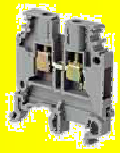
ENVIRONMENTAL DECLARATION OF PRODUCTS

TERMINAL BLOCKS TYPE M4/6



Products References

1SNA115116R0700	–	1SNA125116R0100	–	1SNA105002R2000	–
1SNA105116R1600	–	1SNA105001R2700	–	1SNA105032R1500	–
1SNA105031R1400	–	1SNA105051R2000	–	1SNA105209R1400	–
1SNA195116R0000	–	1SNA199002R2600	–	1SNA115259R0600	–
1SNA195259R0700	–	1SNA215116R1300			

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Organisational framework

Manufacturer

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ABB France Connection Activity belongs to the Business Unit Control Product with 3 main sites in France and Poland. The Business Unit belongs to the Automation Products Division. ABB France Products Automation Division has been certified to ISO9001V2000 since March 2002.

Environmental management

The ISO 14001 international environmental management standard has been implemented at the 3 main sites of the Business Unit Control Products. ABB France Chassieu factory has been certified to ISO14001 since 1998. M4/6 terminal blocks are manufactured in France and in Polska by ABB factories certified to ISO 14001 since 2005.
Life cycle assessment is applied continuously to all new product development.

Product description

The ABB Entrelec terminal blocks offer the possibility to connect two or more wires on the same block. All products can be mounted on standard DIN rail.
The M4/6 terminal blocks are usually used in all electrical circuits mounted in cabinets or boxes.

Material for the product is used according to the following table

Type of material	Kg / Product	Kg / linking bar
Mercury	0	0
Beryllium	0	0
Chrome (VI+)	0	0
Lead	0	0
Cadmium	0	0
Steel	0,003	0,003
Copper and Copper alloys	0,0012	0,0012
Zinc	0,000012	0,000012
Tin	0,000077	0,000077
Thermoplastics	0,0044	0,0044
PBB / PBDE	0	0
PVC	0	0
HCFC	0	0
SF6	0	0

Environmental performance

The data and calculations are in accordance with the Product Specific Requirement (PSR) for Terminal Blocks dated June 2006, which specify the following baselines for the LCA calculation.

Functional unit

The functional unit for the LCA is 1 terminal block connected to external circuits related to the number of feed through circuits.

System boundaries

The life cycle assessment covers all environmental aspects for extraction, production and transport of raw materials, manufacturing of main parts, assembly of the terminal block, transport and use of the product, disposal without dismantling at the end of the product's life. It includes consumption of material and energy resources as well as emissions and waste generation.

Calculations are based upon an average lifetime of 15 years. The terminal block switchs-on 22 hours per day, 358 days per year.
A French mix of energy has been used for calculating energy consumption during manufacturing and a European mix of energy for calculating energy losses through the contact during use.
For transport, we consider the use of a lorry semitrailer < 40 t, on a distance of 400 Km for raw materials and on a distance of 1500 Km for our products.

The LCA study does not include :
- the manufacturing processes at suppliers including sub-suppliers,
- building, tools and machines including services and maintenance,
- phones, computers, software and other administrative tools,
- service and maintenance during the usage,
- environmental impacts from sales companies,
- material waste in production which are sent to recycling,
- recycling after end-of-life.

Resources utilisation

	Manufacturing Phase	Usage Phase	Disposal Phase
Use of non-renewable resources			
Iron (Fe) Kg / linking bar	0,0031	0,0048	0
Copper (Cu) Kg / linking bar	0	0	0
Tin (Sn) Kg / linking bar	0,0001	0	0
Zinc (Zn) mg / linking bar	0,0125	0	0
Uranium (U) mg / linking bar	0,1117	0	0
Coal Kg / linking bar	0,0078	0,4884	0
Natural gas Kg / linking bar	0,0004	0,086	0
Crude Oil Kg / linking bar	0,0011	0,0754	0
Use of renewable resources			
Wood Kg / linking bar	0,0003	0,037	0
Hydro energy MJ / linking bar	0,0038	0	0

Energy consumption and losses

Energy form	Manufacturing Phase	Usage Phase	Disposal Phase
Electrical energy MJ / linking bar	No data available	12,76	No data available

The average French electricity mix is defined as being 1.6 % gas, 14.3 % hydro, 74.4 % nuclear, 2.1 % oil, 6.7 % stone coal and 0.6 % lignite coal.
The average European electrical energy is defined as being 10 % gas, 15 % hydro, 36 % nuclear, 10 % oil, 19 % stone coal and 10 % lignite coal.

The resultant resource utilisation is shown in the table above.

Wastes

Waste during manufacturing phase	Kg / linking bar
Hazardous wastes (various)	0,0101
Regular wastes (to landfill)	0,0006
Waste at disposal phase	**Kg / linking bar**
Landfill waste	0,0087

During manufacturing phase, metals and parts of thermoplastics are recycling. The other wastes are landfilled or treated (hazardous wastes).

Emissions

Category of impact	Equivalent unit	Manufacturing phase	Usage phase	Total life cycle
Acidification Potential AP	Kmol H+ / linking bar	0,0111655	0,3936582	0,4048237
Global Warming Potential GWP	Kg CO2 / linking bar	0,0581956	1,9331410	1,9913366
Eutrophication NP	Kg P / linking bar	0,0019880	0,0216051	0,0235931
Ozone Depletion Potential ODP	Kg CFC-11 / linking bar	5,94E-09	3,17E-07	0,0000003
Photochemical Oxydants Potential POCP	Kg ethylene / linking bar	1,19341E-05	0,0003343	0,0003462

Additional qualifying factors

Recycling and disposal

100 % of materials using for M4/6 Terminal Blocks can be recycled, but now, we have no feedback about the rate of recycling at the end of life of our products.

Hazardous material	Component / part / physical position
Mercury	NO
Beryllium	NO
Lead	NO
Cadmium	NO
PBB / PBDE	NO
PVC	NO
HCFC	NO
SF6	NO

Usage phase in relation to the total

The environmental impact during the usage phase is the most important one du to the energy consumption (energy loss by Joule effect).

Category of impact	Usage in % of total
Acidification Potential AP	97,24
Global Warming Potential GWP	97,08
Eutrophication NP	91,57
Ozone Depletion Potential ODP	98,16
Photochemical Oxydants Potential POCP	96,55

References

LCA report : 07-1-A-LCA-1SNA115116R0700
PSR for Terminal Blocks June 2006 for ABB France Connection Activity
The above mentioned document is available upon request.

Glossary

Acidification Potential – AP

Chemical alternation of the environment, resulting in hydrogenous being produced more rapidly than they are dispersed or neutralised. Occurs mainly through fallout of sulphur and nitrogen compounds from combustion processes. Acidification can be harmful to terrestrial and aquatic life.

Global Warming Potentiel – GWP

The index used to translate the level of emissions of various gases into a common measure to compare their contributions to the absorption by the atmosphere of infrared radiation. GWPs are calculated as the absorption that would result from the emission of 1 Kg of a gas to that from emission of 1 Kg of carbon dioxide over 100 years.

Eutrophication – NP

Enrichment of bodies of water by nitrates and phosphates from organic material or surface runoff. This increases the growth of aquatic plants and can produce alga blooms that deoxygenate water and smother other aquatic life.

Ozone Depletion Potential – ODP

The index used to translate the level of emissions of various gases into a common measure to compare their contributions to breakdown of the ozone layer. ODPs are calculated as the change that would result from the emission of 1 Kg of a substance to that from emission of 1 Kg of CFC-11 (a freon).

Photochemical Ozone Creation Potential – POCP

The index used to translate the level of emissions of various gases into a common measure to compare their contributions to the change of ground-level ozone concentration. POCPs are calculated as the change that would result from the emission of 1 Kg of a gas to that of the emission of 1 Kg ethylene.