

Design For Recycling

GUIDELINES for packaging

* Polymer resin can be either fossil- or bio-based, virgin or recycled.
 ** Temporary Solution
 *** Guidelines are non-company specifics. Barrier structures compatible with recycling are listed in RecyClass Approval page.
 **** NC-binders will be reconsidered based on future findings from RecyClass and SafeCycle project

The DfR guidelines for plastic packaging are 100% aligned with....
 For more info, please visit <https://recyclclass.eu/>

RecyClass

CIRCPACK
 by VEOLIA

Material:

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

PE flexible

Coloured

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



		Yes - Full compatibility	Conditional - Limited compatibility	No - Low (or no) compatibility
Main body	Material*	Oriented and non-oriented LDPE, LLDPE (including PE-plastomers), HDPE; EVA, EBA, EEA, EMA copolymers with vinyl acetate and acrylate monomers representing < 5% of the film; EMAA, EAA copolymers & ionomers <= 20%	Multilayer PE/PP <u>with PP ≤ 5%</u>	Multilayer PE/PP with PP > 5%; Any other polymer (e.g. PET, PVC, etc.)
	Colours	Light colours; translucent colours	NIR-detectable dark colours (Sorting test)	Non NIR-detectable dark colours
	Size	<u>Packaging surface > 100 cm²</u>	<u>Packaging surface between 30 and 100 cm²</u>	<u>Packaging surface < 30cm²</u>
	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***	SiOx and AlOx without additional coatings	<u>≤ 5% EVOH (in polyolefinic combination film);</u> <u>Metallisation: PVOH ≤ 1%;</u> <u>≤ 15% PA 6/66 copolymer with melting temperature < 192°C</u> <u>and incorporating ≥ 10% PE-g-MAH tie layers</u>	> 5% EVOH (in polyolefinic combination film); Any other PA; PVOH > 1%; PVC, PVDC barrier layers; <u>AlOx coating with PVOH primer</u> ; any other barrier layer; aluminium
	Additives	Additives that do not increase the density higher than 0,97 g/cm ³		Bio-/oxo-/photodegradable additives; foaming agents used as expanding chemical agents; Additives that do increase the density higher than 0,97 g/cm ³ (CaCO ₃ , talc, glass fibers, etc.)
	Laminating adhesives	<u>Polyurethanes and water-based acrylics ≤ 3%;</u> <u>Laminating adhesives</u> approved as fully compatible by RecyClass; To be tested if in combination with <u>other barrier than EVOH and metallisation.</u>	<u>Polyurethanes and water-based acrylics 3-5%;</u> Laminating adhesives approved as limited compatible by RecyClass; To be tested if in combination with other barrier material than <u>EVOH and metallisation</u>	Polyurethanes and water-based acrylics >5%; Laminating adhesive specially developed for high thermal applications above boiling and/or for high chemical resistance (to be tested); Any other laminating adhesives (Epoxy, etc.)
Attachments	Closure Systems	LDPE, LLDPE (including PE-plastomers), HDPE	PP	Metal, aluminium, PVC, PET, PETG, PS, PLA, non PO or foams with density < 1 g/cm ³
	Liners, Seals and Valves	LDPE, LLDPE (including PE-plastomers), HDPE	PP, removable aluminium liddings	Metal, aluminium, PVC, PET, PETG, PS, PLA, foiled paper, non PO or foams with density < 1 g/cm ³
	Other Attachments	LDPE, LLDPE (including PE-plastomers), HDPE	PP	Metal, aluminium, PVC, PET, PETG, PS, PLA, non PO or foams with density < 1 g/cm ³
Decoration	Inks	PU-based inks (with no NC); Non-bleeding inks compliant with <u>EuPIA Exclusion Policy</u> ; Inks & Varnish <5%	<= 0.8% of NC-binders**** Inks & Varnish 5-7%	> 0.8% of NC-binders; Inks & Varnish >7%; Bleeding inks; Inks non-compliant with EuPIA Exclusion Policy; PVC co- and terpolymer binders; Any other chlorinated binders
	Labels	PE	PP	Metallized labels, any other; paper labels
	Adhesives for labels	Water soluble or water-releasable at less than 40°C		Adhesives non-soluble in water or non-releasable in water at less than 40°C
	Other Decorative Technologies	Laser marking with coverage <50% **	Laser marking with coverage > 50%**	