



High Quality Recycling

PCEP Position Paper

[PCEP](#) (the Polyolefin Circular Economy Platform), PCEP brings together actors from across the polyolefin value chain, united in our common mission to drive the transition to a circular economy for polyolefins - the most commonly used family of plastics. 71.4% of plastics packaging in Europe is made of polyolefins, accounting for 71% of collected plastic waste. This collected material goes on to be transformed into 84.7% of post-consumer recycled polyolefins, used today in European products across building and construction, packaging, agriculture, automotive, electronics, and other sectors.

Key messages

- High-quality recycling produces a high-quality recycled plastic that replaces virgin polyolefin and that is of a sufficient quality to be used widely as a replacement for the equivalent grade of virgin plastic or in targeted high quality plastic applications. It does this efficiently and whilst minimising the environmental impact, in particular from a CO₂ perspective.
- High quality recycling means producing high quality recycled material of a consistent quality, managing any changes in the technical characteristics of the waste input material, and limiting the variability in the recycled plastic produced.
- High quality recycled plastic can be used in open as well as closed loops and should not be defined by the end use application.
- PCEP supports a complementary approach to recycling, where different recycling technologies are used to produce high-quality recycled plastics to meet demand requirements and maximise circularity.
- Optimisation and investment in separate collection and sorting are required to achieve high-quality recycling. Extended Producer Responsibility is a key enabler to achieve high quality recycling, both in terms of providing the necessary finance and coordination along the supply chain.
- The definition of high-quality recycling should be consistent across all EU legislation and so should be defined in the Waste Framework Directive.

The need for high quality recycled plastic

As we produce increasing quantities of recycled polyolefins in the EU, to decouple plastics from fossil fuel consumption and to avoid leakage into the environment, it is important that we produce high quality recycled polyolefins so that they can be used in a wide range of applications replacing virgin plastic. To have meaningful impact, this is particularly important for applications that have a high-volume usage of the plastic, for example food packaging.

Enabling measures that support the development of high-quality recycling, include drivers to promote the use of recycled content and a supportive legal framework for all recycling technologies.

The difference between high quality and technical specifications

When defining high-quality recycling, care should be taken to differentiate between high quality recycling and maintaining all technical characteristics. Absolute maintenance of function may not always be possible when mechanically recycling polyolefins. In part, this is due to items of the same polymer type but different technical characteristics sometimes being recycled together. For example, PE bottles with differing melt flow indexes or mixing of linear-low and low density PE films. Separating them in advance of recycling in many cases is either not practicable, not necessary, or may increase the environmental impact of the process. A change in technical properties is not necessarily a problem if controlled through considered choice of feedstock and blending. In some cases, inputs are blended specifically to create a target output specification.

A change in technical characteristics during recycling should not in itself be used to define the quality of a recycling process. The consistency of recycled plastic and degree of variability in the technical characteristics is a more useful measure of high-quality recycling.

Access to knowledge for users of the recycled plastic with respect to the quality is important. PCEP have developed an extended technical data sheet that we recommend accompanies all recycled polyolefins.

Use of high-quality recycled polyolefins

Recycled and virgin polyolefins are commodities that are used in an extremely wide range of applications and sectors. Often the recycler will be unaware of the ultimate use of the recycled polyolefin. This is different than some other plastics that may be used primarily in specific applications.

The manufacture of a product or packaging is not part of the recycling process and use of the recycled polyolefin is typically out of the control of the recycler. As such, the application the recycled plastic is used in should not be used as a criterion for assessing the quality of recycling.

Minimising the environmental impact

We should ensure that recycled polyolefins are of a quality where they can be used widely in applications in which the virgin plastic is used, or in targeted high-quality plastic applications, and that allow for continued use in the circular economy. This should be done whilst minimising the environmental impact and avoidable losses of target polymer in the recycling process.

Any definition of high-quality recycling that requires recycled polyolefins to meet the requirements of certain applications or sectors, or that requires retention of technical properties throughout the recycling process, should be accompanied with a detailed impact assessment to minimise the risk of unintended consequences. The impact assessment should consider the additional demand that might be created by the requirement and the overall environmental impact.