

Product Environmental Profile

Thermal magnetic MCBs DX³
1 module/pole



LEGRAND'S ENVIRONMENTAL COMMITMENTS

• **Incorporate environmental management into our industrial sites**

Of all Legrand sites worldwide, over 80% are ISO 14001-certified [sites belonging to the Group for more than five years].

• **Involve the environment in product design**

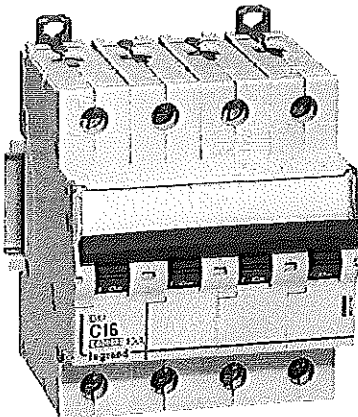
Provide our customers with all relevant informations (composition, consumption, end of life, etc.).
Reduce the environmental impact of products over their whole life cycle.

• **Offer our customers environmentally friendly solutions**

Develop innovative solutions to help our customers to design more energy efficient, better managed and more environmentally friendly installations.



REFERENCE PRODUCT

| | |
|----------------------------------|--|
| <p>Function</p> | <p>The product is an automatic MCB 4P C16 6kA, responding to the requirements of the IEC EN 60898-1, that protects and commands the electric circuits with a maximum voltage of 400 V for a 20 years period of use. PCR category: passive product.</p> |
| <p>Reference Products</p> | <div style="text-align: center;">  <p>LG-407898</p> <p>Automatic thermal-magnetic circuit breaker DX³ - 4P - 1 module/pole - C curve -16A - 6kA - 400V a.c.</p> </div> |

The company reserves the right to change specifications and designs without notice. All illustrations, descriptions, dimensions and weights in the document are for guidance and cannot be held binding on the Company.



CONCERNED PRODUCTS

The environmental data represent the following Catalogue Numbers:

- **LG-407898**
- LG-407415 - 416 - 417 - 418 - 419 - 420 - 421 - 422 - 423 - 491 - 492 - 493 - 494 - 495 - 496 - 497 - 498 - 499 - 500 - 530 - 531 - 532 - 533 - 534 - 535 - 536 - 537 - 538 - 593 - 594 - 595 - 596 - 597 - 598 - 599 - 600 - 601 - 645 - 646 - 647 - 648 - 649 - 650 - 652 - 654 - 655 - 656 - 657 - 658 - 659 - 660 - 774 - 776 - 777 - 778 - 779 - 780 - 781 - 782 - 784 - 785 - 786 - 787 - 788 - 789 - 790 - 821 - 822 - 823 - 824 - 825 - 827 - 829 - 830 - 831 - 832 - 833 - 834 - 835 - 836 - 837 - 838 - 839 - 840 - 841 - 843 - 844 - 845 - 846 - 847 - 848 - 890 - 891 - 892 - 893 - 894 - 896 - 899 - 900 - 901 - 902 - 903 - 904 - 905 - 906 - 907 - 908 - 909 - 910 - 912 - 913 - 914 - 915 - 916 - 917 - 949 - 950 - 951 - 952 - 953;
- LG-408007 - 008 - 009 - 010 - 011 - 012 - 013 - 014 - 015 - 016 - 017 - 018 - 019 - 020 - 021 - 053 - 054 - 055 - 056 - 057 - 058 - 059 - 060 - 061 - 062 - 063 - 064 - 065 - 066 - 067 - 068 - 069 - 070 - 071 - 073 - 074 - 075 - 076 - 077 - 078 - 111 - 112 - 113 - 114 - 115 - 116 - 117 - 118 - 119 - 120 - 121 - 122 - 123 - 124 - 125 - 126 - 127 - 128 - 129 - 131 - 132 - 133 - 134 - 135 - 136 - 880 - 881 - 882 - 884 - 885 - 887 - 888 - 889 - 890 - 891 - 952 - 953 - 954 - 956 - 957 - 959 - 960 - 961 - 962 - 963 - 964 - 965 - 966 - 967;
- LG-409002 - 003 - 005 - 006 - 008 - 009 - 010 - 011 - 012 - 013 - 014 - 015 - 016 - 077 - 079 - 080 - 082 - 083 - 084 - 085 - 086 - 087 - 088 - 089 - 090 - 125 - 126 - 127 - 129 - 131 - 133 - 134 - 135 - 136 - 137 - 138 - 139 - 140 - 141 - 142 - 213 - 214 - 215 - 217 - 219 - 221 - 222 - 223 - 224 - 225 - 226 - 227 - 228 - 229 - 230 - 265 - 266 - 267 - 269 - 271 - 273 - 274 - 275 - 276 - 277 - 278 - 279 - 280 - 281 - 282 - 347 - 348 - 349 - 351 - 353 - 355 - 356 - 357 - 358 - 359 - 360 - 361 - 362 - 363 - 364 - 458 - 459 - 460 - 506 - 507 - 508 - 540 - 541 - 542.

Product Environmental Profile

Thermal magnetic MCBs DX³
1 module/pole



■ CONSTITUENT MATERIALS

This product contains no substances prohibited by the regulations applicable at the time of its introduction to the market. At the date of publication of this document, this product contains no substances to which the RoHS directives apply (2002/95/EC and review 2011/65/EU) and none of the 155 candidate substances covered by the REACH regulation dated 16/06/2014.

| Total weight of Reference Products: | | 540 g (unit packaging included) | | | |
|--|---------------|--|---------------|----------------------------------|--------------|
| Plastics as % of weight | | Metals as % of weight | | Other (packaging) as % of weight | |
| Thermoset | 42,1 % | Steel | 28,4 % | Cardboard / Paper | 4,8 % |
| Polyamide | 3,4 % | Copper alloys | 17,7 % | | |
| Polycarbonate | 0,6 % | Aluminium | 0,8 % | | |
| Polypropylene | 0,3 % | Silver alloys | < 0,1 % | | |
| PBT | 0,2 % | Other metals | 1,5 % | | |
| Other plastics | 0,2 % | | | | |
| Total plastics | 46,8 % | Total metals | 48,4 % | Total other (packaging) | 4,8 % |

Estimated recycled material content: 22 % by weight



■ MANUFACTURE

This product comes from sites that have received ISO 14001 certification.



■ DISTRIBUTION

The Group's products are distributed from logistics centres located to optimize transport efficiency.

The Reference Product is therefore transported over an average distance of 780 km, essentially by road, representing a marketing in Europe.

Packaging is compliant with european directive 2004/12/EC concerning packaging and packaging waste.

At the packaging end of life, its recycling rate is of 100 % (as % of packaging weight).



■ INSTALLATION

Installation components not delivered with the product are not taken into account.



■ USE

■ Servicing and maintenance:

Under normal conditions of use, this type of product requires no servicing or maintenance.

■ Consumable

No consumables are necessary to use the product.

Product Environmental Profile

Thermal magnetic MCBs DX³
1 module/pole



END OF LIFE

Development teams integrate product end of life factors in the design phase. Dismantling and sorting of components or materials is made as easier as possible with a view to recycling or failing that, another form of reuse.

• Recyclability rate:

Calculated using the method described in the IEC/TR 62635 technical report, the recyclability rate of the product is estimated as 57 %. This value is based on data collected from a technological channel using industrial procedures. It does not pre-validate the effective use of this channel for end-of-life electrical and electronic products.

Separated into:

- Plastic materials (excluding packaging): 4 %
- Metal materials (excluding packaging): 48 %
- Packaging (all types of materials): 5 %



ENVIRONMENTAL IMPACTS

The evaluation of environmental impacts examines the stages of the Reference Product life cycle: manufacturing, distribution, installation, use and end of life of the product marketed and used in Europe. The following modelling elements were taken into account:

| | |
|----------------------|--|
| Manufacture | Unit packaging taken in account. As required by the «PEP ecopassport» programme all transports for the manufacturing of the Reference Product, including materials and components, has been taken in account. |
| Distribution | Transport between the last Group distribution centre and an average delivery to the sales area. |
| Installation | Installation components not delivered with the product are not taken into account. |
| Use | <ul style="list-style-type: none"> • Maintenance: under normal conditions of use, this type of product requires no servicing or maintenance. No consumables are necessary to use the product. • Product category: passive product. • Use scenario: non-continuous operation for 20 years at 30% of rated load during 30% of the time. This modelling duration does not constitute a minimum durability requirement. • Energy model: Electricity mix Europe 2005. |
| End of life | In view of the data available on the date of creation of the document, and in accordance with the requirements of the PCR of the « PEP ecopassport » programme, was counted transport of the Reference Product by road only once, over a distance of 1000 km, to a processing site at end of life. |
| Software used | EIME V5 and its database «Legrand-2012-10-31 version 3» developed from database «CODDE-2012-07». |

Product Environmental Profile

Thermal magnetic MCBs DX³
1 module/pole



ENVIRONMENTAL IMPACTS

| | | Total for Life cycle | | Raw material and manufacture | | Distribution | | Installation | | Use | | End of life | |
|----------------------|-----------------------------------|----------------------|---------------------------------|------------------------------|-----|--------------|-----|--------------|----|----------|-----|-------------|-----|
| | | | | | | | | | | | | | |
| Mandatory indicators | Contribution to greenhouse effect | 1.82E+04 | g-CO ₂ | 1.69E+03 | 9% | 5.34E+01 | <1% | 0.00E+00 | 0% | 1.64E+04 | 90% | 6.39E+01 | <1% |
| | Damage to the ozone layer | 1.33E-03 | g-CFC-11 | 3.55E-04 | 27% | 3.78E-05 | 3% | 0.00E+00 | 0% | 8.91E-04 | 67% | 4.52E-05 | 3% |
| | Eutrophisation of water | 3.49E-01 | g-PO ₄ ³⁻ | 3.09E-01 | 88% | 8.90E-04 | <1% | 0.00E+00 | 0% | 3.85E-02 | 11% | 1.06E-03 | <1% |
| | Photochemical ozone formation | 7.00E+00 | g-C ₂ H ₄ | 1.16E+00 | 17% | 4.64E-02 | <1% | 0.00E+00 | 0% | 5.74E+00 | 82% | 5.54E-02 | <1% |
| | Acidification of the air | 3.09E+00 | g-H ⁺ | 8.70E-01 | 28% | 7.06E-03 | <1% | 0.00E+00 | 0% | 2.20E+00 | 71% | 8.14E-03 | <1% |
| | Total energy consumed | 4.08E+02 | MJ | 8.12E+01 | 20% | 6.76E-01 | <1% | 0.00E+00 | 0% | 3.25E+02 | 80% | 8.07E-01 | <1% |
| | Consumption of water | 7.64E+01 | dm ³ | 2.93E+01 | 38% | 6.42E-02 | <1% | 0.00E+00 | 0% | 4.70E+01 | 62% | 7.66E-02 | <1% |

| | | | | | | | | | | | | | |
|---------------------|--------------------------------|----------|---------------------|----------|-----|----------|-----|----------|----|----------|-----|----------|-----|
| Optional indicators | Depletion of natural resources | 1.48E-14 | years ⁻¹ | 1.44E-14 | 97% | 9.22E-19 | <1% | 0.00E+00 | 0% | 3.69E-16 | 2% | 1.10E-18 | <1% |
| | Toxicity of the air | 4.57E+06 | m ³ | 1.82E+06 | 40% | 1.05E+04 | <1% | 0.00E+00 | 0% | 2.72E+06 | 60% | 1.20E+04 | <1% |
| | Toxicity of the water | 5.44E+00 | m ³ | 7.13E-01 | 13% | 7.45E-03 | <1% | 0.00E+00 | 0% | 4.71E+00 | 87% | 8.90E-03 | <1% |
| | Production of hazardous waste | 3.39E-01 | kg | 6.69E-02 | 20% | 1.99E-05 | <1% | 0.00E+00 | 0% | 2.72E-01 | 80% | 2.38E-05 | <1% |

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

Extrapolation rule for the products of the homogeneous family different from those of reference: the environmental impacts of the manufacture, distribution and end of life phases are proportional to the number of poles, the installation phase is always null and the environmental impacts of the use phase are proportional to the number of poles and to the dissipated powers.

The values of these impacts are valid for the context specified in this document. They must not be used directly to draw up the environmental balance sheet for the installation.

| | |
|---|---|
| Registration number: LGRP-2014-183-v1-en | Drafting rule: PEP-PCR-ed2.1-FR-2012 12 11 and PSR-0005-ed1-FR-2012 12 11 |
| Authorisation number of checker: VH02 | Programme information: www.pep-ecopassport.org |
| Date of issue: December 2014 | Validity period: 4 years |
| Independent verification of the declaration and data, in accordance with ISO 14025:2006 Interne <input checked="" type="checkbox"/> Externe <input type="checkbox"/> | |
| In accordance with ISO 14025 :2006 Type III environmental declaration | |
| The critical review of the PCR was conducted by a panel of experts chaired by J.Chevalier [CSTB] | |
| The elements of the present PEP cannot be compared with elements from another programme | |

