Product Environmental Profile

TeSys D Thermal overload relay
LRD 3365 to LRD 33696
LRD 4365 to LRD 4369

Schneider Electric

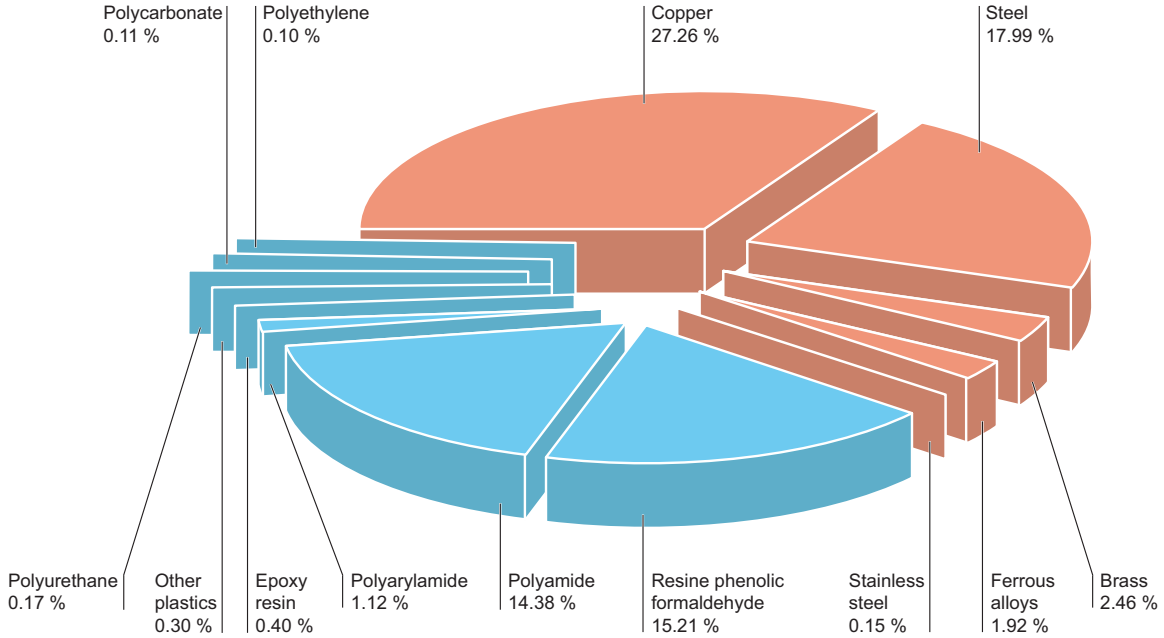
Product Environmental Profile - PEP

Product Overview

The main purpose of TeSys LRD thermal overload relays is to detect overload currents in order to protect the load. This range covers thermal overload relays for utilization currents between 80 (LRD 3365) and 140 A (LRD 33696).
The representative product used for the analysis is the thermal overload relays LRD 33696.
The environmental impacts of this referenced product are representative of the impacts of the other products of the range which are developed with the similar technology.
The environmental analysis was performed in conformity with ISO 14040.
This analysis takes into account the complete life cycle of the product.

Constituent materials

The mass of the product range is from 510 g and 1000 g no including packaging. It is 845 g for the LRD 33696.
The constituent materials are distributed as follows:



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 LRD 3365 TO LRD 33696 product range is manufactured at a Schneider Electric production site on which an ISO 14001 certified environmental management system has been established.

Distribution

The weight and volume of the packaging have been reduced, in compliance with the European Union's packaging directive.
The LRD 33696 packaging weight is 192.5 g. It consists of recycled paper (8.9 g), and cardboard (183.6 g).
The product distribution flows have been optimised by setting up local distribution centres close to the market areas.

Utilisation

The products of the LRD 3365 TO LRD 33696 range do not generate environmental pollution requiring special precautionary measures (noise, emissions, and so on) in using phase.
The dissipated power depends on the conditions under which the product is implemented and used.
This dissipated power spreads out between 17 W and 31 W for the LRD 3365 TO LRD 33696 product range.
It is 31 W for the representative product LRD 33696.
This thermal dissipation represents less than 0.05 % of the power which passes through the product.

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End of life

At end of life, the products in the LRD 3365 TO LRD 33696 have been optimized to decrease the amount of waste and valorise the components and materials of the product.
The product range doesn't need any specific end of life special treatment. According to the countries practices this product can go through the usual end of life treatment processes.
The potential of recyclability of the products has been evaluated using the Codde "recyclability and recoverability calculation method" (version V1, 20 Sep. 2008) and published by ADEME (French Agency for Environment and Energy Management).
According this method, the potential recyclability ratio is: 57 %.
As described in the recyclability calculation method, this ratio includes metals and plastics chosen for their proven industrial recycling processes, but do not include materials which don't have such proven treatment processes (ie most type of plastics which are not recycled).

Environmental impacts

The life cycle assessment has been achieved on the following life phases: Materials and Manufacturing (M), Distribution (D), Utilisation (U).
Modelisation hypothesis and impact results:
- The calculation has been done on LRD 33696.
- Product packaging : is included.
- Installation components : no special components included.
- Scenario for the use phase : this product range is included in the category Energy passing product (assumed lifetime service is 20 years and using scenario: 31 W, loading rate is 30 % and uptime percentage is 30 %).
- The electrical power model used is Europe.

Presentation of the environmental impacts

Environmental indicators	Unit	TeSys D Thermal overload relay			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	**3.8 10^{-14}**	3.6 10^{-14}	2.65 10^{-18}	0.2 10^{-14}
Energy Depletion	MJ	**1.76 10^{3}**	77.3	1.9	1.68 10^{3}
Water depletion	dm^3	**3.18 10^{2}**	74.9	0.2	2.43 10^{2}
Global Warming	g≈CO_2	**8.94 10^{4}**	4.46 10^{3}	2.2 10^{2}	8.47 10^{4}
Ozone Depletion	g≈CFC-11	**5.3 10^{-3}**	0.6 10^{-3}	0.1 10^{-3}	4.6 10^{-3}
Air Toxicity	m^3	**184 10^{5}**	42.6 10^{5}	1.0 10^{5}	141 10^{5}
Photochemical Ozone Creation	g≈C_2H_4	**30.9**	2.1	0.1	28.7
Air acidification	g≈H^+	**13.4**	1.9	0.08	11.4
Water Toxicity	dm^3	**2.6 10^{4}**	1.84 10^{3}	19.2	2.42 10^{4}
Water Eutrophication	g≈PO_4	**0.9**	0.7	2.5 10^{-3}	0.2
Hazardous waste production	kg	**1.6**	0.2	5.8 10^{-5}	1.4

The life cycle assessment has been achieved with the EIME software (Environmental Impact and Management Explorer), version 4.1, and with its database, version 11.0.
The Utilisation phase is the life cycle phase which has the greatest impact on the majority of environmental indicators

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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 dm^3.

Global Warming (GW)

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 CO_2.

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 ethylene (C_2H_4).

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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This document is based on ISO 14020 which relates to the general principles of environmental declarations and the ISO 14025 technical report relating to type III environmental declarations. Product Environmental Profiles Drafting Guide version 12.

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