

# Product Environmental Profile

## PowerLogic P5

### PowerLogic P5



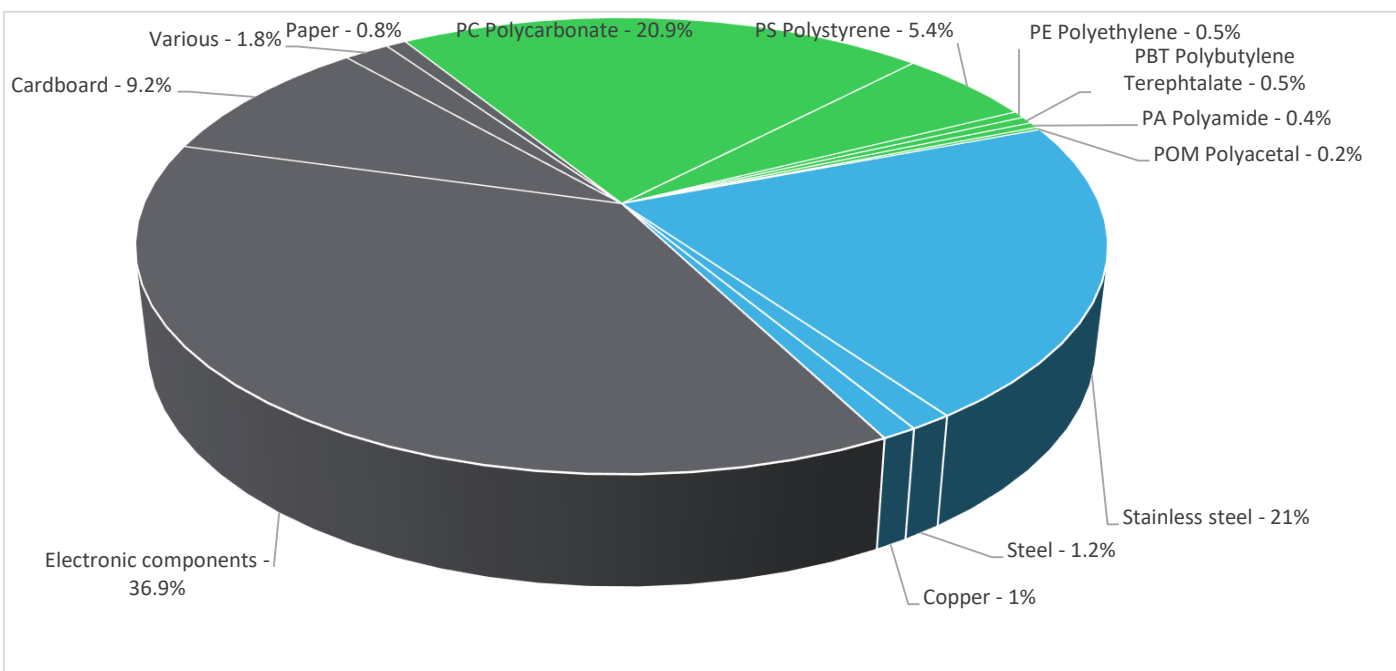
General information

<b>Representative product</b>	PowerLogic P5 - PowerLogic P5F30 - REL50453
<b>Description of the product</b>	Protect electrical network, medium & high voltage network - Maximize energy availability and the profits generated by customer installation.
<b>Description of the range</b>	Range including two models: PowerLogic P5x20 and PowerLogic P5x30  The environmental impacts of this referenced product are representative of the impacts of the other products of the range which are developed with a similar technology.
<b>Functional unit</b>	Protect distribution and transmission networks and high voltage equipment (typically from 1 to 500 KV) like feeder, transformer, motor and generator against faults, (short circuit, over load ...) 24h per day, 7 days on 7. Calculations done in this document for LCA use a period of 10 years of operations, in Europe environmental conditions. This time is not representative of the effective lifetime of PowerLogic P5 protection relays, which is more than 10 years.



## Constituent materials

<b>Reference product mass</b>	4259 g including the product, its packaging and additional elements and accessories
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Plastics	27.9%
Metals	23.2%
Others	48.7%



## Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2011/65/EU of 8 June 2011) and do not contain, or only contain in the authorised proportions, lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls - PBB, polybrominated diphenyl ethers - PBDE) as mentioned in the Directive

As the products of the range are designed in accordance with the RoHS Directive (European Directive 2002/95/EC of 27 January 2003), they can be incorporated without any restriction in an assembly or an installation subject to this Directive.

Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website

<http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page>



## Additional environmental information

The PowerLogic P5 presents the following relevant environmental aspects

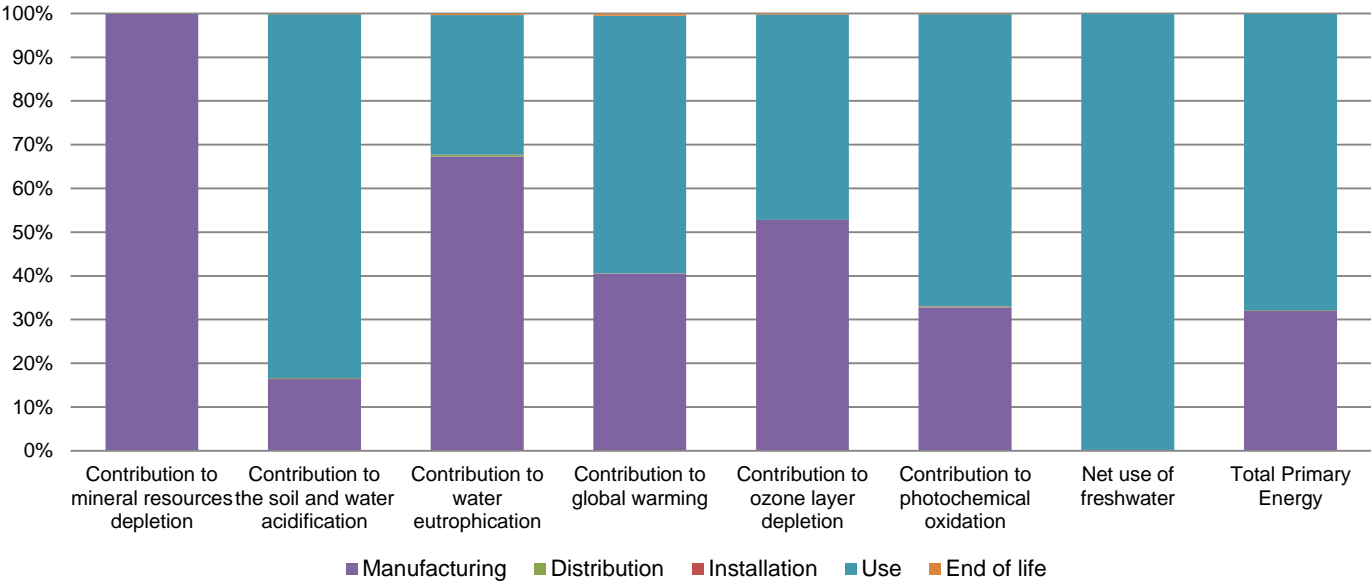
Design	PowerLogic P5 Nominal consum: PowerLogic P5x20 < 4,5 W and PowerLogic P5x30 < 5,5 W
Manufacturing	Manufactured at a Schneider Electric production site ISO14001 certified
Distribution	Weight and volume of the packaging optimized, based on the European Union's packaging directive Packaging weight is 704.7 g, consisting of cardboard & paper (63 %) and plastic (37 %). Packaging recycled materials is 69% of total packaging mass. Product distribution optimised by setting up local distribution centres
Installation	This product does not require any installation operations.
Use	The product does not require special maintenance operations.
End of life	End of life optimized to decrease the amount of waste and allow recovery of the product components and materials  This product contains electronic cards (1472 g) that should be separated from the stream of waste so as to optimize end-of-life treatment.  The location of these components and other recommendations are given in the End of Life Instruction document which is available on the Schneider-Electric Green Premium website  <a href="http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page">http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page</a>  Recyclability potential: <b>65%</b> Based on "ECO'DEEE recyclability and recoverability calculation method" (version V1, 20 Sep. 2008 presented to the French Agency for Environment and Energy Management: ADEME).



## Environmental impacts

Reference life time	10 years			
Product category	Other equipments - Active product			
Installation elements	End of life of the packaging			
Use scenario	Only standby mode (5,5 W) is considered as 100% of the time, because consumed power in active mode is negligible. No Sleep mode nor Off mode.			
Geographical representativeness	Worldwide			
Technological representativeness	Protect electrical network, medium & high voltage network - Maximize energy availability and the profits generated by customer installation.			
Energy model used	Manufacturing	Installation	Use	End of life
	Energy model used: France	Electricity grid mix; AC; consumption mix, at consumer; < 1kV; EU-27	Electricity grid mix; AC; consumption mix, at consumer; < 1kV; EU-27	Electricity grid mix; AC; consumption mix, at consumer; < 1kV; EU-27

Compulsory indicators		PowerLogic P5 - PowerLogic P5F30 - REL50453					
Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Contribution to mineral resources depletion	kg Sb eq	1.74E-02	1.74E-02	0*	0*	2.05E-05	0*
Contribution to the soil and water acidification	kg SO <sub>2</sub> eq	1.18E+00	1.94E-01	2.51E-03	2.02E-04	9.85E-01	1.59E-03
Contribution to water eutrophication	kg PO <sub>4</sub> <sup>3-</sup> eq	1.86E-01	1.25E-01	5.78E-04	1.25E-04	5.95E-02	6.90E-04
Contribution to global warming	kg CO <sub>2</sub> eq	4.01E+02	1.62E+02	5.50E-01	5.01E-02	2.36E+02	2.00E+00
Contribution to ozone layer depletion	kg CFC11 eq	3.28E-05	1.73E-05	0*	0*	1.54E-05	7.43E-08
Contribution to photochemical oxidation	kg C <sub>2</sub> H <sub>4</sub> eq	8.10E-02	2.66E-02	1.79E-04	1.53E-05	5.41E-02	1.42E-04
Resources use	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Net use of freshwater	m3	8.58E+02	1.86E+00	0*	0*	8.56E+02	0*
Total Primary Energy	MJ	6.95E+03	2.22E+03	7.77E+00	0*	4.71E+03	7.12E+00



Optional indicators		PowerLogic P5 - PowerLogic P5F30 - REL50453					
Impact indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Contribution to fossil resources depletion	MJ	4.53E+03	1.84E+03	7.72E+00	5.81E-01	2.68E+03	5.80E+00
Contribution to air pollution	m³	2.66E+04	1.63E+04	2.34E+01	3.76E+00	1.02E+04	5.09E+01
Contribution to water pollution	m³	2.29E+04	1.29E+04	9.04E+01	6.78E+00	9.74E+03	9.56E+01
Resources use	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Use of secondary material	kg	3.68E-02	3.68E-02	0*	0*	0*	0*
Total use of renewable primary energy resources	MJ	6.48E+02	4.89E+01	0*	0*	6.00E+02	0*
Total use of non-renewable primary energy resources	MJ	6.31E+03	2.18E+03	7.76E+00	0*	4.12E+03	7.11E+00
Use of renewable primary energy excluding renewable primary energy used as raw material	MJ	6.40E+02	4.06E+01	0*	0*	6.00E+02	0*
Use of renewable primary energy resources used as raw material	MJ	8.31E+00	8.31E+00	0*	0*	0*	0*
Use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	6.24E+03	2.11E+03	7.76E+00	0*	4.12E+03	7.11E+00
Use of non renewable primary energy resources used as raw material	MJ	6.17E+01	6.17E+01	0*	0*	0*	0*
Use of non renewable secondary fuels	MJ	0.00E+00	0*	0*	0*	0*	0*
Use of renewable secondary fuels	MJ	0.00E+00	0*	0*	0*	0*	0*
Waste categories	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Hazardous waste disposed	kg	1.70E+02	1.64E+02	0*	0*	1.23E-01	6.22E+00
Non hazardous waste disposed	kg	9.14E+02	3.41E+01	0*	2.11E-01	8.80E+02	0*
Radioactive waste disposed	kg	6.05E-01	1.70E-02	0*	0*	5.88E-01	0*
Other environmental information	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Materials for recycling	kg	3.18E+00	2.55E-01	0*	5.15E-01	0*	2.41E+00
Components for reuse	kg	0.00E+00	0*	0*	0*	0*	0*
Materials for energy recovery	kg	5.09E-01	0*	0*	0*	0*	5.09E-01
Exported Energy	MJ	1.40E-03	1.31E-04	0*	1.27E-03	0*	0*

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

Life cycle assessment performed with EIME version EIME v5.6.0.1, database version 2016-11 in compliance with ISO 14044.

The use phase is the life cycle phase which has the greatest impact on the majority of environmental indicators (based on compulsory indicators).

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range.

The present study is carried out for an PowerLogic P5x30 protection relay in width with the following configuration of I / O and communication boards:

- 2 x 6I4O
- 1x UNIT COM ETH 2TP
- 1x UNIT COM RS485
- 1x EXTENSION MODULE

The difference between some PowerLogic P5x30 relays can be related only to the embedded firmware. The firmware has no impact on the environment and is not taken into account in the evaluation.

There may also be hardware differences in options, such as different input voltage ranges for digital input or power supply cards, for example, but neither the size of the PCBA nor the type of electronics used do not differ and their power consumption remains equivalent.

There may also be PowerLogic P5x30 references with configurations with fewer I / O or communications boards, but these differences are minor.

So the present study prevails on the following PowerLogic P5x30 products: REL50401, REL50402, REL50403, REL50404, REL50405, REL50406, REL50407, REL50408, REL50409, REL50410, REL50411, REL50412, REL50451, REL50452, REL50454, REL50455, REL50456, REL50457, REL50458, GCR\_P5F30, GCR\_P5M30.

The present study can be extrapolated to the products of the PowerLogic P5x20 protection relays thanks to proportionality factors. Indeed, the products PowerLogic P5x20 and PowerLogic P5x30 are very similar:

- identical height & depth,
- the mechanical parts in kind and number are identical except for those impacted by the width and therefore proportional (size & mass) to the width of the two models of products,
- the electronic cards are identical except for the CPU and LCD display which are proportional (size & mass) to the product width.

The impact and resource indicators used for the PowerLogic P5x20 can therefore be calculated according to the product life phases by using the following proportionality factors:

	P5x30	P5x20	P5x20 / P5x30	Phases of life cycle
Mass (g)	3553	2580	0.73	Manufacturing & End of Live
Mass + packaging (g)	4258	3020	0.71	Distribution
Packaging (g)	705	440	0.62	Installation
Consumed power (w)	5.5	4.5	0.82	Use

The difference between PowerLogic P5x20 models is similar to that described above for PowerLogic P5x30 models.

By extrapolation, the PowerLogic P5x20 products included in the present study are therefore the following: REL50301, REL50302, REL50303, REL50304, REL50305, REL50306, REL50331, REL50332, REL50333, REL50334, REL50339, REL50340, GCR\_P5U20, GCR\_P5V20.

Please note that the values given above are only valid within the context specified and cannot be used directly to draw up the environmental assessment of an installation.

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Independent verification of the declaration and data			
Internal	X	External	
The elements of the present PEP cannot be compared with elements from another program.			
Document in compliance with ISO 14021:2016 « Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling) »			

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