

Design For Recycling

GUIDELINES for packaging

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

**A removable label is a label resulting in a removal efficiency equal or higher than 90% by grinding and washing the packaging. RecyClass developed a standard testing procedure to prove label removability

***Decorative technologies must not hinder the recognition of the underlying PP-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 Coloured
- PP flexible
- PE rigid
- PE flexible
- PS
- Paper & cardboard
- Beverage carton
- Glass
- Steel
- Aluminium



		Yes - Full compatibility	Conditional - Limited compatibility	No - Low (or no) compatibility
Main body	Material*	PP, TPO <= 10 % (full olefinic or aliphatic structure)	PE ≤ 10%	Multilayers with PLA; PVC; PS; PET; PETG; PE > 10%, 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% + PP-g -MAH tie layers with MAH ≥ 0.1wt% and EVOH:tie layers ratio ≤ 2;	EVOH > 6% + PP-g -MAH tie layers with MAH ≥ 0.1wt% and EVOH:tie layers ratio ≤ 2; EVOH ≤ 1% with any other tie layers; Metallisation	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
	Laminating adhesives	Laminating adhesives <u>approved</u> as fully compatible by RecyClass; To be tested if in combination with a barrier material, PU < 3 wt%;	Laminating adhesives <u>approved</u> as limited compatible by RecyClass; To be tested if in combination with a barrier material, PU between 3 and 4.5 wt%	Any other laminating adhesives, PU > 4.5wt%
Attachments	Closure Systems	PP	HDPE; LDPE; LLDPE; MDPE; PET; PETG; PS; PLA (all with a density >1g/cm³), Removable aluminium lidding	Non-PO and/or foams with density < 1 g/cm³; Aluminium; Metal; PVC
	Liners, Seals and Valves	PP; TPO ≤ 1%; <u>TPS</u> ≤ 1%	HDPE; LDPE; LLDPE; MDPE; TPS; PET, PETG, PLA, PS (d>1 g/cm³); removable silicon with d>1 g/cm³; PO foamed ≤ 1%	Non-PO and/or foams with density < 1 g/cm³; Any other TPE ; Aluminium; Metal; Foiled paper; PVC
	Other Components	PP	PE with density <1 g/cm³; PET; PETG; PS; PLA (d >1 g/cm³)	Aluminium; PVC; Glass components; Non-PO and /or foams with density < 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 PP (all with density < 1 g/cm³) <u>In-Mould-Labels in PP printed with < 1 wt% of the total packaging</u> (except dark colours and bleeding inks)	Labels in PE, 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; <u>Any other IML</u> in PP (except bleeding inks)	Labels that hinder PP recognition; labels in non PO-materials with d< 1 g/cm³ ; Paper labels with fibreless; alu; metallised labels; PVC; Cardboard or paper in In-Mould-Labels
	Adhesives for labels	Water soluble or water releasable adhesive (@ less than 40°C)		Non water soluble or water releasable adhesives
	Sleeves	Sleeves in PO (all with density < 1 g/cm³), <u>Self-separable plastic and cardboard sleeves under mechanical stress</u> (<u>sorting test</u> mandatory)	Sleeves in PE (density < 1 g/cm³); Sleeves in PET, PETG, PET-C, PLA, PS (density > 1 g/cm³), Cardboard sleeves without fiberloss (<u>sorting test</u> mandatory)	Sleeves that hinder the PP recognition; Sleeves in non-PO materials with d< 1 g/cm³ ; Cardboard sleeves with fibreless; Aluminium; Metallised sleeves; Heavily inked sleeves; PVC
	Direct Printing	Laser marked; Production or best-before date		Any other direct printing
	Other Decorative Tech		Electroplating on attachments (with density > 1 g/cm³)	Electroplating on attachments (with density <1 g/cm³)