

Design For Recycling

GUIDELINES for packaging

*Polymer resin can be either fossil- or bio-based, virgin or recycled.

**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. Known misleading features are listed on the RecyClass Methodology.

Material:

- PET bottle
- PET tray
- PP rigid
- PP flexible

PE rigid Coloured

- PE flexible
- PS
- Paper & cardboard
- Beverage carton
- Glass
- Steel
- Aluminium



		Yes - Full compatibility	Conditional - Limited compatibility	No - Low (or no) compatibility
Main body	Material*	HDPE; Multilayer PE with HDPE prevalence (LLDPE, LDPE, MDPE); TPO <= 10 % (full olefinic or aliphatic structure)	PP ≤ 10%	Multilayers HDPE with PLA; PVC; PS; PET; PETG; 10% < PP ≤ 30% (-2 classes); PP > 30% (-3 classes); TPO (containing rubber, e.g. EPDM)
	Colours	All colours	Black inner layer and dark colours (NIR-detectable)	Non NIR detectable colours
	Size		Items compacted < 5 cm	Items compacted < than 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 ≤ 6.0%wt + PE-g-MAH tie layers with MAH > 0.1%wt and EVOH:tie layer ratio ≤ 2; Enkase (fluorination); In-mould fluorination; SiOx Plasma coating	EVOH > 6.0%wt + PE-g-MAH tie layers with MAH > 0.1%wt and EVOH:tie layer ratio ≤ 2; EVOH ≤ 1% with any other tie layers; Plasma Fluorination; Metallisation; PVOH ≤ 1%	EVOH > 1% with different tie layers; PA; PVDC; Aluminium
	Additives	Additives that are unavoidable in processing (stabilizers, antioxidants, lubricants, nucleating agents, peroxides) and density remains <0,97 g/cm³	Mineral fillers (CaCO ₃ , talc) not increasing density more than 0,97 g/cm³	Additives changing material density >1 g/cm³; Flame retardant additives, plasticizers; Bio-/oxo-/photodegradable additive
Attachments	Laminating adhesives	Polyurethanes and water-based acrylics <3%; To be tested if in combination with a barrier material	Polyurethanes and water-based acrylics 3-5%; To be tested if in combination with a barrier material	Polyurethanes and water-based acrylics >5%; laminating adhesive developed for high thermal applications above boiling and/or for high chemical resistance (to be tested); Any other laminating adhesives
	Closure Systems	HDPE; LDPE; LLDPE; MDPE	PP; PET; PETG; PLA; PS (all with a density > 1 g/cm³); Removable aluminium lidding	Non-PO and/or foams with density <1g/cm³; Aluminium; Metal; PVC
	Liners, Seals and Valves	HDPE; LDPE; LLDPE; MDPE; TPO ≤ 1%; TPS ≤ 1%	PP; PS; PET, PETG, PLA, PS (all with a density > 1 g/cm³); Removable silicon with a density > 1 g/cm³, PO foamed ≤ 1%	Aluminium; PVC; Glass components; Foams with density < 1 g/cm³;
	Other Components	HDPE; LDPE; LLDPE; MDPE	PP; PET; PETG; PS; PLA all with density >1 g/cm³;	Alu; PVC; Glass components; Non-PO and /or foams with d < 1 g/cm³
Decoration**	Inks	Non-bleeding inks compliant with EuPIA Exclusion Policy		Inks that bleed; Inks non-compliant with EuPIA Exclusion Policy ; PVC binders
	Label Materials (PSL, Wet-glue labels, IML, Wrap-around labels)	Labels in PE (all with density < 1 g/cm³); In-Mould-Labels in PE printed with < 1 wt% of the total packaging (except dark colours and bleeding inks)	Labels in PP, PO (with d < 1 g/cm³); Labels in PET, PETG, PLA, PS (all with d > 1 g/cm³); Labels in Paper without fibreless; PO-foamed labels; Any other In-Mould-Labels in PE (except bleeding inks)	Labels that hinder the recognition of the PE; Labels in non PO-materials with d < 1 g/cm³; Paper labels with fibreless during recycling process; Cardboard or paper In-Mould-Labels;Aluminium; Metallised labels; PVC
	Adhesives for labels	Water soluble or water releasable adhesive (@ less than 40°C)	Non-water soluble or non-releasable approved by RecyClass in combination with filmic PO labels; Acrylic emulsion ; Hotmelt rubber	Non-water soluble adhesive (@ less than 40°C); Non-water releasable adhesive (@ less than 40°C)
	Sleeves	Sleeves in PE (all with density < 1 g/cm³); Self-separable plastic and cardboard sleeves under mechanical pressure (sorting test mandatory)	Sleeves in PO (with density < 1 g/cm³); Sleeves in PET, PETG, PET-C, PLA, PS (all with density >1 g/cm³); Cardboard sleeves without fiberloss (sorting test mandatory)	Sleeves that hinder the recognition of the PE; Sleeves in non PO-materials with d <1 g/cm³; Cardboard sleeves with fibreless during recycling process; Alu; Metallised sleeves; Heavily inked sleeves; PVC
	Direct Printing	Laser marked; Production or best-before date; Direct printing (inks + lacquer) representing < 1 wt% of the total packaging (except dark colours)	Any other direct printing; Cold transfer and hot stamping technologies that does not hinder the recognition of the underlying PE-polymer	
Other Decorative Tech		Electroplating on attachments (with density > 1 g/cm³)	Electroplating on attachments (with density <1 g/cm³)	