

SOFT PLASTIC CONSUMER PACKAGING

Introduction

This Quickstart provides design guidance for soft plastic packaging destined for consumer households in Australia and should be utilised by packaging designers to ensure packaging is designed for mechanical recycling and chemical recycling.

Polyolefins (polyethylene (PE), high density PE (HDPE) or polypropylene (PP)) as soft (also known as flexible) plastic material are the focus of this Quickstart. Guidance provided does not apply to certified compostable plastics which are designed for organics recycling.

Note: APCO's [Quickstart Guides](#) are intended to be used when considering the first Sustainable Packaging Principle of the [Sustainable Packaging Guidelines](#) (SPGs) - 'Design for Recovery: Design for Material Recycling'

Soft plastics recycling context in Australia

Soft plastic packaging from households is incompatible with most conventional material recovery facility (MRF) processes. Individual soft plastic items often become caught in machinery, which can lead to damage or failure of the MRF equipment.




While there are some trial soft plastic collections through kerbside in Australia, for most, soft plastics currently need to be collected separately from household collection in order to be mechanically or chemically recycled.

This Quickstart was prepared in alignment with international recognised 'best practice' guidelines developed by [CEFLEX](#) and the [Ellen MacArthur Foundation \(EMF\) Project Barrier](#), along with guidelines from the Association of Plastics Recyclers (APR).



Best practice design guidance

The below guidance refers to 'primary polymers' (the main substrate) and 'secondary polymers' (other material layers in the packaging, e.g. to provide additional functionality).

To create a more valuable material with greater functionality once recycled:

	<p>USE MONO-MATERIALS AND LIGHTWEIGHT WHERE POSSIBLE Use only polyolefins (mono-PE or mono-PP) or a combination of the two for all components.</p>
	<p>MINIMISE COLOURS OR SELECT PREFERRED COLOURS Use clear unpigmented material as this has the highest value for recycling.</p>
	<p>USE LABELS COMPATIBLE FOR RECYCLING Use only polyolefin label materials that cover minimal surface area to help reduce contamination. Paper labels and other plastics are a contaminant.</p>

To support a circular economy:

	<p>INCORPORATE RECYCLED CONTENT Use the maximum possible percentage of recycled content to help create and support sustainable end markets.</p>
	<p>INCLUDE LABELLING FOR RECYCLING Use the Australasian Recycling Label (ARL) to educate consumers on how to correctly dispose of each component of the packaging. For the 'Check Locally' ARL to be applied, please assess your packaging in PREP.</p>

Guide to selecting materials for soft plastic packaging

The following table outlines:

- **Preferred:** best practice design of household consumer soft plastic packaging, aligned with global thresholds of the CEFLEX guidelines and EMF Project Barrier.
- **Recyclable with reduced value:** detail on what is the minimum design requirements to be accepted for recycling in Australia.
- **Avoid:** Things to avoid when designing household consumer soft plastic packaging.

Note: Only materials meeting the **preferred** or **recyclable with reduced value** thresholds will be eligible for a Check Locally logo within the Australasian Recycling Label (ARL).

COMPONENT	PREFERRED	RECYCLABLE WITH REDUCED VALUE	AVOID (NOT COMPATIBLE)	REASON
Primary material	<p>Use mono-material film grades at a minimum of 90%:</p> <p>Polyethylene (PE) - LDPE/HDPE – 90-100% of the total weight</p> <p>Polypropylene (PP) – BOPP/CPP – 90- 100% of the total weight</p> <p>Minimum of 90% mono-material-PE or mono-material-PP by weight of the total structure</p> <p>Other materials must be included at compatible limits – see <i>Secondary Material as a laminate</i> below.</p>	<p>PE - LDPE/HDPE – 80-90% of the total weight</p> <p>PP – BOPP/CPP – 80-90% of the total weight</p> <p>Minimum of 80% mono-material-PE or mono-material-PP or 80% mix of PE and PP by weight of the total structure.</p> <p>Other materials must be included at compatible limits – see <i>Secondary Material as a laminate</i> below.</p>	<p>PE - LDPE/HDPE – less than 80% of the total weight</p> <p>PP – BOPP/CPP – less than 80% of the total weight</p> <p>Polyolefins – less than 80% of the total weight</p> <p>Any materials other than PE or PP, including:</p> <ul style="list-style-type: none"> - Polyvinyl chloride (PVC) and Polyvinylidene chloride (PVdC) - Polystyrene (PS) - Non-polyolefin Bioplastics (e.g. PLA, PHA, starch based) or compostable materials - Polyamide (PA) - Nylon - Polyethylene terephthalate (PET) - Oxo-degradable and other fragmentable plastics 	<p>A mono-material contains predominantly one material type. In this scenario, at least 90% of the packaging by weight, is composed of the one polymer type (e.g. PE or PP). Multiple layers of the same material can be considered as mono-material.</p> <p>When material composition for PE or PP is less than 80 percent, lower yields of recyclable materials are generated.</p> <p>PE and PP are more readily accepted for recycling through local and international soft plastics recycling systems.</p> <p>Multi-material films, made from differing polymers or materials, make recycling extremely difficult as polymers cannot be separated, and recycling streams are contaminated.</p> <p>Materials to avoid can cause significant issues if processed through current soft plastics recycling technologies.</p>

COMPONENT	PREFERRED	RECYCLABLE WITH REDUCED VALUE	AVOID (NOT COMPATIBLE)	REASON
Secondary material as a laminate	<p>For best practice and reduced contamination, aim to include the least amount of secondary materials as possible.</p> <p>If required, the following secondary materials are accepted if less than the percentage indicated:</p> <ul style="list-style-type: none"> - Nylon – less than 5% - EVOH and PVOH– less than 5% - AlOx and SiOX– less than 5% - Acrylic – less than 5% - Metallised polymer layers – less than 5% metallisation. 	<p>The following secondary materials are accepted when their combined percentage is less than 20% and their individual percentage as part of the pack is:</p> <ul style="list-style-type: none"> - Nylon – between 5-10% - EVOH and PVOH – between 5- 10% - AlOx and SiOX– less than 10% - Acrylic – less than 10% 	<p>The following secondary materials are not accepted at any level:</p> <ul style="list-style-type: none"> - PET - PVC - PVDC - PS - Non-polyolefin Bioplastics (e.g. PLA, PHA, starch based) or compostable materials - Paper - Aluminium <p>The following secondary materials are not accepted if their combined percentage is greater than 20% or if their individual percentage as part of the pack is:</p> <ul style="list-style-type: none"> - Nylon – greater than 10% - EVOH – greater than 10% - AlOx and SiOX– greater than 10% - Acrylic – greater than 10% 	<p>Some reprocessors can tolerate a limited mix of polymers. Limit the use of secondary materials as per the preference for mono-material film grades.</p> <p>Secondary polymers must be less than the percentage thresholds by weight as any greater contamination will inhibit the ability for the material to be effectively recycled.</p> <p>Paper in the plastic mechanical recycling process is a challenge as remaining fibres carbonise in the extrusion process, negatively affecting the quality of the recycled plastic.</p> <p>Aluminium layers in soft plastics are not compatible in the recycling process, and may be removed in mechanical sorting processes. <i>Please note: this refers to only aluminium laminate layers, and does not include metallised polymer layers which are accepted .</i></p> <p>PET is not compatible with PE, PP or mixed PO recycling, as it takes twice as much energy to melt and extrude the PET material. This leads to increased energy consumption, risks damage to the PO materials and limits available end-markets for the recovered materials.</p> <p>PVDC is not compatible with PE, PP or mixed PO recycling as it can cause issues in the recycling process.</p>

COMPONENT	PREFERRED	RECYCLABLE WITH REDUCED VALUE	AVOID (NOT COMPATIBLE)	REASON
Secondary material as an additional component (e.g. labels, wires etc.)	Labels applied to the soft plastic should be adhered to the primary component, and be made from the same material as the primary component.	The following are acceptable: - PP or PE labels - Rigid valves, lids, spouts - must be PP or HDPE	Rigid steel/aluminium (e.g. wires, closures). Paper labels	These items cause contamination in the recycling streams and lower the value of the recyclate and/or cause significant inefficiencies during processing (additional sorting and decontamination required).
Colours/inks	Use "natural" unpigmented materials where possible.	Limit use of inks, lacquers and pigments. Avoid dark colours where possible as this limits the range of end products to only being dark grey or black.	Use of carbon black.	Natural polymers create a higher value recyclate as they have significantly more end market opportunities. Inks can discolour the recyclate and lower the value.

More information

- To find out more information about PREP:
 - PREP Design Pty Ltd (2019), available at: <https://prep.org.au/>
- To find out more information about CEFLEX:
 - CEFLEX (2020), available at: <https://ceflex.eu/>
- To find out more information about EMF Project Barrier:
 - CEFLEX (2020), available at: <https://ceflex.eu/projectbarrier/>
- To find out more information about the Soft Plastics Taskforce:
 - Soft Plastics Taskforce (2023), available at <https://www.aldiunpacked.com.au/storage/2023/03/Soft-Plastics-Taskforce-Roadmap-20230307.pdf>
- To find out more information about APR guidelines:
 - The Association of Plastics Recyclers (2021), available at: <https://plasticsrecycling.org/pe-film-design-guidance>

Disclaimer: This document has been developed by the Australian Packaging Covenant Organisation (APCO) with consultation from packaging manufacturers and experts in the waste and recycling industry. The document is intended to be general guidance only and the information contained within has been developed based on current knowledge at the time of publication.

Some information may not be relevant to all packaging types. For specific guidance on individual packaging items and to classify recyclability through kerbside recycling in Australia and New Zealand, please refer to the Packaging Recyclability Evaluation Portal (PREP). PREP is a living and dynamic platform that can be edited or expanded in consultation with APCO's Material Stewardship Committees, as market and infrastructure adapt.