Helvar

Environmental Product Information 2023

Table of Contents

Graphs and Charts

Introduction

Urgent action is required to meet climate goals and ensure liveable conditions for future generations. We recognise the climate crisis and have accelerated efforts to improve both our internal processes and external offering to help reach critical environmental targets.

This leaflet serves as an informational resource for various environmental aspects of Helvar's offering, including Helvar's environmental policy and any EU legislation applicable to the company. Additionally, by highlighting our production and end-of-life processes, we hope to create more transparency around our efforts to improve the sustainability of Helvar as a company. We also encourage our stakeholders to follow similar measures to improve both operational efficiency and material circularity.

For more details and metrics on sustainability performance, please see our annual sustainability report.

Summary

At Helvar, creating future-proof and energy-saving technology is a core part of our company blueprint and we are firmly committed to the principles of sustainable development. As a manufacturer of electronic products with a global supply chain, we are aware that our operations impact the environment and are consistently taking action to minimise said impacts.

Apart from following EcoDesign processes in product development, we have been upholding an ISO 9001 certified quality management system since the 1990s and an ISO 14001 certified environmental management system since 2009. We strive to exceed legislative requirements concerning sustainability and the environment and have already reached 2025 energy efficiency targets as set out by the Finnish Energy Efficiency Agreement, which Helvar has been following since 2008.

Beyond our supply chain activities, Helvar solutions serve to create strong reductions in energy usage throughout the lifetime of a building, ultimately reducing the carbon footprint of our end customers.

Helvar policy

Helvar complies with all relevant regulations in the company's operating areas and strives to exceed the minimum legislative requirements set out for performance across environmental, social and governance aspects.

Continuous improvement of energy efficiency is a core part of Helvar processes and products. As such, waste management and pollution prevention efforts are constantly re-assessed in our ways of working.

Helvar is committed to the continual improvement of its Quality & Environmental Business Management System to ensure it is effectively controlled and fulfils the requirements in line with the framework laid down within ISO9001:2015 & ISO14001:2015. EES+ (Energy Efficiency System) is part of the environmental management system of Helvar Oy Ab.

Helvar's full policy document is available online at *helvar.com/quality-documents*.

Legislative requirements in the EU

Environmental issues have become a critical focus area in legislation, and Helvar strives to exceed the requirements set out on local, national and EU-wide levels. The forthcoming section will present the key directives across an EU-level, and how Helvar addresses them in company operations.

RoHS

The RoHS directive 2011/65/EU sets restrictions on the use of hazardous substances within electrical and electronic equipment (EEE), with a view to protecting human health and the environment.

The directive sets restrictions on ten hazardous substances in electrical and electronic equipment.

Cadmium (Cd): < 100 ppm (0.01%)
Cadmium is used in electronic equipment, car batteries, metal coatings, and pigments. It is a carcinogen that affects multiple organ systems. CAS number = 7440-43-9.

Lead (Pb): < 1000 ppm (0.1%)
Lead is used in solder, lead-acid batteries, electronic components, cable sheathing, x-ray shielding, and in the glass of cathode-ray tubes. It is a carcinogen that affects the nervous and renal systems. CAS number = 7439-92-1.

NOTE: RoHS 0.1% lead amounts are exempted when used as an alloying element in steel, aluminium, copper; in specific solders; and in specific glass and ceramic applications up through 2024.

Mercury (Hg): < 1000 ppm (0.1%)
Mercury is used in batteries, switches, thermostats and fluorescent lamps. It is a carcinogen that affects multiple organ systems. CAS number = 7439-97-6.

Hexavalent Chromium (Cr VI) < 1000 ppm (0.1%)
Chromium VI is used in chrome plating, dyes, and pigments. While some forms of chromium are non-toxic, chromium VI can produce toxic effects in multiple organ systems. CAS number = 18540-29-9.

Polybrominated Biphenyls (PBB): < 1000 ppm (0.1%)
Also known as congeners, PBBs are flame retardants found in computer monitor and TV plastic enclosures. They have been found in indoor dust and air through evaporation. They are a known human carcinogen that affects the endocrine system.

Polybrominated Diphenyl Ethers (PBDE): < 1000 ppm (0.1%)
Similarly to PBBs, PBDEs are used as padding in plastic enclosures to make them difficult to burn. They are a known human carcinogen that affects the endocrine system.

Bis(2-Ethylhexyl) phthalate (DEHP): < 1000 ppm (0.1%) (RoHS 3)
DEHPs are used to soften PVC and vinyl insulation on electrical wires and in medical tubing. They are a known human carcinogen that affects the immune and reproductive systems.

Benzyl butyl phthalate (BBP): < 1000 ppm (0.1%) (RoHS 3)
BBPs are used to soften PVC and vinyl insulation on electrical wires.

Dibutyl phthalate (DBP): < 1000 ppm (0.1%) (RoHS 3)
DBPs are part of the di-n-phtalate family used to soften PVC and vinyl insulation on electrical wires.

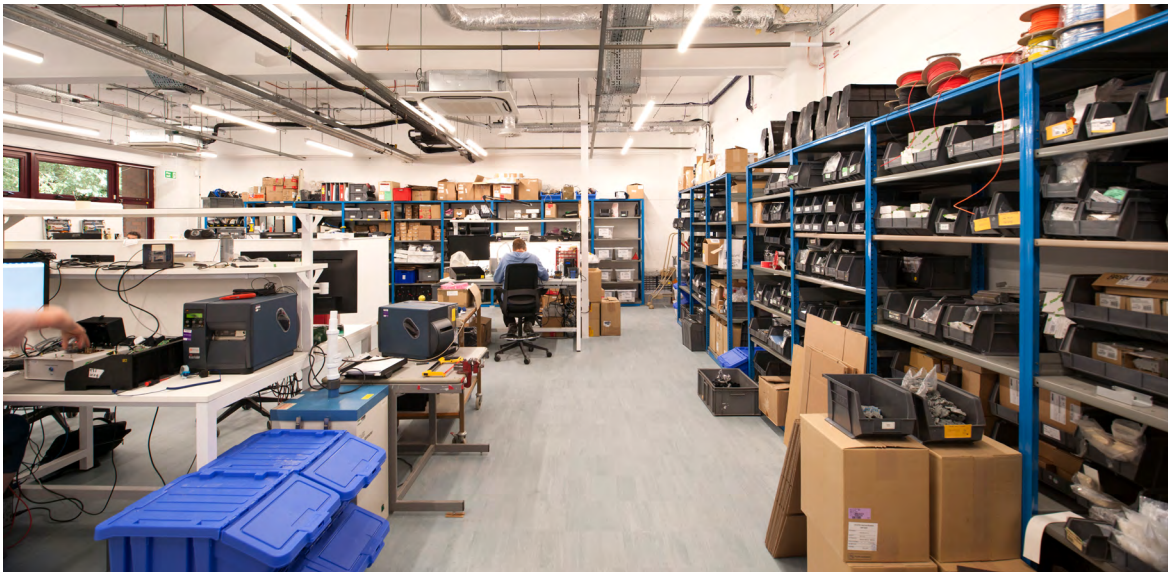
Diisobutyl phthalate (DIBP): < 1000 ppm (0.1%) (RoHS 3)
DIBPs are also used to soften PVC and vinyl insulation on electrical wires.

Helvar requires its suppliers of raw materials and components to comply with the RoHS requirements. As the RoHS directive is mandatory in the EU & UK, Helvar products comply with the requirements of the directive.

WEEE

WEEE stands for Waste from Electrical and Electronic Equipment, with the latest revision, WEEE 2 (Directive 2012/19/EU), in place since February 14, 2014. In the lighting sector, the luminaire manufacturer is responsible for all the components in the luminaire, including LED drivers, ballasts and lighting control components.

The WEEE Directive mandates environmental waste management strategies for various disposable and recyclable electrical and electronic equipment placed on the market of EU Member States, by either manufacturers or distributors of such equipment.



RoHS compliance in association with WEEE reduces the amount of hazardous chemicals used in electronics manufacture. RoHS regulates the hazardous substances used in the manufacture of electrical and electronic equipment (EEE), while WEEE regulates the disposal of this same equipment. All applicable products for the EU & UK market must comply to the WEEE directive and carry the "Wheelie Bin" mark.

The WEEE directive applies to monitoring and control instruments, and the equipment for controlling light. Helvar lighting control products such as controllers, sensors and panels belong to this category.

Information concerning the manufacturing and recycling of Helvar products is given in the chapter about Helvar products. For further information please contact Helvar headquarters or visit our website *helvar.com*.

Requirements for material content of products

Besides the RoHS directive, there are other legal requirements for material content that also apply to electrical and electronic equipment.

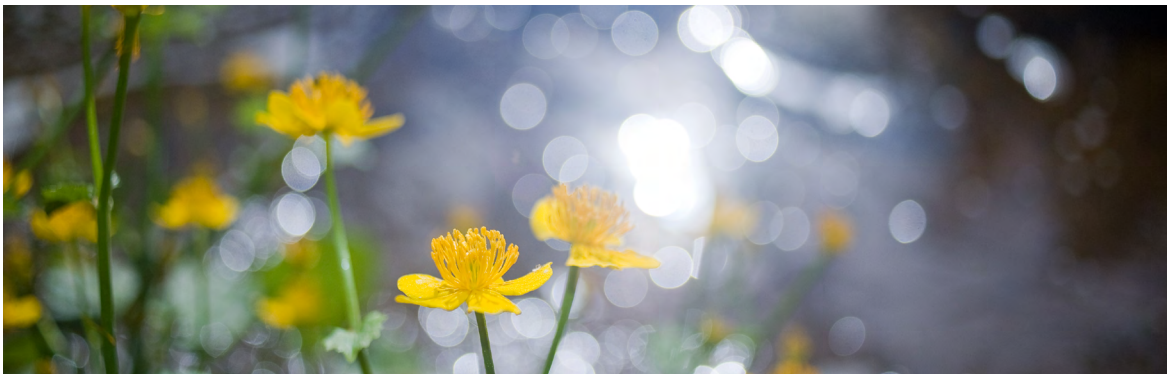
The Registration, Evaluation, Authorisation and Restriction of Chemical (REACH) regulation entered into force in 2007. REACH is an EU regulation adopted to protect human health and the environment from the risks posed by specific chemicals, while enhancing the competitiveness of the EU chemicals industry. It also promotes alternative methods for the hazard assessment of substances in order to reduce the number of tests carried out on animals.

When it comes to the requirements set by REACH, Helvar is considered as a downstream user. The main responsibilities of a downstream user are to know what substances they use and what are the requirements for them, to follow the instructions in the safety data sheets and in the exposure scenarios, and to comply with the bans and restrictions (annex XVII) in force. Downstream users must ensure that the manufacturer or importer registers the substance for the use of a downstream user. Information on safety and use must be communicated upstream and downstream in the supply chain.

In addition, REACH sets a requirement for suppliers of an article to inform the recipient of the article about the substances of very high concern (SVHC) in the article. Since January 2021, articles containing Substances of Very High Concern (SVHC) above concentration of 0,1% must be reported to the *SCIP database*.

The SCIP database aims to increase the knowledge of hazardous chemicals in articles and products throughout their whole lifecycle, and to reduce hazardous substances in waste.

Helvar products' current SVHC information and SCIP registration status is available under *helvar.com/quality-documents*.

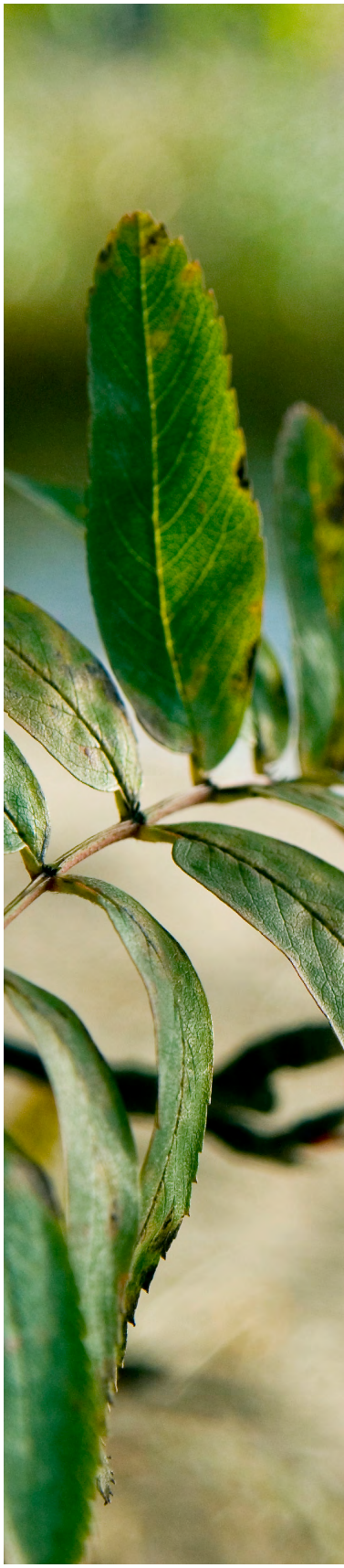


Requirements for batteries

The EU Battery Directive (2006/66/EC) regulates the manufacturing and disposal of batteries and accumulators in the European Union to protect human health and the environment from hazardous substances such as mercury and cadmium.

Batteries used within Helvar products comply with the requirements in these directives. Batteries should be taken to a battery collection point.

Different battery types may require different disposal methods; always check how your batteries should be disposed of.



Helvar Products

Helvar has integrated sustainable material principles in both design and sourcing processes. Components are assessed for chemical compliance prior to approval, and also when changes in requirements occur. Helvar has an internal listing of restricted and declarable substances, and this list follows the guidelines of the supply chain declaration list maintained by the Bomcheck commercial platform *sphera.bomcheck.com*.

Efficient material use and possibilities to increase the use of recycled material are continuously assessed.

In the production phase, important environmental issues include energy consumption, the use of chemicals and raw materials, and the generation of waste. Helvar's product offering is designed for energy efficient, professional lighting solutions which enable significant reductions in energy consumption during use.

When it comes to disposing of products, appropriate end-of-life treatment is crucial to ensure efficient material recovery. Information on the structure and material content is needed to dispose of the products correctly. In addition to the recycling of the product itself, the reuse and recovery of packaging materials should be considered since raw materials and energy are bound to packaging.

Production

Helvar products are manufactured within our own production facilities or by approved subcontractors. Subcontractors are assessed on the basis of the same high standards and requirements that our own production processes use. Helvar demands its main production partners to have ISO 9001 & 14001 certification, and ISO 45000 is strongly recommended.

For Helvar, improving the efficiency of manufacturing processes across all production sites involves not only fast, energy efficient production methods, but also the reduction of emissions and waste.

Overall, manufacturing processes at Helvar generate low levels of direct emissions compared to many other industries, since Helvar factories run on electricity and very low amounts of chemicals are used. Nonetheless, Helvar continuously puts effort into reducing the energy consumption, emissions and waste from its own premises. For example, Helvar has been part of the Finnish Energy Efficiency Agreement since 2008 and entered the second contract period in 2017. Helvar has already achieved the targets set out for the second agreement period in 2017-2025 for an a 7,5% reduction in energy consumption compared to 2016.

Helvar and Ecodesign

Originating from the EuP directive (2005/32/EC Energy Using products), 'ecodesign' directives have long served as a framework for environmental requirements in design processes, which also includes lighting sector products.

The most recent updates in the context of the lighting industry have been the 2019/2020 regulation for ecodesign requirements for light sources and separate control gear, and the 2019/2015 energy labelling requirements for light sources.

Helvar LED drivers and LED modules fulfil both functional and informational ecodesign requirements. For example, the stand-by consumption of Helvar DALI products complies with the 0,5W requirement for idle power consumption of a luminaire, and new controllable products have been designed and optimised to achieve even lowed combined consumption than defined Ecodesign regulations.

Ecological product design is a method for developing more environmentally friendly products. Ecodesign measures differ depending on which environmental aspects are considered the most important in the particular case. The basic ecodesign principles are to reduce the use of natural resources, to minimise the use of hazardous substances, to reduce the waste and emissions, to optimize the product's working life and to increase recycling and recyclability.

In addition to EcoDesign requirements, the lighting industry promotes the use of lighting design which increases the potential energy savings beyond simply energy efficient products (e.g. through control functions).

Updated data sheets are available at *helvar.com*.

LCA

Helvar has consistently followed ecodesign principles and is systematically reducing the use of hazardous substances in its products. Helvar has also studied the most important environmental aspects of luminaire and lighting control components through life cycle assessments, in order to be able to address ecodesign measures at the correct design phases.

A life cycle assessment (LCA) is a method for evaluating the environmental aspects of a product or service during its life cycle, based on relevant input resources and output wastes and emissions in different lifecycle stages. The total life cycle includes all the phases of a product's life from raw material acquisition to the end-of-life. Helvar has conducted LCAs on both Lighting Components and Lighting Control products in 2022, following ISO 14040, ISO 14044, EN 15804 and IBU Product Category Rules for Environmental Product Declarations.

Most of the environmental impacts associated with Helvar products originate from the upstream and downstream value chain, namely from the electronic component production and the use stages respectively. This came as no surprise; semiconductor production is notorious for being materials-intensive and consuming high amounts of water and energy. In fact, Williams E. (2004) determined that to produce a 2-gram microchip, 72 grams of chemicals, 32 litres of water and 2.9 kWh of electricity are needed.

To illustrate where the environmental impacts of Helvar products originate from, the carbon footprints of some product groups are shown below. The most significant part of the cradle-to-gate footprint comes from the manufacturing of electronic components. The impact of packaging, plastic mechanics, soldering and transportation processes are much smaller.

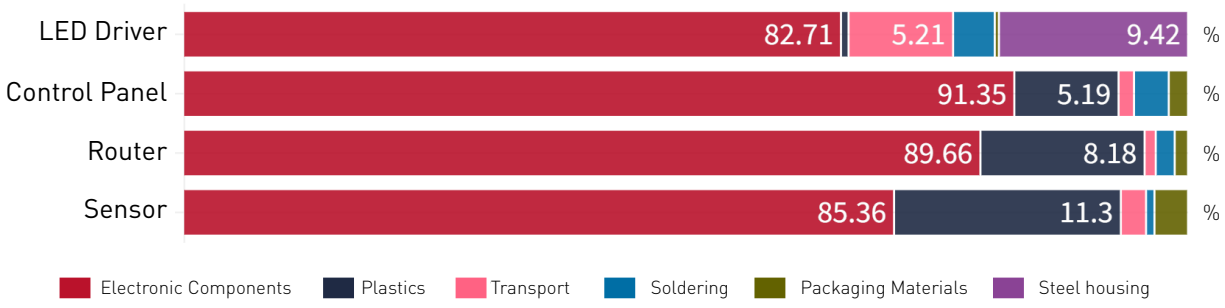


Figure 1*: Carbon footprint of products by category*

When the total lifecycle is considered, the use stage tends to have the most significant environmental impact, although this depends greatly on the assumed lifetime of the product and the used emissions factors for the electricity. The emissions are higher in areas where electricity is produced from fossil fuels. It is good to note that long product lifetimes, while seemingly causing the highest emissions, are important for circular economy and material efficiency.

The end-of-life stage consists of transportation to waste treatment (C2), treatment of waste (C3) and the benefit (i.e. avoided environmental impact) of the metals recovered from the products.

It is assumed that products entering end-of-life stage are in the EU area, where the WEEE directive has established requirements for the collection and treatment of the waste. It is also assumed that the products are crushed and mechanically separated into metals & non-metals sections. The metals are recovered for recycling and reuse and the non-metals section, which consists of plastic and ceramic materials, is incinerated.

Handprint

While Helvar products have a carbon footprint that the company is working on reducing, they also have a significant carbon handprint. Indeed, one of the core benefits of lighting control solutions is the energy saving opportunity that they bring. Lighting standards reinforce this need for saving energy by defining varying illuminance levels for different tasks and needs. Without lighting control, significant amounts of energy would be wasted. Even with just daylight harvesting and occupancy detecting features, one can save in many cases more than 50% of lighting energy usage.

To calculate Helvar's handprint in terms of saved electricity, the annual sales of sensors and dimmable drivers were measured, along with the respective yearly savings that they generate on the sites at which they are installed. Naturally, different ways of producing energy can result in different foot- and handprints, depending on the country or region. However, even in countries where a significant part of the energy mix comes from renewable or nuclear sources (such as in Finland), a luminaire's carbon handprint is five times bigger than its footprint, when the luminaire is equipped with a dimmable driver and controlled with proper lighting control.

Maximising Helvar's carbon handprint is a key company target, and the Helvar handprint remains significantly bigger than the Helvar footprint. In R&D and manufacturing processes, improved energy efficiency is a very important design criterion for all Helvar products and solutions. Energy savings are a core outcome of our solutions and contribute to lower emissions, less use of natural resources, a cleaner environment and ultimately to reaching climate goals.

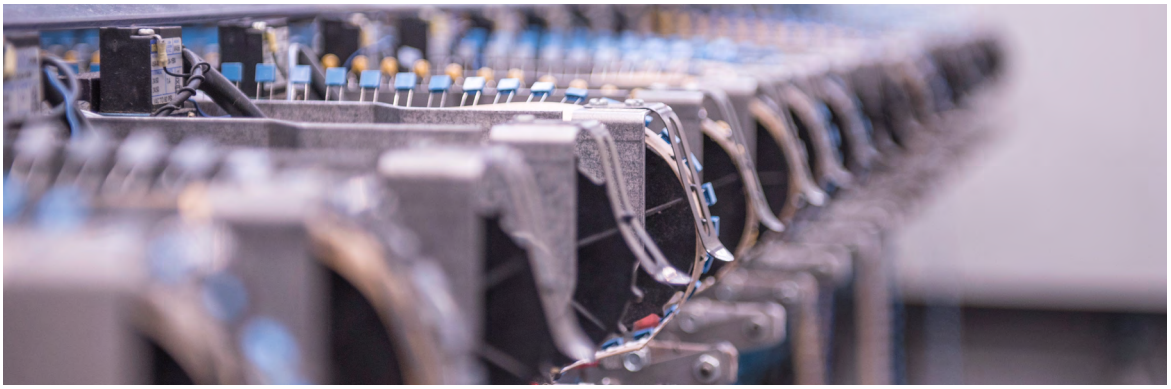
In addition to these environmental impacts, energy savings can also bring about socioeconomic impacts. They can lower the operating costs of products and increase the security of energy supplies. As well as reducing the energy consumption of lighting, controlling lights can also bring benefits beyond lighting, e.g. reduced heat generation resulting in lower costs for cooling spaces.

Material contents

The material content of Helvar products is based on legislative requirements. Helvar uses only those components and materials that comply with the RoHS directive.

Energy consumption is by far the most important environmental aspect of Helvar products, according to LCAs. However, the material content of a product is also significant when it comes to the consumption of natural resources. The amount of non-renewable resources is limited, and it is important to recycle non-renewable materials. The use of material should not be excessive or in vain, and developing products that contain less material and enhancing the recycling of materials both contribute to more efficient use of natural resources.

Helvar products containing printed circuit boards have complex material contents. As it is banned to use lead in solder, the temperature in the soldering process has risen, which challenges the flame retardant substances. Only legally-permitted flame retardants are used in Helvar products.



Packaging

Packaging is required for the protection of products during transportation, storage and marketing. Packaging materials must be strong enough to protect the products from damage. As packaging materials are typically discarded after the product is taken into use, the packaging material should ideally be either reused, recycled or recoverable for the environment.

Helvar utilizes the Waste hierarchy tool in the evaluation of actions related to packaging, to protect the environment, alongside resource use and energy consumption.

The hierarchy establishes preferred program priorities based on sustainability. To be sustainable, waste management cannot be solved only with technical end-of-pipe solutions, and an integrated approach is necessary to switch to reusable, recyclable and recoverable packaging materials.

Through the above considerations, the amount of packaging material Helvar uses is minimized but sufficient protection of the products is still ensured. If material cannot be reused as such, the material contents may be recovered by recycling, and the energy content can be recovered by incineration.

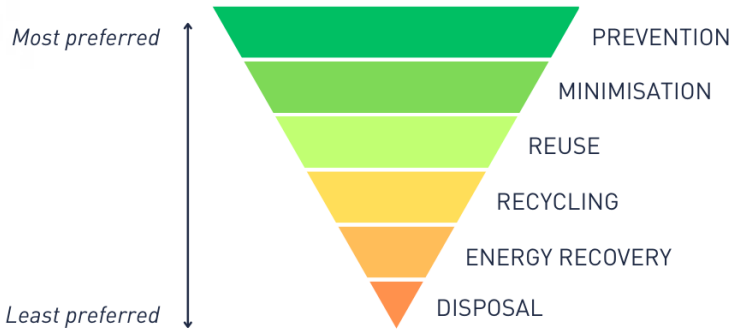


Figure 2*: Waste hierarchy in use at Helvar*

Packing of volume products

Helvar products are packaged using either cardboard outer casing, or Euro-pallet (Plastic or wood). Polyethylene film (shrink-wrap) or cardboard is used to wrap or segregate product layers on the pallet.

Pallets are wrapped with Polyethylene film (shrink-wrap) for protection.

All wooden pallets used conform to the regulations for Ispm15, the International Standards for Phytosanitary Measures developed by the International Plant Protection Convention (IPPC), that directly addresses the need to treat wood materials of a thickness greater than 6mm which are used to ship products between countries. Its main purpose is to prevent the international transport and the spread of disease and insects that could negatively affect plants or ecosystems.

Polyester and polypropylene straps are used to bind multiple bunches of led drivers together.

Packaging of small volume products

An inflatable air pillow (Fill-Air®) is used to fill voids when placing products in shipping boxes to aid cushioning & protection during transport.

Packaging material

Packaging materials used by Helvar, and proposals for their disposal are listed below.

Packaging material	Material	Proposed disposal method
Cardboard	Corrugated board	Recycling
Paper	-	Recycling
Pallet Strapping (Plastic)	Polyester and Polypropylene	-
Pallet Strapping (Steel)	Steel	Recycling
Stretch (Pallet) Wrap	Polyethylene	-
Air Pillows Sealed Air® Fill-Air®	HDPE (High Density Polyethylene)	Recycling - 2 - HDPE
Plastic Pallets	Polypropylene (PP)	Recycling - 5 - PP
Wooden Pallets	(Ispm15) Heat Treated Pallets	Recycling
Plastic bags	LDPE (Low-Density Polyethylene)	Recycling - 4 - LDPE
Stratocell ®	LDPE (Low-Density Polyethylene)	Recycling - 4 - LDPE

Table 1: *Packaging materials and proposals for disposal*

The above proposed disposal methods are recommendations only. Always follow the instructions of the local authorities for packaging disposal in your area!

Treatment of waste from Helvar products

The treatment of waste from Helvar products is subject to national laws and local regulations as well as EU-wide legislation. In order to save natural resources and the environment, it is important to focus on recycling of the non-renewable resources. Overall, Helvar encourages the recycling of its products. In its own operations, Helvar also acts to minimize the generation of waste.

Helvar products are classified as electrical and electronic waste, and they contain substances that can impact on the environment. As such, Helvar electronic products should be sent to a licensed company specializing in electronic treatment and recycling, to ensure that the treatment of waste is carried out professionally.

At the end of life, Helvar products should be taken to WEEE collection point. They should not be disposed of as part of mixed municipal waste.

For further information on where to place the waste product, please contact the distributor or local Helvar sales office.

Electronic products

Different materials from electronic products should be separated. Parts suitable for metal scrap, such as the lid and case, chokes, panel and shield, should be recycled.

Plastic parts, such as the insulation sheet, plastic frame and housing, are suitable for energy recovery. The plastic housing of LED drivers and lighting control products is suitable for melting and reshaping as it is made of thermoplastic polycarbonate.

The printed circuit board must be removed from the electronic device if the surface is greater than 10 cm2. The PCB with components can be shredded and reprocessed. Major metals should be recovered, and the rest of the metals are chemically bonded to the ashes.

Terms

Term	Definition
Carbon footprint	Quantification of the greenhouse gases emitted, expressed as carbon dioxide eq.
Disposal	Final placement or destruction of waste
Energy recovery	The use of combustible waste to generate energy through incineration and recovering the heat
Environmental aspect	An element or function of a product, service or organization's activities that can have environmental impact
Environmental impact	Any change to the environment wholly or partially resulting from a product, service or organisation's activities
EuP	Energy using product, a term combing from the EuP directive 2005/32/EC concering the ecodesign requirements for energy using products
Hazardous waste	Waste that by reason of its chemical reactivity or toxic, explosive, corrosive, radioactive, intractable, or other characteristics causes or is likely to cause danger to health or the environment
Life cycle	Consecutive and interlinked stages from a product's raw material acquisition to its final disposal
Life cycle assessment (LCA)	An evaluation of the environmental impacts of a product or service throughout its life cycle
Non-renewable resources	Natural resources that are finite in quantity and cannot be renewed naturally, e.g. fossil fuels
PCB	Printed circuit board
REACH	Regulation on the Registration, Evaluation, Authorisation and Restriction of Chemicals
Recovery	The extraction of useful materials or energy from waste, e.g. metals, glass and paper
Recycling	Reprocessing of waste material for the original use purposes or other purposes, excluding energy recovery
Reuse	Any operation by which a product or a component, having reached the end of its first use, is used in its original form for the same purpose for which it was conceived
RoHS	Restriction of certain hazardous substances. Derives from the RoHS directive 2011/65/EU
Substances of very high concern (SVHC)	Hazardous substances on the candidate list for authorisation under REACH
Scrap	Discarded waste material that contains metals suitable for reprocessing
Shredding	Tearing material into smaller pieces for further processing
Waste	Any refuse or waste material which the holder discards, intends to- or is required to discard
WEEE	Waste electrical and electronic equipment, directive 2012/19/EU

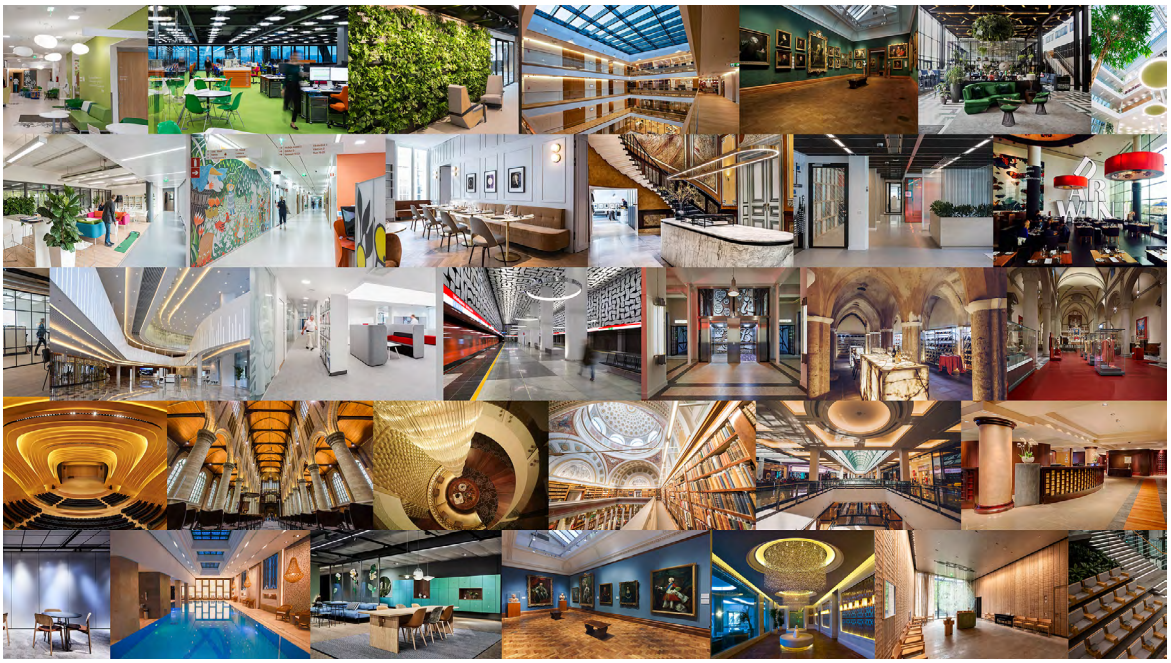
Table 2: *Key terms*

About Helvar

Helvar is a family-owned company which primarily develops, manufactures and markets lighting solutions and services. With two business units responsible for lighting controls and lighting components respectively, Helvar's product range includes a variety of manufactured products such as LED drivers, sensors, routers, control panels and gateways, as well as a portfolio of digital solutions and services.

Helvar works with a broad range of stakeholders across all stages of a building's construction and use cycle, including key customers such as luminaire manufacturers, architects, electrical contractors and facilities management companies. Helvar's core business is to provide optimal conditions for indoor spaces in commercial settings, but a broad portfolio of products enables Helvar to provide solutions for a much wider range of applications, including but not limited to industrial, retail, hospitality, architectural, marine and cultural applications. With 100 years of expertise behind the Helvar name, we now follow our mission of Turning Everyday Places into Brighter Spaces, which are optimally lit, seamlessly integrated and designed for sustainable smart buildings.

Helvar's headquarters are based in Espoo, Finland with a main manufacturing facility in Karkkila, Finland. Helvar also has offices in London, UK and Stockholm, Sweden, and works with a global network of partner companies across 80+ countries around the world. Contact information can be found at the end of this publication, and any additional information through our website *helvar.com*.



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