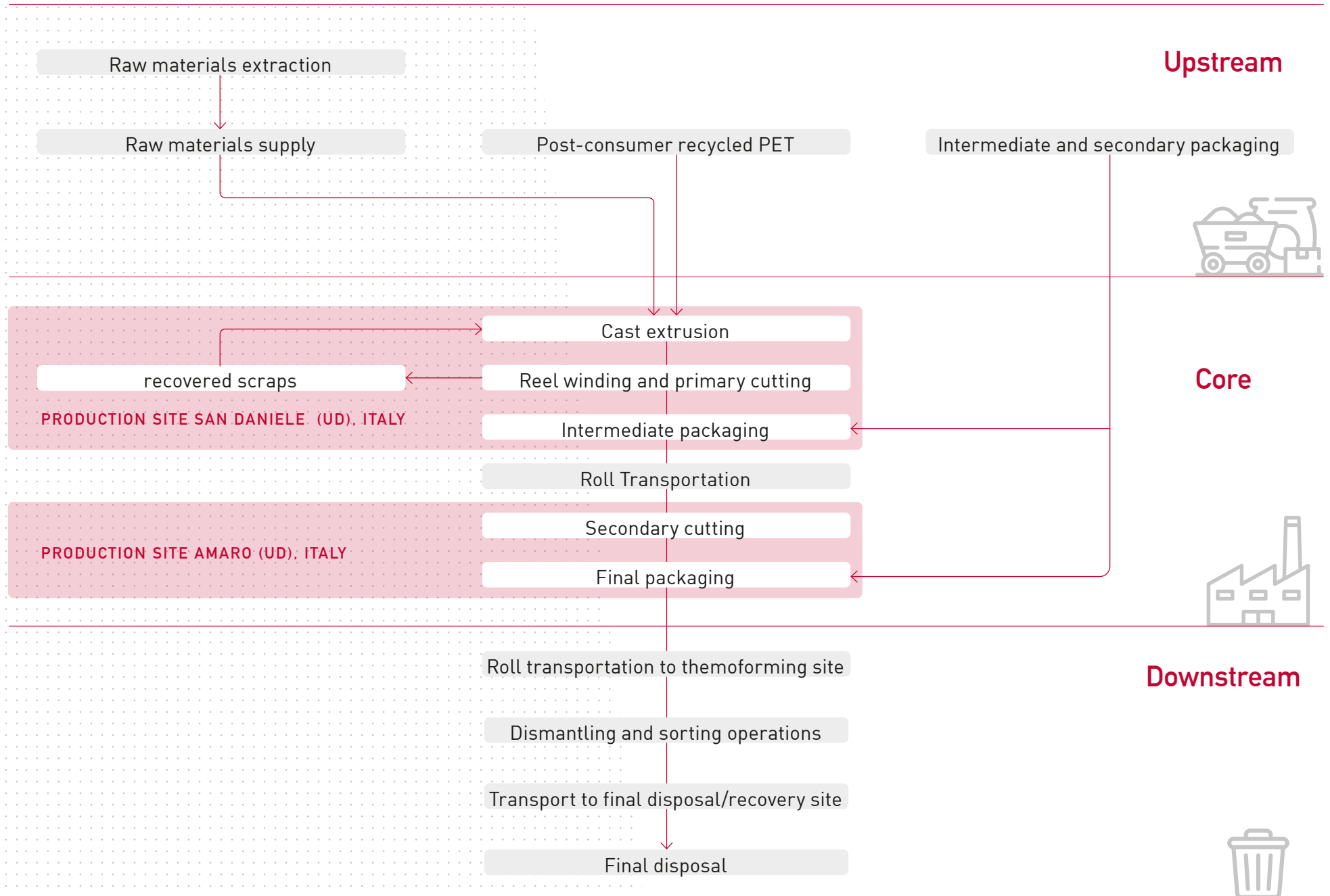
- Transportation of raw materials and packaging materials from production or collection facilities to the plants located in San Daniele (Udine, Italy) and Amaro (Udine, Italy);
- Manufacturing of the product;
- Storage and handling of materials;
- Maintenance activities;
- Treatment of waste generated from the manufacturing process;
- Production and consumption of electricity and fuels associated to the core module.

Downstream



The downstream process includes:

- Transport of the finished product to thermoforming sites;
- Operations for the separation of packaging product components and subsequent sorting;
- Transportation of the discarded products as part of the waste processing (to recovery or final disposal site);
- Final disposal.



Calculation Rules

Secondary data from **Ecoinvent and PlasticsEurope** database have been used to model the raw materials used in the film production.

During Mono PET HB production, process scraps are recovered and reused as material input in the manufacturing process of the same product system or different product systems.

The products under study are made from internally recovered scraps for a certain percentage of the declared amount. This material does not contribute to the recycled content of the products in accordance with ISO 14021:2016.

The manufacturing process of the products covered by this EPD is divided into two production sites. **Primary data from both production sites have been collected and refer to the year 2020.** Allocation based on the mass of the finished products from the individual production lines, the specific departments or the overall site has been used depending on data availability.

The intermediate packaging used for the semi-finished products (truck transport of the rolls from San Daniele to Amaro) has been assumed to be the same as the one used for the delivery of the finished products to customers.

The transport of the products to customers reflect the actual 2020 distribution scenario.

The end-of-life environmental impacts related to the investigated product and the secondary packaging reflect the actual average scenarios from the European and non-European countries in which the product under study is sold.

End-of-life sources are:

- Italy (monomaterial and multimaterial plastic-based packaging): "Corepla's sustainability report, 2018-2020"
- Italy (wood-based packaging): "Rilegno's annual prevention specific plan, 2018-2019 "
- Italy (paper-based and coreboard packaging): "Comieco's annual report 2018-2019"
- Switzerland: "Switzerland Federal Office for the environment, 2021"
- Other european countries: "Eurostat's statistics, 2017-2018"
- Australia: "Packaging consumption and recycling data 2018-2019, APCO, v.1"
- USA: "Eurostat's statistics, 2014".

In accordance with general PCR requirements the LCA study used specific, generic and proxy data.

The packaging of the incoming raw materials is under the 1% cut-off threshold.

Proxy data contributes to the environmental indicators less than 10%.

LCA Methodology

The environmental burden of the product has been calculated according to PCR 2019:13 version 1.1, 2020-12-17. This declaration is a cradle to gate with options EPD type, based on the application of Life Cycle Assessment (LCA) methodology to the whole life cycle system.

In the whole LCA model, infrastructures and production equipment are not considered.

Customized LCA questionnaires were used to gather in-depth information about all aspects of the production system, in order to provide a complete picture of the environmental burden of the system for example, raw materials specifications, process efficiencies, air emissions, waste management. According to the PCR, processes contributing greater than 1% of the total environmental impact indicator for each impact are included in the inventory.

No data gaps were allowed which were expected to significantly affect the outcome of the indicator results.

Environmental Performance

PET HB-MY250	Thickness	Unit weight
	250 µm	334 g/m ²

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generations) are declared per **1 m² of film** and reported for life cycle stage, according to the PCR, and in aggregated form in the column «Total».

INDICATORS DESCRIBING POTENTIAL ENVIRONMENTAL IMPACTS					
Indicator	Units/D.U.	Upstream	Core	Downstream	TOTAL
GWP	kg CO ₂ eq	3,10E-01	1,68E-01	1,02E-01	5,80E-01
GWP,f	kg CO ₂ eq	3,08E-01	1,68E-01	9,79E-02	5,74E-01
GWP,b	kg CO ₂ eq	1,24E-03	1,98E-05	4,36E-03	5,62E-03
GWP,luluc	kg CO ₂ eq	6,19E-04	5,86E-06	1,54E-05	6,40E-04
AP	kgSO ₂ eq	1,21E-03	5,64E-04	5,28E-04	2,30E-03
EP	kg PO ₄ ³⁻ eq	2,03E-04	5,84E-05	6,74E-05	3,28E-04
POCP	kg NMVOC eq	7,67E-04	4,00E-04	4,79E-04	1,65E-03
ADP-e	kg Sb eq	3,35E-05	3,90E-09	3,08E-08	3,36E-05
ADP-f	MJ	6,58E+00	2,63E+00	8,92E-01	1,01E+01
WDP	m ³ eq	4,43E-01	1,24E-02	4,46E-03	4,60E-01

GWP Global warming potential, total

GWP,f Global warming potential, fossil

GWP,b Global warming potential, biogenic

GWP,luluc Global warming potential, land use and land use change

AP Acidification Potential

EP Eutrophication Potential

POCP Photochemical oxidant formation potential

ADP-e Abiotic depletion potential - Elements

ADP-f Abiotic depletion potential – Fossil fuels

WDP Water scarcity potential

Environmental Performance

PET HB-MY250	Thickness	Unit weight
	250 µm	334 g/m ²

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generations) are declared per **1 m² of film** and reported for life cycle stage, according to the PCR, and in aggregated form in the column «Total».

INDICATORS DESCRIBING USE OF PRIMARY AND SECONDARY RESOURCES					
Indicator	Units/D.U.	Upstream	Core	Downstream	TOTAL
PERE	MJ	9,93E-01	1,01E-01	8,88E-03	1,10E+00
PERM	MJ	5,33E-01	0,00E+00	0,00E+00	5,33E-01
PERT	MJ	1,53E+00	1,01E-01	8,88E-03	1,64E+00
PENRE	MJ	4,85E+00	2,95E+00	9,07E-01	8,70E+00
PENRM	MJ	2,52E+00	0,00E+00	0,00E+00	2,52E+00
PENRT	MJ	7,37E+00	2,95E+00	9,07E-01	1,12E+01
SM	kg	2,88E-01	0,00E+00	0,00E+00	2,88E-01
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,17E-02	3,88E-04	1,42E-04	1,23E-02

PERE Primary energy resources renewable – use as energy carrier

PERM Primary energy resources renewable – used as raw materials

PERT Primary energy resources renewable – total

PENRE Primary energy resources non renewable – use as energy carrier

PENRM Primary energy resources non renewable – used as raw materials

PENRT Primary energy resources non renewable – total

SM Secondary material

RSF Renewable secondary fuels

NRSF Non-renewable secondary fuels

FW Net use of freshwater

Environmental Performance

PET HB-MY250	Thickness	Unit weight
	250 µm	334 g/m ²

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generations) are declared per **1 m² of film** and reported for life cycle stage, according to the PCR, and in aggregated form in the column «Total».

INDICATORS DESCRIBING WASTE PRODUCTION AND OUTPUT FLOWS

Indicator	Units/D.U.	Upstream	Core	Downstream	TOTAL
HWD	kg	0,00E+00	3,39E-05	0,00E+00	3,39E-05
NHWD	kg	0,00E+00	1,26E-03	0,00E+00	1,26E-03
RWD	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	4,70E-02	1,45E-01	1,92E-01
MER	kg	0,00E+00	0,00E+00	1,14E-01	1,14E-01
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD Hazardous waste disposed

NHWD Non-hazardous waste disposed

RWD Radioactive waste disposed

CRU Components for re-use

MFR Materials for recycling

MER Materials for energy recovery

EE Exported energy, electricity

ET Exported energy, thermal

Environmental Performance

PET HB-MY450	Thickness	Unit weight
	450 µm	603 g/m ²

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generations) are declared per **1 m² of film** and reported for life cycle stage, according to the PCR, and in aggregated form in the column «Total».

INDICATORS DESCRIBING POTENTIAL ENVIRONMENTAL IMPACTS					
Indicator	Units/D.U.	Upstream	Core	Downstream	TOTAL
GWP	kg CO ₂ eq	4,75E-01	3,03E-01	1,63E-01	9,41E-01
GWP,f	kg CO ₂ eq	4,72E-01	3,03E-01	1,54E-01	9,29E-01
GWP,b	kg CO ₂ eq	2,11E-03	3,57E-05	9,53E-03	1,17E-02
GWP,luluc	kg CO ₂ eq	9,13E-04	1,06E-05	3,28E-05	9,56E-04
AP	kgSO ₂ eq	1,77E-03	1,01E-03	3,85E-04	3,17E-03
EP	kg PO ₄ ³⁻ eq	3,04E-04	1,05E-04	7,10E-05	4,79E-04
POCP	kg NMVOC eq	1,17E-03	7,16E-04	4,41E-04	2,33E-03
ADP-e	kg Sb eq	4,51E-05	7,03E-09	6,46E-08	4,52E-05
ADP-f	MJ	9,73E+00	4,75E+00	9,75E-01	1,55E+01
WDP	m ³ eq	5,16E-01	2,23E-02	1,03E-02	5,49E-01

GWP Global warming potential, total

GWP,f Global warming potential, fossil

GWP,b Global warming potential, biogenic

GWP,luluc Global warming potential, land use and land use change

AP Acidification Potential

EP Eutrophication Potential

POCP Photochemical oxidant formation potential

ADP-e Abiotic depletion potential - Elements

ADP-f Abiotic depletion potential – Fossil fuels

WDP Water scarcity potential

Environmental Performance

PET HB-MY450	Thickness	Unit weight
	450 µm	603 g/m ²

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generations) are declared per **1 m² of film** and reported for life cycle stage, according to the PCR, and in aggregated form in the column «Total».

INDICATORS DESCRIBING USE OF PRIMARY AND SECONDARY RESOURCES

Indicator	Units/D.U.	Upstream	Core	Downstream	TOTAL
PERE	MJ	1,07E+00	1,82E-01	1,78E-02	1,27E+00
PERM	MJ	9,61E-01	0,00E+00	0,00E+00	9,61E-01
PERT	MJ	2,03E+00	1,82E-01	1,78E-02	2,23E+00
PENRE	MJ	7,26E+00	5,32E+00	1,01E+00	1,36E+01
PENRM	MJ	3,72E+00	0,00E+00	0,00E+00	3,72E+00
PENRT	MJ	1,10E+01	5,32E+00	1,01E+00	1,73E+01
SM	kg	5,49E-01	0,00E+00	0,00E+00	5,49E-01
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,49E-02	6,99E-04	3,16E-04	1,59E-02

PERE Primary energy resources renewable – use as energy carrier

PERM Primary energy resources renewable – used as raw materials

PERT Primary energy resources renewable – total

PENRE Primary energy resources non renewable – use as energy carrier

PENRM Primary energy resources non renewable – used as raw materials

PENRT Primary energy resources non renewable – total

SM Secondary material

RSF Renewable secondary fuels

NRSF Non-renewable secondary fuels

FW Net use of freshwater

Environmental Performance

PET HB-MY450	Thickness	Unit weight
	450 µm	603 g/m ²

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generations) are declared per **1 m² of film** and reported for life cycle stage, according to the PCR, and in aggregated form in the column «Total».

INDICATORS DESCRIBING WASTE PRODUCTION AND OUTPUT FLOWS					
Impact category	Units/D.U.	Upstream	Core	Downstream	TOTAL
HWD	kg	0,00E+00	6,11E-05	0,00E+00	6,11E-05
NHWD	kg	0,00E+00	2,27E-03	0,00E+00	2,27E-03
RWD	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	8,48E-02	3,16E-01	4,01E-01
MER	kg	0,00E+00	0,00E+00	2,92E-01	2,92E-01
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD Hazardous waste disposed

NHWD Non-hazardous waste disposed

RWD Radioactive waste disposed

CRU Components for re-use

MFR Materials for recycling

MER Materials for energy recovery

EE Exported energy, electricity

ET Exported energy, thermal

Additional information

Our sustainability pillars support all those activities addressed to closing the loop and move forward the EU action plan for the Circular Economy.

Cooperation with stakeholders and strategic organizations

We cannot achieve that goal on our own, so it's important to make ongoing cooperation skills with all our stakeholders dealing with production, consumption, waste management & market for secondary raw materials and regulatory aspects.

We intend to work together along the plastics value chains, including all relevant public and private actors across Europe, to reach sustainable objective whilst ensuring the functionalities of plastic products and packaging, not compromising on consumer protection and safety and hygiene. Moreover, to achieve sustainable development, we believe that it is important to foster ongoing collaboration with strategic organisations.

In that regard, AMB has undertaken a series of voluntary commitments, collaborative initiatives and trade association memberships:

- **Operation Clean Sweep**[®] (www.opcleansweep.org)
- **Sedex** (www.sedex.com)
- **Petcore Europe** (www.petcore-europe.org)
- **Ceflex** (ceflex.eu)
- **Ecosense** (fundacionplasticsense.eu)
- **PET Sheet Europe** (www.petsheeteurope.eu)
- **CONAI** (www.conai.org)
- **Unionplast** (www.federazionegommaplastica.it)



Recyclability AMB High barrier Mono PET

Thanks to our Innovation process we are going to reduce the complexity of packaging materials including the number of material and polymers used and evaluating new project in terms of sustainability.

Most of our applications refer to the food sector where packaging must have the main function of guaranteeing food safety and the shelf life of food products that are often exported and therefore subjected to severe transport and storage conditions.

To do this, combinations of materials have been studied for years, leading to the creation of a complex packaging system capable of meeting the challenges of product conservation. With the aim of promoting recyclability, we are therefore facing the challenge to replace a well-established and reliable multilayer packaging with mono materials structures. AMB HB mono PET is designed for recycling with an oxygen barrier different from EVOH and without adhesives.

EVOH is a disruptor of the PET recycling stream and is not recommended as EVOH deteriorate the mechanical proprieties of the recycled material. In PET containers EVOH compromise the transparency and intrinsic viscosity of recycled PET, making it unacceptable for certain end-applications.

*Founded in May 2014 with its head office in Aachen, the Institute cyclos-HTP is a company specialised in the classification, assessment and certification of recyclability of packaging and goods as well as in research and development in this area

CERTIFICATE

Recyclability of Packaging

AMB Spa
Via San Martino, 28
33038 San Daniele del Friuli (UD) | Italy

The company receives the certification of recyclability for the following packaging.

Designation	
AMBAR 38HB – PET monomaterial high barrier (Article-No. AMBAR 38HB 1000) (PET film for thermoformed trays)	
Test result	
Permitted in sort/specification:	PET bottles, others, Fraction No. 499 (AT) PET trays, Fraction No. UMP-937 (NL)
Assessment via path:	PET bottles, others, Fraction No. 499 (AT) PET trays, Fraction No. UMP-937 (NL)
Recyclate (final product):	PET recyclate

Test standard / scope of application:

- Requirements and assessment catalogue of the institute cyclos-HTP for EU-wide certification (state 14.09.2021) / Scope of validity according to nation states, see chapter 1
- Within the certification process, conformity with the following standards was also checked:
 - Minimum standard for measuring the recycling capacity of the ZSVR (state 31.08.2021); also integrated
 - DIN EN 13430 with regard to material recyclability in the post-use phase; also integrated
 - Under consideration of COTREP – Recyclability of Plastic Packaging; on request
 - Under consideration of APR Design® Guide for Plastics Recyclability; on request

According to the CHI standard the recyclability of the packaging amounts to:

100 % (AT, NL)

In accordance with the test results the potential recyclate yield of the packaging amounts to 100%.

This certificate (No. 2428-2021-002559-R1) is valid until the **30/11/2022** (1 year upon issue) for the countries listed in brackets above. This certificate will lose validity in case of qualitative or quantitative changes of packaging components.

Certificate with adjustment from 02.03.2022.

Aachen, dated 26/11/2021



Dr. Joachim Christian
Publicly appointed and sworn expert for the IfHK for packaging waste disposal
Competent authority: IfHK Aachen

The detailed results are documented in the corresponding test report (No. 2428-2021-002559-R1).

Institute cyclos - HTP



Institute cyclos-HTP GmbH
Maria-Theresa-Allee 35 - 52064 Aachen
phone: +49 (0) 241 / 949 00 - 0
fax: +49 (0) 241 / 949 00 - 49



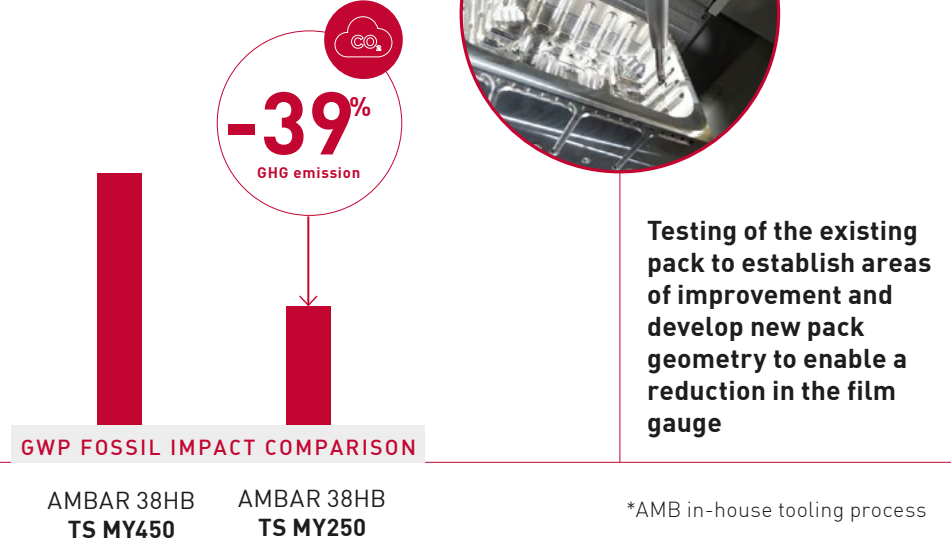
The recyclability of AMBAR 38HB mono PET (thickness 450 µm) is certified by Institute Cyclos – HTP* that confirm the 100% recyclability of our material for thermoformed trays recyclable where facilities exist (Austria and The Netherlands). Following the above results our 38HB mono PET scraps are suitable to be reused in the same extrusion processes and as pre-consumer material.

Efforts to reduce the GWP

We can reduce the GWP of our High Barrier Mono PET thanks to a downgauging process and/or increasing the amount of recycled plastic.

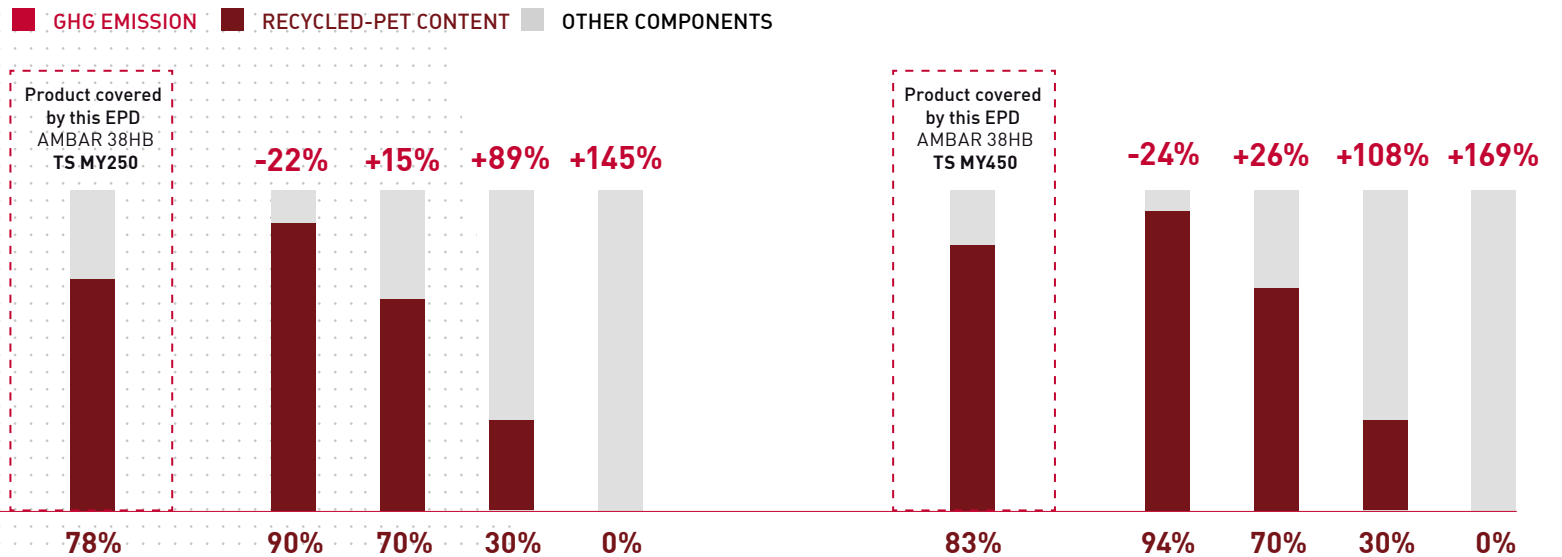
Intelligent Downgauging

Thanks to our Intelligent Downgauging process we are going to reduce the quantity of plastic necessary for the final packaging and their related fossil carbon emissions, without compromising the level of safety performances requested by the customer: the same barrier and structural properties are guaranteed even after the lightweighting.



Estimation of benefits increasing recycled-PET content

Increasing the rate of recycled PET we have estimated that we can reduce the GWP, fossil up to 22% for AMBAR 38HB TS MY250 and up to 24% for AMBAR 38HB TS MY450.

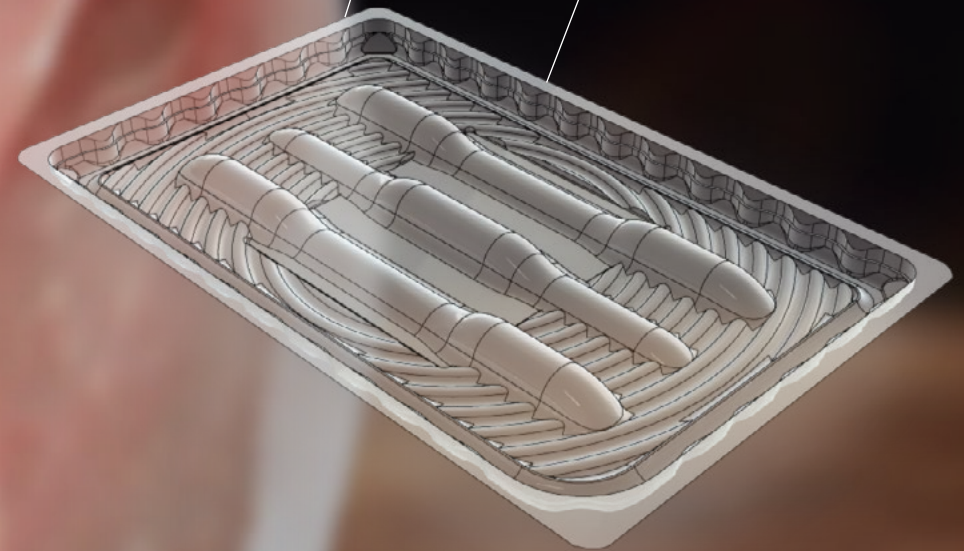


Example of application of PET HB-MY250

Product	High barrier mono PET tray
External size (mm)	300X190,5X13
Internal volume (L)	0,9
Weight (g)	18,9
Packaging material	PET 
Thickness (µm)	250
OTR (23°C / 0% RH)	< 1,0 cc/m2/day
PET recycled content	78%
Food Application	Slices ham packed in MAP (Modified Atmosphere Packaging)
Shelf life of the packed product	30/90 days depending on the ham (cooked or seasoned)


Product covered by this EPD
AMBAR 38HB TS MY250

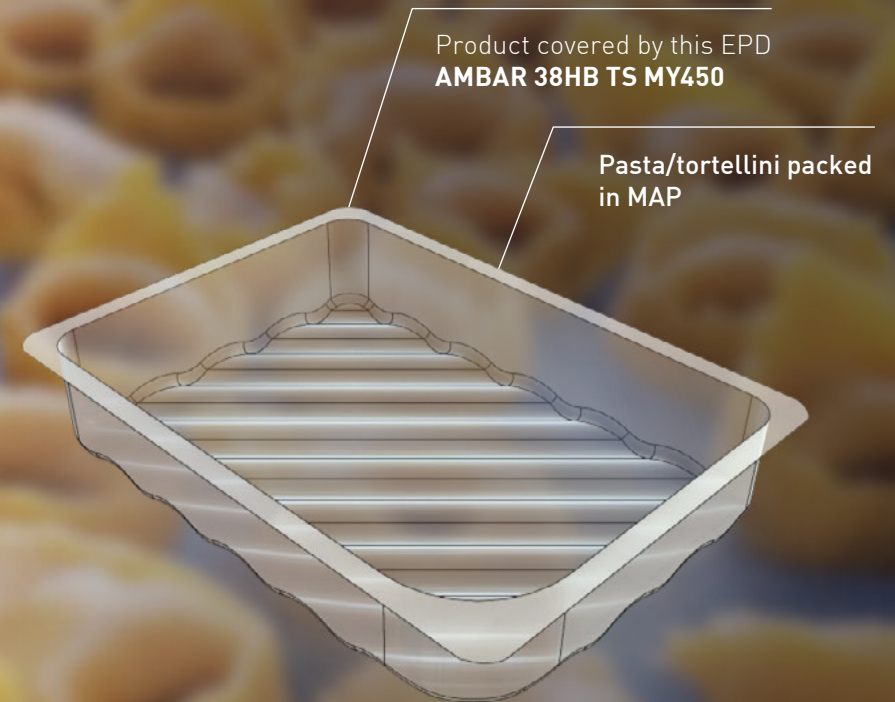
Slices ham packed in MAP



*All data in the Table come from an example of a potential practical application of the product covered by this EPD. The product images shown are for illustrations only, they may represent a possible application of the product and might not be an exact representation of the final product.

Example of application of PET HB-MY450

Product	High barrier PET mono tray
External size (mm)	187x137x85
Internal volume (L)	1,9
Weight (g)	15,5
Packaging material	PET 
Thickness (µm)	450
OTR (23°C / 0% RH)	< 1,0 cc/m ² /day
PET recycled content	83%
Food Application	Fresh pasta/fresh tortellini packed in MAP (Modified Atmosphere Packaging)
Shelf life of the packed product	Depending on the food packed (40/60 days)



*All data in the Table come from an example of a potential practical application of the product covered by this EPD. The product images shown are for illustrations only, they may represent a possible application of the product and might not be an exact representation of the final product.

Main References

- PCR 2019:13 version 1.1, 2020-12-17
- General Programme Instructions for The International EPD® System, version 3.01
- ISO 14040:2021 - ISO 14044:2021 - ISO 14025:2006 - ISO 14001:2015
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- European Residual Mixes – Results of the calculation of residual Mixes for the calendar year 2020, version 1.0, 2021-05-31
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- Eco-profiles and Environmental Product Declarations of the European Plastics Manufacturers published by Plastics Europe (2014)
- Corepla's Sustainability report, 2018
- Corepla's Sustainability report, 2020
- Packaging consumption and recycling data 2018-2019, APCO, v1
- Rilegno, Annual Prevention Specific Plan (PSP), 2018-2019
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- <https://ec.europa.eu/eurostat>
- LCA Report "Life Cycle Assessment (LCA) applied to multilayer and monolayer plastic films to be used for packaging applications", v.2, 2022-03-07





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