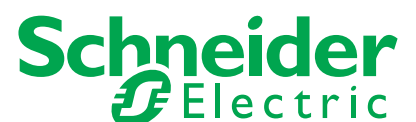
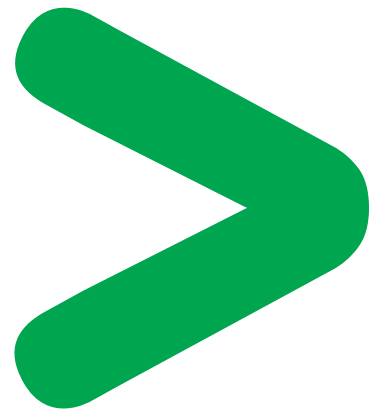


Product Environmental Profile

TeSys LRD01 to LRD038

Thermal overload protective relay



Product Environmental Profile - PEP

Product Overview

The main purpose of TeSys LRD thermal overload relays range is to detect overload currents in order to protect the load. This range covers thermal overload relays for utilization currents between 0 and 38 A.

The representative product used for the analysis is the thermal overload relays TeSys LRD08. This product is representative of the environmental impacts of all the other products in the same range for which similar technologies are used.

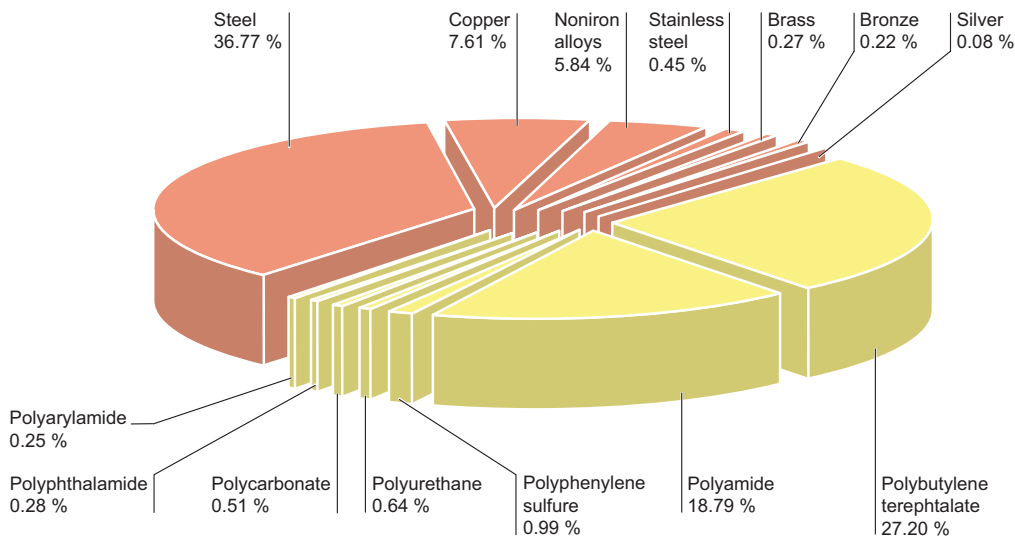
The environmental analysis was performed in conformity with ISO 14040 "Environmental management:

Life cycle assessment - Principle and framework".

This analysis takes the stages in the life cycle of the product into account.

Constituent materials

The products in the considered range (TeSys LRD between 0 and 38 A) are of identical design, size and weight. Their weight is 126 g excluding packaging. The constituent materials are as follows:



Substance assessment

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, polybromodiphenylthers PBDE) as mentioned in the Directive.

Manufacturing

The 0 to 38 A TeSys LRD product family is manufactured on Schneider Electric production sites, which have set up an ISO 14001 certified environmental management system.

Distribution

Packaging has been designed with a view to reducing its overall weight and volume, while complying with the European Union packaging directive 94/62/EC.

The packaging for the TeSys LRD08 is of 18 g. It is made entirely of cardboard and of an adhesive paper label weighting 0.2 g.

The product distribution flows are optimized by the location of local distribution centers close to the market areas.

Product Environmental Profile - PEP

Utilization

The 0 to 38 A product family does not cause any pollution requiring special precautions for use (noise, emissions, etc.).
 The power dissipation depend on the product's installation and operating conditions. This dissipated power extends from 4 W and 8 W (Joule effect losses expressed in W) for the product range TeSys LRD from 0 to 38 A. This power dissipation is of 5 W for the TeSys LRD 08 used as reference.
 This power dissipation represents around 0.3 % of the power of the motor protected by this TeSys LRD 08 (1.5 kW sous 400 V).

End of life

At the end of their life, the TeSys LRD 0 to 38 A product family can either be dismantled or crushed to make better use of the various constituent materials.
 The recycling potential is greater than 80 %. This percentage includes metal materials and branded plastics compliant with current regulations.

Environmental impacts

The Life Cycle Assessment (LCA) was carried out using EIME (Environmental Information and Management Explorer) software version 2.4 and its version 5.4 database.
 The assumed service life of the product is 20 years with a utilization rate of the installation of 30 % (that is 8 h per day). The European electric power model is used.
 The scope of the analysis consists of the product referenced TeSys LRD 08 in the international catalog.
 The environmental impacts were analyzed during the Manufacturing (M) (raw material processing), Distribution (D) and Use (U) phases.

Presentation of the environmental impacts of the product

Environmental indicators	Unit	For a TeSys LRD 08			
		S = M + D + U	M	D	U
Raw material depletion	Y-1	1.81 10 ⁻¹⁴	1.57 10 ⁻¹⁴	8.65 10 ⁻¹⁹	2.47 10 ⁻¹⁵
Energy depletion	MJ	2.79 10 ⁺⁰³	13.6	6.22 10 ⁻⁰¹	2.77 10 ⁺⁰³
Water depletion	dm ³	3.68 10 ⁺⁰²	7.24	6.02 10 ⁻⁰²	3.61 10 ⁺⁰²
Global warming potential	g≈CO ₂	1.74 10 ⁺⁰⁵	6.27 10 ⁺⁰²	54.1	1.74 10 ⁺⁰⁵
Ozone depletion potential	g≈CFC-11	2.16 10 ⁻⁰²	1.02 10 ⁻⁰⁴	3.55 10 ⁻⁰⁵	2.15 10 ⁻⁰²
Photochemical ozone creatione	g≈C ₂ H ₄	61.6	2.22 10 ⁻⁰¹	6.71 10 ⁻⁰²	61.3
Air acidification	g≈H ⁺	29.8	3.34 10 ⁻⁰¹	1.42 10 ⁻⁰²	29.5
Hazardous waste production	kg	2.50	6.76 10 ⁻⁰³	1.93 10 ⁻⁰⁵	2.49

This Life Cycle Analysis showed that the product operating phase (U phase) has the greatest impact on most of the above-mentioned environmental criteria and the main influential parameters have been optimised at the design stage.

Product Environmental Profile - PEP

System approach

As the product 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 within an assembly or an installation submitted to this Directive.

*N.B.: please note that the environmental impacts of the product depend on the use and installation conditions of the product.
Impacts values given above are only valid within the context specified and cannot be directly used to draw up the environmental assessment of the installation.*

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)

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⁺.

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.

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