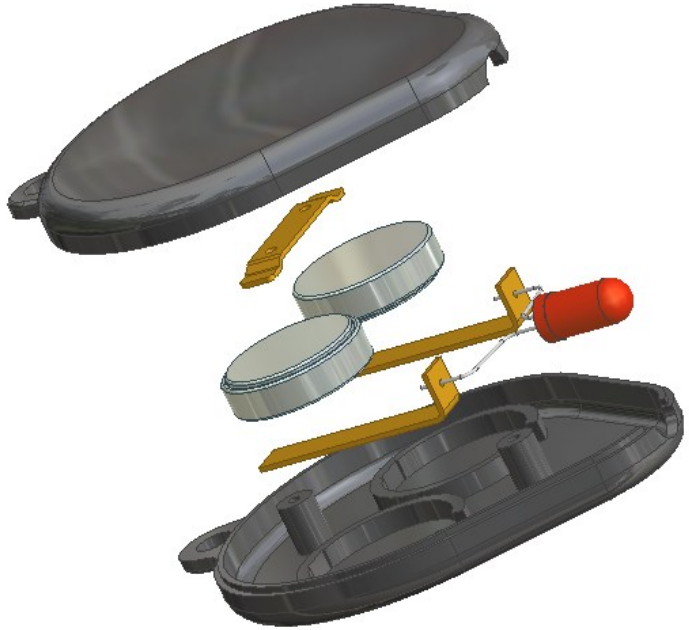
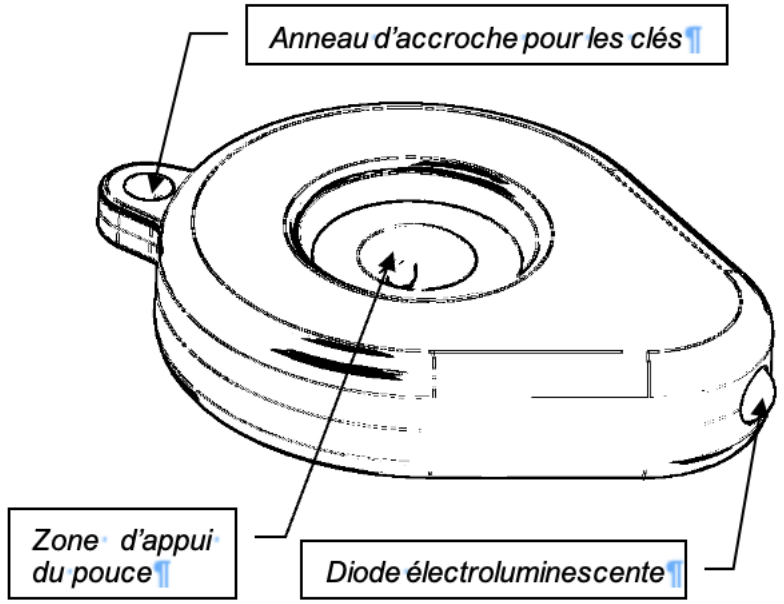
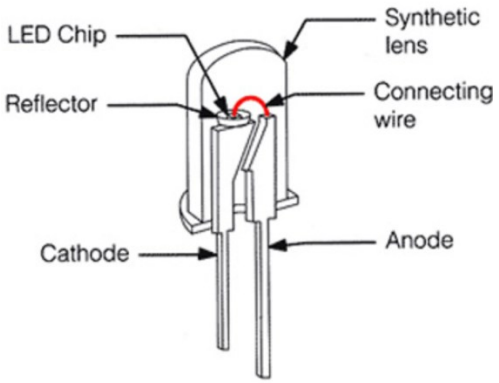
Example : **Keychain Lamp**

Complete eco-design study of this product (analyses..., footprint, withs « Bilan Produit »)





Component inventory



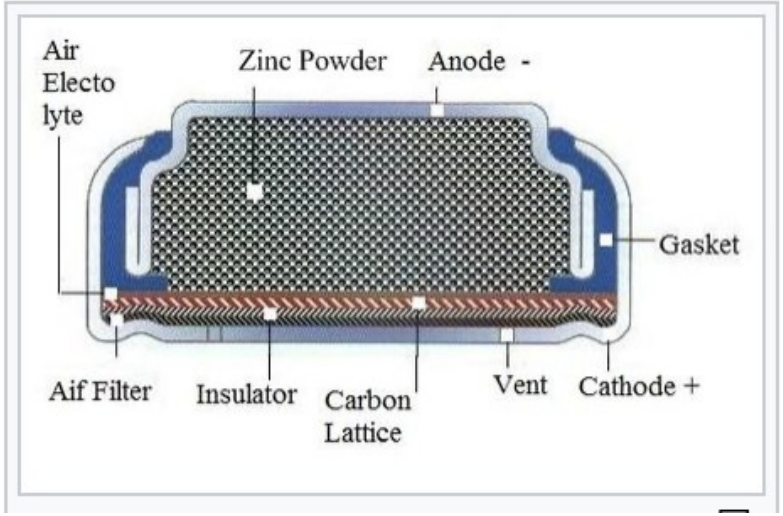
- These keychains are intended to be sold for €0.80 (excluding VAT) in Northern Europe, with an annual volume of 500,000 units within a 1200 km radius of the port of Antwerp in Belgium.
- LED is purchased from KINGBRIGHT in Taiwan (anode and cathode and the cup are made of Copper alloy CR004A ; lens is made of epoxy resin (traces of phosphorus and boron) ; blades are made of copper alloy ; folding of the 3 blades is carried out at JIATONG SHEET METAL located in the Guangdong Province of China)

Composition chimique %

Element	Cu	Bi	O	P	Pb	Autres		Masse volumique g/cm^3
						total	non compris	
Mini:	99,9	-	-	-	-	-	Ag, O	8,9
Maxi:	-	0,0005	0,040	-	0,005	0,03		

Component inventory : **The 2 Batteries**

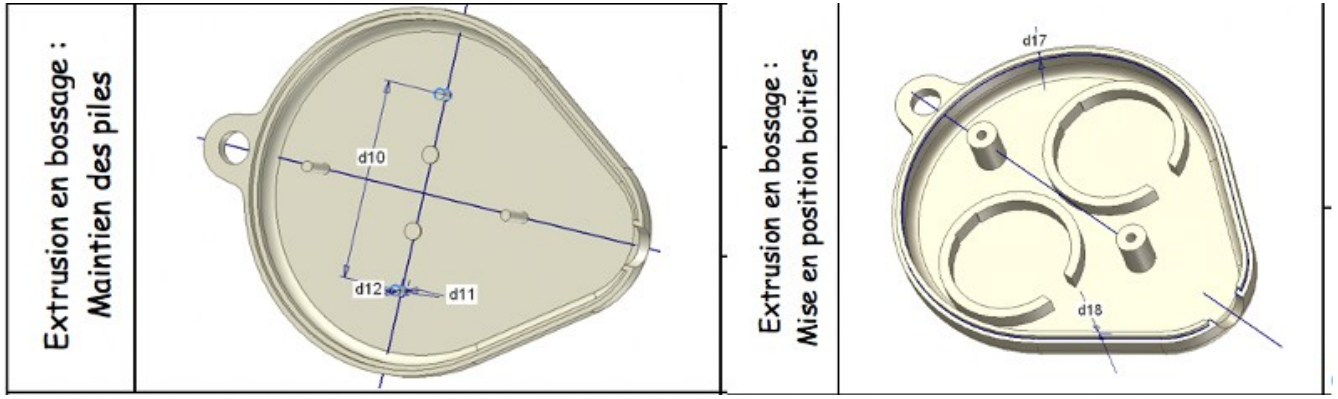
- These batteries are non-rechargeable. These LR44 button cell batteries are called Zinc-air batteries
- These button cell batteries are purchased from : Shenzhen JinNengDa Battery Co., Ltd



Component inventory : **The lower and upper casings**

- are made of injectable thermoplastic

- These casings are manufactured at China SYnergy Group Manufacturing, located in Yuyao, south of Shanghai, China



Inventory : **Assembly of the elements**

Assembly of the elements (2 casings, 3 blades, 2 button cells, LED) is carried out at the Dongguan Betterlife Technology Limited factory located in Nancheng District, Dongguan, Guangdong, China.

NOTE : The electrical energy used by the aforementioned factories is generated by coal-fire

Inventory : Packaging

- **Packaging** is carried out at the assembly plant (BetterLife Technology Limited) using bubble bags measuring 5x4cm with a thickness of 90 microns.

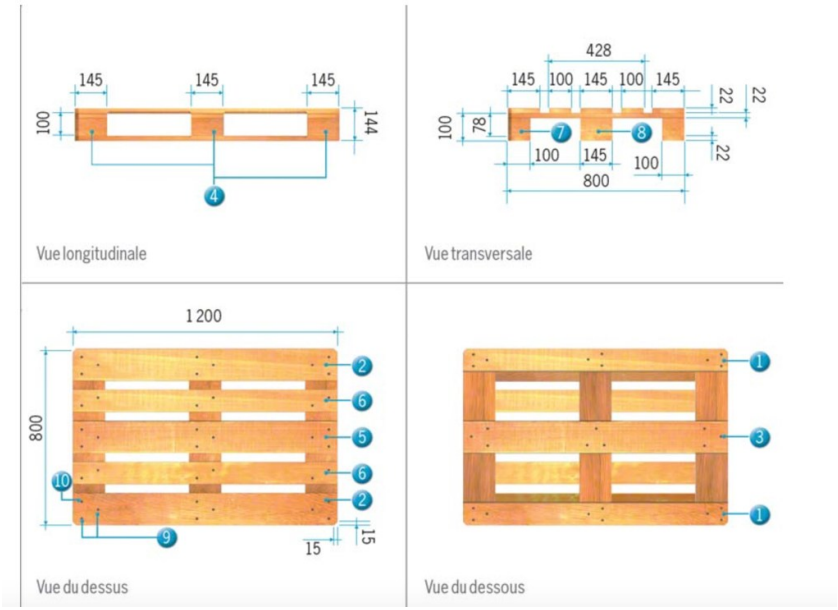
- **A user manual** translated into European languages is provided with the product, in its packaging. This manual is printed using the offset method on white B6 paper. The printing ink used is Quickset ink : it is used on sheet-fed offset machines. The ink, composed of synthetic resins with special film-forming qualities

Inventory : Packaging

- The whole is packaged in brown cardboard boxes (cloth, paper, PVC, polyethylene, foam, etc.) measuring 30x20x17 cm, in which 700 keychain sets packed with instructions can be placed, ready for sale: the boxes are closed with adhesive tape. Packaging adhesive tapes are recycled along with the cardboard. Polypropylene can be incinerated without emitting toxic fumes.

Inventory : logistics

- The cartons are positioned on Euro pallets, and then all of these cartons are wrapped with polyethylene film, per pallet



Inventory : Transportation

Road transport in China between suppliers and the assembler, Dongguan Betterlife Technology Limited factory located in Nancheng District, Dongguan, Guangdong, China.

Maritime and road transport between Taiwan and the Dongguan Betterlife Technology Limited assembly plant located in Nancheng District, Dongguan, Guangdong, China.

Maritime transport between the port of Shenzhen in China and the port of Antwerp in Belgium (approximately 11067 nautical miles by boat, with a sailing time of approximately 27 days for a cruising speed of approximately 17 knots).

Road transport between the port of Antwerp and European distributors of the product sold, within a radius of approximately 1200 km around the port of Antwerp.

Inventory : Recycling

The recycling rate of round batteries in Europe ranges from 50% to 80%.

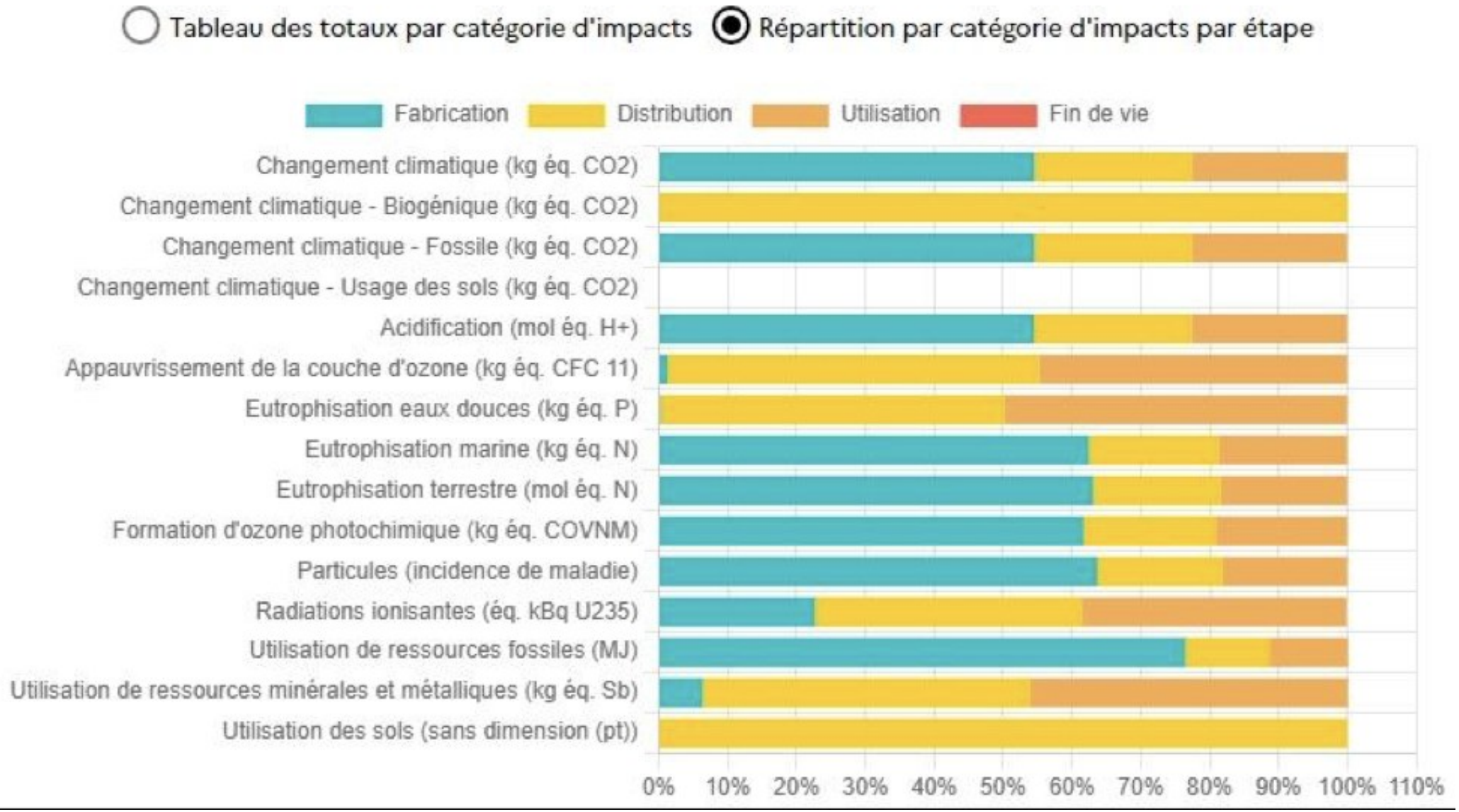
Electrical and electronic devices: they are returned to the retailer, who is required to take back used equipment when purchasing a new device.

Summary of the inventory

(To enter the data into the software)

Etape	Valeur	Sous-étape	Valeur	Sous Partie	Valeur
Fabrication	54,61%	Composition	0,2%	LED	0,01%
				Lames	0,03%
				Piles	0,1%
				Boîtiers	0,06%
		Approvisionnement	0%	Produit	0%
				LED	0%
				Lames	0%
				Piles	0%
				Boîtiers	0%
		Mise en forme	54,4%	LED	23,01%
				Lames	31,37%
				Piles	0%
				Boîtiers	0,02%
		Assemblage	0%	Produit	0%
Distribution	22,8%	Matière emballages	0,17%	Pochette plastique	0,17%
				Notice	0%
				Carton	0%
				Scotch	0%
				Palette	0%
				Film	0%
		Approvisionnement emballages	0,01%	Ensemble des emballages	0,01%
				Pochette plastique	0%
				Notice	0%
				Carton	0%
				Scotch	0%
				Palette	0%
				Film	0%
		Mise en forme emballages	0%	Pochette plastique	0%
				Notice	0%
				Carton	0%
				Scotch	0%
				Palette	0%
				Film	0%
		Transport Production / Entrepôts	0%	Produit + Emballage	0%
		Stockage	22,62%	Produit	99,23%
Utilisation	22,6%	Utilisation	22,6%	Produit	22,6%
Fin de vie	0%	Collecte	0%	Produit	0%
				Ensemble des Emballages primaires	0%
		Traitement	0%	LED	0%
				Lames	0%
				Piles	0%
				Boîtiers	0%
				Pochette plastique	0%
				Notice	0%

Results of the study on the environmental impact of the lamp



Analysis and search for solutions to reduce environmental impact

Catégorie	Situation actuelle (kg éq. CO_2)	Solutions proposées	Réduction estimée par Bilan Produit de l'ADEME (%)	Nouvelle valeur (kg éq. CO_2)[1]
Fabrication	54,61%	LED basse consommation Lames métalliques recyclées Plastique biodégradable	-15 %	39,61 %
Transport & stockage	22,8%	Relocalisation partielle Emballage optimisé	-20 %	18,24 %
Utilisation	22,6%	Batterie Li-ion rechargeable	-30 %	15,82 %
Fin de vie	0% (non comptabilisé)	Mise en place du recyclage (récupération LED, plastiques, circuits)	+5 % bénéfice recyclage	-5 % de réduction sur l'impact total

[1] : pour obtenir la nouvelle valeur, le calcul est le suivant :

$$Nouvelle\ valeur\ (\%) = Valeur\ initiale\ (\%) \times \left(1 - \frac{Réduction\ estimée\ (\%)}{100}\right)$$

Impact reduction after applying solutions