

Product Environmental Profile

Modular Surge Protective Devices (SPDs)



LEGRAND'S ENVIRONMENTAL COMMITMENTS

- **Incorporate environmental management into our industrial sites**

Of all Legrand sites worldwide, over 85% are ISO 14001-certified (sites belonging to the Group for more than five years).

- **Offer our customers environmentally friendly solutions**

Develop innovative solutions to help our customers design more energy efficient, better managed and more environmentally friendly installations.


- **Involve the environment in product design and provide informations in compliance with ISO 14025**

Reduce the environmental impact of products over their whole life cycle.

Provide our customers with all relevant information (composition, consumption, end of life, etc.).



REFERENCE PRODUCT

Function	Protect, against direct and indirect effects of lightning or against transient overvoltages, electronic equipment connected to networks with a rated operational voltage of up to 1000 V AC, via a surge arrester of type T2, with 4+0 poles, according to the appropriate use scenario, and for the reference service life of the product of 20 years.
Reference Product	 <p>Cat.No 4 122 23</p> <p>Surge Protective Devices_T2_In5_Imax20_4+0_Un 320V.</p>

The company reserves the right to change specifications and designs without notice. All illustrations, descriptions, dimensions and weights in the document are for guidance and cannot be held binding on the company.



PRODUCTS CONCERNED

The environmental data is representative of the following products:

Catalogue Numbers
<ul style="list-style-type: none"> • 412220, 412221, 412224, 412225, 412226, 412227, 412230, 412232, 412233, 412240, 412241, 412242, 412243, 412244, 412245, 412246, 412247, 412250, 412251, 412252, 412253, 412254, 412255, 412256, 412257, 412297, 412299, 412301, 412302, 412300, 412298

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■ CONSTITUENT MATERIALS

This Reference Product contains no substances prohibited by the regulations applicable at the time of its introduction to the market. It respects the restrictions on use of hazardous substances as defined in the RoHS directive 2011/65/EU amended by delegated directive (EU) 2015/863, and its amendment 2017/2102/EU.

Total weight of Reference Product	0.40 kg (all packaging included)
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Product alone weight 0.33 kg					
Plastics as % of weight		Metals as % of weight		Other as % of weight	
PBT	22.8 %	Copper and copper alloys	16.5 %	Various components	12.2 %
PC	19.5 %	Steel	10.0 %		
PA	1.8 %	Aluminium	0.3 %		
PS	<0.1 %				

Packaging (alone) : 0.07 kg					
PE	0.1 %			Cardboard	10.4 %
				Wood	5.0 %
				Paper	1.5 %

Total plastics : 0.18 kg	44.1 %	Total metals : 0.11 kg	26.8 %	Total others : 0.12 kg	29.1 %
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At the date of edition of this document, the content of recycled material(s) is :

- Product alone (excluding packaging): 15% by mass
- Packaging only: 60% by mass



■ MANUFACTURE

This Reference Product comes from a site that has received ISO14001 certification. The final assembly site is located in Poland.



■ DISTRIBUTION

Products are distributed from logistics centres located with a view to optimize transport efficiency. The Reference Product is therefore transported over an average distance of 1000 km by lorry and 19000 km by ship from our warehouse to the local point of distribution into the market all around the world.

Packaging is compliant with applicable regulation.



■ INSTALLATION

For the installation of the product, only standard tools are needed.



■ USE

Under normal conditions of use, this product requires no servicing, no maintenance or additional products.

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END OF LIFE

The product end of life factors are taken into account during the design phase. Dismantling and sorting of components or materials is made as easy as possible with a view to recycling or failing that, another form of reuse. This product falls within the scope of the WEEE directive (2012/19/EU). Therefore it must be processed through local WEEE recycling/recovery channels.

Extended producer responsibility:

The sale of this product is subject to a contribution to eco-organisations in each country responsible for managing end of life products in the field of application of the European Waste Electronic and Electrical Equipment Directive.



ENVIRONMENTAL IMPACTS

The evaluation of environmental impacts examines the stages of the Reference Product life cycle: manufacturing, distribution, installation, use and end of life. It is representative from worldwide marketed products. The datasets collected in this PEP are representative of the year 2025.

For each phase, the following modelling elements were taken into account:

System Limit	Manufacture A1-A3	Materials and components of the product, all transport for the manufacturing, the packaging and the waste generated by the manufacturing.
	Distribution A4	Transport between the last Group distribution centre and an average delivery point in the sales area.
	Installation A5	The end of life of the packaging.
	Use B1-B7	<ul style="list-style-type: none"> Product category: Surge arresters : Type 1, 2 or 3 devices connected to low voltage power systems. Use scenario: continuous operation (100% of the time) for 20 years at 30% of rated load of the time. This modelling duration does not constitute a minimum durability requirement. Energy model: Electricity Mix; production mix; Low voltage ; Global, GLO - 2022.
	End of life C1-C4	Choice of end-of-life by default model for PCR-ed4-EN-2021 09 06
D Module		Module D is calculated according to PCR-ed4-EN-2021 09 06 based on the materials recycled and the modelled end-of-life scenario. It expresses the net benefits and loads beyond the boundaries of the system, and are not to be included in the life cycle totals.
Software and data-base used		The set of indicators used is Indicators for PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2) v2.0 EIME V6 & its database 2025-04-15

Unless otherwise indicated the modelling energetic mix are those integrated in the data modules used from the aforementioned database.

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ENVIRONMENTAL IMPACTS

	Total Life Cycle		Manufacturing	Distribution	Installation	Use ⁽¹⁾			End of Life	Module D
			A1-A3	A4	A5	Total B1-B7	B2	B6	C1-C4	
Climate change - total	7.16E+00	kg CO ₂ eq.	1.38E+00	3.66E-02	1.27E-01	5.43E+00	0.00E+00	5.43E+00	1.87E-01	-9.40E-02
Climate change - fossil fuels	7.08E+00	kg CO ₂ eq.	1.46E+00	3.66E-02	2.34E-02	5.38E+00	0.00E+00	5.38E+00	1.86E-01	-3.47E-02
Climate change - biogenics	8.38E-02	kg CO ₂ eq.	-7.81E-02	0*	1.03E-01	5.74E-02	0.00E+00	5.74E-02	1.08E-03	-5.93E-02
Climate change - land use and land use transformation	1.07E-04	kg CO ₂ eq.	1.07E-04	2.32E-08	0*	0.00E+00	0.00E+00	0.00E+00	5.62E-08	0.00E+00
Ozone depletion	1.46E-07	kg CFC-11 eq.	1.11E-07	2.13E-10	8.37E-10	2.28E-08	0.00E+00	2.28E-08	1.08E-08	-2.57E-09
Acidification (AP)	4.52E-02	mole of H ⁺ eq.	1.55E-02	5.48E-04	1.36E-04	2.79E-02	0.00E+00	2.79E-02	1.15E-03	-9.22E-04
Freshwater eutrophication	3.51E-05	kg P eq.	2.63E-05	9.34E-08	2.87E-08	8.39E-06	0.00E+00	8.39E-06	2.95E-07	6.76E-07
Marine aquatic eutrophication	4.76E-03	kg of N eq.	1.02E-03	1.50E-04	3.27E-05	3.34E-03	0.00E+00	3.34E-03	2.20E-04	2.22E-05
Terrestrial eutrophication	5.98E-02	mole of N eq.	1.17E-02	1.64E-03	4.37E-04	4.31E-02	0.00E+00	4.31E-02	2.87E-03	4.32E-05
Photochemical ozone formation	1.79E-02	kg NMVOC eq.	5.84E-03	4.14E-04	9.20E-05	1.09E-02	0.00E+00	1.09E-02	6.66E-04	-9.81E-05
Depletion of abiotic resources - elements	1.25E-03	kg Sb eq.	1.25E-03	0*	0*	1.15E-06	0.00E+00	1.15E-06	0*	-8.94E-06
Depletion of abiotic resources - fossil fuels	1.56E+02	MJ	3.69E+01	5.55E-01	4.37E-01	1.15E+02	0.00E+00	1.15E+02	3.32E+00	-5.03E+00
Water requirement	9.99E+00	m ³ deprivation worldwide eq.	9.63E+00	0*	1.38E-03	3.32E-01	0.00E+00	3.32E-01	2.45E-02	-5.44E-02
Emission of fine particles	2.98E-07	incidence of diseases	9.34E-08	2.33E-09	9.45E-10	1.94E-07	0.00E+00	1.94E-07	7.60E-09	-5.62E-09

*Represents less than 0.01% of the total life cycle of the reference flow

⁽¹⁾ For the Use phase and according to the current PCR, the information modules B1, B3, B4, B5 and B7, all having indicator values equal to «0» (zero), are not listed in this table

In accordance with current PCR rules, the environmental indicator values in the «Module D» column must not be summed with the values in the «Total Life Cycle» column

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Total Life Cycle			Manufacturing	Distribution	Installation	Use ⁽¹⁾			End of Life	Module D
			A1-A3	A4	A5	Total B1-B7	B2	B6	C1-C4	
Ionizing radiation, human health	4.95E+00	kBq of U235 eq.	2.89E-01	5.89E-04	8.94E-03	4.59E+00	0.00E+00	4.59E+00	6.08E-02	-9.81E-03
Ecotoxicity (fresh water)	1.15E+02	CTUe	1.02E+02	4.42E-01	5.82E-01	8.10E+00	0.00E+00	8.10E+00	4.28E+00	7.51E-01
Human toxicity, carcinogenic effects	9.29E-09	CTUh	8.58E-09	3.41E-12	4.32E-12	6.57E-10	0.00E+00	6.57E-10	4.36E-11	5.12E-09
Human toxicity, non-carcinogenic effects	1.24E-07	CTUh	1.03E-07	7.02E-11	1.71E-10	1.79E-08	0.00E+00	1.79E-08	2.13E-09	-1.27E-08
Impacts related to land use/soil quality	1.52E+00	-	1.42E+00	0*	5.23E-04	9.97E-02	0.00E+00	9.97E-02	3.49E-03	-5.48E-07
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	1.98E+01	MJ	9.49E-01	0*	3.88E-02	1.86E+01	0.00E+00	1.86E+01	2.37E-01	-1.77E-01
Use of renewable primary energy resources used as raw materials	8.13E-01	MJ	8.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.18E-01
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	2.07E+01	MJ	1.76E+00	0*	3.88E-02	1.86E+01	0.00E+00	1.86E+01	2.37E-01	5.41E-01
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	1.51E+02	MJ	3.22E+01	5.55E-01	4.37E-01	1.15E+02	0.00E+00	1.15E+02	3.32E+00	-5.03E+00
Use of non-renewable primary energy resources used as raw materials	4.70E+00	MJ	4.70E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.82E-05
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	1.56E+02	MJ	3.69E+01	5.55E-01	4.37E-01	1.15E+02	0.00E+00	1.15E+02	3.32E+00	-5.03E+00

*Represents less than 0.01% of the total life cycle of the reference flow

⁽¹⁾ For the Use phase and according to the current PCR, the information modules B1, B3, B4, B5 and B7, all having indicator values equal to «0» (zero), are not listed in this table

In accordance with current PCR rules, the environmental indicator values in the «Module D» column must not be summed with the values in the «Total Life Cycle» column

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Total Life Cycle			Manufacturing	Distribution	Installation	Use ⁽¹⁾			End of Life	Module D
			A1-A3	A4	A5	Total B1-B7	B2	B6	C1-C4	
Use of secondary materials	1.05E-01	kg	1.05E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	0.00E+00	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	0.00E+00	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	2.33E-01	m³	2.24E-01	0*	3.15E-05	7.74E-03	0.00E+00	7.74E-03	6.87E-04	-1.27E-03
Hazardous waste disposed of	4.87E+00	kg	4.34E+00	0*	2.52E-02	1.26E-01	0.00E+00	1.26E-01	3.80E-01	-6.87E-01
Non-hazardous waste disposed of	1.38E+00	kg	4.33E-01	1.43E-03	3.16E-03	8.59E-01	0.00E+00	8.59E-01	8.37E-02	5.33E-03
Radioactive waste disposed of	3.78E-04	kg	1.94E-04	1.13E-06	1.32E-06	1.71E-04	0.00E+00	1.71E-04	1.08E-05	-4.93E-06
Components for re-use	0.00E+00	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	9.51E-02	kg	2.31E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.21E-02	0.00E+00
Materials for energy recovery	0.00E+00	MJ by energy vector	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	0.00E+00	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of primary energy during the life cycle	1.76E+02	MJ	3.87E+01	5.55E-01	4.76E-01	1.33E+02	0.00E+00	1.33E+02	3.55E+00	-4.49E+00
Biogenic carbon content of the product	0.00E+00	kg of C	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content of the associated packaging	3.56E-02	kg of C	3.56E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.73E-02

*Represents less than 0.01% of the total life cycle of the reference flow

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In accordance with current PCR rules, the environmental indicator values in the «Module D» column must not be summed with the values in the «Total Life Cycle» column

The values of the indicators defined in the PCR-ed4-EN-2021 09 06 are available in the digital database of pep-ecopassport.org website.

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ENVIRONMENTAL IMPACTS

For products covered by the PEP other than the Reference product, the environmental impacts of each phase of the lifecycle are calculated with the extrapolation coefficients indicated in the table below:

Cat No	Total life Cycle	Manufacturing	Distribution	Installation	Use	End of life
412223	1.0	1.0	1.0	1.0	1.0	1.0
412220	0.5	0.4	0.4	0.7	1.0	0.3
412221	0.7	0.6	0.6	1.0	1.0	0.5
412224	0.7	0.6	0.6	1.0	1.0	0.5
412225	1.0	1.1	1.1	1.3	1.0	1.0
412226	0.7	0.6	0.6	1.1	1.0	0.5
412227	1.0	1.0	1.0	1.5	1.0	1.0
412230	0.5	0.4	0.4	0.8	1.0	0.3
412232	1.0	1.0	1.0	1.1	1.0	1.0
412233	1.2	1.3	1.3	1.3	1.0	1.3
412240	0.5	0.4	0.4	0.7	1.0	0.3
412241	0.7	0.6	0.6	1.0	1.0	0.6
412242	1.0	1.0	1.0	1.1	1.0	0.9
412243	1.1	1.1	1.1	0.9	1.0	1.2
412244	0.7	0.6	0.6	0.9	1.0	0.5
412245	1.1	1.2	1.2	1.5	1.0	1.1
412246	0.7	0.6	0.6	1.0	1.0	0.5
412247	1.1	1.2	1.2	1.4	1.0	1.1
412250	0.6	0.5	0.5	0.7	1.0	0.4
412251	0.9	0.9	0.9	1.1	1.0	0.8
412252	1.1	1.2	1.2	1.1	1.0	1.2
412253	1.4	1.5	1.5	1.0	1.0	1.6
412254	0.7	0.7	0.7	1.0	1.0	0.6
412255	1.3	1.4	1.4	1.4	1.0	1.4
412256	0.8	0.7	0.7	1.1	1.0	0.6
412257	1.4	1.4	1.4	1.4	1.0	1.5
412297	0.4	0.2	0.2	0.7	1.0	0.1
412299	0.4	0.3	0.3	0.8	1.0	0.2
412301	0.4	0.3	0.3	0.9	1.0	0.2
412302	0.5	0.4	0.4	0.8	1.0	0.3
412300	0.4	0.2	0.2	0.8	1.0	0.1
412298	0.4	0.2	0.2	0.8	1.0	0.1

Registration number: LGRP-02195-V01.01-EN		Drafting rules: « PEP-PCR-ed4-EN-2021 09 06 » Supplemented by «PSR-0005-ed3.1-2023 12 08»	
Verifier accreditation N°: VH23		Information and reference documents: www.pep-ecopassport.org	
Date of issue: 07-2025		Validity period: 5 years	
Independent verification of the declaration and data, in compliance with ISO 14025 : 2006			
Internal <input checked="" type="checkbox"/> External <input type="checkbox"/>			
The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain)			
PEP are compliant with NF C08-100-1 :2016 and EN 50693 :2019 or NF E38-500 :2022			
The elements of the present PEP cannot be compared with elements from another program			
Document in compliance with ISO 14025 : 2006: «Environmental labels and declarations. Type III environmental declarations»			

Environmental data in alignment with EN 15804: 2012 + A2 : 2019