

Product Environmental Profile

**ION 8600
and 8650 Switchboard Meter**



Product overview

The main function of the ION 8600 and 8650 Switchboard Meter product range is class 2 revenue metering and power quality monitoring.

This range consists of: all 8600 and 8650 Switchboard form factor meters.

The representative product used for the analysis is M8650A7C0E6C1C0A - 8650-FT21-STD-60-FULL-1I50 8650 Power Meter.

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.

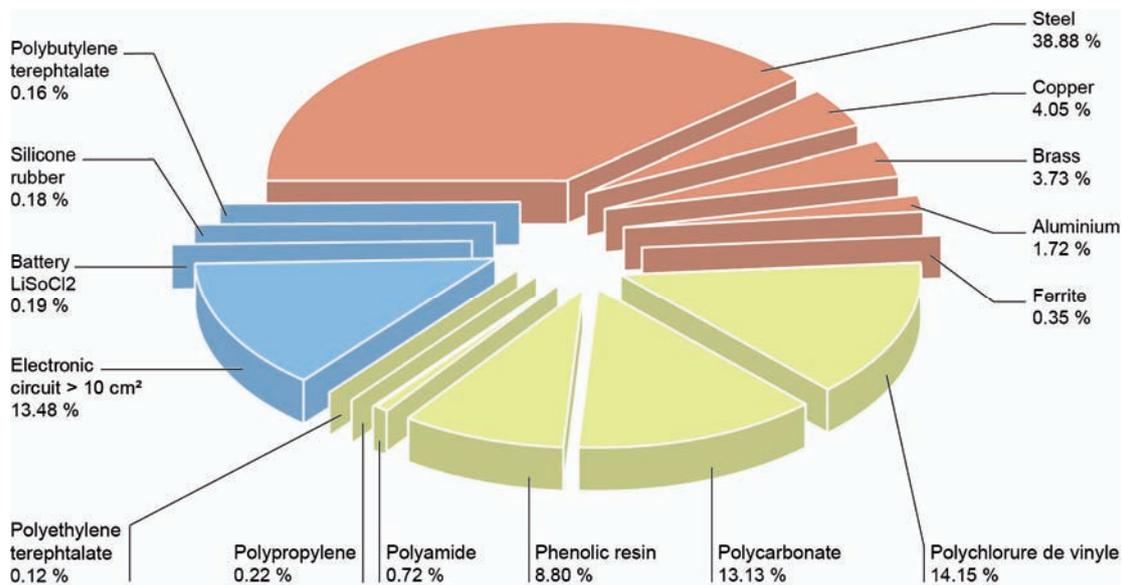
The environmental analysis was performed in conformity with ISO 14040.

This analysis takes into account the complete life cycle of the product.

Constituent materials

The mass of the product range is from 6172 g and 6646 g not including packaging. It is 6264 g for the representative ION 8650 Switchboard Meter.

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 (polybromobiphenyls PBB, polybromodiphenylthethers PBDE) as mentioned in the Directive.

The ION 8600 and 8650 Switchboard Meters are considered articles under the EU's reach regulation (EC 1907/2006). An analysis of the ION 8600 and 8650 Switchboard Meters concluded that they do not contain any substances of very high concern, per the 20-june-2011 list, in concentrations over the allowed 1 %. As such, this product is not required to be registered.

Manufacturing

The ION 8600 and 8650 Switchboard Meter product range is manufactured at a Schneider Electric production site at which an ISO 14001 certified environmental management system has been established.

Distribution

The weight and volume of the packaging has been reduced, in compliance with the European Union's packaging directive. The ION 8600 and 8650 Switchboard Meter packaging weight is 687.6 g. It consists of 482 g of corrugated cardboard, 196 g polyethylene, and 10 g of silica.

The weight of recycled materials used is 37 % of total packaging mass.

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

Use

The products of the ION 8600 and 8650 Switchboard Meter range do not generate environmental pollution requiring special precautionary measures (noise, emissions, and so on) through their operation.

The dissipated power depends on the conditions under which the product is implemented and used.

The electrical power consumed by the ION 8600 and 8650 Switchboard Meter range is between 6 W and 15 W. It is 15 W in active mode and 6 W in standby mode for the referenced ION 8650 Switchboard Meter.

End of life

At end of life, the products in the ION 8600 and 8650 Switchboard Meter ranges have been optimized to decrease the amount of waste and valorise the components and materials of the product.

This product range contains capacitors, a battery and a display that should be separated from the stream of waste so as to optimize the end of life treatment by a special treatment. The location of these components and the other recommendations are given in the End of Life Instruction available for this product range.

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 to this method, the potential recyclability ratio is: 38 %.

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), Utilization (U). Modelisation hypothesis and impact results:

- The calculation has been done on the ION 8650 Switchboard Meter.
- Product packaging is included.
- Installation components: no special components included.
- Scenario for the use phase: this product range is included in category 2: Energy consuming product (assumed lifetime service is 10 years and power consumption is assumed to be 15 W at 50 % uptime).
- The electrical power model used is Electricity (Europe).

Presentation of the product environmental impacts

Environmental indicators	Unit	ION 8600 and 8650 Switchboard Meter			
		S = M + D + U	M	D	U
Raw Material Depletion	Y-1	6.66 10 ⁻¹³	6.54 10 ⁻¹³	4.04 10 ⁻¹⁶	1.20 10 ⁻¹⁴
Energy Depletion	MJ	1.26 10 ⁴	1.76 10 ³	2.97 10 ²	1.05 10 ⁴
Water depletion	dm ³	2.38 10 ³	8.32 10 ²	2.82 10 ¹	1.52 10 ³
Global Warming	g≈CO ₂	6.72 10 ⁵	1.17 10 ⁵	2.31 10 ⁴	5.31 10 ⁵
Ozone Depletion	g≈CFC-11	7.01 10 ⁻²	2.46 10 ⁻²	1.66 10 ⁻²	2.89 10 ⁻²
Air Toxicity	m ³	6.56	4.83	4.77 10 ⁻¹	1.25
Photochemical Ozone Creation	g≈C ₂ H ₄	1.28 10 ⁸	3.63 10 ⁷	3.78 10 ⁶	8.82 10 ⁷
Air acidification	g≈H ⁺	2.50 10 ²	4.95 10 ¹	2.05 10 ¹	1.80 10 ²
Water Toxicity	dm ³	11.68	2.86	3.89 10 ⁻³	8.82
Water Eutrophication	g≈PO ₄	1.77 10 ⁵	2.19 10 ⁴	3 10 ³	1.52 10 ⁵
Hazardous waste production	kg	9.66 10 ¹	2.22 10 ¹	2.61	7.18 10 ¹

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 active phase is the life cycle phase which has the greatest impact on the majority of environmental indicators. Impacts have been taken into account so as to optimize impacts at the design stage.

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

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.
Air Toxicity (AT)	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.
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 ₂ H 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 ⁺ .
Water Toxicity (WT)	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.
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.

PEP in compliance with Schneider-Electric TT01 V4.8 and TT02 V15 procedures

PEP established according to PCR PEPecopassport 2010:1.0 rules

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Published by: Schneider Electric