15.5.2025

Martela

Martela and the environmental impact of products

Materials used by Martela

The main raw materials of the products in Martela collection are wood, metal and plastic. Wood materials are commonly used wood species that grow in commercial forests. Wood material is mainly particle board, in which, for example, by-products of sawmills and recycled material from packaging can be utilized. The environmental impacts of wood material arise from forestry, transportation, and processing. Martela manages their impact by reducing material waste across manufacturing stages. After use, wood-based materials can be used as a source of energy but at the same time the carbon bound to the wood is released into the atmosphere. Wood is a renewable material. A new tree growing to replace a cutted tree sequestrate carbon dioxide as it grows.

Among metals, steel pipes in many forms are most commonly used in furniture, and use of aluminium is increasing due to its lightness. The environmental impacts of steel and aluminium arise from the mining industry's land use, metal enrichment and transport, and these are also mainly managed by the efficiency of material utilization. Metal processing consumes significantly more energy than processing wood into a product, but metal can be melted down after use and used as a recycled material in new products. Metal recycling is also global to the extent that on average 33% of all steel is recycled material. Recycled metal is increasingly used in the manufacture of metal components in products. Metal is a non-renewable natural resource, meaning it cannot be created again once all steel and aluminium have been recovered from the ground.

Plastic is used extensively, especially in the frames, wheels, foams and synthetic fibre fabrics of Martela’s office chairs. Plastic is mainly made from oil, which is a non-renewable natural resource. The environmental impacts of plastic arise from oil drilling and various oil refining processes, as well as from plastic fibre processing processes. Plastic processing consumes a lot of energy and chemicals. After use, various plastic fractions can be carefully sorted and used as material. Since there are many different plastic fractions, sorting plastic materials for durable consumer products after use is difficult and expensive, and the recycling technologies for plastic are not yet sufficiently developed. Miscellaneous plastic material is mainly used as energy. Recycled plastic products are mainly made from packaging plastics and plastic bottles. The share of recycled plastic has increased in plastic products, but its use is limited by the limited availability of plastic suitable for recycling and the deterioration of the properties of the plastic during the recycling process.

Processes at Martela

The environmental impact calculations for the manufacturing processes of new products sold under the Martela brand include the operations of Martela’s Poland unit, Kidex Oy's component manufacturing and Nummela logistics centre in Finland. The operations of Kidex Oy's factory mainly include cutting of particle boards and MDF boards, edge banding,

lamination and surface treatment of veneered components. Martela's polish factory manufactures sub-assemblies of upholstered chair components. Nummela logistics centre is mainly responsible for storing components of short delivery times products and for the final assembly of furniture. The manufacturing of new products is based on customer orders. The environmental impacts of the logistics centre and factories mainly result from the energy use related to the property, the transport of incoming and outgoing goods and the use of machinery. For Kidex Oy, a small part of the environmental impact also arises from the surface treatment process. Water-based surface treatment agents are used in the surface treatment process. Martela's logistics centre is also responsible for the remanufacturing of used furniture. The raw materials for remanufacturing production are mainly used furniture, which is refurbished for reuse, while extending the product's lifespan. Once refurbished, used furniture find new users through Martela Outlet online store and physical shops.

Martela products

The products in the Martela collection are designed to last and meet demanding needs of customers related to the use of public space furniture. During the product development phase, the properties of the products are tested in our own laboratory with a variety of tests that can ensure a long and functional service life of the products. In practice, however, the environmental impacts during the manufacturing of the products are only part of the effects of the entire life cycle of the products. If the product's service life is short and it has to be sent for waste treatment after use, its environmental impacts are significantly greater than if it is used for at least ten years, as verified by product testing, and the components and materials can still be utilized after use. The energy use of Martela products during use is usually only related to cleaning the product, and even in the case of an electrically adjustable table or a soundproof conference and workspace, the energy consumption is very low. The service life of the products can be greatly influenced by maintenance and renovation. For example, the fabric parts of a chair will last significantly longer if they are vacuumed once a week and cleaned immediately when dirty, or at least once a year, according to the fabric manufacturers' recommendations. Dust and dirt that accumulate on the surface of the fabric increase friction between the user and the fabric, which wears prematurely the fabric. On the other hand, vacuuming and washing consume energy and chemicals, which in turn have their own environmental impacts.

The history of product environmental impact assessment at Martela

Martela took part in the Environmental Declaration project, coordinated by VTT Technical Research Centre of Finland. Starting in 1995, the study aimed to investigate and document the environmental impacts of selected wood products throughout their entire life cycle. It summarized them into customer-oriented environmental statements. The project resulted in the first environmental statements for products manufactured by Martela: Tangent family’s table, drawer unit and cabinet with roller shutter.

In the 2000s, the development of various environmental impact assessments of products expanded. Particularly carbon footprint calculations began to become a common topic of

discussion. To meet the increasing need for environmental information from its customers, Martela commissioned a carbon footprint study from Aalto University in 2010 for a life cycle analysis of selected products. Two model of chairs were chosen, one of which was mainly made of wood while the other has metal legs. It took about half a year to conduct the life cycle assessment and calculate the carbon footprint of the product versions. Data collection was partly carried out on site but mainly came from various external databases and literature. The calculation itself was carried out using the GaBi 4 software and what calculation method was based on the ISO 14040 series of standards.

However, Martela's products are largely modular and often unique to each customer, so such a heavy calculation method was not practical. However, in order to meet the expectations of different customers, it was necessary to find ways to calculate the life cycle carbon footprint of products for a wider range of products using lighter methods. The method chosen was a product group-specific calculation, which was carried out using the Footprinter software, which yielded a larger result than a broader and more accurate calculation, but one whose differences for different product types were similar to those calculated using the GaBi 4 software. The Footprinter software's carbon footprint calculation covered materials, production, assembly, packaging and logistics.

In the early 2020s, impacts other than the carbon footprint began to receive increasing attention. The carbon footprint alone was no longer sufficient for assessing environmental impacts, but more comparable information was needed on an increasing number of environmental impacts. There was also a desire to distinguish biogenic and fossil impacts from climate impacts and, on the other hand, to include post-use impacts in the assessment. There are no specific calculation rules (Product Category Rules) for loose furniture that are suitable for this product category yet, but in Norway, furniture manufacturers have long applied the product category rules for building materials. The updated product category rules for building materials entered into force at the end of 2023, when Martela started producing third-party verified Environmental Product Declarations (EPD). However, the amount of information contained in the EPD is extensive and is specified by the European standard.

LCA calculations are transformed into simplified product environmental cards

Martela has published over 30 EPD documents through the EPD Norge portal during 2024, which provide Life Cycle Analysis (LCA) calculations of the environmental impacts of over 100 different product variations. The EPD documents take into account environmental impacts other than carbon dioxide emissions only. The LCA calculation is based on the EN15804+A2:2019 standard and the emission factors of the materials are mainly from the EcoInvent 3.6 database. However, the carbon footprint according to the EPD environmental declaration is slightly different when calculated with the Footprinter program. In order to increase the comparability of the products, the carbon footprint calculations on Martela's website were updated in spring 2025 to better align to the EPD documents verified by a third party. As the amount of information contained in the EPD is very extensive, it is still challenging to extract the most interesting values from it. The renewed product environmental card now presents the following information about the product: product weight and carbon dioxide

emissions by materials, total carbon dioxide emissions of the product including packaging, and the share of materials, logistics and production in total emissions as a percentage.