

Sustainability Report

Polytives GmbH 2022



Meeting the ecological challenges of plastics production with suitable solutions

What does Polytives stand for?

We develop, produce, and market new plastic additives and advise our customers on how these additives can help them with their individual challenges. Our goal is to meet the environmental challenges of plastics production with a suitable solution, with our products offering appropriate benefits for users in a wide range of industries. In doing so, we are convinced that we should all live and work in a way that preserves the natural environment and valuable resources for future generations.

The social aspect

How do we get these things done? As a small team of nine employees and two working students, we take advantage of the structure of a relatively small and innovative company: we work with flat hierarchies and are agile, i.e. able to react quickly when necessary. Each team member contributes his or her personal strengths. Profitable, interdisciplinary thinking is thus part of our everyday life. Our diversity opens different perspectives on problems and their solutions, which makes our products and our company unique.

The ecological and the economic side

Plastics are increasingly controversially discussed in society, yet it is hard to imagine everyday life without them. Their positive properties offer considerable advantages over alternative materials in countless applications. Some of them are vital. Therefore, it is important for us to present this group of materials in a realistic view.

Our additives change a products life cycle assessment (LCA). Therefore, we want to make our influence on the use and application of plastics as sustainable as possible. Here we focus on our flow improver *bFI A 3745*. Polytives currently maintains a laboratory site where research is carried out and the *bFI* family of flow improvers is further developed, as well as an office site where we take care of the management of our products and services.

What we can change with our additives

Decisions to act in an environmentally oriented manner always have an impact on the economic aspects. After initially high investments, sustainable savings are achieved in the long term for the benefit of the environment and finances. Such corporate management must be designed to optimize resource utilization, conserve machinery and keep them running longer. After all, sustainability is a holistic concept. Product recycling not only protects the environment, but also the wallet. This benefits our customers, whom we can support in these goals through our technology.

For our customers, our growing *bFI* family of flow improvers provides benefits in the processing stage: By using our synthesis technology, polymers can be processed at lower temperatures. This makes it possible to process even previously rather unusual combinations of materials together. In application cases, for example, the required temperatures drop by 30°C (from 220 °C to 190 °C), and for another plastic even by 35 °C (from 270 °C to 235 °C). The customer benefits immediately from a saving in energy input and secondarily also from the fact that less energy must be extracted again, for example by cooling the product. In injection molding, it was possible to reduce not only the temperature but also the necessary injection pressures by around 30 %, thus saving resources.

In the finished customer product, our additives also ensure that materials have better properties than previously used plastic compounds. In concrete terms, these improvements must always be considered in the relevant application. In general, however, the following effects can be identified:

- Savings in solvents due to the increased flowability
- Reduction or avoidance of toxic additives possible
- Better realization of filigree components and thus, for example, increased reflection in lighting elements
- Preservation of the recyclability of products manufactured by our customer with precisely matching additives (our additive usually has the same structure as the base plastic)
- Recycled plastic materials , which are difficult to further process due to their high melt viscosity, are given a second chance for injection molding (the recovered material can be used for high-value applications and is not subject to current restrictions).

Our handling of resources

In addition to these positive properties that our products have for our customers, we take care in our processes from the very beginning to keep chemicals in circulation and to produce as little waste as possible. Technical equipment enables us to separate 99 % of certain solvents from our products, thereby recovering and reusing them. In this way, we were able to recycle 30 liters of solvent in 2022 — from this reservoir, 13% have already been put to good use again for new research purposes. Not avoidable were 558 kg of waste generated in 2022 during our research, development, and production. Of this amount, 362 kg were attributable to technically (not yet) recyclable solvents and solvent mixtures and 196 kg to supplies.

We are also starting to act sustainably in our daily practice not only intuitively, but also quite consciously and, if possible, in a measurable way. As an example, consider the CO₂ emissions of our vehicle fleet: These are 890 kg, of which 100 % are compensated. 8 % of the emissions were even completely avoided. We obtain our electricity, both in the office

and in the laboratory, from sustainable energy sources and try to design processes digitally. Shipping services and printed materials are ordered as climate neutral as possible or with CO₂ compensation.



Conclusion

The ecological dimension of sustainability plays the biggest role in our processes today and will continue to do so in the future. For a sound assessment of the environmental impact of entrepreneurial activity, the complete CO₂ balance must always be considered. We have now created awareness and taken the first steps to address this account. In the future, the review of the current scope must be underpinned with further data to better assess the savings potential through sustainable business practices.

A glimpse into the future

We aim for our company to operate successfully with a sustainable business model. We want to establish ourselves firmly in our industry and, in doing so, actively contribute to a positive change in the image of plastics in all its diversity. Our goal is therefore not just to use the topic of sustainability as a means of communication, but to pursue it in a concrete way and to deepen our understanding of it. In 2023, we will relocate our company site within Thuringia to Rudolstadt and set up a production plant there. The building, which was completed in 1997, will be assessed and optimized in terms of energy management in the run-up to our move in. For this purpose, for example, the installation of a photovoltaic system on the roof is being examined. In the medium term, an initial carbon footprint of our flow improver *bFI A 3745* and its downstream products will be calculated. In the long term we will also include our company as a whole unit in this calculation.

Our vision for the future is to develop our products in line with the requirements of full recyclability. To achieve this, many steps must be taken to ensure that starting products can also be produced in a recyclable form. We are optimistic that the overall societal trend toward greater sustainability in all areas of life will generate strong demand for resource-saving solutions, which we can support with our technology.

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