

Design For Recycling

GUIDELINES for packaging

* Polymer resin can be either fossil- or bio-based, virgin or recycled. EPS commercial packaging should refer to other existing DfR Guidelines (i.e. EPS white goods and EPS fish boxes). XPS and EPS household packaging are not recycled into the PS stream. To recycle them, it is necessary to develop a separate stream.

** Decorative technologies must not hinder the recognition of the underlying PE-polymer. Features as size, print, mass colouration and/or barrier might require to perform a Sorting Evaluation Protocol. The following size indications can be considered to ensure the recognition of PE:

- Size of non-PE detectable surfaces on containers > 500 ml: < 70% coverage
- Size of non-PE detectable surfaces on containers < 500 ml: < 50% coverage

Material:

- PET bottle
- PET thermoform
- PP rigid
- PP flexible
- PE rigid
- PE flexible

PS

Coloured

- Paper & cardboard
- Beverage carton
- Glass
- Steel
- Aluminium



		Yes - Full compatibility	Conditional - Limited compatibility	No - Low (or no) compatibility
Main body	Material	PS		PS foamed < 1 g/cm ³ ; multilayers (PET, PETG, PVC, PLA, HDPE, PP...)
	Colours	Light colours	Dark colours (NIR detectable)	Non NIR-detectable colours
	Size		Items compacted ≤ 5 cm	Items (compactd) ≤ 2 cm
	Product residues	A if the index Easy-to-empty is < 5%; B if the index is < 10%	C if the index Easy-to-empty is < 15%	D if index <20%; E < if index 25%; F if index > 25%
	Barrier	EVOH ≤ 5.0 wt% + PE-g-MAH tie layers and EVOH:Tie layers ratio ≤ 1	EVOH > 5.0 wt% + PE-g-MAH tie layers and EVOH:Tie layers ratio ≤ 1	PA; PVdC
	Additives	Additives that are unavoidable in processing (stabilizers, antioxidants, lubricants...) and in formulation (SBS copolymer) with density that remains between 1 and 1.07 g/cm ³	Mineral fillers (CaCO ₃ , talc) not increasing density > 1.07 g/cm ³	Additives increasing density > 1.07 g/cm ³ ; Bio/oxo/photodegradable additives
Attachments	Closure Systems	PS	Removable PP and/or PE; paper without fibre loss	PET; PETG; PVC; PLA; Paper; Any material with d >1 g/cm ³ ; Non detaching or welded closures; Aluminium; metal
	Liners, Seals and Valves	PS	PP; PE; EVA; TPE (non welded and with density <1 g/cm ³)	PET; PETG; PVC; PLA; Any material with d >1 g/cm ³ ; Metal; metal foil; silicone
	Lids	PS	Removable aluminium lidding ; Removable PP and/or PE ; Removable PET; Paper without fibre loss	PVC; Non removable alu lidding; Paper; PET. Multilayer PET/paper or PET/PS; Any material with density >1 g/cm ³
	Other Components	PS	Removable PP and/or PE; paper without fiberloss	PET, PETG, PVC, PLA, metal, metal foil, paper; Any other material with density >1 g/cm ³
Decoration	Inks	Non-bleeding inks compliant with EuPIA Exclusion Policy; Inks & lacquers for direct printing representing < 1 wt% of the total packaging, not hindering NIR detection	More than 1 wt% direct printing (to be tested)	Bleeding inks; Inks non compliant with EuPIA Exclusion Policy; PVC co-and terpolymer binders; any other chlorinated binders
	Facestock Label Material	PS	Labels in PP, PE (with density < 1 g/cm ³); Label in paper without fiberloss	Labels that hinder the recognition of the PS; PET; PETG; PVC; PLA; Paper with fiberloss; In-Mould-Labels; Metallised materials; Aluminium
	Adhesives for labels*	Releasable in the recycling process		Non-removable in the recycling process
	Sleeves	PS; Self-separable plastic and cardboard sleeves under mechanical pressure (sorting test mandatory)	Sleeves in PE, PO (with density <1 g/cm ³) not hampering the NIR detection (sorting test mandatory)	Sleeves that hinder PS recognition; Sleeves in non PO materials with d <1 g/cm ³ ; PET, PETG, PVC, PLA; Cardboard sleeves; Metallised materials; Heavily inked sleeves; Alu
	Direct Printing	Laser marking		