



Legrand's environmental commitments

> Incorporate environmental management into our industrial units.

At present, 72 % of units worldwide and 90 % of our European units are ISO 14001-certified.



> Involve the environment in product design.

Provide our customers with all relevant information (composition, consumption, end of life, etc.).
Reduce the environmental impact of products over their whole life cycle.

> Offer our customers environmentally friendly solutions.

Develop innovative solutions to help our customers design installations that consume less energy, are better managed and more environmentally friendly.



Product description

> Reference products for this environmental profile

The given values are based on the following items.

| Function | Mosaic 2-way switch – 10 AX – 2 modules + Support frame – 2 modules + Mosaic plate – 2 modules - white | | |
|--------------------|--|---|--|
| Reference products | <p>Cat. No. 770 11 Mosaic 10AX 2-way switch 2 modules</p> | <p>Cat. No. 802 51 Support frame 2 modules</p> | <p>Cat. No. 788 02 Mosaic Plate 2 modules</p> |

> Products covered by this product environmental profile

The reference products allow us to include in this profile: 1-way switches (10AX – 20A), 2-way switches (10AX – 16AX – 20A), intermediate switches, push-button switches and key-operated switches.

Environmental impacts of the reference products are representative of the products covered by this PEP, which therefore constitute a homogeneous environmental family.

| | Mechanism catalogue numbers | Support frame catalogue numbers | Plate catalogue numbers |
|----------|--|---|--|
| Cat. Nos | 770 00/01/02/11/17/21/25/26/30/31/40/ 41/43/44/50/60/72/73/74/75/76/77/91/ 92 792 01/11/30/70/25/26 | 802 50/51/52/53/54/59/61/64/66/67/68/ 69 | 788 01/02/03/04/06/07/08 788 10/11/14/15/16/18 788 22/23/25 788 30/32/36/37/38/38 788 42/43/44 788 54/56 788 64/66 |



Constituent materials

These products contain no substances forbidden by regulations applicable at the time of their market launch, excluding maintenance operations carried out during normal use.

Total weight of reference products: 76.4 g (unit packaging included)

| Plastics as % of weight | | Metals as % of weight | | Other as % of weight | |
|-------------------------|--------|-----------------------|---------|---------------------------|---------|
| Polycarbonate | 27 % | Steel | 24 % | Titanium dioxide | 1.1 % |
| ABS | 14 % | Copper | 4.8 % | Glass fibre | 0.83 % |
| Polyamide (PA 66) | 7.8 % | Zinc | 1.7 % | Carbon black | 0.06 % |
| Polypropylene | 0.7 % | Stainless steel | 0.72 % | Flame retardant | 0.03 % |
| | | Silver | 0.22 % | | |
| | | Aluminium | 0.12 % | Packaging as % of weight | |
| | | Nickel | 0.02 % | Paper/cardboard | 13 % |
| | | | | Miscellaneous packaging | 3.9 % |
| Total plastics | 49.5 % | Total metals | 31.58 % | Total other and packaging | 18.92 % |

23 % by weight

Estimated recycled material content:

Calculated on the basis of data on recycling in France, source: "Bilan du recyclage 1993-2003, Données et références", 2005 edition, published by the French Agency for the Environment and Energy Control (ADEME)



Manufacture

These products are manufactured by a Legrand Group production unit which has received ISO 14001 environmental certification for manufacturing.



Distribution

Typical transport conditions

- On average this product covers 827 km by road transport from our production site to the nearest distributor to our customer (Basis for calculation: average distance calculated for products sold in France).

Packaging

- The 12.70 g packaging is composed of: 79.9 % paper and cardboard, 19.9 % plastic materials (15.8 % of which constitutes worksite protection materials made of recyclable PET), the remainder being printing ink.
- Recycling potential: 100 % by weight of packaging
- Energy recovery potential: 100 % by weight of packaging

The packaging has been designed in accordance with the current applicable regulations:

- Directive 94/62/EC concerning packaging and packaging waste
- Decree 98-638 transposing the Directive into French law.

Legrand undertakes to:

- Reduce its packaging at source as much as possible in terms of weight and volume, in accordance with its customers' needs.
- Produce packaging with a heavy metal content of <100 ppm and without deliberately introducing N-class environmentally hazardous substances.
- Design and use packaging that is convertible and where possible reusable.



Use

Use scenario

Electrical products can be divided into two main product families: "passive" or "active" products. Passive products dissipate energy through the joule effect, whereas active products consume power (motor, lighting, etc.). In all cases a use scenario must be defined to quantify the energy consumed.

This product dissipates 0.69 mW of power for 2 hours per day, 365 days per year, which corresponds to lighting a resistive charge of 100 W under 230 V (total consumption of 0.5 Wh per year).

Consumable

No consumables are necessary to use the product.

Servicing and maintenance

Normal conditions of use of this type of product require no servicing or maintenance.



End of life

Product management

> Hazardous waste contained in the product:

This product contains no hazardous waste.

> Non-hazardous waste contained in the product:

Plastics / metal / others: 63.70 g

> Recycling potential:

The recycling potential of a product is the percentage of material that can be recycled using existing techniques. It takes no account of the existence or lack of recycling chains, which are highly dependent on the local situation.

This product contains **98 %** by weight of recyclable material (other than packaging):

- Plastic materials : 60 %
- Metal materials : 38 %

> Energy recovery potential:

Energy recovery consists in valorising the calories contained in waste by burning it and recovering the energy produced, for example, to heat buildings or to produce electricity. The process uses the convertible energy embodied in the waste.

60 % of this product's weight can be valorised through energy recovery.



Environmental impacts

Methodology

The environmental impacts of the reference product are representative of the products covered by the PEP, which therefore constitute a homogeneous environmental family.

Assessment of the environmental impacts of the reference product concerns the following stages of the life cycle: raw materials, manufacture, distribution, and use.

The modelling assumptions for use are:

- Power dissipated: 0.69 mW of power 2 hours per day, 365 days per year, which corresponds to lighting a resistive charge of 100 W under 230 V (or 0.50 Wh per year).
- Period of use (*): 20 years
- Unit packaging is also taken into account.

| Indicators (see glossary) | Overall M+D+U | Unit | Manufacture M | Distribution D | Use U |
|---|------------------|---------------------------------|------------------|-------------------|----------|
| Depletion of natural resources | 1.52 E-14 | years ⁻¹ | 99.99 % | 0.01 % | < 0.01% |
| Total energy consumed | 11.10 | MJ | 91.95 % | 5.46 % | 2.59 % |
| Consumption of water | 3.70 | dm ³ | 89.93 % | 8.01 % | 2.06 % |
| Contribution to the greenhouse effect | 666 | g-CO ₂ | 95.15 % | 3.29 % | 1.56 % |
| Contribution to the depletion of the ozone layer | 6.79 E-05 | g-CFC ₁₁ | 84.85 % | 14.73 % | 0.42 % |
| Contribution to the creation of photochemical ozone | 2.53 E-01 | g-C ₂ H ₄ | 85.53 % | 9.12 % | 5.35 % |
| Potential for acidification of the air | 1.17 E-01 | g-H+ | 92.89 % | 4.28 % | 2.83 % |
| Production of hazardous waste | 5.81 E-03 | kg | 98.49 % | 0.54 % | 0.97 % |

Modelling performed using EIME software version 2.3 and its database in version 7.6.
Energy consumption modelling: EDF 2000

(*) Period of use identified for the assessment of the environmental impacts.

This period of use is different from the life expectancy of the product and does not constitute a minimum durability requirement. It is the quantified expression of a unit of service rendered.

Extrapolation rule for products other than reference product: environmental impact is generally proportional to weight (e.g. 73 % more for a product featuring the following catalogue numbers: 802 52, 788 04 and two 770 11 mechanisms).



Glossary

| | |
|--|---|
| Consumption of water | Indicates the total water consumption for the whole life cycle of the product. |
| Contribution to the creation of photochemical ozone | Indicates as g~C ₂ H ₄ the gas emissions having an effect on the creation of photochemical ozone in the lower atmosphere (smog) under the effect of solar radiation. |
| Contribution to the depletion of the ozone layer | Indicates what all the life cycle phases of the product release as CO ₂ gram-equivalents. |
| Contribution to the greenhouse effect | Indicates what all the life cycle phases of the product release as CO ₂ gram-equivalents. Example of the equivalence principle: 1 g of CO ₂ = 1 g~CO ₂ ; 1 g of CH ₄ (methane) is equivalent to the effect of 64 g of CO ₂ , etc. |
| Convertible | Said of a product or packaging capable of being reused, recycled or from which it is possible to recover energy by incineration. |
| Depletion of natural resources | Indicates the depletion of natural resources, by considering the quantity of world reserves (minerals, fossils, etc.) for these resources and the current level of consumption. Expressed as a fraction of the reserves that disappear each year. |
| Eco-solution | Products or services enabling the reduction of a building's environmental impacts. |
| EIME | Environmental Information and Management Explorer - Product environmental impact modelling software based on the life cycle assessment methodology. |
| Energy recovery potential | % by weight of the product or packaging from which energy can be recovered. Energy recovery consists in valorising the calories contained in waste by burning it and recovering the energy produced, for example, to heat buildings or to produce electricity. The process uses the convertible energy embodied in the waste. |
| Hazardous waste | This is specific waste having a certain level of toxicity and requiring special treatment. Its definition is codified by the European community (Annex of Decision 2000/532/EC amended by Decisions 2001/118/EC and 2001/119/EC) |
| LCA | Compilation and assessment of inputs and outputs, as well as the potential environmental impacts of a product, or a system, during its life cycle, "from the cradle to the grave". This approach is described by standard ISO 14040 and its related standards. |
| Life cycle approach | Method of taking into account all the life stages of a product (manufacture, installation, use and end of life) in order to determine the consequences for the environment. |
| Non-hazardous waste | This is made up of non-toxic waste and is of a similar nature to household waste. Its definition is codified by the European community (Annex of Decision 2000/532/EC amended by Decisions 2001/118/EC and 2001/119/EC) |
| Potential for acidification of the air | Indicates the potential for acidification of the air caused by the release of certain gases into the atmosphere. Expressed as H ⁺ ion gram-equivalent. |
| Production of hazardous waste | Indicates the weight of ultimate hazardous waste produced for the whole life cycle of the product. |
| Recycling potential | % by weight of the product or packaging capable of being re-injected into a manufacturing circuit of the same product or another product. |
| Reference product(s) | Product (or product group) modelled in the presented LCA. |
| Reusable | Said of a product or packaging capable of being used for the same function provided the product's proper functionality is verified by the person carrying out the operation. |
| Total energy consumed | Indicates the total energy consumption in megajoules for the whole life cycle of the product. |
| WEEE (Waste Electrical and Electronic Equipment) | For products in the application area of the European Directive on Waste Electronic and Electrical Equipment (2002/96/EC), part of the product having to be treated selectively in compliance with Annex II of the Directive. |