*Press release – 14 December 2023*

**NIR test programme reveals factors influencing sorting flexible packaging materials**

A major international collaboration to provide independent, scientific data linked to design, sortability and mechanical recyclability of flexible packaging has published its first report – with a focus on Near Infrared (NIR) technology. It provides extensive new data to boost circular design decisions, based on industrial-scale testing of a unique set of 240 samples and over 100 structures.

The Circular Economy for Flexible Packaging (CEFLEX) led initiative clarifies exactly how a NIR sorting device sees flexible packaging, understands a range of material structures and classifies them into different recycling streams. With data illustrating how to enhance design for recycling guidance, improve design decisions and optimise sorting of flexible plastic packaging with NIR.

CEFLEX worked with stakeholders from across the value chain to assemble the extensive set of packaging material samples for testing. Academic partners and respected test centres in Germany and The Netherlands all collaborated to deliver the programme, which was co-funded by UK Research & Innovation’s Smart Sustainable Plastic Packaging Challenge, delivered by Innovate UK. The principal results and data are now available in an open-source report for public download: [guidelines.ceflex.eu](https://guidelines.ceflex.eu/)

“NIR is an established key technology for sorting plastics across Europe, so rigorous, independent data of exactly what it can – and cannot – achieve is essential,” said project coordinator Graham Houlder.

“As a result of this research, specific cases or thresholds where materials and elements of the packaging structure can disrupt sorting are clearly established. These insights are being shared openly to boost industry knowledge and will enhance our ‘Designing for a Circular Economy’ (D4ACE) guidelines. Designers of flexible packaging now have a new level of detail on exactly how to achieve the best outcomes,” he added.

CEFLEX design lead, Liz Morrish commented, “In addition to establishing exactly how NIR sees packaging structures, the data shows how orientation, layer sequence, and opaque and reflective materials – such as carbon black, metallisation, aluminium, paper – can affect the sorting outcomes and at what thresholds”.

Testing demonstrated that, for many multi-material multi-layer structures, the NIR spectrum contains information about all layers of the structure. The report also reveals thin layers such as adhesives, coatings and most inks generally do not influence the sorting results.

The publication is just one part of an extensive testing programme with a network of leading laboratories, universities and industry experts to generate open-source, robust and independent data to strengthen flexible packaging design guidance across the board. Future results assess the impact of size and shape on sorting and mechanical recyclability of flexible packaging structures.

**Notes for editors:**

The Circular Economy for Flexible Packaging (CEFLEX) initiative is a collaboration of over 180 European companies, associations and organisations representing the entire value chain of flexible packaging. Together, we work to make all flexible packaging in Europe circular by 2025. More information, see: ceflex.eu

Testing and analysis conducted by CEFLEX, Institut cyclos-HTP and Dutch National Test Centre for Circular Plastics (NTCP) between February 2022 – September 2023.

Insights on the classifying and sorting of different flexible packaging structures by NIR are being used by CEFLEX to update their ‘Designing for a Circular Economy’ (D4ACE) guidelines as well as making them available publicly for broader industry.

CEFLEX are grateful to UK Research and Innovation (UKRI)[[1]](#footnote-2) for their collaboration and co-funding as part of the Smart Sustainable Plastic Packaging (SSPP) Challenge[[2]](#footnote-3), delivered by Innovate UK.

1. [https://www.ukri.org](https://www.ukri.org/) [↑](#footnote-ref-2)
2. <https://www.ukri.org/what-we-do/our-main-funds-and-areas-of-support/browse-our-areas-of-investment-and-support/smart-sustainable-plastic-packaging/> [↑](#footnote-ref-3)