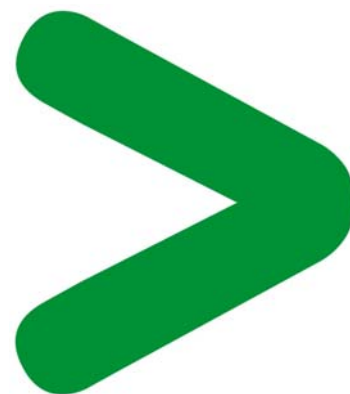


# Product Environmental Profile

Industrial Control and  
Machine Tool Transformers



# Product Environmental Profile - PEP

## Product overview

Control power transformers from Schneider Electric set the industry standard for design innovation and performance. They are designed with low impedance windings for excellent voltage regulation, and can accommodate the high inrush current associated with contactors, starters, solenoids, and relays.

The Schneider Electric product offering for Industrial and Machine Control Transformers ranges from 50VA through 5000VA.

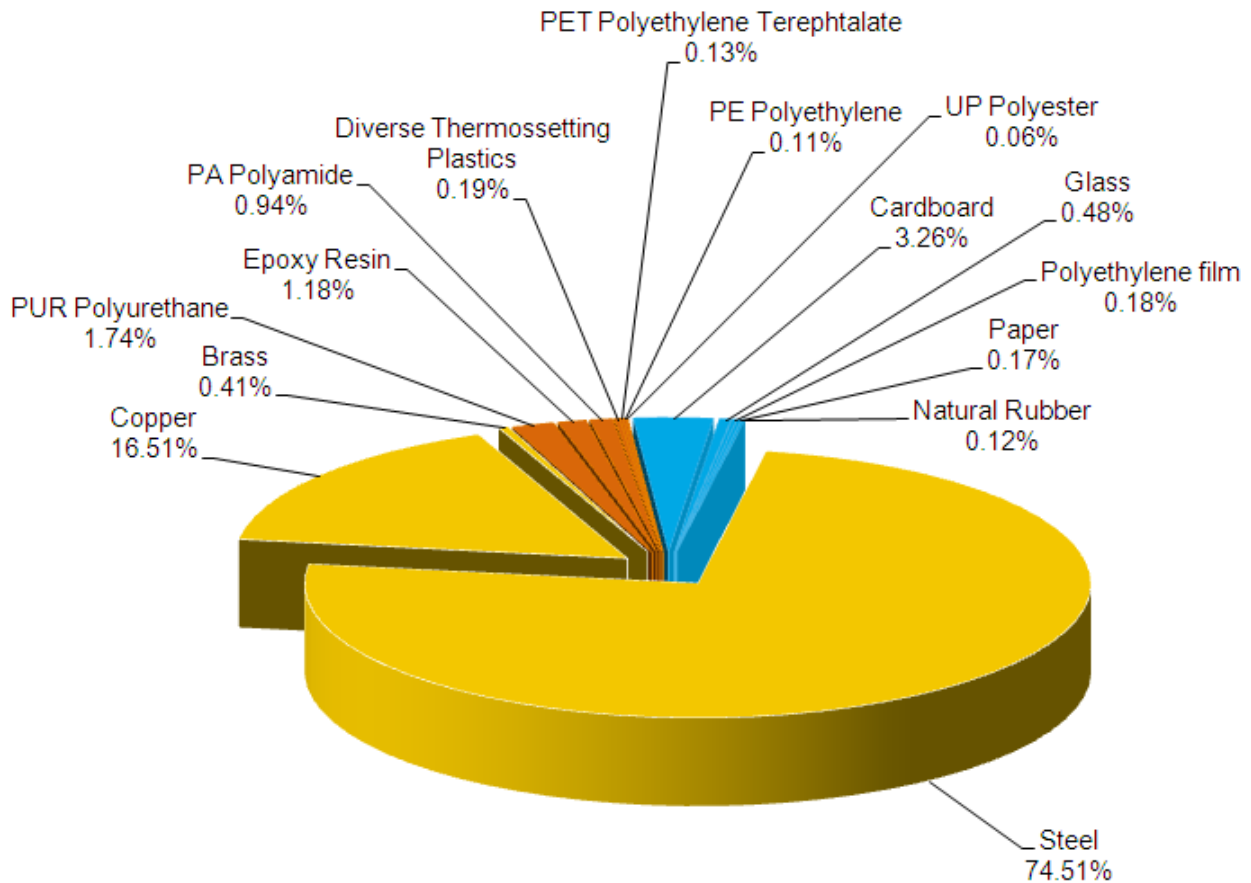
The representative product used for the analysis is the 9070T500D1 500VA Transformer.

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.

The environmental analysis was performed in conformity with ISO14040.

## Constituent materials

The mass of the Industrial Control and Machine Transformers range from 2.5 lbs. (1.13 Kg) to 94 lbs. (42.64 Kg) including packaging. It is 12.7 lbs. (5.75 Kg) for the 9070T500D1. The constituent materials are distributed as follows:



# Product Environmental Profile - PEP

## 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 only contain in the authorized proportions, lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls - PBB, polybrominated diphenyl ethers - PBDE) as mentioned in the 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) .  
(<http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page> )

## Manufacturing

The Industrial Control and Machine Transformer product range is manufactured at a Schneider Electric production site on which an ISO14001 certified environmental management system has been established.

## Distribution

The weight and volume of the packaging have been optimized. The Industrial Control and Machine Transformer packaging weight is **0.62 lbs (0.28 Kg)** and consists of corrugated carton **and Foam-in-Place packaging for the referenced 9070T500D1.**

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

## Use

The products of the Industrial Control and Machine Transformer range do not generate environmental pollution (noise, emissions) requiring special precautionary measures in standard use.

The electrical power consumption depends on the conditions under which the product is implemented and used. The electrical power consumed by the Industrial Control and Machine Transformer range is between 4.5 W and 227.0 W. It is **51 W at Full Load for** the referenced 9070T500D1 Industrial Control and Machine Transformer.

This thermal dissipation represents less than 9% of the power which passes through the product.

**The Watts loss and thermal dissipation at multiple load levels for each size of Industrial Control and Machine Transformer is published in the "Type T Performance Data" chart in catalog 9070CT9901 available on the Schneider Electric website:**  
[http://download.schneider-electric.com/files?p\\_Reference=9070CT9901&p\\_EnDocType=Catalog&p\\_File\\_Id=153782572&p\\_File\\_Name=9070CT9901R805.pdf](http://download.schneider-electric.com/files?p_Reference=9070CT9901&p_EnDocType=Catalog&p_File_Id=153782572&p_File_Name=9070CT9901R805.pdf)

## End of life

At end of life, the products in the Industrial Control and Machine Transformer range have been optimized to decrease the amount of waste and allow recovery of the product components and materials.

This product range doesn't need any special end-of-life treatment. According to countries' practices this product can enter the usual end-of-life treatment process.

The recyclability potential of the products has been evaluated using the "ECO DEEE recyclability and recoverability calculation method" (version V1, 20 Sep. 2008 presented to the French Agency for Environment and Energy Management: ADEME).

According to this method, the potential recyclability ratio is: 89%.

As described in the recyclability calculation method this ratio includes only metals and plastics which have proven industrial recycling processes.

# Product Environmental Profile - PEP

## Environmental impacts

Life cycle assessment has been performed on the following life cycle phases: Materials and Manufacturing (M), Distribution (D), Installation (I) Use (U), and End of life (E).

Modelling hypothesis and method:

- The calculation was performed on the 9070T500D1 Industrial Control and Machine Transformer.
- Product packaging: is included
- Installation components: No special components included.
- Scenario for the Use phase: this product range is included in the category Energy Consuming Product with an assumed service life is 10 years. The use scenario is: 60% of the time **at Full Load** with **51 W** loss, 25% of the **time at No Load** with **21 W** loss and 15% of the **time OFF** with 0W loss.
- The geographical representative area for the assessment is United States and the electrical power model used for calculation is American model.

End of life impacts are based on a worst case transport distance to the recycling plant (1000km)

### Presentation of the product environmental impacts

Data calculated for product use for a period of 10 years.

Environmental indicators	Unit	For a 9070T500D1					
		S = M + D + I + U + E	M	D	I	U	E
Raw Material Depletion	Y-1	6.11 10 <sup>-14</sup>	2.94 10 <sup>-14</sup>	1.97 10 <sup>-17</sup>	0	3.16 10 <sup>-14</sup>	1.17 10 <sup>-17</sup>
Energy Depletion	MJ	3.52 10 <sup>4</sup>	2.17 10 <sup>2</sup>	1.44 10 <sup>1</sup>	0	3.49 10 <sup>4</sup>	8.59
Water depletion	dm <sup>3</sup>	4.24 10 <sup>3</sup>	2.39 10 <sup>2</sup>	1.37	0	4.00 10 <sup>3</sup>	8.16 10 <sup>-1</sup>
Global Warming	g~CO <sub>2</sub>	2.31 10 <sup>6</sup>	1.68 10 <sup>4</sup>	1.14 10 <sup>3</sup>	0	2.29 10 <sup>6</sup>	6.80 10 <sup>2</sup>
Ozone Depletion	g~CFC-11	7.78 10 <sup>-2</sup>	1.57 10 <sup>-3</sup>	8.07 10 <sup>-4</sup>	0	7.50 10 <sup>-2</sup>	4.81 10 <sup>-4</sup>
Air Toxicity	m <sup>3</sup>	5.22 10 <sup>8</sup>	1.20 10 <sup>7</sup>	2.15 10 <sup>5</sup>	0	5.09 10 <sup>8</sup>	1.28 10 <sup>5</sup>
Photochemical Ozone Creation	g~C <sub>2</sub> H <sub>4</sub>	4.72 10 <sup>2</sup>	3.06	9.75 10 <sup>-1</sup>	0	4.68 10 <sup>2</sup>	5.81 10 <sup>-1</sup>
Air acidification	g~H <sup>+</sup>	4.36 10 <sup>2</sup>	4.50	1.45 10 <sup>-1</sup>	0	4.32 10 <sup>2</sup>	8.67 10 <sup>-2</sup>
Water Toxicity	dm <sup>3</sup>	2.23 10 <sup>5</sup>	4.71 10 <sup>3</sup>	1.43 10 <sup>2</sup>	0	2.18 10 <sup>5</sup>	8.50 10 <sup>1</sup>
Water Eutrophication	g~PO <sub>4</sub>	6.93	1.63	1.90 10 <sup>-2</sup>	0	5.27	1.13 10 <sup>-2</sup>
Hazardous waste production	kg	5.06 10 <sup>1</sup>	5.34 10 <sup>-1</sup>	4.24 10 <sup>-4</sup>	0	5.01 10 <sup>1</sup>	2.53 10 <sup>-4</sup>

Life cycle assessment has been performed with the EIME software (Environmental Impact and Management Explorer), version 4.0, and with its database version 11.0.

The Use Phase is the life cycle phase which has the greatest impact on the majority of environmental indicators.

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range: Depending on the impact analysis, the environmental indicators of other products in this family may be proportionally extrapolated by the mass and energy consumption of the Industrial Control and Machine Transformer.


## System approach

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.

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.

## Glossary

<b>Raw Material Depletion (RMD)</b>	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.
<b>Energy Depletion (ED)</b>	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.
<b>Water Depletion (WD)</b>	This indicator calculates the volume of water consumed, including drinking water and water from industrial sources. It is expressed in dm <sup>3</sup> .
<b>Global Warming (GW)</b>	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 <sub>2</sub> .
<b>Ozone Depletion (OD)</b>	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.
<b>Air Toxicity (AT)</b>	This indicator represents the air toxicity in a human environment. It takes into account the usually accepted concentrations for several gases in the air and the quantity of gas released over the life cycle. The indication given corresponds to the air volume needed to dilute these gases down to acceptable concentrations.
<b>Photochemical Ozone Creation (POC)</b>	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 <sub>2</sub> H <sub>4</sub> ).
<b>Air Acidification (AA)</b>	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 <sup>+</sup> .
<b>Water Toxicity (WT)</b>	This indicator represents the water toxicity. It takes into account the usually accepted concentrations for several substances in water and the quantity of substances released over the life cycle. The indication given corresponds to the water volume needed to dilute these substances down to acceptable concentrations.
<b>Hazardous Waste Production (HWP)</b>	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.

Registration N° : SCHN-2013-034-V0		Applicable PCR : PEP- PCR-ed 2-EN-2011 12 09	
Verifier accreditation N° : VH05		Program information: <a href="http://www.pep-ecopassport.org">www.pep-ecopassport.org</a>	
Date of issue: 09-2013		Period of validity: 4 years	
Independent verification of the declaration and data, according to ISO 14025:2006			
Internal	X	External	
In compliance with ISO 14025:2006 type III environmental declarations			
PCR review was conducted by an expert panel chaired by J. Chevalier (CSTB).			
The elements of the actual PEP cannot be compared with elements from another program.			

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