

Environmental Product Declaration



In accordance with ISO 14025 for:

- 1. corrugated packaging production - Sada plant Pontecagnano (SA)**
- 2. greenboxX® corrugated packaging - Sada plant Pontecagnano**



A. SADA & FIGLI SPA

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P- 03047
Publication date:	2021-05-10
Valid until:	2026-05-09

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



Programme information

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com
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Product category rules (PCR): *CORRUGATED PAPER AND PAPERBOARD PRODUCT GROUP: UN CPC 32151 2013:07 VERSION 2.11 VALID UNTIL: 2021-08-11,*

PCR review was conducted by: Review Chair: Filippo Sessa – contact: info@environdec.com

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

EPD process certification EPD verification

Third party verifier: *<name, organisation and signature of the third party verifier>*

In case of accredited certification bodies:

Accredited by: *<name of the accreditation body and accreditation number, where applicable>*.

In case of recognised individual verifiers: Dr. Ugo Pretato - Studio Fieschi & soci Srl

Approved by: The International EPD® System

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

Yes No

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

Company information

A.Sada & Figli Spa is a packaging manufacturer specializing in the production of corrugated cardboard packaging. Its main plant, located in Pontecagnano Faiano (SA) - Italy, is equipped with a 1.7 MW photovoltaic system, with 7,310 panels installed, covering an area of approximately 19,000 m².

Sada was founded in 1870 in Molina di Vietri: it started producing wooden crates for the canning industry which was in full development in the Nocerino Sarnese countryside at that time and began to export all over the world. When his first customer, the canned vegetables company Crudele, moved to Pontecagnano, also in the Salerno area, Sada followed. The company then moved from wood to the production of corrugated packaging. Sada acquired other small and medium-sized companies in the industry such as Sabox (2004), Sifim of Catania in 2010. Sada then began to diversify entering the folding carton industry: it built a plant, also in Pontecagnano, to produce boxes for food (pasta, ice cream, snacks, drinks) and then, in 2017, completed the acquisition of the Veronese Travagliati, also a manufacturer of boxes. .

A.Sada & Figli Spa produces, in its Pontecagnano (SA) plant, a wide range of corrugated cardboard packaging used by customers operating mainly in the food and beverage sector, all of which can be customized, even in high definition, with direct flexo printing:

- American boxes
- Die-cut boxes
- Shelf Ready Packaging die cut

Particularly innovative product lines are also produced in Pontecagnano, such as:

- GreenboxX® - It is the 100% recycled and FSC certified packaging line, made from nearby recycled waste.
- Cornerless® - An excellent example of eco-design, it allows an important saving of raw material, exploiting at the same time the entire surface inside and maintaining high performance. The innovative angle allows for strength, ease of stacking and handling. It is particularly suitable for automatic packaging lines because it has no impediments that hinder filling.
- 1Derbox® - Self-mounting tray for forming machines which, thanks to special die-cutting elements, creates a structure that can be easily torn and removed, ensuring excellent shelf visibility.

Product-related or management system-related certifications:

With over 100 years of experience, Sada manufactures high quality corrugated cardboard packaging. Sada was the first corrugated cardboard manufacturer in Italy to be certified ISO 9001 in 1996: certifications are a valuable tool for the company to demonstrate its compliance with the rules and to make the most of the organization's commitment.

Sada Spa current certifications: ISO 9001 – ISO 14001 – ISO 18000 – ISO 45000 – SA 8000 – FSC – PEFC - BRC

Name and location of production site: Pontecagnano (SA) Italy

Product information

In the LCA study, the entire production of corrugated packaging by A. Sada & Figli Spa (product 1) and a particular corrugated packaging called *greenboxx*® (product 2) were considered. Primary data were obtained by Sada regarding energy and water consumption, auxiliary materials, distances, waste production. Raw materials were associated to the corresponding Ecoinvent 3.6 datasets, or, as in the case of the *greenboxx*® (product 2), it was possible to use EPD n. 01621 owned by Cartesar Spa, study related to the production of *greenpaper*® (CPC CODES: 32134 – 32135), a special paper obtained transforming only waste paper from local differentiated collection.

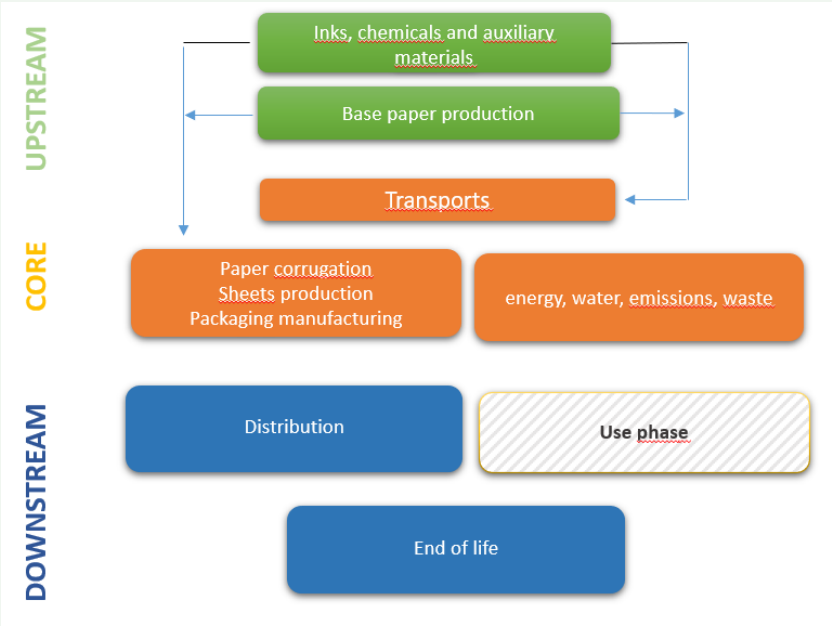
Description of system boundaries:

Boundaries of the considered system are "cradle to grave". The system studied therefore includes the production of raw materials and auxiliaries necessary for the production of corrugated cardboard packaging by Sada spa, the phase of corrugation, sheets production, printing, cutting and gluing of the boxes, packaging and preparation of the finished product for shipment, distribution to user customers and end of life modeled on an Italian scenario. For distribution, the boxes are folded and stacked on pallets: they are then secured with polypropylene straps (0.0002% by weight with respect to the mass of the finished product) and closed with polyethylene stretch film (0.0004% by weight with respect to the mass of the finished product)

Excluded lifecycle stages:

The system includes the packaging delivery to Sada customers but not the subsequent final distribution phase (with the customers' products inside) as it is not one of the phases that the company can significantly influence as it is linked to highly variable distances depending on customer locations. A hypothetical phase of use of the packaging was also excluded from the study as there are no particular uses of the packaging that could influence the final impact data

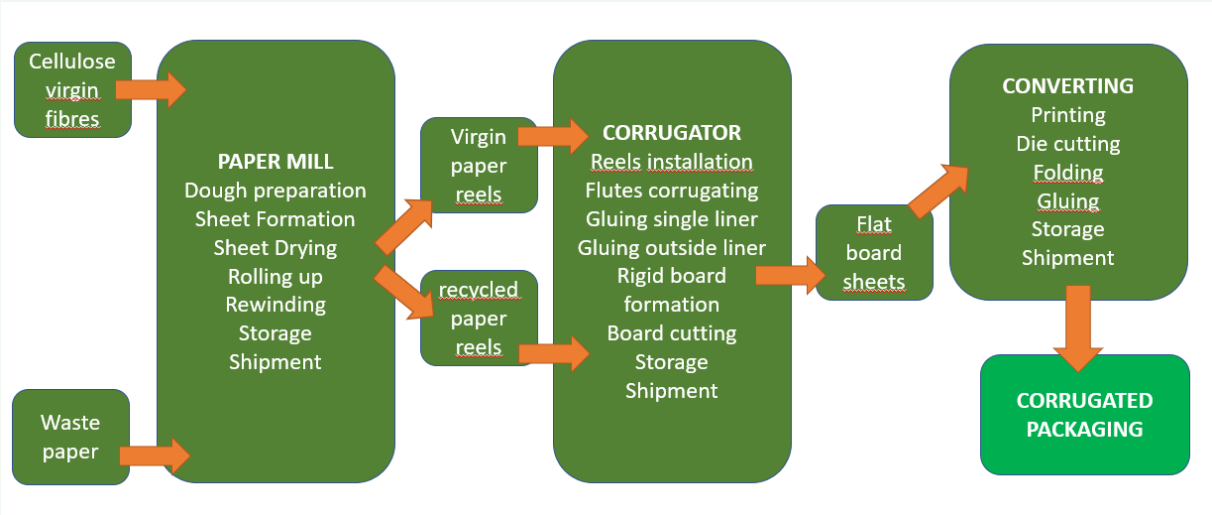
System diagram



Apart from the origin and nature of the papers used, both products (1 & 2) are made according to the following production cycle:

Manufacturing process

The process starts at the paper mill where virgin cellulose fibers or waste-paper are the input factors to manufacture paper reels to be sent to the corrugator. A corrugator is a set of machines designed to bring together three, five or seven sheets of paper to form single, double or triple wall board in a continuous process. The output of the corrugator machine are flat board sheets that are used to be converted in corrugated packaging through converting operations as printing, die-cutting, folding and gluing (taping or stitching).



LCA information

Functional unit: 1 ton of packaging

Reference service life: N/A

Time representativeness: 2019

Database(s) and LCA software used: Ecoinvent 3.2 – SimaPro 9.1.1.1

Owner of the EPD:

A. Sada & Figli spa – Pontecagnano (SA) Italy

Contact person: Dr. Massimo Lombardi – sostenibilita@sadaspa.it

More information:

www.sadaspa.it

www.packagingsostenibile.com

The study was performed by:

Dr. Massimo Lombardi – LCA Consultant

sostenibilita@sadaspa.it

Product 1

Corrugated cardboard boxes made at the Sada plant in Pontecagnano (SA) - Entire production -

Product identification: Sada packaging is made with corrugated sheets weighting from 100 to 300 g/sqm. 73.67% of the papers used for the production of packaging come from recycled fibers (waste paper post consumer), 21.68% from virgin fibres and 4.65% are made with greenpaper®, a particular recycled paper that is characterized by the local origin of the pulp_(always post consumer waste-paper) used for the proximity of its production cycle.

Product description: The specific function of corrugated containers is that of secondary packaging (distribution packaging) and therefore the protection of the products contained therein in order to ensure their

transport, handling and storage in complete safety and safeguarding their integrity.

Declaration about the recording, the evaluation, the authorization and the restriction of chemical substances – REACH - Rule (EC) n° 1907/2006 of the European parliament: Sada corrugated cardboard boxes don't contain substances subject to recording and therefore, as required by the rule it will be Sada care to ask its suppliers, in the chain of provisioning, the full observance of every fulfillment regarding the pre-recording, recording, authorization, predisposition of the scenery of exposure and the safety files, as foreseen by the arts. 6,31,95 of the summentioned rules.

UN CPC code: 32151

Geographical scope: Europe



American boxes



Twin boxes



Die cut-boxes

Product 2

Corrugated packaging boxes greenboxX®, made at the Sada plant in Pontecagnano (SA)

Product identification: greenboxX® is 100% made with a recycled post consumer waste paper called greenpaper® (EPD n. 01621) obtained from proximity recycled waste paper. The greenpaper® is manufactured (weight from 100 to 185 g/sqm) at Cartesar Spa, a paper mill in Pellezzano (SA) which receives about 150,000 tons of waste paper yearly, 40% from Campania region and the rest from neighboring areas that do not have recovery plants, therefore being able to all intents and purposes to define the recycling of waste paper at Cartesar as "proximity" one pursuant to Directive 2008/98 / EC.



greenboxX®

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UN CPC code: 32151

Geographical scope: Europe

Environmental performance product 1: corrugated packaging production - Sada plant

Potential environmental impact

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	9,56E+02	2,70E+02	3,62E+01	1,26E+03
	Biogenic	kg CO ₂ eq.	3,61E+00	1,10E+00	1,48E+02	1,53E+02
	Land use and land transformation	kg CO ₂ eq.	5,33E+00	4,47E-02	1,11E-02	5,38E+00
	TOTAL	kg CO ₂ eq.	9,65E+02	2,71E+02	1,84E+02	1,42E+03
Depletion potential of the stratospheric ozone layer (ODP)		kg CFC 11 eq.	9,77E-05	2,58E-05	6,42E-06	1,30E-04
Acidification potential (AP)		kg SO ₂ eq.	3,12E+00	8,15E-01	2,04E-01	4,14E+00
Eutrophication potential (EP)		kg PO ₄ ³⁻ eq.	1,90E+00	1,92E-01	3,93E-01	2,49E+00
Photochemical oxidant formation potential (POFP)		kg NMVOC eq.	3,27E+00	7,17E-01	3,67E-01	4,36E+00
Abiotic depletion potential – Elements		kg Sb eq.	1,42E-03	4,42E-04	1,06E-04	1,97E-03
Abiotic depletion potential – Fossil resources		MJ, net calorific value	1,34E+04	3,06E+03	5,72E+02	1,71E+04
Water scarcity potential		m ³ eq.	1,24E+01	3,98E-01	1,34E-01	1,29E+01

Use of resources

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	11.283	3.302	598	15.183
	Used as raw materials	MJ, net calorific value	3.686	0	0	3.686
	TOTAL	MJ, net calorific value	14.969	3.302	598	18.869
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	11.290	289	10	11.588
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	11.290	289	10	11.588
Secondary material	kg	783	0	0	783	
Renewable secondary fuels	MJ, net calorific value	0	0	0	0	
Non-renewable secondary fuels	MJ, net calorific value	0	0	0	0	
Net use of fresh water	m ³	4,57	3,66	0,37	8,60	



Waste production and output flows

Waste production

PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Hazardous waste disposed	kg	0	0	0	0
Non-hazardous waste disposed	kg	0	0	0	0
Radioactive waste disposed	kg	2,E-02	1,E-02	4,E-03	4,E-02

The amount of hazardous and non hazardous wastes as outflows from the system is zero, because all treatment processes are included within the system boundaries"

Output flows

PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	7,98E+02	7,98E+02
Materials for energy recovery	kg	0,00E+00	0,00E+00	7,92E+01	7,92E+01
Exported energy, electricity	MJ	0,00E+00	2,06E+01	0,00E+00	2,06E+01
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00



Environmental performance product 2: *greenboxX*[®]

Potential environmental impact

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	8,66E+02	1,47E+02	3,62E+01	1,05E+03
	Biogenic	kg CO ₂ eq.	2,56E+01	1,22E+00	1,48E+02	1,75E+02
	Land use and land transformation	kg CO ₂ eq.	4,94E+00	2,27E-02	1,11E-02	4,97E+00
	TOTAL	kg CO ₂ eq.	8,97E+02	1,48E+02	1,84E+02	1,23E+03
Depletion potential of the stratospheric ozone layer (ODP)		kg CFC 11 eq.	3,87E-05	7,74E-06	6,38E-06	5,28E-05
Acidification potential (AP)		kg SO ₂ eq.	2,44E+00	3,74E-01	1,54E-01	2,96E+00
Eutrophication potential (EP)		kg PO ₄ ³⁻ eq.	1,25E+00	1,02E-01	3,80E-01	1,74E+00
Photochemical oxidant formation potential (POFP)		kg NMVOC eq.	2,35E+00	2,55E-01	2,61E-01	2,86E+00
Abiotic depletion potential – Elements		kg Sb eq.	9,13E-04	1,36E-04	1,06E-04	1,15E-03
Abiotic depletion potential – Fossil resources		MJ, net calorific value	1,07E+04	1,27E+03	5,68E+02	1,26E+04
Water scarcity potential		m ³ eq.	1,36E+01	4,03E-02	1,33E-01	1,37E+01

Use of resources

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	11.356	1.434	594	13.384
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	11.356	1.434	594	13.384
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	1.568	1.429	130	3.127
	Used as raw materials	MJ, net calorific value	0	0	0	0
	TOTAL	MJ, net calorific value	1.568	1.429	130	3.127
Secondary material	kg	1.069			1.069	
Renewable secondary fuels	MJ, net calorific value	0	0	0	0	
Non-renewable secondary fuels	MJ, net calorific value	0	0	0	0	
Net use of fresh water	m ³	4,69	0,73	0,37	5,79	



Waste production and output flows

Waste production

PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Hazardous waste disposed	kg	0	0	0	0
Non-hazardous waste disposed	kg	0	0	0	0
Radioactive waste disposed	kg	1,E-02	3,E-03	4,E-03	2,E-02

The amount of hazardous and non hazardous wastes as outflows from the system is zero, because all treatment processes are included within the system boundaries"

Output flows

PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Components for reuse	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	7,98E+02	7,98E+02
Materials for energy recovery	kg	0,00E+00	0,00E+00	7,92E+01	7,92E+01
Exported energy, electricity	MJ	0,00E+00	9,33E+00	0,00E+00	9,33E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00



Additional information

Benefits of proximity recycling: GreenboxX® - closed loop recycled packaging

A.Sada & Figli Spa sustainability policy focuses on providing correct information about its packaging features and environmental impacts, origin of raw materials and recycling/reuse possibilities.

Sada closed loop recycling projects integrate customers' sustainability objectives creating a real circular economy system that guarantees, through proximity recycling and a local value chain, emission reductions, traceability and legality of the whole cycle.

Main purpose of the project is to allocate waste paper generated by Sada customers' plants to the recycling cycle managed by SADA Group and Rete per il Packaging Sostenibile and use it to produce (mixed with other local waste-paper) a new type of corrugated packaging called greenboxX®, bearing FSC® certification and EPD®, environmental impact declaration. The project makes it possible to give effect to the Principle of Proximity and to feed a traceable, legal and sustainable local value chain.

Closed loop packaging



In general, waste-paper generated by industrial productions is collected by an authorized operator, transported to the platform and then placed on the market to be sold in the country or abroad: a single economic transaction that benefits few people.



Circular economy projects of closed loop recycling allow customers to consciously decide a specific destination for their secondary raw materials and do not to alienate from the territory the value chain related to their transformation and recycling: in this way it is possible to preserve jobs and contribute to local wealth in a perspective of shared social responsibility and reduction of environmental impact.

Being aware of the destination of its own waste-paper is the natural extension of the PPP (polluter pays principles: OECD - EE UU) better defined also by the EPR (extended producer responsibility) whilst local recycling complies with the Directive 2008/98 / EC of the European Parliament and with the "proximity principle", according to which waste should be treated at the closest available facilities.

GreenBoxX®



References

*GENERAL PROGRAMME INSTRUCTIONS FOR THE INTERNATIONAL EPD® SYSTEM
Versione 3.1 del 2019-09-18*

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ISO14040: 1997 - Environmental management - Life cycle assessment - Principles and framework*

ISO 14044: 2006 - Environmental Management — Life Cycle Assessment — Requirements and Guidelines

*A.Sada & Figli Spa -Life Cycle Assessment |packaging in cartone ondulato (intera produzione)
|greenboxX®*

The study was commissioned by:

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