
Alternatives to Expanded Polystyrene (EPS)

In August 2019 WRAP and the UK Plastics Pact launched the report '[Eliminating problem plastics](#)', the report listed 8 items to be eliminated, polystyrene in all packaging forms is one of the eight.

This document is intended to suggest alternatives to expanded polystyrene (EPS) in chips and its rigid form. Suitability for the intended use is the responsibility of individual companies and their specific packaging needs.

Please note: given the complex factors involved, LCA considerations are not included.

Background

Polystyrene is not recycled in the UK. It is often used for food takeaways containers and yoghurt pots and to package white goods like microwaves. Alternative materials can be used.

The scope to support the avoidance of polystyrene packaging is only household (post-consumer) material that is collected by local authorities. Some companies provide take-back services for expanded polystyrene used to package consumer goods e.g. packaging removed and taken back by the company for recycling at the point of delivery. In this case, the material is out of scope for elimination since it is not entering household recycling.

Alternatives to EPS chips

The table below shows some possible alternatives to EPS chips, their properties and considerations.

Alternative	Properties	Considerations
Air filled polyethylene (PE)	• Lightweight • Shock absorbing • Fill on site • Accepted for recycling at many supermarkets	• Mono-material where possible - avoid nylon reinforced films • Minimise the use of colour • Recycled content opportunity
PE bubble wrap	• Lightweight • Shock absorbing • Accepted for recycling at many supermarkets	• Mono-material where possible - avoid nylon reinforced films • Recycled content opportunity
Corrugated board based	• Lightweight • Shock absorbing • Widely recycled	• Avoid shredded cardboard • Avoid wax coated, foils and plastic laminates • Ensure recycled content is specified
Paper based	• Lightweight • Widely recycled	• Minimise the use of colour • Avoid wax coated, foils and plastic laminates • Ensure recycled content is specified

Innovations are continuously being released including compostable versions, considerations for all alternatives to EPS chips should include:

- Likelihood of capture and processing through the intended route
- Minimise the chances of entering landfill
- Consider the carbon footprint
- Investigate reusable options

Alternatives to Rigid EPS

The table below shows some possible alternatives to rigid EPS, their properties and considerations.

Alternative	Properties	Considerations
Moulded fibre	• Vibration, dampening and cushioning properties • Product nests for efficient shipping • Static neutral • Recyclable • Not affected by temperature	• Minimise the use of colour • Ensure recycled content is specified
Expanded Polypropylene	• Vibration, dampening and cushioning properties • Recyclable • Regains shape • Resistant to water and other liquids • Insulating • Load bearing	• Minimise the use of colour • Recycled content opportunity
Expanded PE	• Vibration, dampening and cushioning properties. • Recyclable • Regains shape • Resistant to water and other liquids • Insulating	• Avoid chemically crosslinked versions (non-recyclable) • Minimise the use of colour • Recycled content opportunity
Cardboard	• Vibration, dampening and cushioning properties • Recyclable • Static Neutral • Insulating • Load bearing	• Minimise the use of colour • Avoid wax coatings and foils • Avoid plastic-based laminates • Ensure recycled content is specified

Innovations are continuously being released including compostable versions. When considering alternatives to rigid EPS it is important to think about:

- Likelihood of capture and processing through the intended route
- Minimise the chances of entering landfill
- Consider the carbon footprint
- Investigate reusable options

It should be noted that UK recyclers are concerned about the use of expanded PET owing to the risk of contaminating the polyolefin stream. It is therefore likely to be classified as not recyclable and it is recommended to avoid ePET.

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