



Servizi
Italia



ENVIRONMENTAL PRODUCT DECLARATION

PROVISION OF INTEGRATED SERVICES FOR THE SUPPLY, RENTAL AND RECONDITIONING (WASHING AND DISINFECTION, STERILIZATION), MAINTENANCE, LOGISTICS (TRANSPORTATION, COLLECTION AND DISTRIBUTION AT CUSTOMERS) OF STERILE DRAPES AND GOWNS IN REUSABLE TECHNICAL FABRIC (R.T.T.), PACKED IN S.B.S. (STERILE BARRIER SYSTEM).

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-01945
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PREPARED WITH THE SUPPORT OF **CENTROCOT** – CENTRO TESSILE COTONIERO E ABBIGLIAMENTO S.P.A.

IN COMPLIANCE WITH ISO 14025.

NOTE: 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

Service information

The Company

Servizi Italia S.p.A. was founded in 1986 as a company operating in the field of design, construction and installation of laundries and wash-hire services (i.e. linen rental and industrial launderer).

The Company's business areas include laundry services, laundry sterilization and sterilization of surgical instruments, supplies for surgical procedures and services like those of sterilization.

Over the years, the wide diversification of the services range has allowed Servizi Italia S.p.A. to position itself as a strategic partner and privileged interlocutor of integrated services of rental, washing and sterilization of textile shards and surgical instruments in favor of social welfare and hospital facilities, both public and private. Servizi Italia S.p.A. mainly targets public and private health companies in central/northern Italy, the state of S. Paulo in Brazil, Turkey, India, Albania by offering a wide and diverse range of services.

The Servizi Italia S.p.A Group (which includes Servizi Italia S.p.A. and the consolidated companies) employs more than 3,400 people. **The headquarters is based in Castellina di Soragna (Parma)**. The other corporate locations covered within the present Environmental Product Declaration (EPD) are:

Bolzaneto Production Site (GE)

Florence Production Site (FI)

For more information: <https://servizitaliagroup.com/homepage>

The service

The sterilization of textiles, which aims to eliminate any vital organ from a medical device through an automatic sequence of operational phases carried out in a sterilizer (so-called "sterilization cycle"). It concerns surgical interventions for the setting up of the operating field and the dressing of the medical team. Once used, the textiles are withdrawn, refurbished, subjected to the sterilization process and returned in sets to the operating rooms for re-use.

The sterilization takes place in specific buildings attached to the laundry production sites where the textiles, once refurbished, are packed in sets and subjected to the sterilization process. This process is made in accordance with the current regulations as well as those specifically related to the Medical Devices, thus ensuring the traceability of the process/product through the use of special information systems and the application of barcodes or technological systems that allow to identify the devices automatically.

To transport the Sterile Medical Devices, Servizi Italia S.p.A. relies on qualified third-party companies that have dedicated means and staff suitable for this type of activity.

Servizi Italia S.p.A. is the main national operator in the integrated services of rental, washing and sterilization of textiles and surgical instruments in favor of social welfare and hospital public and private facilities. The services covered by this Environmental Product Declaration are the following:

- Supply, rental and reconditioning (washing and disinfection, sterilization), maintenance, logistics (transportation, collection and distribution at customers) of sterile drapes and gowns in reusable technical fabric (R.T.T.), packed in SBS (sterile barrier system).

These services correspond to the code UN CPC 97130 "Other textile cleaning services". This classification is best described in Table 1

Table 1 Classification of the activity under analysis.

GROUP	CLASS PROPERTY	SUBCLASS PROPERTY	DESCRIPTION
971			Washing, cleaning and dyeing services
	9713	97130	Other textile cleaning services

The sites covered by this study, in all three, are presented in Table 2

Table 2 Sites being analyzed.

SOURCE – Owner of EPD	
SERVIZI ITALIA S. p. A.	Via S. Pietro 59/C 43019 Castellina di Soragna (PR)
PRODUCTION SITES INCLUDED IN THE ANALYSIS	
Castellina Production Site (PR)	Laundry with attached laundry sterilization Via S. Pietro 59/C 43019 Castellina di Soragna (PR)
Bolzaneto Production Site (GE)	Laundry with attached laundry sterilization Via Albisola, 105-109, 16162 Bolzaneto (GE)
Florence Production Site (FI)	Laundry with attached laundry sterilization c/o Hospital Careggi – Via Lungo il Rio Freddo 15, 50141 Florence (FI)
Contacts	
Internal contact of SERVIZI ITALIA S.p.A.	Ing. Alessia Magni (Responsible for the Environmental Management System) alessia.magni@si-servizitalia.com

Life Cycle Assessment

Introduction to the study

The methodology used to quantify the environmental performance stated in this Environmental Product Declaration (EPD) is the Life Cycle Assessment (LIFE Cycle Assessment) regulated by the rules contained in the ISO 14040 series.

The Product Category Rules are contained in the document "SERVICE OF PROVIDING WASHED AND STERILIZED REUSABLE SURGICAL DRAPES AND GOWNS UDES FOR PATIENTS AND CLINICAL STAFF" (PRODUCT CATEGORY CLASSIFICATION: A CPC 97130).

The study was carried out by the technicians of CENTROCOT - Centro Tessile Cotoniero ed Abbigliamento S.p.A., in accordance with the directives contained in the document relating to the Product Category Rules.

This EPD aims to communicate to customers and suppliers the company's commitment to continuous improvement of its environmental performance and its resource consumption.

This EPD is based on data related to the year 2018. The study also used specific data, when available, integrating it with generic data from the following databases:

- GaBi (GaBi Professional, service pack 39)¹
- Ecoinvent v3.5²

Functional unit

The functional unit is the washing and sterilization service of 1 kg of drapes and gowns (R.T.T.) provided in a clean and sterilized form (according to the quality criteria necessary for them to be used in an operating theatre) and packaged in SBS (sterile barrier system), during a year of service.

During this period, each drape and each gown is washed and sterilized for "n" times on average. While the useful life of R.T.T. it is calculated as the "N" sterilization cycles that it can perform:

F.U. - 1 kg of R.T.T. washed and sterilized in one year of service

The calculation procedure for defining "1 kg" is as follows:

- calculation of the total mass for each fabric that makes up all the drapes and gowns treated during the year 2018.
- calculation of the percentage of the masses of such tissues, carried out on the total of the drapes and gowns treated.
- transfer of these percentages to 1 kg of treated drapes and gowns.

Depending on the phase (i.e. upstream, core, or downstream), the functional unit is allocated: (i) considering the number "n" sterilization cycles in a year compared to the number "N" useful life cycles (for upstream and downstream), or (ii) considering only the number "n" one year (for core activities).

¹ <http://www.gabi-software.com/databases/gabi-databases/professional/>

² <https://www.ecoinvent.org/>

In this study, "n" and "N" correspond to:

n - number of sterilization cycles in a year = 70

N - number of sterilization cycles in all useful life = 70

These numbers were provided directly by Servizi Italia S.p.A.

Considering the service for three plants, the contribution of each of them is calculated using the criterion of the weighted average of the mass of the fabric treated in that plant and that of the total mass of fabric of towels and gowns (in all establishments).

System boundary

For the assessment of environmental loads, the system taken into account is consistent with that indicated in PCR A CPC 97130, of type "cradle to grave", and is presented in Figure 1

Geographically, this study refers to three establishments located in Italy.

Upstream

The following processes are part of the product system and are classified as upstream processes:

- Extraction of raw materials for textile layer manufacturing
- Transport of raw materials for textile layer manufacturing
- Textile layer manufacturing for drapes and gowns manufacturing.
- Transport of textile layer for drapes and gowns manufacturing.
- Drapes and gowns manufacturing.
- Extraction and transport of raw materials for primary and secondary packaging of the new drapes and gowns.
- Manufacturing of primary and secondary packaging of the new drapes and gowns.
- Manufacturing of packaging of chemicals, machineries and equipment to the facility.
- Extraction and production of raw materials to produce machineries and equipment used in the washing and sterilization service.
- Extraction and production of raw materials used in the production of consumables, such as chemicals used in the washing and sterilization service.
- Manufacturing of packaging of drapes and gowns, chemicals, machineries and equipment to the facility.
- Transport of the new machineries and equipment to the facility.
- Transport of chemicals to the facility.
- Transport of drapes and gowns to the facility.
- Transport of the packaging to the facility.

The upstream process is related to 1 kg of drapes and gowns allocated considering the number of sterilization cycles in one year in respect of the "N" sterilized cycles in the service life.

Core process

The following processes are part of the product system and are classified as key processes:

- Water consumption
- Washing and sterilization of surgical drapes and gowns
- Quality control of surgical drapes and gowns
- Possible reparation of surgical drapes and gowns
- Packaging of sterilized and dirty surgical drapes and gowns

- Transport of sterilized drapes, gowns, closets from the facility service to the hospital
- Transport of dirty drapes, gowns, sacks, rolls from the hospitals to the service facility
- Decontamination of means of transport (trucks), rolls and closets
- Ordinary maintenance of machineries and equipment 2
- Land use of building of service facility.

The core process is built on 1 kg of washed and sterilized drapes and gowns, considering the "n" number of sterilization cycles in a year.

Downstream

The following processes are part of the Product System and are classified as downstream processes:

- End-of-life processes of the drapes and gowns.
- End-of-life processes of machineries and equipment.
- Treatment of waste generated during reprocessing (e.g. detergents and washing water).
- End-of-life processes of packaging of drapes and gowns (new, dirty and sterilized), of chemicals, of machineries and equipment, of spare parts.

The downstream process is related to 1 kg of drapes and gowns allocated considering the number of sterilization cycles in one year in respect of the "N" sterilized cycles in the service life.

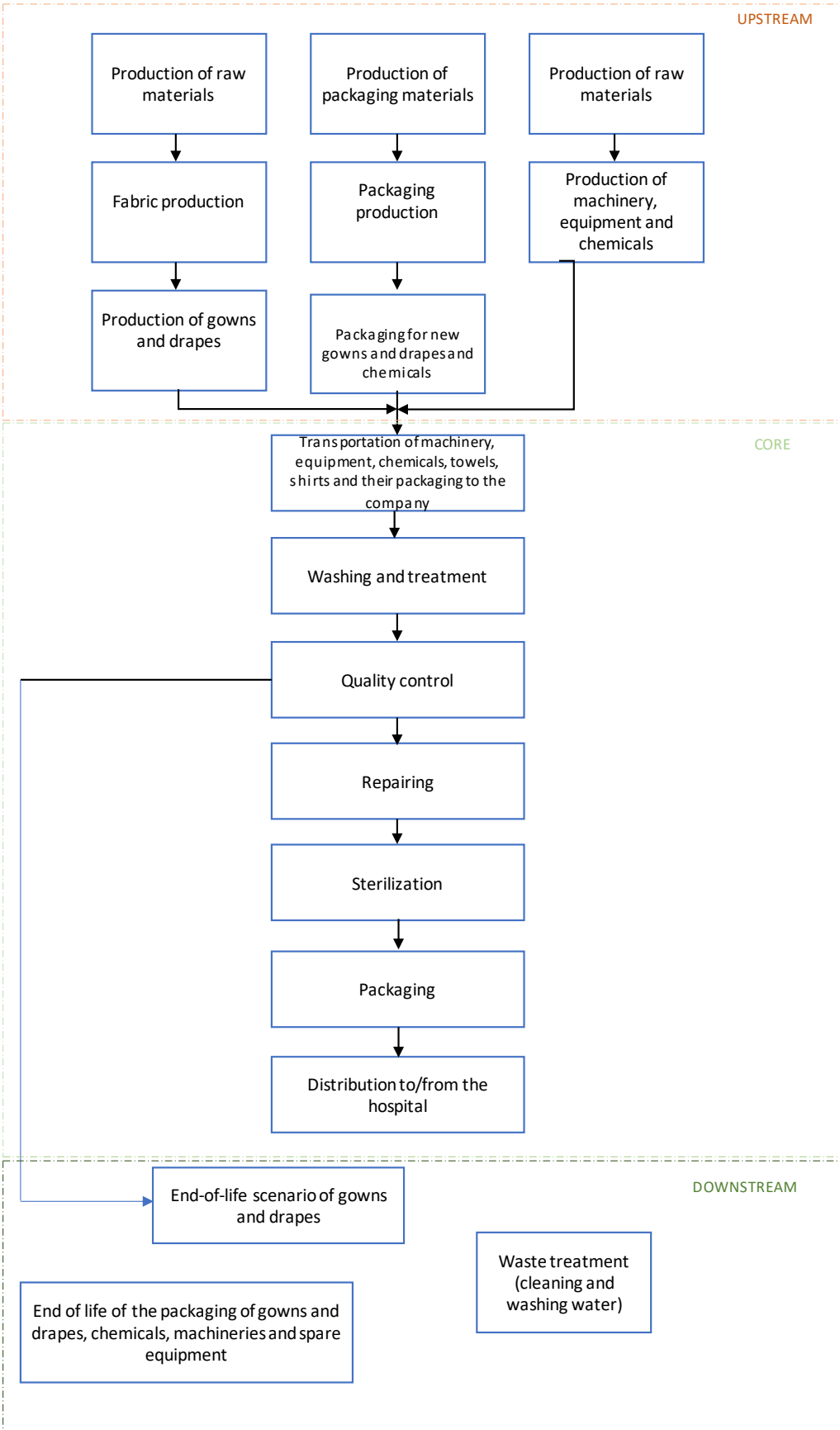


Figure 1 System Boundaries.

Since the production process and related energy consumption, as well as the transport of raw materials, do not vary as the material treated, a mass allocation is applied to energy consumption, raw materials, possible emissions and waste, in order to separate the inputs and outputs related to the R.T.T. within the scope of the present EPD.

As no "partial" counters are available in the facilities, all inputs and outputs are based on calculations that consider machine data, areas, processed volumes.

In accordance with the Product Specific Requirements (PCR A CPC 97130 v.1 2018:05), the inventory was filled with a general cut-off rule of 1%.

Environmental impact

In order to assess environmental performance according to the Product Category Rules UN CPC 97130 2018:05, both an environmental impact assessment and an inventory analysis are reported. The results for the recommended parameters are shown in the following sections. In accordance with the Product Category Rules UN CPC 97130 2018:05, as the study considers the service for three plants, the total impact is calculated using the criterion of the weighted average.

The total impact is obtained by weighting the results of the three sites on the amount of R.T.T. processed in 2018. Their sum is divided by type of fabric treated by the percentages reported in Table 3.

The scores shown in the following sections are calculated for 1 kg of R.T.T.

This kilogram is to be considered to be broken down as indicated in Table 3 the textiles.

Table 3 Amount of R.T.T. processed in 2018 for the three sites.

SITE	TOTAL R.T.T. PROCESSED 2018 (kg)	POLYESTER	POLYESTER, CARBON	POLYESTER, PTFE/TEFLON® HT	POLYESTER, POLYURETHANE MEMBRANE
Bolzaneto	404159	11422.53	47283.28	176691.69	168761.50
	100%	3%	12%	44%	42%
Castellina	453885	39467.34	67158.54	85092.58	262166.53
	100%	9%	15%	19%	58%
Florence	432154	33625.96	53214.19	77083.13	268230.72
	100%	8%	12%	18%	62%
Total 3 sites	1290198.00	84515.83	167656.01	338867.41	699158.75
	100%	7%	13%	26%	54%

Environmental impact

The environmental impact is calculated according to recommended indicators and it is shown in Table 4 All results refer to the functional unit and are weighed on the amount of textiles washed and sterilized in 2018 in each plant.

Table 4 Environmental Impacts according to the recommended Indicators (average weighted on the three sites).

			Weighted impacts (related to 1 kg T.T.R.)			
PARAMETER		UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTALE
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	9.46E+00	1.79E+00	1.08E+00	1.23E+01
	Biogenic	kg CO ₂ eq.	3.12E+01	6.83E-03	2.86E-01	3.15E+01
	Land use and land transformation	kg CO ₂ eq.	7.85E-03	7.22E-04	1.85E-04	8.75E-03
Acidification potential (AP)		kg SO ₂ eq.	2.33E-02	2.33E-03	4.36E-04	2.60E-02
Eutrophication potential (EP)		kg PO ₄ ³⁻	2.12E-03	4.26E-04	1.86E-03	4.41E-03
Photochemical oxidant formation		Kg NMVOC eq.	1.46E-02	1.74E-03	8.60E-04	1.72E-02
Abiotic depletion potential	Elements	kg Sb eq.	1.89E-05	1.32E-07	1.07E-08	1.91E-05
	Fossil fuels	MJ net calorific value	1.76E+02	2.67E+01	1.35E+00	2.04E+02
Water scarcity		m ³ eq.	1.71E-01	1.56E+00	1.33E-02	1.74E+00
Human toxicity 100a		kg 1,4-DB eq.	1.13E+00	1.70E-01	6.04E-03	1.31E+00

Use of resources

The results of the inventory analysis conducted to evaluate resource use indicators is shown in Table 5. All results refer to the functional unit and are weighed on the amount of R.T.T. washed and sterilized in 2018 in each plant.

Table 5 Results of inventory analysis (resources) related to recommended parameters (average weighted on the three sites).

			Weighted impacts (related to 1 kg T.T.R.)			
PARAMETER		UNIT	UPSTREAM	CORE	DOWNSTREAM	TOTALE
Primary energy resources - Renewable	Used as energy carrier	MJ, net calorific value	1.86E+01	1.05E+00	2.02E-01	1.99E+01
	Used as raw materials	MJ, net calorific value	0	0	0	0
	Totale	MJ, net calorific value	1.86E+01	1.05E+00	2.02E-01	1.99E+01
Primary energy resources – Non renewable	Used as energy carrier	MJ, net calorific value	1.87E+02	2.79E+01	1.43E+00	2.17E+02
	Used as raw materials	MJ, net calorific value	0	0	0	0
	Totale	MJ, net calorific value	1.87E+02	2.79E+01	1.43E+00	2.17E+02
Secondary material		kg	0	0	0	0
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 water		m ³	4.55E-02	3.52E-02	3.74E-04	8.11E-02
Toxic materials		kg	1.25E-03	0	0	1.25E-03

Waste and other "output flows"

The quantities of waste at disposal, classified as by Specific Product Requirements UN CPC 97130 2018:05, are shown in Table 6. In addition, the non-waste output quantities, classified as recommended, are listed in Table 7.

All results refer to the functional unit and are weighed on the amount of R.T.T. washed and sterilized in 2018 in each plant.

Table 6 Waste Production Indicators (average weighted on the three sites).

PARAMETER	UNIT	Weighted impacts (related to 1 kg T.T.R.)			
		UPSTREAM	CORE	DOWNSTREAM	TOTALE
Hazardous waste disposed	kg	2.19E-05	3.84E-08	7.42E-09	2.20E-05
Non-hazardous waste disposed	kg	1.68E-01	1.01E-02	7.94E-01	9.72E-01
Radioactive waste disposed	kg	0	0	0	0

Table 7 Indicators for non-waste outbound flows (average weighted on the three sites).

PARAMETER	UNIT	Weighted impacts (related to 1 kg T.T.R.)			
		UPSTREAM	CORE	DOWNSTREAM	TOTALE
Components for reuse	kg	0	0	0	0
Material for recycling	kg	0	0	3.94E-02	3.94E-02
Materials for energy recovery	kg	0	0	1.20E-02	1.20E-02
Exported energy, electricity	MJ	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0

Programme information

- Address of programme operator: EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com
- The following mandatory statement from ISO 14025: “EPDs within the same product category but from different programmes may not be comparable.”
- The EPD owner has the sole ownership, liability and responsibility of the EPD
- Information about verification and reference PCR:

Product category rules (PCR):

SERVICE OF PROVIDING WASHED AND STERILIZED REUSABLE SURGICAL DRAPES AND GOWNS USED FOR PATIENTS AND CLINICAL STAFF.

Product Category Classification: UN CPC 97130. Version 1.01 2018:05

PCR Review was conducted by:

Technical Committee of International EPD®System (www.environdec.com)

Chair of the PCR review: **Lars-Gunnar Lindfors**

The review panel may be contacted via: 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:

SGS Italia S.p.A.

Accredited by: **ACCREDIA**

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

Yes

No

The comparison of different EPDs shall be carried out taking into account:

- In the same PCR:
 - The criteria to define the functional unit and their method of calculation.
 - The total number of cycles of life of frapes and gowns and their method of calculation.
 - The total number of cycles of life of drapes and gowns in one year and their method of calculation.
- In the comparison of one disposable drape and one reusable drape:
 - One type of drape should be chosen.
 - 1 kg of this drape should be calculated taking into account the percentage of its component materials.
 - The life cycle should be calculated considering one cycle of sterilization.

References

Ecoinvent (2018). Ecoinvent 3.5 database. For further information: <https://www.ecoinvent.org/database/older-versions/ecoinvent-35/ecoinvent-35.html>

EPD International (2018). PRODUCT CATEGORY RULES (PCR) - SERVICE OF PROVIDING WASHED AND STERILIZED REUSABLE SURGICAL DRAPES AND GOWNS USED FOR PATIENTS AND CLINICAL STAFF. PRODUCT CATEGORY CLASSIFICATION: UN CPC 97130. 2018:05 versione 1.01.

EPD International (2019) General Programme Instructions for the International EPD® System. Versione 3.01, dated 2019-09-18. www.environdec.com

Thinkstep (2019). GaBi Professional Database. Service pack 39. For further information: <https://www.gabi-software.com/support/gabi>