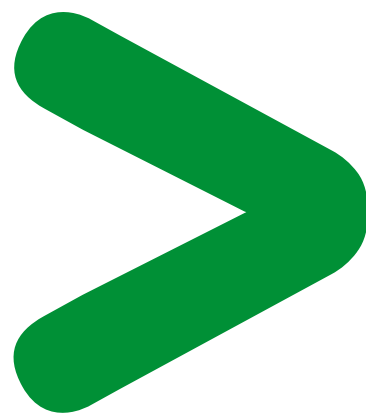


Compact NSX100 to NSX250

# Product Environmental Profile



# Product Environmental Profile - PEP

## Product overview

The Compact NSX100 to NSX160 circuit breaker product range is designed to ensure the protection of low-voltage electrical applications between 16 A and 250 A.

The Product Environmental Profile (PEP) covers the entire range:

- Compact NSX100 to NSX160 3-pole or 4-pole, fixed or draw-out circuit breaker
- fitted with a Micrologic control unit.

The representative product used for the analysis is the 3P Compact NSX160N with Micrologic 2.2.

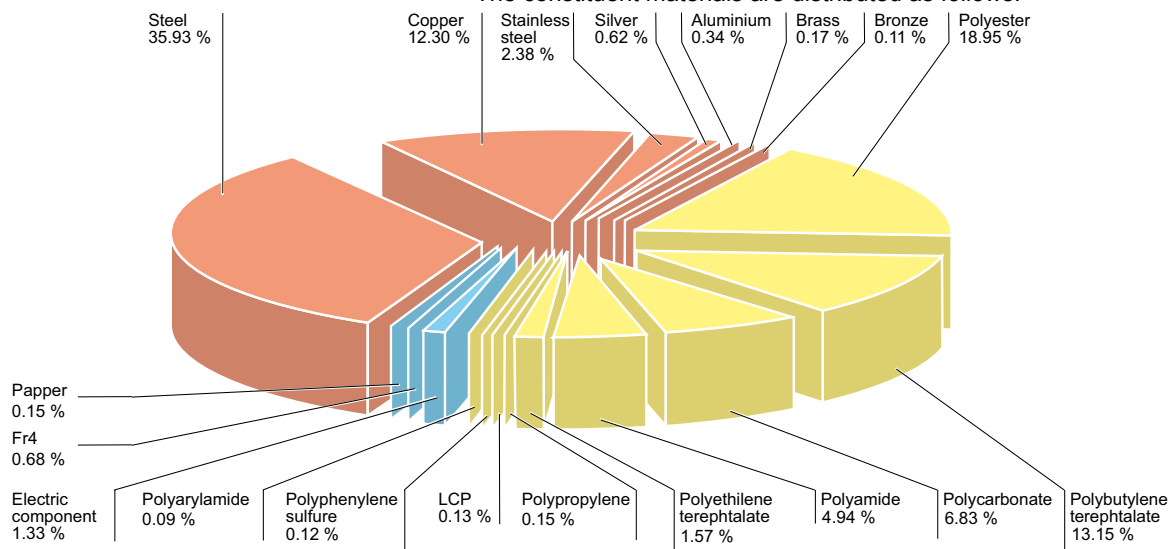
The environmental impacts of this referenced product are representative of the impacts of the other products in the range for which the same technology is used. The environmental analysis was performed in conformity with ISO 14040 "Environmental management: Life cycle assessment – Principle and framework".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

## Constituent materials

The design and size of the products in this range are identical.

The mass of the 3P Compact NSX160N with Micrologic 2.2 is 1772 g (not including the packaging)

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 Compact NSX100 to NSX250 product range do not contain any substances prohibited by the legislation that was in force<sup>(1)</sup> 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, polybromodiphenylthers PBDE) as mentioned in the Directive  
*(1) According to the list available on request.*

## Manufacturing

The Compact NSX100 to NSX250 product range is manufactured at a Schneider Electric production site on which an ISO14001 certified environmental management system has been established.

## 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 3P Compact NSX160N with Micrologic 2.2 is 149 g.

The packaging consists of a cardboard box (124 g). The weight includes the instructions for the device (25 g).

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

# Product Environmental Profile - PEP

## Utilization

The products in the Compact NSX100 to NSX250 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 Compact NSX100 to NSX250 product range, this dissipated power is between 3 W for the 3P Compact NSX100 with Micrologic 2.2 and 68 W for the 4P Compact NSX250 with Micrologic 2.2.

The dissipated power of the 3P Compact NSX160N circuit breaker with Micrologic 2.2 is 27 W

*The heat dissipation accounts for less than 0.02 % of the power passing through the product.*

The annual power consumption of a 3P Compact NSX100 with Micrologic 2.2 is 95 kWh, assuming a typical daily operation at 80 % of the load for 14 hours and 20 % of the load for 10 hours.

## End of life

81 % of the materials used for the 3P Compact NSX160N with Micrologic 2.2 can be recycled by the standard systems.

At end of life, the products in the Compact NSX100 to NSX250 circuit breaker range can either be dismantled or crushed to facilitate the recovery of the various constituent materials.

This percentage includes ferrous and non-ferrous materials, together with marked plastics that do not contain halogenated flame retardants.

Less than 2 % of the total product mass requires special recycling treatment.

The circuit breakers in the Compact NSX100 to NSX250 range also include electronic tripping devices that can easily be disassembled and which must be sent to specialised treatment systems.

These 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 and the European electrical power model is used.

The life cycle assessment relates to the 3P Compact NSX160N with Micrologic 2.2 including:

- the 3P Compact NSX160N disconnecting box
- the Micrologic 2.2 control unit.

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 one fixed 3P Compact NSX160N with Micrologic 2.2			
		S = M + D + U	M	D	U
Raw material depletion	Y-1	6.57 10 <sup>-15</sup>	6.40 10 <sup>-13</sup>	1.12 10 <sup>-17</sup>	1.78 10 <sup>-14</sup>
Energy depletion	MJ	2.01 10 <sup>4</sup>	1.68 10 <sup>2</sup>	8.33	2.00 10 <sup>4</sup>
Water depletion	dm <sup>3</sup>	2.68 10 <sup>3</sup>	82.9	4.19 10 <sup>-1</sup>	2.60 10 <sup>3</sup>
Global warming potential	g≈CO <sub>2</sub>	1.26 10 <sup>6</sup>	8.78 10 <sup>3</sup>	6.68 10 <sup>2</sup>	1.25 10 <sup>6</sup>
Ozone depletion potential	g≈CFC-11	1.57 10 <sup>-1</sup>	1.53 10 <sup>-3</sup>	2.36 10 <sup>-4</sup>	1.55 10 <sup>-1</sup>
Photochemical ozone creation	g≈C <sub>2</sub> H <sub>4</sub>	4.47 10 <sup>2</sup>	4.33	6.86 10 <sup>-1</sup>	4.42 10 <sup>2</sup>
Air acidification	g≈H <sup>+</sup>	2.15 10 <sup>2</sup>	2.31	1.74 10 <sup>-1</sup>	2.12 10 <sup>2</sup>
Hazardous waste production	kg	18	7.32 10 <sup>-2</sup>	1.32 10 <sup>-4</sup>	17.9

The utilisation phase (phase U) has the greatest impact on all the life cycle phases of the product.

# Product Environmental Profile - PEP

## System approach

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 dm<sup>3</sup>.

### 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<sub>2</sub>.

### 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<sub>2</sub>H<sub>4</sub>).

### 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<sup>+</sup>.

### 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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