Product Environmental Profile

TeSys D contactor range
LC1D40A, LC1D50A, LC1D65A

PEP ecoPASSPORT®

Schneider Electric

Product Environmental Profile - PEP

Product Overview

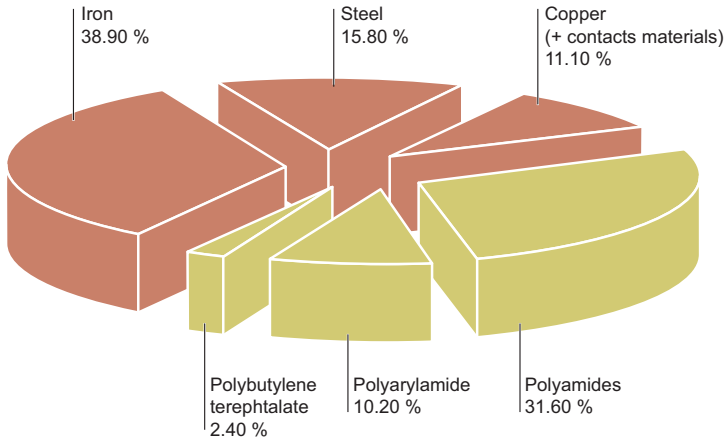
The purpose of the contactors in the TeSys D range is to make and break currents up to 150 A for motor loads and up to 200 A for resistive loads at voltages up to 1000 V AC.
This range consists of the following contactors:

- three-pole and four-pole
- Power control by voltages of 12 to 690 V AC.

This document covers the following generic references in the TeSys D range: D40A, D50A, D65A.
The representative product used for the study is the contactor with the reference LC1D50AP7. This contactor is representative of the environmental impacts of all the other products in the 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 mass of the products in the range is from 765 g to 780 g packaging not included. It is 771g for the LC1D50AP7 three-pole contactor analysed.
The constituent materials are distributed 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 TeSys D product range covered by this document is manufactured at a production site which complies with the regulations governing industrial sites and which have set-up an ISO 14001 certified environmental management system
Chlorides solvents were suppressed in the manufacturing phase conducting to a 30t diminution of the solvent used on the electro-magnet production lines. Laser technology is used to mark the products, thus limiting the use of inks.

Distribution

The weight and volume of the packaging have been reduced, in compliance with the European Union’s packaging directive, 94/62/EC.
The weight of the packing of the LC1D50AP7 contactor is 111.3 g. It is constituted of recyclable cardboard (100.1 g) , of a paper instructions sheet of 11g and of an adhesive paper label of 0.2 g.
The product distribution flows have been optimised by setting up local distribution centres close to the market areas. The impact of transporting the products is included in the environmental analysis.

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Utilization

The TeSys D product range covered by this document does not generate environmental pollution requiring special precautionary measures (noise, emissions, etc…)
The heat dissipation depends on the conditions under which the product is implemented and operated.
For the referred LC1 D50AP7 contactor, the dissipated power under A 80 A current is 33 W (Joule effect in the poles and power consumption in the coil).
For a utilisation rate of 30 % under a rated current of 50 A, the dissipated energy is of 4.7 Wh. This thermal dissipation represents less than 0.08 % (4.7/ 22000 x 0.3) of the energy used by the motor (22kW under 400 V). controlled by this contactor
Our products are silent and produce no waste material when used.

End of life

At end of life, the contactors TeSys D covered by this document do not need any particular de-polluting precaution. They can be else crushed or dismantled in order to better validate the various constitutive.
The recycling potential is more than 90 %. This percentage includes the metallic materials conforming to the RoHS Directive and the marked plastics materials.

Environmental impacts

The EIME (Environmental Impact and Management Explorer) software, version 2.4 and its database, version 6 were used for the life cycle assessment (LCA).
The assumed service life of the product is 20 years under its rated current with a utilisation rate of the installation of 30 % (8 h per day). The electrical power model used is the electricity Europe model.
The analysis focused on the contactor referenced LC1D50AP7 from the international catalogue.
The environmental impacts were analysed for the Manufacturing (M) phase, including the processing of raw materials, and for the Distribution (D) and Utilization (U) phases.

Presentation of the environmental impacts of the product

Environmental indicators	Unit	For a LC1D50AP7 (1.000 unit)			
		S = M + D + U	M	D	U
Raw material depletion	Y-1	**$1.85\ 10^{-12}$**	$1.82\ 10^{-12}$	$1.61\ 10^{-16}$	$1.57\ 10^{-15}$
Energy depletion	MJ	**$1.91\ 10^{3}$**	40.3	2.03	$1.91\ 10^{3}$
Water depletion	dm^3	**$2.56\ 10^{2}$**	21.1	$1.36\ 10^{-1}$	$2.48\ 10^{2}$
Global warming potential	g≈CO_2	**$1.26\ 10^{5}$**	$2.62\ 10^{3}$	90.8	$1.27\ 10^{5}$
Ozone depletion potential	g≈CFC-11	**$1.59\ 10^{-2}$**	$3.85\ 10^{-4}$	$5.74\ 10^{-5}$	$1.56\ 10^{-2}$
Photochemical ozone creatione	g≈C_2H_4	**4.35**	$6.89\ 10^{-1}$	$1.19\ 10^{-1}$	40.1
Air acidification	g≈H^+	**20.4**	$5.72\ 10^{-1}$	$2.35\ 10^{-2}$	19.7
Hazardous waste production	kg	**17.8**	$1.86\ 10^{-2}$	$5.37\ 10^{-5}$	16.1

The life cycle analysis shows that the Utilization (U) phase is the life cycle phase which has the greatest impact on the majority of environmental indicators. The environmental parameters of this phase were optimised to reduce these environmental impacts at the design stage.
The heat dissipation, which is an important parameter, was optimised to reduce these environmental impacts.

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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 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 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 methane (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.

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Schneider Electric Industries SAS
35, rue Joseph Monier
CS30323
F - 92506 Rueil Malmaison Cedex

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Capital social 896 313 776 €
www.schneider-electric.com

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

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