ENVIRONMENTAL PRODUCT DECLARATION

For the MERCURY valve produced by EFFEBI SpA

Manufactured at the EFFEBI S.p.A. production site in Via Giuseppe Verdi, 68, 25073 Bovezzo (BS)

Declaration of compliance ISO 14025 and PCR-2021-0002 Version 1.0

Program operator:	EPDItaly
Publisher:	EPDItaly
Declaration number:	Valv.ottone01
EPD registration number:	EPDITALY0376
Publication date:	2022-12-15
Valid until:	2027-12-15

An EPD must provide up-to-date information and be updated if conditions change. The validity declared is therefore subject to continuous reporting and publication at www.epditaly.it

General information

Program Operator	EPDItaly (www.epditaly.it) Via Gaetano De Castillia 10 - 20124 Milan, Italy
External auditor	This declaration was developed in compliance with the EPDItaly Regulation: more information and the Regulation itself are available at www.epditaly.it. The legislation referenced is PCR-2021-0002 Version 1.0 – Valves. Multifunctional controls for gas burning appliance. External audit of this declaration and its data in compliance with ISO 14025:2006. Internal ☐ External ☒ Third-party audit carried out by: ICMQ S.p.A., accredited by Accredia, certification n.002H REV.19
Technical support	**2A ECOGESTIONI Srl** Via Mazzini, 15 25121 BRESCIA (BS) www.2a-group.it
CPC Code	43240
Comparability	Environmental declarations published under the same product category, but different programs, may not be comparable.
Responsibility	EFFEBI S.p.A. relieves EPDItaly of any non-compliance with the environmental legislation declared by the manufacturer. The owner of the declaration will be responsible for all information and supporting evidence; EPDItaly declines any responsibility for the information, data, and results of the product life cycle evaluation on behalf of the manufacturer.
Reference document	This declaration was developed following the EPDItaly Program Regulation, available at their website: www.epditaly.it.
Product Category Rule (PCR)	PCR-2021-0002 Version 1.0 – Valves. Multifunctional controls for gas burning appliance.

Company information

EPD Owner: EFFEBI S.p.A.
Via Giuseppe Verdi, 68, 25073 Bovezzo (BS)
T +39 030 21101 - Email: effebi@effebi.it

Contact: Alberto Agnelli - alberto.agnelli@effebi.it

Description of organization: EFFEBI, boasting fifty years of experience in the manufacturing of ball valves, includes all fields of civil and industrial engineering, offering a vast range of cutting-edge shut-off and regulation valves. Thanks to their fully integrated production line, which includes the careful selection of raw materials and hot stamping at sister company Pressytal, supported by a strict quality control system which adheres to regulation ISO 9001:2015, EFFEBI has carved a name for themselves in the Italian and international markets as a leader within their sector.

In 2005, EFFEBI expanded their range, acquiring the well-known TOF JOINT SYSTEM: an Italian market leader in the production of brass fittings for polyethylene and iron pipes.

In order to offer a more efficient service, aimed primarily at customer satisfaction, EFFEBI opened a new logistics center in 2007. The space is 7,000m squared and is located next to the main company headquarters; it is used as a product warehouse and shipping department.

Throughout 2008, EFFEBI developed their own range of products, with a series of brass multi-pincer press fittings for multilayer pipes and a series of brass threaded fittings.

In 2021, the company expanded their production unit by 3,000m squared – following the acquisition of attested company FBQ Baronio, established in 1967, the fittings department significantly increased their range, with two series of press fittings in Inox 316L and in Carbon (both “M” and “V” profiles), a series of press fittings in Copper and Bronze-Copper, as well as a series of bronze threaded fittings.

Production site: EFFEBI S.p.A. manufactures its own products in its site in Via Giuseppe Verdi in Bovezzo (Brescia).

Information on the product and its production cycle

Product name: MERCURY brass valve, code 0401 F/F with aluminum lever, ¾" dimensions

Product description: The analyzed product is a MERCURY series brass valve. This series is used primarily in water distribution systems, industrial and civil heating systems, and hydroelectric, pneumatic, and agricultural plants. All valves comply with directive 97/23/EC, are 100% tested for air sealing and undergo electrical checks.

Product cycle description: The production of the MERCURY valve begins with the acquisition of brass bar CW617N, from which the main bodies and sleeves are produced and subsequently nickel-plated. The nickel-plated bodies and sleeves then undergo a transfer process within EFFEBI's production site. This transfer process is carried out by machines which allow for the production of finished components through different combined and consequential processes, including lathing, threading, etc. The semi-finished products, alongside other components processed by the suppliers, such as balls, stems, washers, levers, nuts, seals, and o-rings, undergo an assembly phase in the 'Assembly 1' ("Montaggio 1") department, followed by a tightness test on the valve, pad printing, and lever assembly in the 'Assembly 2' ("Montaggio 2") department. Finally, the valve undergoes the packaging and storage phase in EFFEBI's warehouse ('magazzino EFFEBI 2') before shipping.

LCA information

Working units / declared units: 1 valve

Reference service life: Not relevant for the system boundaries specified by the PCR.

Temporal representativity: Reference year is 2021.

Geographical location: Italy.

LCA database and software used: Ecoinvent 3.8 and SimPro 9.3.0.3

Description of system boundaries: Cradle to gate

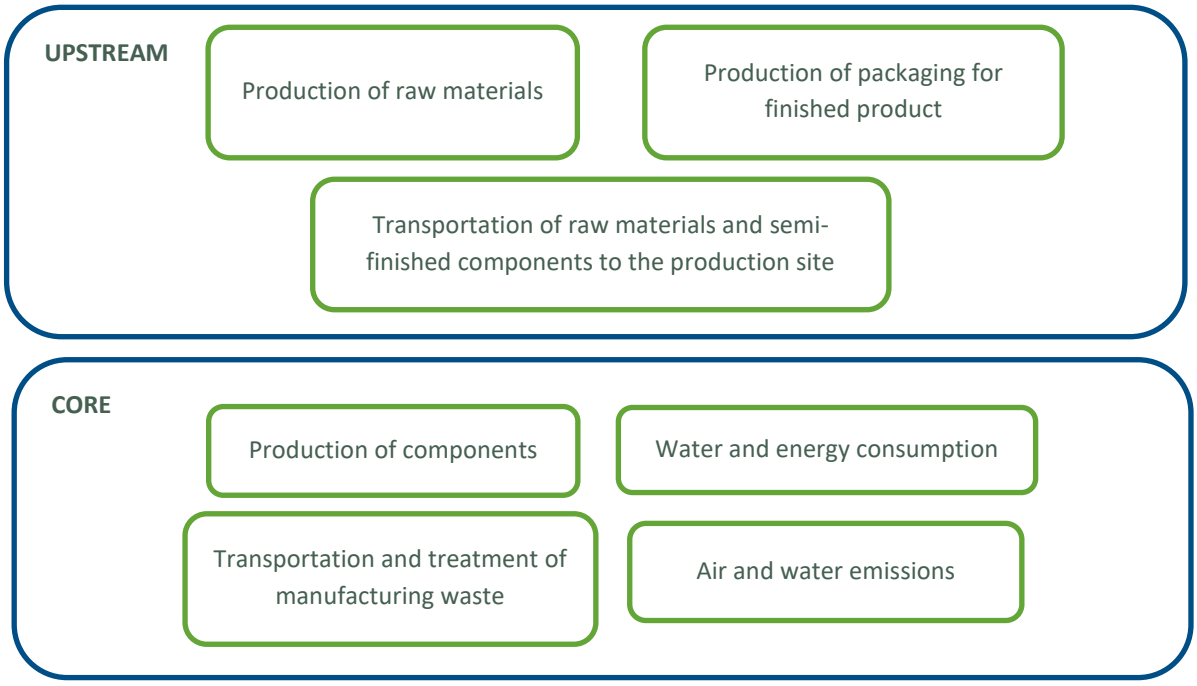
The Upstream phase includes the procurement of raw materials, specifically:

- The extraction and processing of raw materials;
- The production of packaging for the final product;
- The transportation of materials and semi-finished components to the production site.

The Core phase includes the following processes:

- The production of components which will be used to create the valve;
- Water and energy consumption;
- The transportation and treatment of manufacturing waste;
- Air and water emissions.

System boundaries:



Allocation rules: In compliance with document PCR-2021-0002 – Valves v.1.0, the allocation procedure for calculating inputs and outputs of specific data was carried out annually, and regarding the production of 2021. In particular, water and energy consumption, auxiliaries used, emissions, and waste production were allocated to the number of pieces produced in the year of reference for manufacturing at EFFEBI, whilst the data provided by third parties was allocated in bulk.

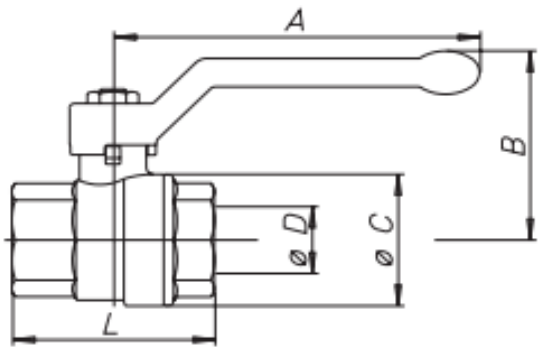
Cut-off rules: The reference PCR allows for the exclusion of system evaluations: the construction and maintenance of infrastructures, travel for work, employee commute, research and development activities, and the production and disposal of intermediary packaging. Sealant used in small quantities and heating/water consumption for hygiene and sanitation have also been excluded.

Reference name: MERCURY valve cod. 0401

Technical characteristics of the MERCURY valve:

- Temperature limits - from -15°C to +120°C with occasional 1-hour time slots at 130°C
- Pressure limits - from 63 bars to 40 bars

The valve analyzed is of ¾" dimensions and is type F/F with an aluminum lever.



Description	Value
Nominal diameter mm	20
Size in inches	3/4"
Ø D bore mm	20
A mm	105
B mm	57
Ø C mm	39
F/F - L mm	58
Flow rate - Kv m^3/h	28

EFFEBI products contain the following dangerous substance.

NAME	UPDATE	CAS NUMBER	EC NUMBER	HAZARD
Lead (Pb)	Inserted in the SVHC update from 27 June 2018	7439-92-1	231-100-4	Reproductive Toxicity Category 1A H360FD – may damage fertility. Suspected of damaging the unborn child. H362 – may be harmful for those breastfeeding.

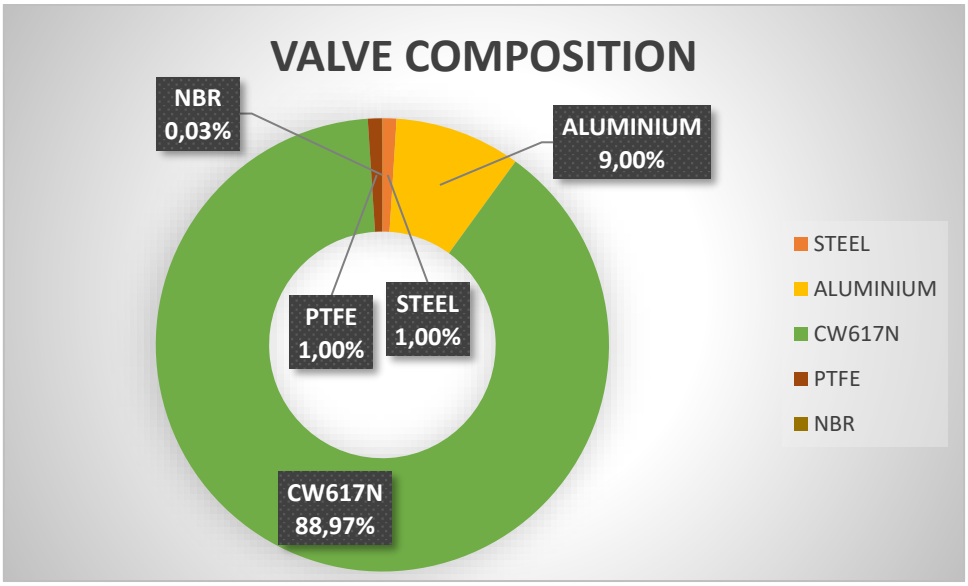
Data quality: The site data specific to the production phase of the brass MERCURY valve is relative to the year 2021 and was provided by EFFEBI S.p.A. and by third parties in order to carry out their activities. The upstream processes were modelled on data from database Ecoinvent 3.8.
Excluded from the system evaluations were: infrastructure, travel for work, employee commutes, research and development activities, and the production and disposal of intermediary packaging.

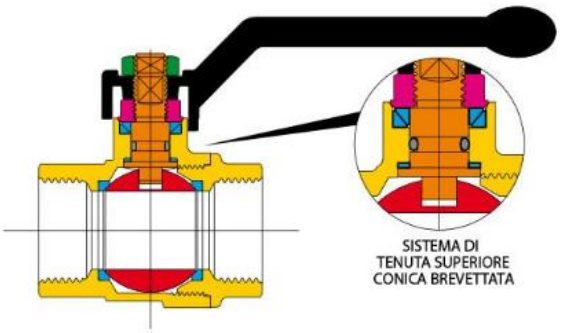
Other information: All raw materials used to manufacture the product analyzed in this study, the energy required, and the production of waste were considered in the LCA.
The impact on the Italian electrical energy climate change indicator is 547 g CO_2eq./kWh (residual mix from Association of Issuing Bodies, European Residual Mixes 2021, Version 1.0, 2022-05-31).

More information: www.effebi.com

About the content

The weight of the valve is 0.311kg. Below are the percentages of the materials from which it is composed.





ELENCO DEI PARTICOLARI: descrizione / materiali / trattamenti		
corpo e manicotto filettato		CW617N (Pb ≤ 2,2% DIN 50930T6) - UBA list
premiguarnizione		CW617N
stelo di manovra		CW617N (Pb ≤ 2,2% DIN 50930T6) - UBA list
sfera cromata lucida		CW617N (Pb ≤ 2,2% DIN 50930T6) - UBA list
guarnizioni di tenuta		PTFE
O-ring di tenuta stelo		NBR
organo di manovra		lega alluminio
dado di fissaggio		acciaio zincato
trattamento esterno	-	Nichelatura esterna, non nichelata all'interno

Environmental information on brass MERCURY valve

Potential environmental impact – obligatory indicators

Indicators	Unit	UPSTREAM	CORE	TOTAL
GWP	kg CO_2 eq.	3,35E+00	3,03E-01	3,66E+00
ODP	kg CFC 11 eq.	1,21E-05	4,70E-08	1,22E-05
AP	mol H+ eq.	1,83E-01	1,07E-03	1,84E-01
EP-freshwater	kg P eq.	1,46E-02	4,24E-05	1,47E-02
EP-marine	kg N eq.	9,83E-03	1,95E-04	1,00E-02
EP-terrestrial	mol N eq.	1,32E-01	1,96E-03	1,34E-01
POCP	kg NMVOC eq.	3,62E-02	5,72E-04	3,68E-02
ADP-minerals&metals*	kg Sb eq.	4,62E-03	2,67E-09	4,62E-03
ADP-fossil*	MJ	3,61E+01	4,58E+00	4,06E+01
WDP*	m^3 eq.	3,41E+00	9,33E-02	3,51E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ODP = Depletion potential of the stratospheric ozone layer; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption			

** Declaration of non-responsibility: the results of this environmental impact indicator must be used with caution as there is a lack of certainty in the results, and experience with the indicator is limited.*

Use of resources

Indicators	Unit	UPSTREAM	CORE	TOTAL
PERE	MJ	8,70E+00	3,38E-01	9,04E+00
PERM	MJ	9,05E-01	1,93E-01	1,10E+00
PERT	MJ	9,61E+00	5,32E-01	1,01E+01
PENRE	MJ	3,61E+01	4,58E+00	4,06E+01
PENRM	MJ.	9,05E-03	1,32E-05	9,06E-03
PENRT	MJ	3,61E+01	4,58E+00	4,06E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00
FW	m^3	8,57E-02	2,20E-03	8,79E-02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water			

Waste production and outflows

Waste production

Indicators	Unit	UPSTREAM	CORE	TOTAL
Dangerous waste disposed of	kg	1,95E-03	4,96E-06	1,96E-03
Non-dangerous waste disposed of	kg	8,25E-01	1,74E-03	8,26E-01
Radioactive waste disposed of	kg	1,33E-04	9,44E-06	1,43E-04

Outflows

Indicators	Unit	UPSTREAM	CORE	TOTAL
Reused components	kg	0,00E+00	0,00E+00	0,00E+00
Recycled materials	kg	0,00E+00	2,74E-01	2,74E-01
Energy-saving materials	kg	0,00E+00	0,00E+00	0,00E+00
Exported electrical enercy	MJ	0,00E+00	0,00E+00	0,00E+00
Exported thermal energy	MJ	0,00E+00	0,00E+00	0,00E+00

Differences from previous version

This is the first version of the EPD.

Bibliography

1. UNI EN ISO 14040:2021 Environmental management – Life cycle assessment - Principles and Framework

2. UNI EN ISO 14044:2021 Environmental management – Life cycle assessment – Requirements and provides guidelines for life cycle assessment (LCA)

3. UNI EN ISO 14025:2010, Etichette e dichiarazioni ambientali - Dichiarazioni ambientali di Tipo III - Principi e procedure

4. Regolamento del programma EPDItaly, revisione 5.2 del 16/02/2022

5. PCR-2021-0002 Version 1.0 – Valves. Multifunctional controls for gas burning appliance, developed by Carbon Footprint Italy

6. Association of Issuing Bodies, European Residual Mixes 2021, Version 1.0, 2022-05-31


EPD
ITALY