Environmental Product Declaration

THE INTERNATIONAL EPD® SYSTEM

In accordance with ISO 14025:2006 for:

Extinguisher 22066-700 EN 3/7 FOAM EXTINGUISHER 6L 27A-144B-40F GREEN WAVE FOAM FF

from

EMME ANTINCENDIO S.r.l.

Programme:	The International EPD® System, www.environdec.com
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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

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
PCR: *name: PCR 2010:08 "Other Special- and General-Purpose Machinery and Parts Thereof"* *registration number: 2010:08* *version: 4.1* *CPC code:* 43923 *"Fire extinguishers; spray guns and similar appliances; steam or sand blasting machines and similar jet projecting machines; mechanical appliances for projecting, dispersing or spraying liquids or powders, except agricultural or horticultural appliances".*
PCR review was conducted by: Technical Committee of the International EPD® System. Contact via the programme operator: info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: *Ollum S.r.l. Via Fratelli Lumiere 19, 52100 Arezzo, Italy*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Dr. Nikolay Minkov, Greentability Ltd. and TÜV Austria Hellas 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 registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see ISO 14025.

Company information

Owner of the EPD: EMME ANTINCENDIO S.r.l.

Contact: Mattia Parlante
E-mail: mattia.parlante@emme-italia.com

Description of the organisation: With over 50 years of experience, Emme is a leader in the fire protection sector, offering a wide range of top-quality services. Its value proposition is based on four key pillars that set it apart: reliability, consultancy, uniqueness, and sustainability. The company pays close attention to every detail, ensuring uncompromising safety and full support through dedicated and personalized consultancy. Emme's ability to deliver creative and innovative solutions is designed to anticipate the future needs of its customers, while its strong commitment to environmental and social responsibility reflects its dedication to the well-being of the planet and the communities it serves.
Among Emme's core services is the production and supply of fire extinguishers and fire protection products. Thanks to a network of qualified dealers, the company distributes and sells high-quality extinguishers, fire protection equipment, signage, personal protective equipment and first aid supplies. Emme's offering is designed to meet all needs, ensuring that every product complies with the highest safety and quality standards.
The company also provides a collection service for obsolete materials such as extinguishers, hoses and extinguishing agents. This service not only enhances safety but also contributes to sustainability and environmental protection, a core value in which Emme strongly believes.
Emme organizes specialized training courses for installers and maintenance technicians, as well as refresher courses. These programs are essential to maintain and develop the skills needed to effectively manage fire extinguishers and other fire protection devices, ensuring that personnel are always ready to respond to any emergency. Continuous training is a key element in guaranteeing maximum safety and expertise, and Emme is proud to provide high-level educational support.
Ultimately, by choosing Emme, you are choosing a partner dedicated to protection, safety and innovation, always by your side to ensure peace of mind and the highest level of protection.

Product-related or management system-related certifications:

- ISO 9001:2015
- ISO 9094:2015
- UNI EN 3-10

Name and location of production site: Via del Molino, 40, 52010 Corsalone AR

Product information

Product name:
Extinguisher EN 3/7 SCHIUMA LT6 27A-144B-40F GREEN WAVE FOAM FF

Product description:
Water-based fire extinguishers with fluorine-free foam, 6 kg capacity, with an operating temperature range from +5°C to +60°C. Manufactured in accordance with UNI EN 3-7 standard and certified under the Pressure Equipment Directive PED 2014/68/EU. The extinguisher is produced in compliance with the production control requirements of EN 3-10.
All extinguishers are voluntarily certified with product quality control guaranteed by Bureau Veritas Italia.
They can be used on live electrical equipment up to 1,000 V, maintaining a minimum distance of 1 metre.

UN CPC code:
43923 *"Fire extinguishers; spray guns and similar appliances; steam or sand blasting machines and similar jet projecting machines; mechanical appliances for projecting, dispersing or spraying liquids or powders, except agricultural or horticultural appliances".*

Geographical scope:
Europe

Information	**Information Examples/explanations**
Commercial name	Fluorine-free foam water-based fire extinguisher, 6 kg
Functions	Fire extinguishing for Class A, B, and F fires; suitable for use on live electrical equipment up to 1,000 V (minimum distance 1 m)
Main components	- Body (high-strength steel alloy, deep drawn, powder-coated RAL 3000) - Valve (M30×1.5, brass body, lever painted RAL 6018) - Siphon tube - Pressure gauge - Hose - Magnetic hose holder - Safety seal - Label - Extinguishing agent - Propellant: Nitrogen (N_2)
Spare parts	Not applicable
Used fuels or energy vectors	Not applicable (manual activation)
Size and dimensions	Height (base to valve) 540 ± 5 mm – Diameter (casing) 160 ± 2 mm
Weight	9,7 kg (total product weight, excluding packaging)

Information	**Information Examples/explanations**
Functional performance (productivity)	Complete extinguishing capacity with 6 kg of foam agent – Class 27 A / 233 B / 40 F
Power	Not applicable
Energy consumption	Not applicable
Fuel consumption	Not applicable
Spare parts consumption	Not applicable
Chemical products and other consumables consumption	Extinguishing agent contained in the tank (100% Green Wave Premix, water-based, fluorine-free)

LCA information

Declared unit:
One assembled unit of the Extinguisher EN 3/7 FOAM LT6 27A-144B-40F GREEN WAVE FOAM FF, designed for fire protection using fluorine-free foam, with a guaranteed operational lifespan of 20 years.

Technical lifespan:
20 years

Time representativeness:
Data collected for the LCA calculations refers to the year 2024.

Database(s) and LCA software used: the assessment was conducted using the pre-verified **EMME ANTINCENDIO LCA TOOL_V.2.1**, which is based on SimaPro 10.2 software and incorporates data from the Ecoinvent 3.10 database.

Description of system boundaries:
Cradle-to-grave

Excluded lifecycle stages:
The study includes all lifecycle stages from cradle-to-grave, excluding benefits beyond the system boundary as they are not mandatory according to the PCR.

More information:
For additional details, please visit the official website: www.emme-italia.com

Name and contact information of LCA practitioner:
Michele Caimi, Giulio Quaglini, Ollum S.r.l. – Via Fratelli Lumiere 19, 52100 (AR)
Email: *michele.caimi@ollum.it*

Additional information:

Data Quality:
In this LCA study, primary data are used for all quantities of materials and energy employed in processes directly controlled by EMME ANTINCENDIO S.r.l. These include raw materials, packaging, auxiliary materials, energy resources, and water consumption. Thermal resources are not used in production. Specific data are also employed for waste generated internally during the assembly process and the related disposal processes.
Transport of incoming materials is also modelled using specific data.
For modelling upstream processes such as raw material extraction and processing, basic material production, energy generation, and other processes for which specific data could not be obtained, data from the Ecoinvent 3.10 database were used.
Regarding end-of-life, exhausted fire extinguishers are assumed to undergo recovery, recycling, and disposal processes based on EUROSTAT statistics.

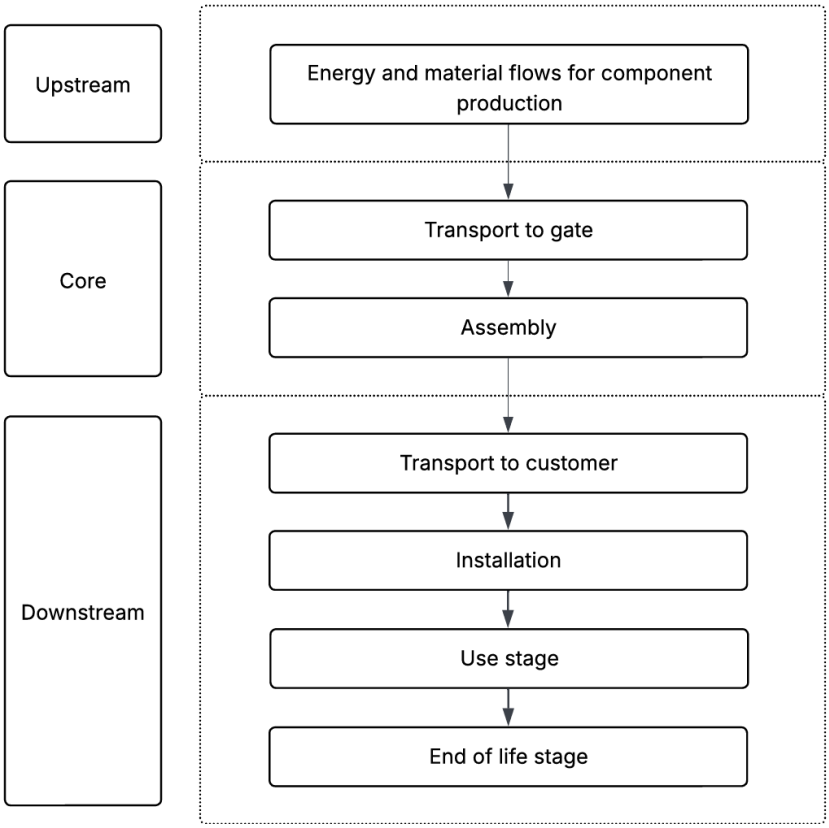
Cut-off:
In this LCA study, the 1% cut-off rule was applied, ensuring comprehensive coverage of at least 99% of the mass, energy, and environmental impact contributions. No items were excluded based on this criterion.

Exclusions:
Some unit processes were excluded from the assessment. In particular, the consumption of energy and materials during the use phase of the product was not considered. Under normal conditions, fire extinguishers do not consume extinguishing agents, as their activation occurs only in rare emergency situations throughout their expected service life.
The use of chemicals or materials for cleaning and maintenance, including the possible replacement of spare parts, was also excluded. As specified in the reference PCR, additional downstream processes and infrastructure-related aspects were not considered. In particular, the production of manufacturing equipment, buildings, and other capital goods was excluded.
The study does not include the construction, maintenance, decommissioning, or disposal of service facilities. Business travel and employee commuting are also outside the scope of this study. Likewise, all research and development activities are excluded.
The packaging of incoming components was not modelled, as no specific data were available from suppliers and waste disposal records did not report significant quantities of packaging waste. Therefore, this exclusion was considered methodologically justified and negligible in terms of overall environmental impact.

Allocation:
Allocation was applied only to the assembly phase, including electricity and water consumption, use of auxiliary materials, and generation/disposal of production waste.
These contributions were allocated based on the total number of units produced, reflecting the actual operating conditions of the production process, where resource use and waste generation are proportional to the number of extinguishers assembled.

System diagram:

- **Upstream**
  - Extraction and production of raw materials and components, including metals, polymers, chemicals, extinguishing agent, and packaging.
  - Electricity and fuels for upstream processes.
  - Transportation of raw materials from extraction sites to processing facilities.
- **Core**
  - Transportation of materials and packaging to Emme Antincendio's production site.
  - Assembly process.
  - Electricity, water, and auxiliary materials use.
  - Waste generation and treatment from production.
- **Downstream**
  - Product distribution and installation.
  - Product use and maintenance (inspection, checks).
  - Transport to waste management facilities.
  - End-of-life treatment (recycling, landfill, incineration).


Upstream
Core
Downstream
Energy and material flows for component production
Transport to gate
Assembly
Transport to customer
Installation
Use stage
End of life stage

Content declaration

Product

Product components	[Kg]	%	Pre-consumer recycled material, mass-% of product	Post-consumer recycled material, mass-% of product
Water & chemicals	6,00	61,7%	0,00%	0,00%
Steel	3,21	33,0%	0,00%	0,00%
Brass	0,187	1,92%	0,00%	0,00%
Rubber	0,210	2,16%	0,00%	0,00%
PVC	0,064	0,66%	0,00%	0,00%
PP	0,005	0,05%	0,00%	0,00%
Other	0,05	0,51%	0,00%	0,00%
Total	**9,73**	**100%**	**0,00%**	**0,00%**

The main materials used in the product composition, in addition to the chemical additives in the foam agent and demineralized water (both part of the product's functional system), include metals such as steel and brass, used respectively for the casing, valve, and mechanical components.
Polymeric materials like rubber are employed for seals and flexible parts, while PVC elements are found in external components such as the siphon tube and safety seal. Polypropylene is used for the label.
Some components combine different materials, such as the PVC and steel assembly found in the hose clamp.

The product does not contain substances classified as hazardous according to Regulation (EC) No 1272/2008 (CLP) and Regulation (EC) No 1907/2006 (REACH).

Packaging

The product includes various packaging materials such as outer film, cardboard box, bubble wrap (polyethylene with air bubbles), and wooden pallet. The weights of the packaging materials have been calculated for the individual fire extinguisher.

Type of Packaging	Quantity	% Weight
Wooden pallet	0,138	29,6%
Cardboard box	0,113	24,5%
Protective film & Pluriball	0,213	45,9%
Totale	**0,464**	**100%**

The packaging does not contain pre-consumer or post-consumer recycled materials.

Recycled material

The extinguisher EN 3/7 FOAM LT6 27A-144B-40F GREEN WAVE FOAM FF does not explicitly contain pre-consumer or post-consumer recycled materials. However, in some cases, recycled content values from the Ecoinvent 3.10 database for the global market have been applied in the LCA study for materials such as steel and brass, as the exact amount of recycled material was not specified. For other materials, such as aluminum if present, primary material without recycled content was considered.

Results of the environmental performance indicators

The following results refer to the declared unit: one assembled unit of the Extinguisher EN 3/7 FOAM LT6 27A-144B-40F GREEN WAVE FOAM FF, with a guaranteed operational lifespan of 20 years.

Impact category indicators

Core environmental impact indicators[1]	Abbreviation	Unit	Upstream	Core	Downstream	Total
Global warming potential - total	GWP-Total	kg CO2 eq.	1,39E+01	1,25E+00	4,28E+00	1,95E+01
Global warming potential - fossil fuels	GWP-Fossil	kg CO2 eq.	1,38E+01	1,15E+00	4,16E+00	1,910E+01
Global warming potential - biogenic	GWP-Biogenic	kg CO2 eq.	1,28E-01	1,02E-01	1,16E-01	3,47E-01
Global warming potential - land use and land use change	GWP-Luluc	kg CO2 eq.	1,96E-02	4,78E-04	1,27E-03	2,13E-02
Depletion potential of the stratospheric ozone layer	ODP	kg CFC-11 eq.	2,02E-07	2,11E-08	7,35E-08	2,97E-07
Acidification potential, accumulated exceedance	AP	mol H+ eq.	1,50E-01	2,05E-02	1,28E-02	1,83E-01
Eutrophication potential - freshwater	EP - freshwater	kg P eq.	1,22E-02	9,68E-05	2,76E-04	1,26E-02
Eutrophication potential - marine	EP - marine	kg N eq.	1,65E-02	5,12E-03	4,57E-03	2,62E-02
Eutrophication potential - terrestrial	EP-terrestrial	mol N eq.	1,87E-01	5,63E-02	4,86E-02	2,92E-01
Photochemical ozone creation potential	POCP	kg NMVOC eq.	6,28E-02	1,59E-02	1,97E-02	9,84E-02
Abiotic depletion potential - non-fossil resources[2]	ADPE	kg Sb eq.	1,44E-03	5,16E-06	1,32E-05	1,46E-03
Abiotic depletion potential - fossil resources[2]	ADPF	MJ, net calorific value	1,74E+02	1,49E+01	5,23E+01	2,41E+02
Water (user) deprivation potential[2]	WDP	m3 world eq. deprived	4,78E+00	2,51E-01	-1,80E-02	5,01E+00

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Resource use indicators

Indicators describing resource use	Abbreviation	Unit	Upstream	Core	Downstream	Total
Use of renewable primary energy as energy carrier	PERE	MJ, net calorific value	1,89E+01	1,97E+00	1,03E+00	2,19E+01
Use of renewable primary energy resources used as raw materials	PERM	MJ, net calorific value	3,19E+00	0,00E+00	0,00E+00	3,19E+00

[1] JRC characterization factors (EF3.1) were used.
[2] The results of this environmental impact indicator should be used with caution as uncertainties about these results are high or as experience with the indicator is limited.
[3] The indicator includes all greenhouse gases included in the total GWP but excludes the absorption and emissions of biogenic carbon dioxide and biogenic carbon stored in the product. This indicator is therefore almost the same as the GWP indicator originally defined in EN 15804:2012+A1.
[4] This impact category mainly concerns the possible impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider the effects of possible nuclear accidents, occupational exposure or the disposal of radioactive waste in underground installations. Potential ionizing radiation from the ground, radon, and some building materials is also not measured by this indicator.

Total use of renewable primary energy	PERT	MJ, net calorific value	2,21E+01	1,97E+00	1,03E+00	2,51E+01
Use of non-renewable primary energy as energy carrier	PENRE	MJ, net calorific value	1,58E+02	1,49E+01	5,23E+01	2,25E+02
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ, net calorific value	1,61E+01	0,00E+00	0,00E+00	1,61E+01
Total use of non-renewable primary energy resource	PENRT	MJ, net calorific value	1,74E+02	1,49E+01	5,23E+01	2,41E+02
Use of secondary material	SM	kg	N/D	N/D	N/D	N/D
Use of renewable secondary fuels	RSF	MJ, net calorific value	N/D	N/D	N/D	N/D
Use of non-renewable secondary fuels	NRSF	MJ, net calorific value	N/D	N/D	N/D	N/D
Net use of fresh water	FW	m3	N/D	N/D	N/D	N/D

Waste indicators

Environmental information describing waste categories	**Abbreviation**	**Unit**	Upstream	Core	Downstream	Total
Hazardous waste disposed	HWD	kg	N/D	N/D	N/D	N/D
Non-hazardous waste disposed	NHWD	kg	N/D	N/D	N/D	N/D
Radioactive waste disposed	RWD	kg	N/D	N/D	N/D	N/D

Output flow indicators

Environmental information describing output flows	**Abbreviation**	**Unit**	Upstream	Core	Downstream	Total
Components for re-use	CRU	kg	N/D	N/D	N/D	N/D
Materials for recycling	MFR	kg	N/D	N/D	N/D	N/D
Materials for energy recovery	MER	kg	N/D	N/D	N/D	N/D
Exported electrical energy	EEE	MJ, net calorific value	N/D	N/D	N/D	N/D
Exported thermal energy	EET	MJ, net calorific value	N/D	N/D	N/D	N/D

Other environmental performance indicators

Additional mandatory environmental impact indicators	**Abbreviation**	**Unit**	Upstream	Core	Downstream	Total
Global warming potential (GWP-GHG)[3]	GWP-GHG	kg CO2 eq.	N/D	N/D	N/D	N/D
Additional voluntary environmental impact indicators	**Abbreviation**	**Unit**	Upstream	Core	Downstream	Total
Particulate matter emissions	PM	Disease incidence	N/D	N/D	N/D	N/D
Ionizing radiation, human health[4]	IRP	kBq U235 eq.	N/D	N/D	N/D	N/D
Eco-toxicity - freshwater [2]	ETP-fw	CTUe	N/D	N/D	N/D	N/D
Human toxicity, cancer effect[2]	HTP-c	CTUh	N/D	N/D	N/D	N/D
Human toxicity, non-cancer effects[2]	HTP-nc	CTUh	N/D	N/D	N/D	N/D
Land use related impacts/Soil quality[2]	SQP	dimensionless	N/D	N/D	N/D	N/D

References

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2. ISO 14044:2006, Environmental management — Life cycle assessment — Requirements and guidelines.
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5. ISO 14044:2006/Amd 2:2020, Environmental management — Life cycle assessment — Requirements and guidelines — Amendment 2.
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9. LCA Tool Report EMME ANTINCENDIO S.r.l. v3.0
10. ISPRA, Special Waste Report 2023 Edition, https://www.isprambiente.gov.it/it/pubblicazioni/rapporti/rapporto-rifiuti-speciali-edizione-2023.
11. UNI EN 15804:2012+A2:2019/AC:2021, Sustainability of construction works — Environmental product declarations — Core rules for the product category development.

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