

Liebherr Appliances Corporate Responsibility



Shaping tomorrow

As a family-run company, we think in generations, not just business cycles – committed to making long-term decisions that benefit people, the planet, and our business.

Our Corporate Responsibility documentation provides insights into how Liebherr Appliances embeds sustainability across its operations, from energy-efficient appliances and responsible sourcing to circular economy initiatives and employee development. While we have made significant progress, we recognise that there is always more to do. Our goal is to continuously innovate, reduce our environmental impact, and contribute to a more sustainable future.

[SEE FULL DOCUMENTATION 2024](#)

Materials



It begins with the materials we choose.

Our appliances are renowned for their craftsmanship, quality, and efficiency – and it all begins with the materials we choose. Each component is selected to ensure durability and timeless aesthetics. From the robust steel exterior to advanced insulation, every element is crafted to guarantee an exceptionally long lifespan and a positive experience for our customers.

We are also constantly evaluating and refining the materials we use. We strive to find even better materials – those that enhance durability while also reducing environmental impact.



A symphony of components

The status quo of our materials

Our freezers and fridges are complex appliances, consisting of various components. Here is a closer look at the materials that make up our appliances, using the freestanding freezer FNc 6625 as an example.

FNc 6625 – main material groups:

1. Housing, cladding, and outer door panel

Materials: Sheet steel

Function: The housing protects internal components and ensures the structural integrity of the appliance. It is robust, resistant to external influences, and designed to be visually appealing with a timeless aesthetic.

2. Inner container and inner door

Materials: Plastic (Polystyrene)

Function: The inner container forms the interior of the fridge and freezer compartments, where food is directly stored. The plastic must be robust, easy to clean, resistant to temperature fluctuations, and food-safe.

3. Insulation

Materials: Polyurethane foam

Function: Polyurethane foam provides effective thermal insulation, minimising heat loss and improving the appliance's energy efficiency, while also contributing to the 3D structural stability.

Materials: Vacuum insulation panels (VIPs)

Function: High-quality VIPs enhance insulation performance, enabling long-term energy savings.

4. Seals

Materials: PVC

Function: PVC seals provide an airtight closure for the doors, preventing the exchange of warm and cold air and thus contributing to energy efficiency. The seals are treated with a biocide to prevent mould formation.

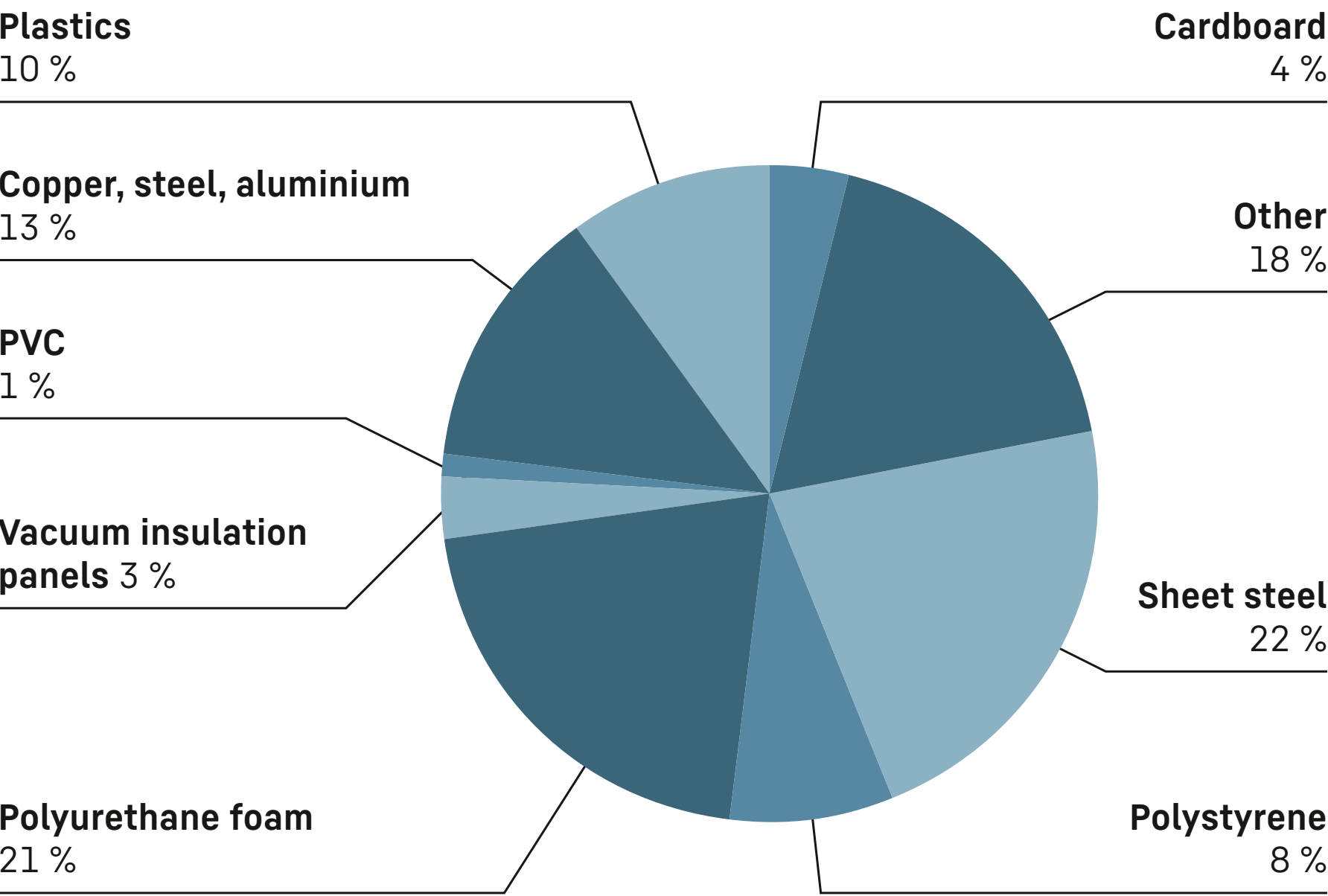
5. Refrigerant

Materials: Pure hydrocarbon-based refrigerant with low Global Warming Potential (GWP)

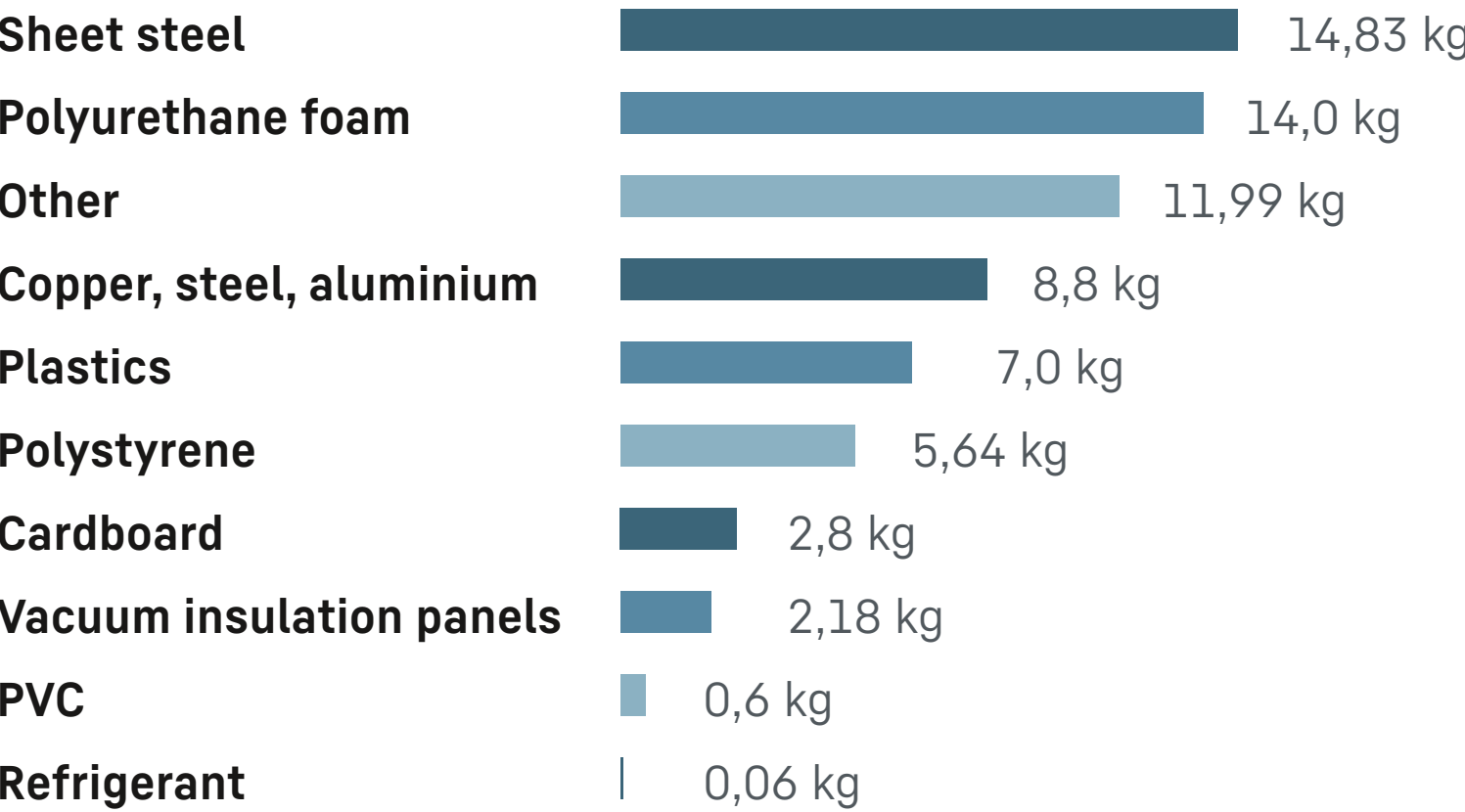
Function: The refrigerant circulates in a loop, absorbing heat and transporting it out of the interior of the appliance. It is designed to operate efficiently while minimising environmental impact. For 30 years we have been relying on hydrocarbon refrigerants, which provide efficient cooling with minimal environmental impact.



FNc 6625 – material distribution in percentage



FNc 6625 – material distribution in kg



Other components used in our appliances

1. Cooling technology

– Refrigerant circuit:

Materials: Copper or aluminium for piping

Function: The refrigerant circuit cools the interior by transporting the refrigerant. Copper and aluminium provide high thermal conductivity and corrosion resistance.

– Compressor:

Materials: Steel, copper (for windings), motor winding made of aluminium, approx. 200 ml of oil

Function: The compressor compacts the refrigerant, creating the pressure needed to drive the cooling process.

– Evaporator and condenser:

Materials: Copper or aluminium, with piping made of steel, copper, and aluminium

Function: The evaporator extracts heat from the interior air, while the condenser releases this heat to the exterior. The materials are chosen for their high thermal conductivity.

– Electronic components (conflict minerals):

Materials: Plastics for housing, copper for conductor tracks, silicon for semiconductors

Function: The electronic Components Control temperature, lighting, and other functions of

the cooling and freezing of fridges and freezers. These component must be reliable and durable and they have to ensure safety and functionality. They are replaceable and easy to repair.

2. Glass and plastics for shelves and drawers

Materials: Tempered glass, plastics

Function: Shelves and drawers provide stable storage for food and are easy to clean. They must also be temperature-resistant, robust, and food-safe to ensure no harmful substances are transferred to food.

Plastics: Used to reduce weight and offer specific shaping properties; currently challenging to recycle due to process.

Glass: Offers robustness, scratch resistance, ease of cleaning, and food safety. The safety glass shatters into small, blunt pieces to minimise injury risk. It is also long-lasting.

3. Flame retardants

Function: Flame retardants in plastics provide additional safety, even in the unlikely event of a fire. They comply with relevant safety regulations and do not come into contact with food.



Status quo packaging

Protecting our appliances during transport is a particular challenge. Packaging must pass strict transport and stacking tests to ensure product safety and quality. Additionally, our materials minimise moisture impact to preserve product integrity.

We have already taken steps to reduce the ecological footprint of our packaging. All components are easily separable and recyclable – no multilayer films or composite materials are used that could complicate recycling processes. We also focus on recyclable materials such as cardboard and have significantly reduced overall packaging. As part of our long-term commitment, we are continuously working to increase the use of renewable materials and recyclates.

Materials: Expanded polystyrene (EPS), cardboard, plastics

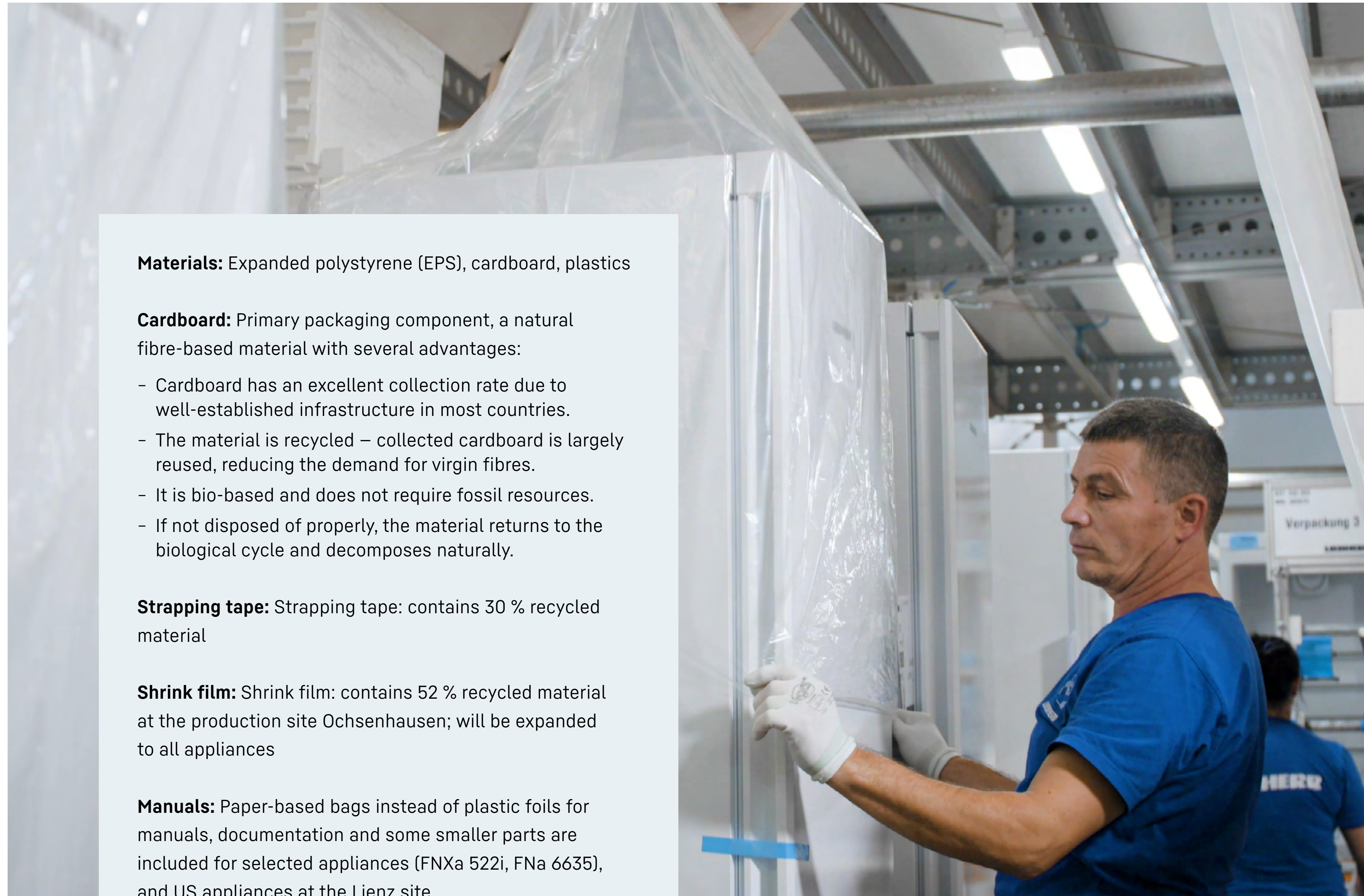
Cardboard: Primary packaging component, a natural fibre-based material with several advantages:

- Cardboard has an excellent collection rate due to well-established infrastructure in most countries.
- The material is recycled – collected cardboard is largely reused, reducing the demand for virgin fibres.
- It is bio-based and does not require fossil resources.
- If not disposed of properly, the material returns to the biological cycle and decomposes naturally.

Strapping tape: Strapping tape: contains 30 % recycled material

Shrink film: Shrink film: contains 52 % recycled material at the production site Ochsenhausen; will be expanded to all appliances

Manuals: Paper-based bags instead of plastic foils for manuals, documentation and some smaller parts are included for selected appliances (FNXa 522i, FNa 6635), and US appliances at the Lienz site.

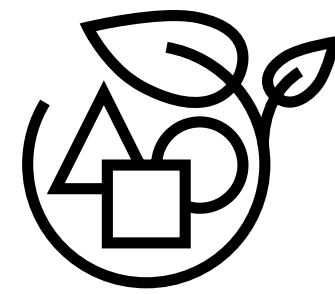


Evolution meets revolution.

Improving the present – innovating for the future

Liebherr Appliances is continuously advancing its material strategy by increasing the use of recyclates and bio-based materials while reducing material variety to enhance recyclability. Our focus is on developing more sustainable, efficient materials that align with circular economy principles. This commitment drives us to create appliances that not only meet today's standards but also contribute to the Sustainable Development Goals of the United Nations, shaping a more responsible future.

Additionally, we are pushing forward with groundbreaking innovations. BluRoX, our revolutionary insulation technology, is redefining sustainability in refrigeration and freezing while adopting principles of circular design.



Every choice matters.

The freestanding freezer FNa 6635 with eco-responsible materials

The FNa 6635 features 100 % recycled steel in its doors and side-walls, resulting in 80 % less CO₂ emissions during production compared to conventional steel. We have replaced traditional polyvinyl chloride (PVC) with thermoplastic elastomer (TPE) for the door seal, ensuring durability and better recyclability. Both the insulation foam and inner lining contain recycled and bio-based materials on a mass balance basis, providing the same exceptional performance with less environmental impact. Also, we have further reduced the ecological footprint of our packaging, without compromising on transportation safety.

[FULL MATERIAL DOCUMENTATION FOR THE FNa 6635](#)

FNa 6635 – main material groups:

1. Housing

Materials: Green steel

Benefit: The material used for doors and side panels is made of 100 % recycled steel, produced using renewable energy in an electric furnace. This allows for a reduction in CO₂ emissions by 80 % compared to the production of conventional steel.

2. Door seal

Materials: TPE

Benefit: The door seal made from TPE combines optimal functionality with durability. The use of TPE reduces the introduction of chlorinated compounds into the environment. TPE is compatible with other plastic materials during the recycling process, allowing for greater efficiency in recycling.

3. Insulation foam

Materials: Bio-based foam

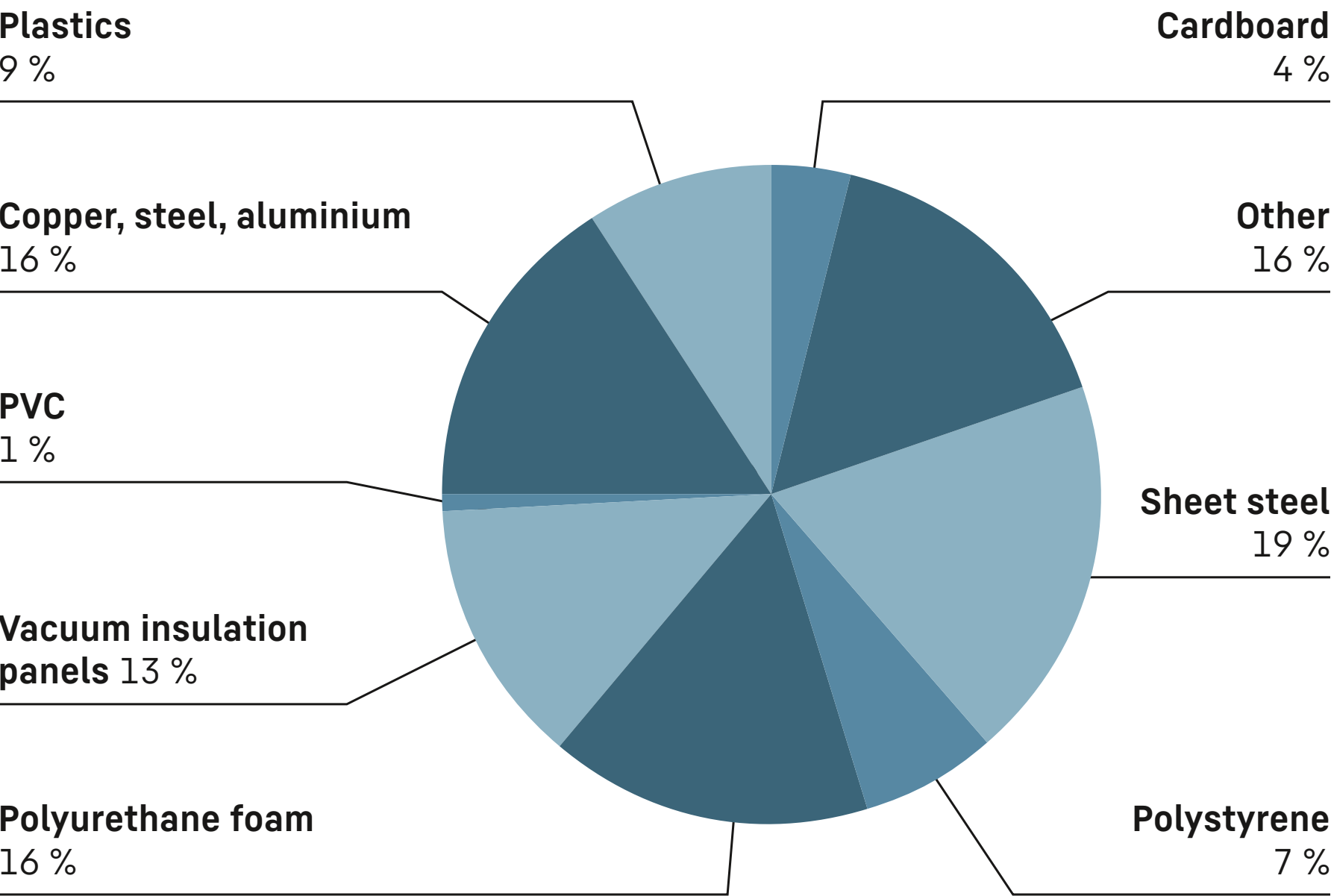
Benefit: For the foam insulation, we use the highest possible percentage of raw materials from recycled or bio-based sources in the mass-balance approach, ensuring maximum performance with reduced ecological impact.

4. Inner container

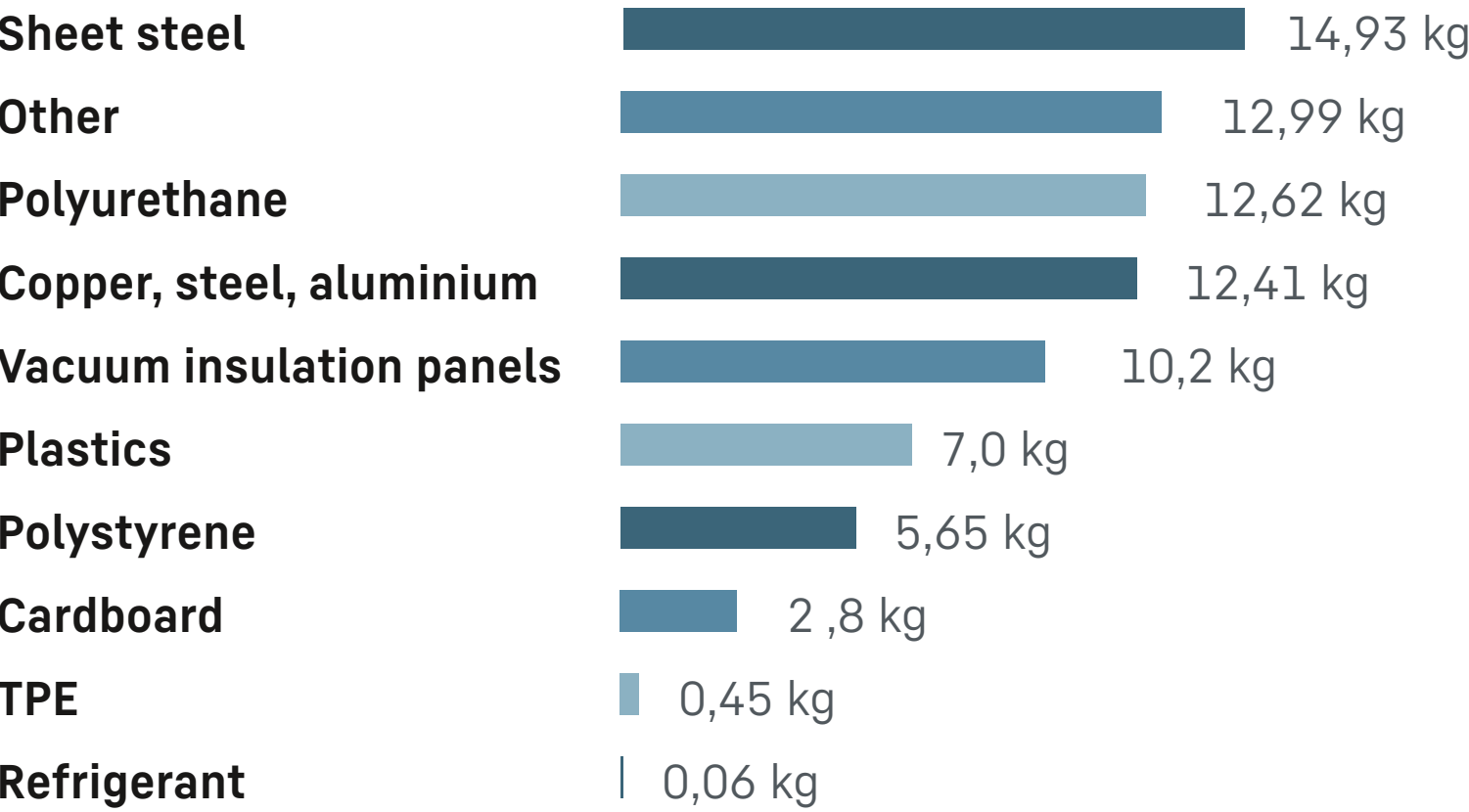
Materials: Plastic

Benefit: For the inner container, we use materials containing 55 % of recyclates from post-consumer waste in the mass-balance approach. This ensures optimal performance with a minimal ecological footprint.

FNa 6635 – material distribution in percentage



FNa 6635 – material distribution in kg



Our goals for future packaging

We are committed to introducing environmentally conscious packaging materials as part of a long-term process to reduce our carbon footprint. Each product presents unique challenges, such as size and transport requirements, demanding packaging that meets rigorous transport and stacking tests while upholding our high-quality standards – ensuring that safety and practicality go hand in hand with our sustainability efforts.

Optimising packaging volume and weight is a key part of our approach, helping to minimise material use and environmental impact. We aim to integrate packaging into existing recycling systems, with paper-based components standing out due to their high collection rates. We prioritise materials with high recycled content that are also easy to recycle, such as switching from polystyrene to more sustainable options for strapping tape and shrink wrap.

Our commitment to sustainability does not stop there. We continuously refine our packaging, eliminating unnecessary materials, increasing recycled content, and reducing plastic use – for example, replacing plastic bags with paper alternatives for accessories. With smarter packaging, we take meaningful steps toward a more sustainable future.

Packaging materials for our FNa 6635

1. Cardboard

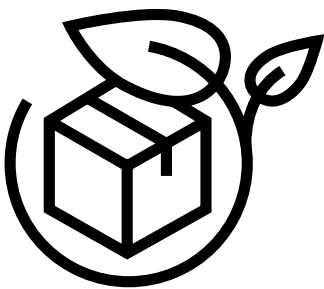
Paper-based components are particularly advantageous, as they have the highest collection rates. Cardboard boasts excellent collection rates, thanks to well-established recycling infrastructures in most countries. As a fully recyclable material, it is largely reused, reducing the need for virgin fibres. Being bio-based, it requires no fossil resources. Even if improperly disposed of, cardboard naturally returns to the biological cycle and decomposes without harming the environment.

2. Recycled expanded polystyrene (rEPS)

For base and top cushioning, we use recycled expanded polystyrene (rEPS), commonly known as Styrofoam. This material is moisture-resistant, offers excellent cushioning properties, is lightweight, and fully recyclable. With 95 % recycled content, the rEPS we use is made almost entirely from recycled materials, supporting a functional circular economy.

3. Strapping tape

Our polypropylene (PP) strapping tape is composed of over 30 % recycled material, ensuring durability and the ability to support the appliance's weight, even when improperly used as a carrying aid.



Our goals and measures

- **Eliminate plastic use wherever possible.**
- **Starting in 2025, all sites will gradually switch from plastic to paper-based adhesive tapes.**
- **Continuous replacement of EPS**
 - Switch to paper-based materials for top cushioning instead of EPS.
 - By 2030, we aim to eliminate EPS for the majority of our appliances.



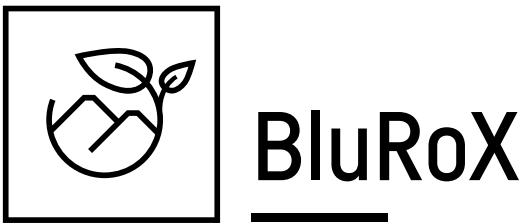


Innovation starts by breaking the mould.

BluRoX – rethinking the way we make things

We are constantly evaluating the way we build our appliances, starting with smarter material choices and minimising their use wherever possible. At the same time, we are driving innovation to develop technologies that transform how our appliances are designed and manufactured.

BluRoX is such an innovation. This technology combines volcanic rock and vacuum insulation, offering exceptional energy efficiency in a compact design. It significantly lowers energy consumption and sets a new standard in sustainable refrigeration.



Designed for circularity, perlite can be reused at the end of the appliance's lifecycle, while the insulation's separation from surrounding components allows for easy processing of the outer housing and inner container. BluRoX facilitates easy repairs and material reuse, contributing to a more sustainable and environmentally responsible lifecycle.

[MORE ABOUT OUR BLUROX TECHNOLOGY](#)

Regulations and requirements

Our appliances are subject to numerous legal regulations in various target markets. Since our primary focus is on European markets, we prioritise compliance with EU requirements. However, as many of our appliances are manufactured for additional markets worldwide, such as the Americas and Asia, they therefore have to meet the respective standards of those regions.

RoHS

The restriction of hazardous substances (RoHS) for electrical appliances is a "classic" regulation. The limits and bans – originally covering four heavy metals and two flame retardant groups, later expanded to include four plasticisers (phthalates) – have been adopted by numerous countries worldwide. This makes RoHS globally recognised and no longer a particular challenge.

REACH and SVHC

The European Chemicals Regulation (REACH) is an extensive law that governs the authorisation, labelling, and restriction of chemicals among other aspects. Since our appliances use very few chemicals, article 33 is the most relevant to us. This article requires disclosure of Substances of Very High Concern (SVHC) to customers. If an item contains any of these substances in concentrations exceeding 0.1 % by weight, this information must be passed through the supply chain. End customers can find information about SVHC in their appliances on our website. The frequent addition of new SVHCs (every six months) and limited awareness of the regulation across Europe still pose challenges. Additionally, appliances containing SVHC must be uploaded to the SCIP database (Substances of Concern in Products), where this information is publicly accessible for the entire lifecycle of products and materials.

[Check your product for SVHC substances according to REACH.](#)

Biocidal Products Regulation

This regulation governs the use of biocidal products, which must be approved for specific applications. For example, a biocide may be permitted for certain products but not for others. In our case, biocides are primarily used in door seals to prevent mould growth.

F-Gas Regulation

The European F-Gas Regulation governs the use of fluorinated gases and complements regulations on ozone-depleting substances (which include chlorine). Over the years, fluorinated gases with high Global Warming Potential have been increasingly restricted, and their availability in Europe has been reduced through quota systems.

All our fridges and freezers have been insulated with hydrocarbon-based foaming agents since 1993. Since 1996, only pure hydrocarbons (predominantly R600a) have been used as refrigerants in Liebherr's household appliances worldwide. Until 2020, we used fluorinated refrigerants in some professional appliances, but we began transitioning these products to hydrocabon-based refrigerants in 2013. Since 2023, however, we have been offering two professional appliance types that use an HF(C)O-based foaming agent with a GWP lower than 4. Aside from these exceptions, fluorinated gases have been eliminated from our appliances.

EUDR (from 30.12.2025)

The upcoming European Union Deforestation Regulation (EUDR) is a critical step in combating global deforestation and ensuring sustainable supply chains. It requires companies operating in the EU to demonstrate that products placed on

the market do not contribute to deforestation or forest degradation. This involves strict due diligence processes, including the traceability of raw materials and ensuring compliance with legal requirements in the country of origin.

The EUDR aligns with our commitment to responsible sourcing and environmental stewardship. We continuously evaluate and enhance our supply chain practices to ensure materials used in our products meet the highest sustainability standards.