EPD®

# ENVIRONMENTAL PRODUCT DECLARATION of GS DISPENSER 1,2 cc - 2,0 cc

**CPC CODE**
36490 - Dispensing Systems PCR 2013:09 - Version 2.0

APPROVAL DATE
05/12/2018

**PUBLICATION DATE**
3/09/2015

**REVISION DATE**
29/11/2018 (REV 7)

**GEOGRAPHICAL SCOPE**
International

**EPD VALIDITY**
08/11/2020

**REGISTRATION NUMBER**
S-P-00743

# 1 Our Company: APTAR ITALIA


The company was established in 1979 as SAR S.p.A. with headquarters in the industrial district of Sambuceto, **in San Giovanni Teatino (Chieti)**. It is considered by all industries operating in this market field as **the world leader in the production of atomising micropumps and dispensers.**

Starting from 1985 the Chicago-based Pittway Corporation took gradually over the company and the Aptar Group was eventually established in 1993. It is listed on the USA stock exchange and holds the parcel of shares of the packaging companies previously held by Pittway.


In 1999 Aptar took over the US Emson Inc., another producer of atomisers, and Emsar S.p.A. was established as a result of the Emson Inc./SAR S.p.A. integration.

Novares S.p.A., located in Piano della Stazza - Manoppello Scalo (Pescara), was established in 1991 and started its production activity in November 1997. The company took up the world-wide challenge of a more and more competitive market and has been using the most advanced production technologies and automation processes.

Further to the reorganization carried out by the Aptar top management at the end of 2009, both production sites became part of the **Beauty & Home division** in the European region.

On 1st July 2014, the company Novares S.p.A. was merged into Emsar S.p.A., with the subsequent change of the company name into **Aptar Italia S.p.A.**

*Headquarter Aptar Italia S,p,A,: Via Po, 49 – Z,I, Sambuceto - 66020 – San Giovanni Teatino (CH) – Italy*

## 1,1 Our vision


## 1,2 Our certifications

*Quality*
**UNI EN ISO 9001**

*Safety*
**OHSAS 18001**

*Environment*
**UNI EN ISO 14001**

*Food contact*
**BRC / IoP**

*Social*
**SA 8000**

*Energy*
**UNI EN ISO 50001**

# 1,3 Environmental sustainability policy of Aptar

The **Environmental Sustainability Policy** is an important component of our commitment to responsible corporate citizenship.

To achieve the environmental element of **our 2030 Vision** we will:

- Comply with requirements of global, national, state, and local statutes, regulations, and standards protecting the environment, human health, and safety
- Incorporate environmental sustainability considerations into our business decisions
- Work to minimize our environmental footprint by promoting energy and water conservation; reducing the use of non-renewable natural resources; increasing the reuse and recycling of materials; and striving for landfill free processes
- Monitor emerging environmental trends and keep abreast of regulatory changes
- Drive continuous improvement in our environmental sustainability performance by setting goals, measuring, and communicating progress towards those goals
- Engage with key stakeholders - including employees, customers, suppliers, and shareholders - for continuous improvement

## 1,4 Plant and production processes

Aptar Italia produces micro-pumps and dispensers for liquids with highly technological assembly processes through the use of high-speed machines.
The GS production process starts with a first phase when the plant receives semi-finished components produced by suppliers with different production processes as injection molding, extrusion, vulcanization and then continues with the assembly of the final product at Aptar Italia plants.

In total the GS has two assembly processes and ten production processes for the various components.


## 1,5 The products

The products included in the analysis belong to the **GS DISPENSER family with dosage 1,2 cc and 2,0 cc.**

All GS family and all GS options covered with metal surfaces are excluded.

# 2 Product description

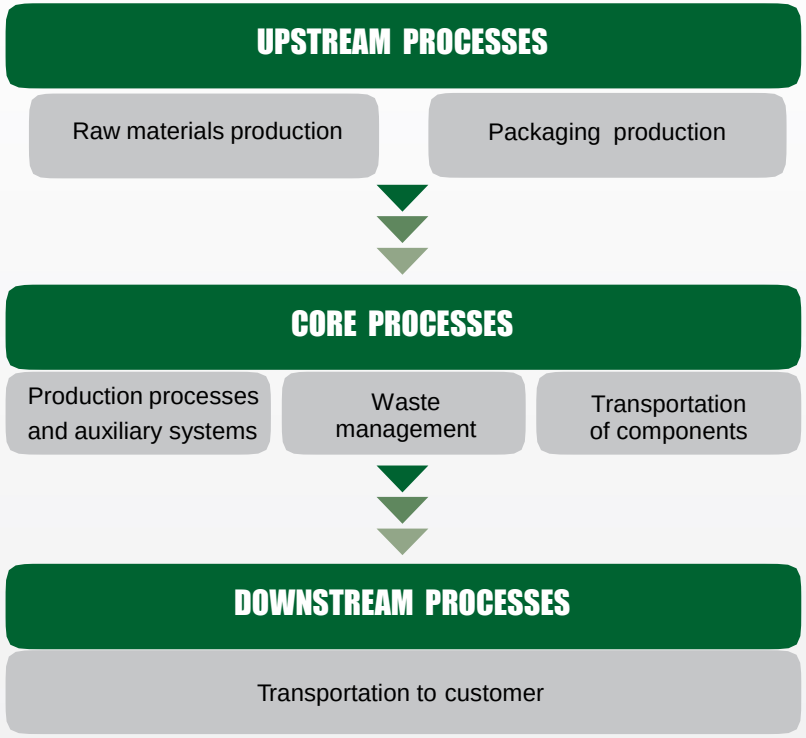
The following table shows the materials of each GS component typology:

| DISPENSER GS 1,2cc – 2,0cc | Material |
|---|---|
| Housing | PP |
| Piston | LLDPE |
| Retainer | PP |
| Stem | POM |
| Ball | POM |
| Spring | Stainless Steel |
| Gasket | PE |
| Closure | PP |
| Actuator | PP |
| Dip Tube | LDPE |

# 3 Calculation of environmental performance

The environmental performance of GS dispenser was calculated using the **Life Cycle Assessment** methodology starting from the raw materials extraction until the final delivery of the finished product to the customers.

The study was conducted taking into consideration the product category rules published by **International EPD System: CPC 36940 Dispensing Systems.**




## SYSTEM BOUNDARIES

The processes constituting the system analyzed were organized in upstream, core and downstream processes in compliance with the requirements of EPD system:

- **UPSTREAM**, considers the raw materials and packaging production;
- **CORE**, considers the production processes and auxiliary systems, waste management and transportation of components;
- **DOWNSTREAM**, considers the product delivery to final customers (B2B market).

# 3,1 General hypotheses adopted

### Raw Materials

The environmental performance associated with the extraction of various types of plastics, metals and rubbers were evaluated considering secondary data from relevant databases (database GaBi Professional 2013).

### Production and assembly of components

The environmental performance associated with the activities of production and assembly of components was evaluated considering the primary data from principal suppliers incorporating consumption of raw materials, energy, and waste. Secondary data (database GaBi Professional 2013) were used for the various environmental aspects associated with the production of electricity.

### Transportation

The environmental performance associated with transport activities was evaluated in relation to raw materials, components, semi-finished products, finished products and waste. Secondary data were used for the various environmental aspects related to the use of means of transport, load capacity and fuel consumption.
Average distances were calculated in order to cover the main reference scenarios.

### Packaging

The environmental performance associated to the production of packaging was evaluated considering secondary data from relevant databases (database GaBi professional 2013). End of life scenarios related to the packaging were excluded because they are not directly attributable to Aptar Italia but to the final customer.

### Use of dispenser

The environmental performances associated with the use of the dispenser by the end user have not been included in the system boundaries as they do not appear to present significant environmental impacts for the use of the finished product.

### End of Life

The environmental performance associated with the end-of-life activities of the dispenser is excluded from the boundaries of the system because it depends on the behaviour of the end users and the collective waste collection service, therefore it is not directly attributable to Aptar Italia.

# 3,2 Data quality

## Specific data

were collected involving the principal suppliers for the following production processes:

- **injection molding** for the production of semi-finished components;
- **winding process** and **metals treatment** for spring production;
- **extrusion process** for dip tube production;
- **vulcanization process** for the production of gasket;
- **assembling process** for module and finished product.

***Note***
*Management activities of waste resulting from the manufacturing process of assembly have been considered referring to the Annexes A6 and A7 of the document "General Program Instructions for the International EPD® System 2.5".*

## Selected Generic data

were considered for the ball component and its production process, **transportation and packaging production.** In reference to the energy mix scenario was considered (only for the production processes carried out at Aptar Italia) **renewable energy** RECs.

## Data not considered

are all maintenance activities related to the molding and assembly production processes as well as the indirect consumption of electricity connected to the structure (lighting, air conditioning) because the contribution is negligible.

Activities like the change of oil and glycol for press maintenance are not considered because they are carried out at a frequency higher than 3 years.

Data relating to the coloring of resins were not considered since they are below the cut-off equal to 1%.

## Proxy data

contribution in the EPD document is under 1%.

## 3,2 Data quality

In this study, an **uncertainty analysis of data** has been conducted with particular attention to thermo-molded components, more specifically taking into consideration a sensitivity control on the energy consumption of the molding process in the three reference months in which data were collected.

**Initial hypothesis**

observation of the press average energy consumption considering the most representative energy values for the molding process.

**Alternative hypothesis**

widening of energy consumption value to improve the data accuracy with statistic formula to identify upper-limit with +3 $\sigma/\sqrt{n}$ and lower limit with -3 $\sigma/\sqrt{n}$.

The following analysis shows that the percent (%) variation of the data considered in the study is under 10% although a wide range of values was considered in comparison with the initial hypothesis.

**SENSITIVITY CONTROL ON UNCERTAINTY OF MOLDING DATA**

| Component: Housing GS 2,0 cc | Average energy consumption | | | Total average |
|---|---|---|---|---|
| | March | October | November | |
| Initial hypothesis, kWh | 43,20 | 39,33 | 39,71 | 40,75 |
| Alternative hypothesis, kWh | 41,89 | 38,46 | 31,02 | 37,12 |
| Deviation, kWh | -1,31 | -0,87 | -8,69 | -3,65 |
| **Deviation, %** | **-3,04** | **-2,21** | **-21,89** | **-8,95** |
| **Sensitivity, %** | **3,04** | **2,21** | **21,89** | **8,95** |

## 3,2 Data quality

In order to determine the reliability of the calculation related to the identification of the range of environmental impact, the study presents a second focus on the quality of the data on which we decided to analyze the various thermo-molded components applying a criterion for statistical computing with intervals placed respectively at +2σ and -2σ.

Taking into consideration the standard normal distribution, the probability that the LCA average value (calculated with energy average values for each component) is present between the limits shown in the figure can be calculated with the following procedure:

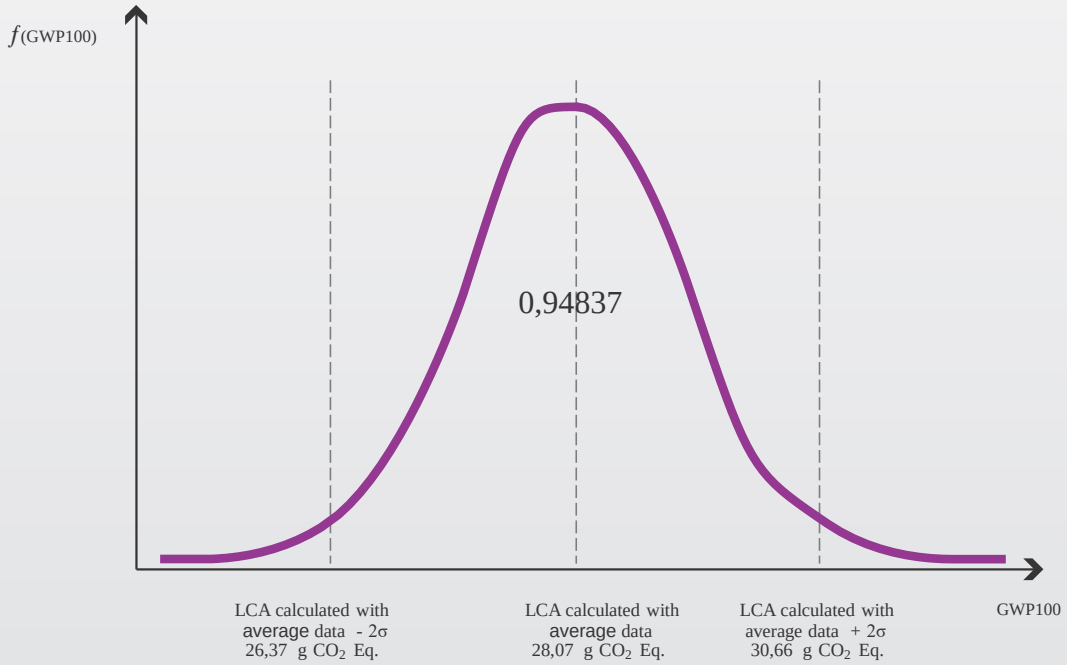
1) $Pr = (26{,}37 \leq x \leq 30{,}66) \rightarrow$

$$Pr = \frac{26{,}37-28{,}07}{1{,}01} \leq \frac{x-\mu}{\sigma} \leq \frac{30{,}66-28{,}07}{1{,}01}$$

2) $Pr = (-1{,}68 \leq Z \leq 2{,}56) = Pr\,(Z \leq 2{,}56) - Pr\,(Z \leq -1{,}6)$
3) $Pr = (Z \leq 2{,}56) - (1- Pr\,(Z< -1{,}68))$
4) 0,99477 (1- 0,95352) = 0,94837
5) 0,94837 real $\tilde{=}$ 0,95445 theoretical

This procedure can be repeated for any other results obtained from the LCA study, confirming a range of possible impacts very close to the example presented.

| GS 2,00 cc 28/400 (less weight configuration) | | | | |
|---|---|---|---|---|
| **Press** | **Component** | **Average value (x) (kWh)** | **x+2σ (kWh)** | **x-2σ (kWh)** |
| 200 T Hydraulic | Retainer | 22,89 | 26,90 | 18,87 |
| 200 T Hydraulic | Piston | 20,29 | 24,27 | 16,30 |
| 250 T Hydraulic | Housing | 38,46 | 41,34 | 37,30 |
| 170 T Hydraulic / Electric | Stem | 16,75 | 29,75 | 3,75 |
| 150-280-320 T Hydraulic | Actuator K2 | 25,33 | 40,08 | 10,59 |
| 150-200-250 T Hydraulic | Closure 3N | 17,00 | 25,49 | 8,51 |



# 3,3 Declared unit

**DECLARED UNIT:** 1 GS dispenser dosage 1,2cc e 2,0cc.

The tables show the less and greater weight product configurations as representative unit.

| GS 1,2 cc 28/415 Less weight | weight (grams) | % |
|---|---|---|
| Housing (PP) | 2,15 | 18 |
| Piston (LLDPE) | 0,35 | 3 |
| Retainer (PP) | 1,08 | 9 |
| Stem (POM) | 0,85 | 7 |
| Ball (POM) | 0,10 | 1 |
| Spring (Stainless Steel) | 0,69 | 6 |
| Gasket (PE) | 0,10 | 1 |
| Closure (PP) | 3,68 | 30 |
| Actuator (PP) | 2,15 | 18 |
| Dip Tube (LDPE) | 1,13 | 9 |
| Packaging (cardboard + plastic film) | 0,001 | <1 |
| **TOTAL** | **12,28** | **100** |

| GS 1,2 cc 28/415 Greater weight | weight (grams) | % |
|---|---|---|
| Housing (PP) | 2,15 | 17 |
| Piston (LLDPE) | 0,35 | 3 |
| Retainer (PP) | 1,08 | 8 |
| Stem (POM) | 0,85 | 7 |
| Ball (POM) | 0,10 | 1 |
| Spring (Stainless Steel) | 0,69 | 5 |
| Gasket (PE) | 0,10 | 1 |
| Closure (PP) | 4,15 | 33 |
| Actuator (PP) | 2,15 | 17 |
| Dip Tube (LDPE) | 1,13 | 9 |
| Packaging (cardboard + plastic film) | 0,001 | <1 |
| **TOTAL** | **12,75** | **100** |

## Note

The annex section shows the various environmental impacts of the entire GS family with dosage 1,2cc and 2,0cc.

Our goal is to consider a minimum and a maximum environmental impact for the GS dispenser (respectively with less weight and greater weight configuration).

**For all other types of combinations the environmental impact will be incorporated within the range calculated.**

# 3,4 Content of materials and chemicals

| GS 1,2 cc 28/415 Less weight | weight (grams) | % |
|---|---|---|
| PP | 9,06 | 73 |
| POM | 0,95 | 8 |
| LDPE | 1,13 | 9 |
| Stainless Steel | 0,69 | 6 |
| LLDPE | 0,35 | 3 |
| PE | 0,10 | 1 |
| Packaging (cardboard + plastic film) | 0,001 | <1 |
| **TOTAL** | **12,28** | **100** |

| GS 1,2 cc 28/415 Greater weight | weight (grams) | % |
|---|---|---|
| PP | 9,53 | 74 |
| POM | 0,95 | 7 |
| LDPE | 1,13 | 9 |
| Stainless Steel | 0,69 | 5 |
| LLDPE | 0,35 | 3 |
| PE | 0,10 | 1 |
| Packaging (cardboard + plastic film) | 0,001 | <1 |
| **TOTAL** | **12,75** | **100** |

**Note**

The GS dispenser is in compliance with the European Council Regulation number 1907/2006 (REACH) operating in the context of the management of hazardous and chemicals substances.

## 4 Comparisons with other environmental product declaration

Any comparisons with other environmental product declarations should only be carried out taking into account the rules for **Product Category issued by the International EPD System: CPC 36940 Dispensing Systems.**

Further comparisons made without reference to the rules identified in the above product category will not be considered valid.

EPDs belonging to the same product category but coming from different programmes may not be comparable.

## 4 Validity of environmental product declaration

This EPD is valid for three years from the date of its publication and is subject to updating in case of significant changes in environmental performance (± 10%).
The geographical validity of EPD is to be understood internationally.

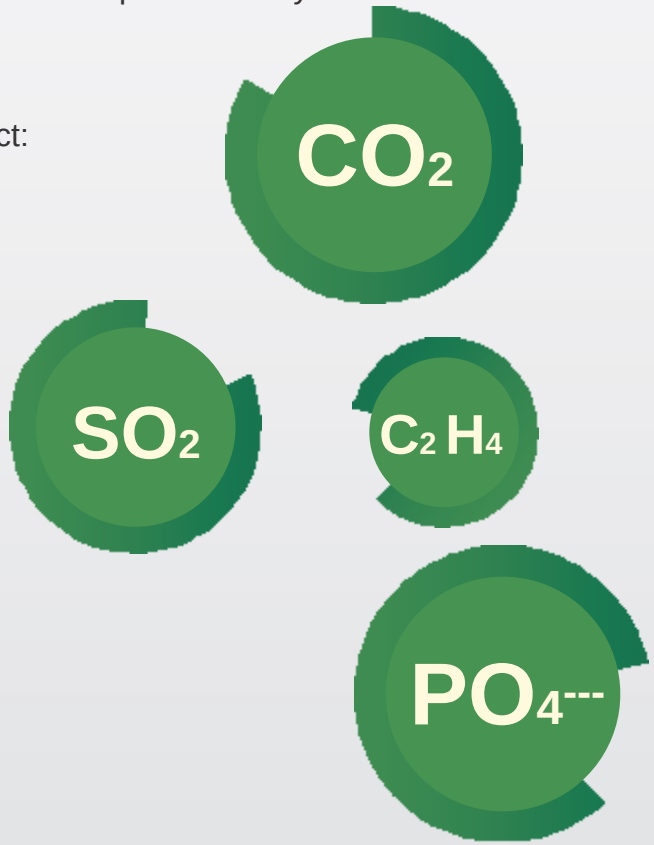
# 5 Environmental impact indicators

The tables in this section shows different environmental impact indicators for the **GS dispenser 1,2 cc and 2,0 cc** regarding the combinations with less weight configuration.

Additional environmental data in relation to different families and variants (less weight and greater weight) are present in the attachments from which it is possible to identify a range of environmental impacts for each GS dispenser family.

The **environmental indicators** are based on 4 different categories of environmental impact:

- Global warming potential (g $CO_2$ equivalent);
- Acidification potential (g $SO_2$ equivalent);
- Eutrophication potential (g $PO_4^{---}$ equivalent);
- Photochemical ozone creation potential (g $C_2H_4$ equivalent).




***Metodology:*** *CML Baseline (version Jan 2016)*
***Software:*** *GaBi 6.0 (PE International)*

## DISPENSER GS 1,2 cc (28/415)
**(less weight configuration)**

| | UPSTREAM PROCESSES | | CORE PROCESSES | | | DOWNSTREAM PROCESSES | TOTAL** |
|---|---|---|---|---|---|---|---|
| | Raw materials production | Packaging | Production processes and Auxil. systems | Waste management | Transportation | Transportation of finished product | |
| **IMPACT CATEGORY** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Global Warming Potential (g $CO_2$ eq ) | 25,500 | 4,530 | 1,080 | | | | **31,110** |
| Acidification potential (g $SO_2$ eq ) | 0,078 | 0,032 | 0,003 | | | | **0,113** |
| Photochemical Ozone Creation Potential (g $C_2H_4$ eq ) | 0,007 | <0,001 | -0,001 | | | | **0,006** |
| Eutrophication potential (g $PO_4^{---}$ eq ) | 0,006 | 0,001 | 0,001 | | | | **0,008** |
| **MATERIAL RESOURCES** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Inert rock (g) | 50,800 | 7,270 | 0,054 | | | | 58,124 |
| Iron ore (g) | 0,242 | <0,001 | <0,001 | | | | 0,242 |
| Limestone (g) | 0,410 | 0,099 | 0,003 | | | | 0,512 |
| Quartz sand (g) | 0,165 | 0,008 | <0,001 | | | | 0,173 |
| Crude oil (g) | 9,456 | 0 | 0 | | | | 9,456 |
| Natural gas (g) | 7,332 | 0 | 0 | | | | 7,332 |
| Others (g) | 1,367 | 0,183 | <0,001 | | | | 1,550 |
| **Non Renewable (g)** | | | | | | | **77,388** |
| **Renewable (g)** | 0 | 0 | 0 | | | | **0** |
| **ENERGY RESOURCES** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Crude Oil (g) | 0,355 | 0,350 | 0,321 | | | | 1,026 |
| Hard coal (g) | 1,230 | 0,519 | 0,001 | | | | 1,750 |
| Lignite (g) | 1,770 | 0,150 | 0,002 | | | | 1,922 |
| Natural Gas (g) | 1,990 | 0,548 | 0,024 | | | | 2,562 |
| Peat (g) | <0,001 | <0,001 | <0,001 | | | | <0,001 |
| Uranium (g) | <0,001 | <0,001 | <0,001 | | | | <0,001 |
| **Non Renewable energy resources (g)** | | | | | | | **7,260** |
| Geothermic (MJ) | <0,001 | 0,040 | <0,001 | | | | 0,040 |
| Hydroelectric (MJ) | 0,005 | 0,051 | <0,001 | | | | 0,055 |
| Solar (MJ) | 0,030 | 0,025 | 0,001 | | | | 0,056 |
| Waves (MJ) | <0,001 | <0,001 | <0,001 | | | | <0,001 |
| Wind power (MJ) | 0,006 | 0,004 | <0,001 | | | | 0,010 |
| Primary forest (MJ) | <0,001 | <0,001 | <0,001 | | | | <0,001 |
| Renewable Fuels (MJ) | <0,001 | <0,001 | <0,001 | | | | <0,001 |
| **Renewable energy resources (MJ)** | | | | | | | **0,161** |

**Any discrepancies in the total values compared to the sum of the single contributions are the effect of rounding

## DISPENSER GS 1,2 cc (28/415)
**(less weight configuration)**

| | UPSTREAM PROCESSES | | CORE PROCESSES | | | DOWNSTREAM PROCESSES | TOTAL** |
|---|---|---|---|---|---|---|---|
| | Raw materials production | Packaging | Production processes and Auxil. systems | Waste management | Transportation | Transportation of finished product | |
| **WASTE** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Hazardous (g) | <0,001 | | 0,049 | | | <0,001 | **0,049** |
| Not hazardous (g) | 2,754 | | 1,957 | | | <0,001 | **4,711** |
| Waste to landfill (%)* | 0% | | 3% | | | 0% | **3%** |
| Waste to recycle (%)* | 0% | | 97% | | | 0% | **97%** |
| Radioactive waste (g)* | 0 | | 0 | | | 0 | **0** |
| **SECONDARY RESOURCES** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Materials (g) | <0,001 | | <0,001 | | | <0,001 | **<0,001** |
| Energy (g) | <0,001 | | <0,001 | | | <0,001 | **<0,001** |
| Recovered energy flows (MJ) | 0 | | 0 | | | 0 | **0** |
| Energy content of product (MJ) | 0,525 | | <0,001 | | | <0,001 | **0,525** |
| **WATER CONSUMPTION** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| **Total amount of water (kg)** | 12,251 | | 10,290 | | | 0,060 | **22,601** |
| **Direct amount of water used in the core process (kg)** | 0 | | 2,16E-05 | | | 0 | **2,16E-05** |

* Waste treatment options have been considered only for core processes

**Any discrepancies in the total values compared to the sum of the single contributions are the effect of rounding

*Under Annex 1 are shown the results of environmental impact for the other GS version having less and greater weight*

## DISPENSER GS 1,2 cc (28/415)
**(greater weight configuration)**

| | UPSTREAM PROCESSES | | CORE PROCESSES | | | DOWNSTREAM PROCESSES | TOTAL |
|---|---|---|---|---|---|---|---|
| | Raw materials production | Packaging | Production processes and Auxil. systems | Waste management | Transportation | Transportation of finished product | |
| **IMPACT CATEGORY** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Global Warming Potential (g $CO_2$ eq ) | 26,300 | | 4,560 | | | 1,120 | **31,980** |
| Acidification potential (g $SO_2$ eq) | 0,079 | | 0,032 | | | 0,003 | **0,114** |
| Photochemical Ozone Creation Potential (g $C_2H_4$ eq) | 0,007 | | -8,07E-6 | | | -0,001 | **0,007** |
| Eutrophication potential (g $PO_4^{---}$ eq) | 0,006 | | 0,001 | | | 0,001 | **0,008** |
| **MATERIAL RESOURCES** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Inert rock (g) | 52,500 | | 7,208 | | | 0,056 | 59,764 |
| Iron ore (g) | 0,242 | | <0,001 | | | <0,001 | 0,242 |
| Limestone (g) | 0,417 | | 0,099 | | | 0,003 | 0,519 |
| Quartz sand (g) | 0,166 | | 0,008 | | | <0,001 | 0,174 |
| Crude oil (g) | 9,818 | | 0 | | | 0 | 9,818 |
| Natural gas (g) | 7,613 | | 0 | | | 0 | 7,613 |
| Others (g) | 1,412 | | 0,189 | | | <0,001 | 1,601 |
| **Non Renewable (g)** | | | | | | | **79,731** |
| **Renewable (g)** | 0 | | 0 | | | 0 | **0** |
| **ENERGY RESOURCES** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Crude Oil (g) | 0,394 | | 0,359 | | | 0,333 | 1,086 |
| Hard coal (g) | 1,250 | | 0,519 | | | 0,002 | 1,771 |
| Lignite (g) | 1,830 | | 0,150 | | | 0,002 | 1,982 |
| Natural Gas (g) | 2,000 | | 0,548 | | | 0,025 | 2,573 |
| Peat (g) | 0,003 | | <0,001 | | | <0,001 | 0,003 |
| Uranium (g) | <0,001 | | <0,001 | | | <0,001 | <0,001 |
| **Non Renewable energy resources (g)** | | | | | | | **7,415** |
| Geothermic (MJ) | <0,001 | | 0,040 | | | <0,001 | 0,040 |
| Hydroelectric (MJ) | 0,005 | | 0,051 | | | <0,001 | 0,055 |
| Solar (MJ) | 0,031 | | 0,025 | | | 0,001 | 0,056 |
| Waves (MJ) | <0,001 | | <0,001 | | | <0,001 | <0,001 |
| Wind Power (MJ) | 0,007 | | 0,004 | | | <0,001 | 0,011 |
| Primary forest (MJ) | <0,001 | | <0,001 | | | <0,001 | <0,001 |
| Renewable Fuels (MJ) | <0,001 | | <0,001 | | | <0,001 | <0,001 |
| **Renewable energy resources (MJ)** | | | | | | | **0,162** |

**

**Any discrepancies in the total values compared to the sum of the single contributions are the effect of rounding

## DISPENSER GS 1,2 cc (28/415)
**(greater weight configuration)**

| | UPSTREAM PROCESSES | | CORE PROCESSES | | | DOWNSTREAM PROCESSES | TOTAL |
|---|---|---|---|---|---|---|---|
| | Raw materials production | Packaging | Production processes and Auxil. systems | Waste management | Transportation | Transportation of finished product | |
| **WASTE** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Hazardous (g) | <0,001 | | 0,049 | | | <0,001 | **0,049** |
| Not hazardous (g) | 2,763 | | 1,966 | | | <0,001 | **4,729** |
| Waste to landfill (%)* | 0% | | 3% | | | 0% | **3%** |
| Waste to recycle (%)* | 0% | | 97% | | | 0% | **97%** |
| Radioactive waste (g)* | 0 | | 0 | | | 0 | **0** |
| **SECONDARY RESOURCES** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| Materials (g) | <0,001 | | <0,001 | | | <0,001 | **<0,001** |
| Energy (g) | <0,001 | | <0,001 | | | <0,001 | **<0,001** |
| Recovered energy flows (MJ) | 0 | | 0 | | | 0 | **0** |
| Energy content of product (MJ) | 0,545 | | <0,001 | | | <0,001 | **0,545** |
| **WATER CONSUMPTION** | | | | | | | **for 1 Dispenser GS 1,2cc (28/415)** |
| **Total amount of water (kg)** | 12,751 | | 10,290 | | | 0,063 | **23,103** |
| **Direct amount of water used in the core process (kg)** | 0 | | 2,16E-05 | | | 0 | **2,16E-05** |

*Waste treatment option have been considered only for core processes

**Any discrepancies in the total values compared to the sum of the single contributions are the effect of rounding

*Under Annex 1 are shown the results of environmental impact for the other GS version having less and greater weight*

# 6 Company information and certification body

**APTAR ITALIA S.p.A. CONTACTS**

The study of **Life Cycle Assessment** and the present **environmental product declaration (EPD)** have been conducted internally by the **Quality - Environment - Safety Department of Aptar Italia S.p.A.**

The business contacts for information about this study are:

- *Eng.* **Nando Marino Cutarella** (nando.cutarella@aptar.com)
- *Industrial Ecologist* **Michele Del Grosso** (michele.delgrosso@aptar.com)

Web site: www.aptar.com

**CERTIFICATION BODY**

PCR review was conducted by:
Technical Committee of the International EPD® System – Chair:Adriana Del Borghi– contact: info@environdec.com

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Independent verification of the declaration and data, according to ISO 14025:2006
☐ EPD process certification ■ EPD verification
Document valid until 08/11/2020

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Third party verifier: RINA Services SpA – Via Corsica, 12 – 16128 Genova (GE) – www.rina.org
Accredited by ACCREDIA 001H

# 7 Informations about the program and additional informations

**REFERENCES**

International EPD® System, General Programme Instructions (EPD), version 2.5 of 05/11/2015;
PCR 2013:09; CPC 36490 – PCR for DISPENSING SYSTEMS; version 2.0 of 24/11/2016;
LCA study of 22/10/2018;
Reference year of data: 2017;
Registration number: S-P-00743.

**UPDATING FROM LAST VERSION**

The GS family product is based on a range included +/- 10% and the reference product has been identified in GS 1,2cc 28/415 (less and greater weight combination). All the GS versions are included into the representative environmental impact of the version above.

The environmental performances, compared to previous years, has been improved thanks to:

- replacement of HVAC systems in Aptar Italia production departments with consequent reduction in energy consumption;
- use (12%) of renewable energy from photovoltaic panels in the extruding extraction process;
- optimization of energy consumption in the molding department with improvements made to the presses.

Further data improvements have been based on updating of GaBi database (year 2017).

*For the acidification potential, please notice the use of non-baseline characterization factors.*

# ANNEX 1

This section provides information about the range of environmental impact of GS dispenser family on each closure combination.

The closure families and component variants considered for **dispenser GS 1,2 cc and 2,0 cc** are the following:

| GS 1,2cc | GS 2,0cc |
|---|---|
| 24/410 | 27/230 |
| 24/415 | 28/400 |
| 27/230 | 28/410 |
| 28/400 | 28/415 |
| 28/410 | |
| 28/415 | |

| GS 1,2cc | GS 2,0cc |
|---|---|
| Actuator | |
| Greater weight | Less weight |
| K2 | K2 |

| GS 1,2cc | GS 2,0cc |
|---|---|
| Gasket | |
| Greater weight | Less weight |
| GS 13 | GS 13 |

| GS 1,2cc | GS 2,0cc |
|---|---|
| Dip Tube | |
| Greater weight | Less weight |
| 120 mm | 120 mm |