

Sepam series 10

Product Environmental Profile



Product Environmental Profile - PEP

Product overview

The main purpose of the Sepam series 10 range is to continuously monitor the state of a medium voltage electrical network and protect it from any unwanted interference: overload, short-circuit, insulation fault, etc.

This range consists of 3 models:

- Sepam series 10 N for protection against earth faults,
- Sepam series 10 B for protection against overloads, phase-to-phase faults and earth faults,
- Sepam series 10 A, which has the same functions as Sepam series 10 B, with a communication port and additional logical inputs and outputs to provide extra monitoring and control functions.

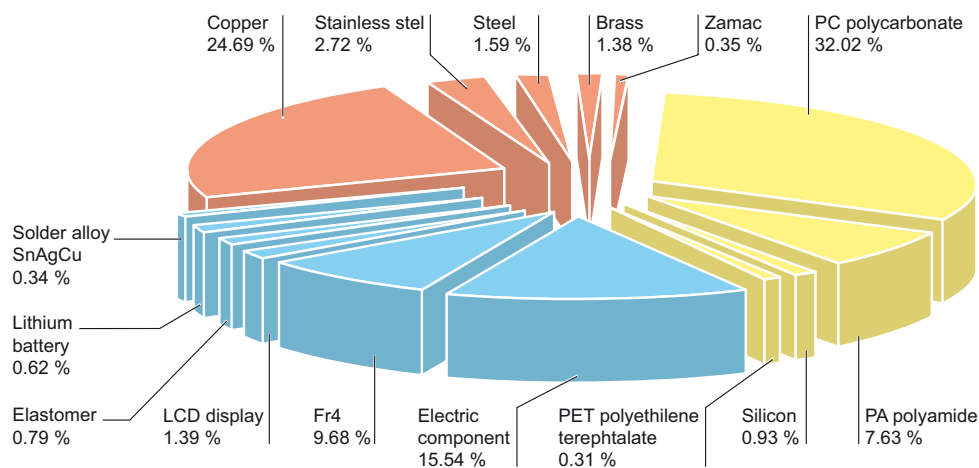
The representative product used for the analysis is the Sepam series 10 A, which is considered to be the most comprehensive (REL59810).

The environmental impacts of this referenced product are representative of the impacts of the other products in the range for which the same technology is used. The environmental analysis was performed in conformity with ISO 14040 "Environmental management: Life cycle assessment – Principle and framework". This analysis takes the stages in the life cycle of the product into account.

Constituent materials

The mass of the products in the range is from 1.145 kg to 1.454 kg, not including the packaging. It is 1.454 kg for the Sepam series 10 A analysed.

The constituent materials are distributed as follows:



All necessary steps have been taken with our services, suppliers and subcontractors to ensure that the materials used in the composition of the Sepam series 10 product range do not contain any substances prohibited by the legislation that was in force⁽¹⁾ when it was put on the market. Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2002/95/EC of 27 January 2003) and do not contain, or in the authorised proportions, lead, mercury, cadmium, chromium hexavalent, flame retardant (polybromobiphenyles PBB, polybromodiphenylthethers PBDE) as mentioned in the Directive.

(1) According to the list available on request.

Manufacturing

The Sepam series 10 product range is manufactured at a production site which complies with the regulations governing industrial sites.

Distribution

The packaging conforms to the European Union packaging directive and it has been designed to optimise its weight and volume.

The weight of the packaging of the Sepam series 10 is 309 g.

The packaging consists of a cardboard box (303 g). The weight includes the instructions for the device (6 g).

The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

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Utilization

The products in the Sepam series 10 range do not generate any environmental pollution requiring special precautionary measures (noise, emissions, etc.).

The dissipated power (loss of wattage due to the Joule effect) depends on the conditions under which the product is implemented and used.

For the Sepam series 10 product range, this dissipated power is between 3 W and 8 W.

For a utilisation rate of 50 %, it is 4 W for the referenced Sepam series 10 A product.

End of life

At end of life, the products of the Sepam serie 10 product range must be dismantled to facilitate the recovery of the various constituent materials.

The proportion of recyclable material is higher than 85 %.

This percentage includes the metallic materials and marked thermoplastics conforming to the current legislation, as well as the sub-assemblies that must be sent to specialised treatment systems: 3 to 5 electronic cards, a battery (Sepam series 10 A only) and an LCD screen that can easily be disassembled.

The mass of these sub-assemblies is 26 % of the product mass.

The end of life details appear on the product end-of-life recovery sheet.

Environmental impacts



The EIME (Environmental Impact and Management Explorer) software, version 1.6, and its database, version 5.4 were used for the Life Cycle Assessment (LCA).

The assumed service life of the product is 20 years, the utilisation rate of the installation is 100 % for an average load rate of 50 % and the European electrical power model is used.

The scope of the analysis was limited to a Sepam series 10 A product.

This analysis takes the product usage and emissions into account in the life cycle phases: Manufacturing (M) including the processing of raw materials, Distribution (D) and Utilisation (U).

Presentation of product environmental impacts

Environmental indicators	Unit	For a Sepam series 10 A			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	$1.23 \cdot 10^{-13}$	$1.17 \cdot 10^{-13}$	$2.69 \cdot 10^{-17}$	$6.59 \cdot 10^{-15}$
Energy Depletion	MJ	$8.49 \cdot 10^3$	$1.08 \cdot 10^3$	20.3	$7.39 \cdot 10^3$
Water Depletion	dm ³	$1.52 \cdot 10^3$	$5.58 \cdot 10^2$	$5.77 \cdot 10^{-1}$	$9.62 \cdot 10^2$
Global Warming	g \approx CO ₂	$5.31 \cdot 10^5$	$6.57 \cdot 10^4$	$1.57 \cdot 10^3$	$4.63 \cdot 10^5$
Ozone Depletion	g \approx CFC-11	$6.66 \cdot 10^{-2}$	$8.95 \cdot 10^{-3}$	$3.01 \cdot 10^{-4}$	$5.73 \cdot 10^{-2}$
Photochemical Ozone Creation	g \approx C ₂ H ₄	$1.92 \cdot 10^2$	27.0	1.47	$1.64 \cdot 10^2$
Air Acidification	g \approx H ⁺	92.4	13.5	$3.14 \cdot 10^{-1}$	78.6
Hazardous Waste Production	kg	7.68	1.04	$1.68 \cdot 10^{-4}$	6.64

The life cycle analysis shows that the Utilisation (U) phase is the life cycle phase which has the greatest impact on the majority of environmental indicators.

The environmental parameters of this phase have been optimized at the design stage.

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System approach

The Sepam series 10 range is designed to minimise abnormal overheating in medium-voltage devices in the event of a fault, thus prolonging their service life.

Products of the range being designed conforming to the RoHS directive (2002/95/EC of 27 January 2003), they can be integrated without restriction in equipment or in an installation that will be directly subject to this regulation.

NB: Product environmental impacts depend on product installation and use conditions.

The environmental impact values listed in the above table are valid only within the specified framework and cannot be used directly to determine installation environmental assessment.

Glossary

Raw Material Depletion (RMD)

This indicator quantifies the consumption of raw materials during the life cycle of the product. It is expressed as the fraction of natural resources that disappear each year, with respect to all the annual reserves of the material.

Energy Depletion (ED)

This indicator gives the quantity of energy consumed, whether it be from fossil, hydroelectric, nuclear or other sources.

This indicator takes into account the energy from the material produced during combustion. It is expressed in MJ.

Water Depletion (WD)

This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm³.

Global Warming Potential (GWP)

The global warming of the planet is the result of the increase in the greenhouse effect due to the sunlight reflected by the earth's surface being absorbed by certain gases known as «greenhouse-effect» gases. The effect is quantified in gram equivalent of CO₂.

Ozone Depletion (OD)

This indicator defines the contribution to the phenomenon of the disappearance of the stratospheric ozone layer due to the emission of certain specific gases. The effect is expressed in gram equivalent of CFC-11.

Photochemical Ozone Creation (POC)

This indicator quantifies the contribution to the «smog» phenomenon (the photochemical oxidation of certain gases which generates ozone) and is expressed in gram equivalent of methane (C₂H₄).

Air Acidification (AA)

The acid substances present in the atmosphere are carried by rain. A high level of acidity in the rain can cause damage to forests. The contribution of acidification is calculated using the acidification potentials of the substances concerned and is expressed in mode equivalent of H⁺.

Hazardous Waste Production (HWP)

This indicator calculates the quantity of specially treated waste created during all the life cycle phases (manufacturing, distribution and utilization). For example, special industrial waste in the manufacturing phase, waste associated with the production of electrical power, etc. It is expressed in kg.



We are committed to safeguarding our planet by "Combining innovation and continuous improvement to meet the new environmental challenges".

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