AUSTRALIAN PACKAGING COVENANT ORGANISATION

Action Plan for Problematic and/or Unnecessary Single-Use Plastic Packaging

Version 2: August 2023

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Introduction

Objective

In 2018, the Australian packaging industry and government committed to the 2025 National Packaging Targets (2025 Targets) which are reinforced by the National Waste Policy and National Waste Policy Action Plan.

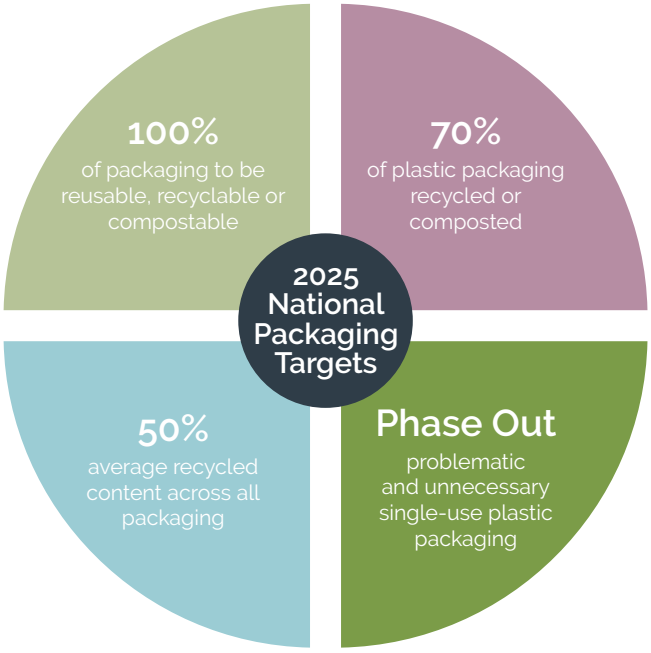


Figure 1 - The 2025 National Packaging Targets

One of the 2025 Targets is to phase out problematic and/or unnecessary single-use plastic packaging by 2025. Phasing out problematic and unnecessary single-use plastic packaging is essential to the achievement of the other 2025 Targets, including 100% of packaging to be reusable, recyclable or compostable by 2025, and that 70% of all plastic packaging is recycled or composted.

The objective of this 2025 Target is to shift our economy and community away from single-use disposable plastic packaging to more durable reusable and recyclable packaging. By tackling these problematic items, we will also reduce packaging consumption, litter and waste, improve the economics of recycling, increase employment, lift recycling rates and help to boost recycled content in packaging. Of all the packaging material streams, plastics needs the most concerted effort in Australia to reach the 2025 Targets, however substitution of one material for another is not always the best solution. To obtain the benefits of this Target, we need to approach these actions through a circular economy lens. This is about driving better design from the very start of the system and changing our overall approach to single-use consumption.

This action plan aims to drive the transition away from problematic and/or unnecessary single-use plastic packaging. It will do this by mobilising a systemic and collaborative approach for the whole packaging value chain, where all stakeholders are involved and working together. With targeted actions for each identified packaging format or material, this action plan sets a clear direction. It aims to inspire innovation and build momentum towards a circular plastics packaging system with high value material flows and better environmental outcomes.

This action plan is designed to support Australia's packaging supply chain as they work to address problematic and/or unnecessary single-use plastic packaging through innovative, sustainable solutions.

Plastics in focus

While packaging can be problematic, unnecessary or single-use, this action plan targets single-use plastic packaging that is unnecessary and/or problematic. It identifies packaging items that need to be addressed through immediate action as well as items that are placed 'on notice' for further consideration and action.

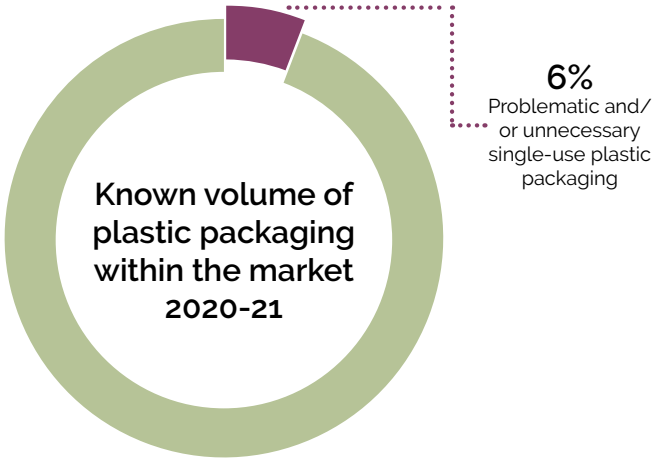


Figure 2 - Known volumes of plastics in Australia in 2020-21

Based on known volumes placed on the Australian market (PoM) in 2020-21, the identified materials and formats equate to approximately 75,100 tonnes of single-use plastic packaging – approximately 6% of the total 1,179,000 tonnes of plastic packaging PoM in 2020-21.[1]

Identified problematic and unnecessary single-use plastic packaging for immediate action

These items are already the focus of current or proposed government regulation or widespread industry action as they are the most problematic to our current systems and environment:

- Lightweight plastic shopping bags
- Fragmentable plastics
- Expanded polystyrene (EPS) packaging for food and beverage service and retail fresh produce
- EPS loose fill packaging
- Moulded EPS packaging for white/brown goods and electronics
- Rigid polyvinyl chloride (PVC) packaging
- Rigid polystyrene (PS) packaging
- Opaque polyethylene terephthalate (PET) bottles
- Rigid plastic packaging with carbon black

Problematic and unnecessary single-use plastic packaging 'on notice' for further action

These items have been identified by the packaging industry as a priority because they contribute to litter and unnecessary waste, and are relatively easily addressed through redesign or alternative approaches.

- Problematic multi-material laminate soft plastics
- Heavy weight plastic shopping bags
- Pumps and trigger packs with metal components
- Small caps and closures
- Coloured PET

Definitions for problematic and/or unnecessary single-use plastic packaging:

Problematic and/or unnecessary, single-use plastic packaging (SUPs) is either:

- single-use packaging that is unnecessary, or
- single-use packaging that is problematic, or
- single-use packaging that is unnecessary and problematic.

Single-use packaging is routinely disposed of after its contents have been unpacked or exhausted, or is not part of an accessible reuse system where packaging can be used again in the same application for which it was originally designed.

Unnecessary packaging can be reduced or redesigned with a fit-for-purpose alternative without diminishing product integrity, compromising product accessibility, hindering ability to meet health or safety regulations, or causing undesirable environmental outcomes.

Problematic packaging is currently either:

- difficult to collect for effective reuse, recycling or composting, or
- a material that hinders, disrupts or obstructs opportunities to recover other materials or resources including via existing recycling streams, or
- a significant contributor to the litter problem, or
- manufactured with hazardous chemicals or materials (e.g., intentionally added PFAS or BPA) that pose a significant risk to human health or the environment.

  Note: Certain types of packaging may not be considered problematic should emerging technologies result in effective collection/recovery for reuse, recycling or composting purposes and a viable end market for the recovered material.

Phase out means to eliminate the packaging entirely or take action to ensure that it is no longer problematic, unnecessary and single-use through design, innovation, or introduction of alternatives.

Plastic packaging contains more plastic by weight than any other substance. Plastic means a polymer material to which additives or substances may have been added (this definition is aligned to the definition by the UK Plastics Pact).

Note: Although these are outside the scope of packaging, this framework covers single-use plastic cutlery, straws, plates and cups when these are used for food service.

Background

APCO has taken a collective impact approach to this work by engaging with hundreds of stakeholders in industry, community and government since 2018, via focused Working Groups, a national workshop and technical committees. This has included reaching agreement on definitions, reviewing and commissioning data studies, developing recommended actions for each item, and identifying challenges and examples of successful innovation.

This work has provided the foundation for this action plan to drive progress towards the phase out of problematic and/or unnecessary single-use plastic packaging by 2025.

Applicable regulatory requirements have been noted throughout this action plan as a priority for compliance. Exemptions or key considerations are clearly defined throughout the action plan, to avoid any perverse environmental or social impacts.

The definitions and actions highlighted in this action plan have all been modelled from similar international approaches, and aligned with local state and territory action on single-use plastics, to ensure Australia is driving best practice actions to phase out the identified materials and formats by 2025.

Click to see the glossary for a full list of terms and definitions.

Why – The importance of collective action

While plastic packaging has many benefits for society, the issue with problematic and unnecessary plastic packaging is their unsustainable low recycling rates, high rates of disposal to landfill, and their significant impact as litter. With single-use plastic packaging the embedded costs of the materials, energy and labour are lost from the economy after a single-use. Additionally, problematic plastic packaging and single use items contaminate current sorting and reprocessing systems. These negative factors have seen problematic and unnecessary single-use plastic packaging grow from a niche issue to the forefront of conventional business and government regulation, with increasing consumer pressures.

Global visibility of low recycling rates, litter and marine pollution has triggered a rethink in our approach and interaction with plastics. A broad group of stakeholders have already acted, including environment and community groups, businesses and policymakers who have introduced landmark legislation in many countries. In Australia, the majority of state and territory governments have introduced legislation or are investigating ways to support the shift away from problematic and unnecessary single-use plastics – see **APCO's Australia and New Zealand Single-use Plastic Bans** resource. Taking advantage of this groundswell is key to driving real change for better plastic packaging.

Although many of the items noted above, such as straws and cutlery, are outside the scope of packaging, we cannot view these materials in isolation as many APCO Members and other packaging value chain stakeholders (community groups, venues, institutions) are invested in both packaging and products identified for action.

While outside the scope of this action plan, APCO supports the actions being undertaken to address other single-use plastics such as straws, cutlery and stirrers as a systemic approach to rethinking single-use consumption of plastics. APCO Members are encouraged to engage in this transition away from all problematic and unnecessary single-use items and should refer to the applicable state and territory legislation to guide their approach to ensure compliance. APCO Members are also able to utilise this Action Plan to support their considered approach to these other materials and to guide best practice change.

How – Framework to drive action

The following framework will guide the packaging value chain to action the change necessary to transition away from problematic and unnecessary single-use plastic packaging. These simple steps confirm the collaborative approach needed to improve packaging recovery and can be embedded into all business processes. All organisations are encouraged to use this framework to improve plastic packaging use in Australia so we can collectively achieve the 2025 Targets.

1

Identify problems and opportunities

2

Analyse

3

Collaborate and Innovate

4

Pilot

5

Expand

6

Communicate and Report

1 Identify problems and opportunities

a. Use this Action Plan to identify the materials or formats that require action throughout the packaging supply chain.

b. Use the flow chart in the appendix - a step by step process to identify any problematic and/or unnecessary single-use plastic packaging items used by the business.

2 Analyse

a. Document and prioritise all barriers and opportunities for change for each identified packaging material, component or format.

b. Assess the viability of each of the action options for the identified packaging to determine the best approach:

- **ELIMINATE** > Phase out use of packaging from the system. Where possible, avoid use, production or sale to reduce overall consumption and waste.
- **REDESIGN** > Change the packaging format or delivery model to ensure it is no longer problematic, unnecessary and single-use. Aim for reduced material usable and investigate reuse opportunities.
- **REPLACE** > Change the material or format to ensure the packaging is reusable, recyclable (via kerbside or specified drop-off program) or certified compostable. Use the **Australasian Recycling Label** (ARL) on-pack to communicate correct disposal.
- **INNOVATE** > Find a solution for the current format or material by introducing or expanding alternative collection programs and actively supporting end markets to increase recovery value and opportunities.

c. Check in – Ensure the problem is being solved, not shifted. **Reassess the chosen option (using the flow chart in the appendix)** to ensure it is not problematic, unnecessary or single-use. This needs to be a lasting solution without negative impacts.

3 Collaborate and innovate

a. Collaborate with supply chains, business and community partners or industry networks to find a solution. Sector collaboration can be a powerful tool to achieve holistic solutions, improve business relationships, reduce costs, maintain an even playing field and deliver customer satisfaction.

b. Engage internal teams from the start of this journey to ensure they understand why this change is so important. Shifting the way an organisation approaches packaging will be more efficient with a group of internal champions to drive the desired outcomes.

4 Pilot

a. Trial the identified options internally, then move to external trials. Testing how the chosen approach performs in practice is vital to determine its feasibility in processes such as manufacturing, distribution, product stability, etc.

b. Adjust the approach as lessons are learnt, pivot through the challenges, and seek further collaboration as needed to maintain momentum.

c. Check in again - ensure the problem is being solved, and not shifted. If problems are identified, pause, and go back to the drawing board to ensure nothing is overlooked.

5 Expand

a. Following a successful trial(s), expand the identified solution for the problematic and/or unnecessary single-use plastic packaging to other formats or materials.

6 Communicate and Report

a. Communicate the changes made and why they are of importance to all stakeholders, including supply chains, partners and customers. For example, impacts from material savings, diversion from landfill, CO_2 emission reductions, supply chain efficiencies.

b. Ensure your supply chain partners are aware of the role they may also need to play to reap the full benefits of the changes you have made. For example, if a shift was made to a recyclable alternative format or material, utilising the ARL on-pack ensures consumers are aware and can take appropriate action for that material to end up in the correct recycling stream so it can be recovered and have a second life.

c. Track and report progress to APCO and publicly so industry, government and the community can track Australia's progress towards to the 2025 Targets and the National Waste Policy.

d. Engage with APCO to elevate the research and effort invested in a successful phase out of problematic and/or unnecessary single-use plastic packaging.

What – Identified problematic and/or unnecessary single-use plastic packaging for immediate action

By their very design, the majority of these plastic packaging formats are destined for landfill. Their lack of a viable after-use pathway, risk of impact to our natural environment and on our existing organics and mechanical recycling processes, make it necessary for action to be taken on these packaging types.

Fundamental redesign and innovation are required. For some packaging formats, this means replacing the method of product delivery; for other packaging, it means scaling existing solutions or accelerating progress made so far. As many of the identified packaging formats and materials have important functional benefits, a considered and coordinated approach is required to collaboratively find the best solution to avoid unintended consequences or perverse outcomes. The recommended actions are ordered as per the best practice waste hierarchy approach of avoidance, reduction, reuse, replace, or innovate. **This approach is to set the direction and focus for redesign and innovation as we progress towards 2025, and beyond.**

Recommended actions on how to address priority problematic and/or unnecessary single-use plastic packaging are summarised in the below table. Further details can be found in the **Detailed recommendations**.

Lightweight plastic shopping bags
Fragmentable plastics
Expanded polystyrene (EPS) packaging for food and beverage service and retail fresh produce
EPS loose fill packaging
Moulded EPS packaging for white/brown goods and electronics
Rigid polyvinyl chloride (PVC) packaging
Rigid polystyrene (PS) packaging
Opaque polyethylene terephthalate (PET) bottles
Rigid plastic packaging with carbon black

Action Plan

Click on the packaging icon within the table to read the detailed recommendations

Table 1. Identified problematic and/or unnecessary single-use plastic packaging for immediate action

Definition of identified packaging	Current applications and exclusions	Strategic Direction	Recommended Actions	Benefits of action
Lightweight plastic shopping bags				
Plastic retail carrier bags with a handle, 35 micron and below. *Issues:* • *Globally regarded as problematic and unnecessary.* • *High litter propensity.* • *Limited recycling.* *Note: These bags are banned in all Australian jurisdictions.*	**Common uses**: Retail carry bags, generally LDPE or HDPE. **Excludes**: Plastic bags above 35 micron (**Heavy weight plastic bags** – addressed separately 'On notice' list). Fresh produce or deli bags without a handle.	**Eliminate**	Avoid the import, production and sale of lightweight plastic shopping bags. Comply with the Australian state and territory regulations already in place or introduced in future.	Reduce likelihood of litter. Reduce soft plastics consumption. Shift behaviour towards reusable bags.
		Redesign	Encourage reusable options. Design the product packaging to negate the need for a carry bag.	
		Replace	Aim to include recycled content to close the recycling loop. Utilise the ARL to communicate correct disposal.	

Click on the packaging icon within the table to read the detailed recommendations

Table 1 (CONTINUED). Identified problematic and/or unnecessary single-use plastic packaging for immediate action

Definition of identified packaging	Current applications and exclusions	Strategic Direction	Recommended Actions	Benefits of action
Fragmentable Plastic				
A material (however described) made of plastic which includes additives to accelerate the fragmentation of the material into smaller pieces, triggered by ultraviolet radiation or heat exposure, whether or not this is, or may be, followed by partial or complete breakdown of the material by microbial action. *Issues*: • *Microplastics pollution.* • *Difficult to identify and sort from conventional plastics.* • *Consumer confusion.* • *Potential contamination of mechanical recycling or organics streams.* • *Potential for claims to breach Australian Consumer Law.*	**Common uses**: Carrier bags, magazine wrap and bin liners. **Excludes**: Certified compostable packaging to Australian Standards AS 4736 (preferred) & AS 5810.	**Eliminate**	Avoid the import, production and sale of resins or packaging which fragment, namely that are not AS4736 or AS5810 certified. Make a collective commitment to educate packaging supply chains and clearly communicate accurate information to the public.	Compliance with Australian Consumer Law (avoiding false or misleading claims). Avoid industry and consumer confusion on use and whether to recycle or dispose to landfill.
		Redesign	Investigate redesigning the packaging format or delivery model to see if there are any reduction or reuse opportunities.	Decrease contamination and risk to organics recycling.
		Replace	If there is no option to avoid or replace with a reusable or mechanically recyclable alternative, consider replacing with compostable packaging certified to AS 4736 or AS 5810 through the Australian Bioplastics Association. Compostable packaging is only to be used when it supports diversion of food waste from landfill and where an organic waste collection service is in place.	Appropriate use and collection of certified compostable packaging can support the diversion of food waste from landfill.

Click on the packaging icon within the table to read the detailed recommendations

Table 1 (CONTINUED). Identified problematic and/or unnecessary single-use plastic packaging for immediate action

Definition of identified packaging	Current applications and exclusions	Strategic Direction	Recommended Actions	Benefits of action
 EPS food and beverage service and fresh produce packaging				
All single-use food and beverage service or fresh produce retail packaging made from EPS. *Issues:* • *Not currently recyclable through kerbside and no alternative collection system available.* • *Lightweight material with extremely high litter propensity.*	**Common uses**: Single-use hot and cold cups, tubs, bowls, plates, trays and clamshells for food service. EPS single-use items are sometimes used by food service businesses e.g. quick service restaurants (QSR), food halls and cafes. Trays are used to package fresh fruit or meat for retail sale. **Excludes**: Business-to-business fresh produce boxes. **EPS loose fill packaging**, **moulded EPS packaging for white/brown goods and electronics**.	**Eliminate**	Avoid the import, production and sale of EPS food and beverage service and retail packaging. Comply with regulations in all applicable states and territories.	Increase recovery of food and beverage service packaging. Reduce likelihood of litter. Reduce loss of resources to landfill.
		Redesign	Investigate redesigning the packaging format or delivery model to see if there are any reduction or reuse opportunities.	
		Replace	Replace EPS packaging with a material type that is currently recyclable via kerbside. Also include recycled content where possible. Utilise the ARL to communicate correct disposal.	

Click on the packaging icon within the table to read the detailed recommendations

Table 1 (CONTINUED). Identified problematic and/or unnecessary single-use plastic packaging for immediate action

Definition of identified packaging	Current applications and exclusions	Strategic Direction	Recommended Actions	Benefits of action
EPS loose fill packaging				
All loose fill packaging made from EPS that is used to protect any product in transport. *Issues:* • *Not currently recyclable through kerbside or at a drop off point.* • *Lightweight material with extremely high litter propensity.*	**Common uses**: Consumer product protection in shipping, e.g. packaging peanuts. **Excludes**: Business-to-business fresh produce boxes. Specialist packaging used for organ transport or pharmaceuticals. Moulded EPS packaging for white/brown goods and electronics.	**Eliminate**	Avoid the import, production and sale of EPS loose fill packaging.	Increase recovery of household and business-to-business packaging. Reduce likelihood of litter. Reduce loss of resources to landfill.
		Redesign	Investigate redesigning the packaging format or delivery model to see if there are any reduction or reuse opportunities. Utilise innovation to reformat boxes to eliminate void space.	
		Replace	Utilise locally recyclable materials to deliver the same protective function. Many recyclable alternatives include cardboard or paper or low density polyethylene (LDPE) air pillow padding. Utilise the ARL to communicate correct disposal.	

Click on the packaging icon within the table to read the detailed recommendations

Table 1 (CONTINUED). Identified problematic and/or unnecessary single-use plastic packaging for immediate action

Definition of identified packaging	Current applications and exclusions	Strategic Direction	Recommended Actions	Benefits of action
 Moulded EPS packaging for white/brown goods and electronics				
Moulded EPS used to prevent movement and protect products in transport. *Issues:* • *Not currently recyclable through kerbside.* • *Limited availability of drop-off services to recycle.* • *Low uptake of existing EPS collections by retailers.* • *Lightweight and fragile material with high impact when littered.*	**Common uses**: Protective packaging for white/brown goods and electronics, including but not limited to computers, TVs, printers, fridges, toasters; as well as furniture and other homewares. **Excludes**: Business-to-business fresh produce boxes. Specialist packaging used for organ transport or pharmaceuticals. **EPS loose fill packaging**.	**Eliminate**	Review the necessity for moulded EPS packaging import, production, and sale. Avoid where possible.	Increase recovery of household and business-to-business packaging to make new products like insulation. Reduce likelihood of litter. Reduce loss of resources to landfill.
		Redesign	Investigate redesigning the packaging format or delivery model to see if there are any reduction or reuse opportunities. Redesign boxes to reduce or eliminate void space.	
		Replace	Utilise locally recyclable materials to deliver the same protective function. Many recyclable alternatives exist including moulded cardboard and LDPE air pillow padding. Utilise the ARL to communicate correct disposal.	
		Innovate	In applications where no viable alternative exists, encourage, or offer drop-off for consumers, and take up existing specialist collection services. Consider support of end-market products or packaging to increase recovery.	

Click on the packaging icon within the table to read the detailed recommendations

Table 1 (CONTINUED). Identified problematic and/or unnecessary single-use plastic packaging for immediate action

Definition of identified packaging	Current applications and exclusions	Strategic Direction	Recommended Actions	Benefits of action
Rigid PVC packaging				
All packaging applications made of rigid polyvinyl chloride (PVC) plastic. *Issues:* • *Low volumes make the economics of recycling very difficult.* • *Incompatible with PET recycling.*	**Common uses**: Blow moulded bottles for cosmetics, lotions, oil, rice, cordial, and food containers. Thermoformed blister packs for pharmaceuticals, clamshells for fresh produce and cosmetics packaging, food trays and punnets. **Excludes**: PVC film, labels or closures.	**Eliminate**	Review the necessity for rigid PVC packaging import, production and sale. Avoid where possible.	Reduce risk to current PET recycling processes locally. Increase recovery and recycled content for PET packaging. Reduce contamination and processing costs, increasing the recovery of plastics. Reduce loss of resources to landfill.
		Redesign	Investigate redesigning the packaging format or delivery model to see if there are any reduction or reuse opportunities.	
		Replace	Investigate viable recyclable alternatives, especially those packaging formats using rigid PVC where it is not necessary to meet functional packaging requirements. Use the ARL to communicate correct disposal.	
		Innovate	Explore alternative collection and recovery models to recycle necessary rigid PVC packaging. Post-industrial rigid PVC packaging and product is recycled locally and presents an opportunity for further investigation.	

Click on the packaging icon within the table to read the detailed recommendations

Table 1 (CONTINUED). Identified problematic and/or unnecessary single-use plastic packaging for immediate action

Definition of identified packaging	Current applications and exclusions	Strategic Direction	Recommended Actions	Benefits of action
Rigid PS packaging				
All packaging applications made of rigid polystyrene (PS). *Issues:* • *Low volumes make the economics of recycling very difficult.* • *Global movement away from uncommon plastics.*	**Common uses**: Margarine and yoghurt tubs, coffee cup lids, water station cups, CD and video cases, and other products like plastic cutlery. **Excludes**: EPS (expanded PS) – addressed separately: EPS food and beverage service and fresh produce retail packaging, **EPS loose fill packaging** and **moulded EPS packaging for white/brown goods and electronics**.	**Eliminate**	Avoid the import, production and sale of rigid PS packaging. Avoid single-use consumption.	Reduce contamination and processing costs to increase the recovery of other plastics. Reduce loss of resources to landfill.
		Redesign	Redesign for reduction or reuse, or explore new formats to deliver the same or better function.	
		Replace	Investigate viable alternatives that are kerbside recyclable in Australia. Utilise the ARL to communicate correct disposal.	
		Innovate	Establish an alternative collection and recycling system.	

Click on the packaging icon within the table to read the detailed recommendations

Table 1 (CONTINUED). Identified problematic and/or unnecessary single-use plastic packaging for immediate action

Definition of identified packaging	Current applications and exclusions	Strategic Direction	Recommended Actions	Benefits of action
Opaque PET bottles				
Rigid amorphous PET (APET) bottles that are opaque in colour, due to the use of additives, such as titanium dioxide (opacifier). *Issues:* • *Reduces value of recovered PET* • *Causes significant material losses (in PET stream) as it creates faults in the recycled product.* • *Has limited end markets, even when separated.*	**Common uses**: PET bottles used to package a light sensitive beverage or product such as those in dairy or personal care. **Excludes**: Crystallised PET (C-PET), PET glycol (PET-G) as they are recycled separately to PET bottles (APET).	**Eliminate**	Avoid the import, production, and sale of opaque PET bottles in Australia. Avoid single-use consumption.	Reduce risk to current PET bottle recycling processes locally. Increase recovery recycled content for PET packaging. Reduce loss of resources to landfill.
		Redesign	Redesign for reduction or reuse, or explore new formats to deliver the same or better functionality and recyclability.	
		Replace	Investigate viable alternatives that are suited to kerbside recycling in Australia. Shift to natural (clear) PET as the priority, or if a barrier to light is required explore high density polyethylene (HDPE), polypropylene (PP) or a full shrink sleeve on natural PET. Use the ARL to communicate correct disposal.	

Click on the packaging icon within the table to read the detailed recommendations

Table 1 (CONTINUED). Identified problematic and/or unnecessary single-use plastic packaging for immediate action

Definition of identified packaging	Current applications and exclusions	Strategic Direction	Recommended Actions	Benefits of action
Rigid plastics with carbon black				
Any rigid plastic packaging format that includes carbon black as the master batch colourant. *Issues:* • *Renders packaging undetectable to Near Infrared (NIR) sortation in a Materials Recovery Facility (MRF) and plastic is lost to landfill.* • *Contaminates clear or lightly coloured streams.*	**Common uses**: Trays, tubs, caps and closures. **Excludes**: Use in inks, labels or soft plastics.	**Eliminate**	Avoid the import, production or retailing plastic packaging that contains carbon black master batch or pigments.	Increase recovery of plastic packaging collected through kerbside. Reduce loss of resources to landfill.
		Redesign	Redesign for reduction or reuse, or explore new formats to deliver the same or better functionality and recyclability.	
		Replace	Avoid dark coloured plastics. Where necessary (e.g. due to recycled content), explore NIR detectable black master batches in development or other colours. Educate and work with brand marketing teams to enable shift in colour.	
		Innovate	Be aware of the new chemistries or technologies emerging to enable MRFs and plastics reprocessors to better identify polymers.	

Detailed Recommendations

Lightweight plastic shopping bags

Scope:

Plastic shopping carrier bags with a handle, below 35-micron or less thickness. Made from any plastic, including bioplastic or any claim to degradation. **See fragmentable plastics on page 23.**

Common applications: Retail carry bags, generally LDPE or HDPE and sometimes certified compostable plastics or fragmentable plastics.

Excludes: Plastic bags above 35-micron thickness. Fresh produce or deli bags without a handle. Protective product packaging plastic bags without a handle. **Heavy weight plastic bags** - addressed in the 'On notice' list below.

The problem:

- Banned or restricted in many jurisdictions globally.
- All states and territories in Australia have banned these bags.
- Extremely high litter propensity due to light weight.
- Limited recycling for flexible plastics.
- Lightweight plastics are problematic when put in kerbside bins as they can become entangled in machinery and contaminate recovered paper, cardboard and plastics.
- Internationally proven to be easily avoidable, with viable alternatives easily accessible.

Volumes in the market: HDPE shopping bags

- 2018-19[2] - 7,000 tonnes PoM
- 2019-20[3] - 200 tonnes PoM
- 2020-21[4] - 100 tonnes PoM

Actions  Lightweight plastic shopping bags

Eliminate – Phase out use from the system

Act now

Brand owners, importers or packaging manufacturers should take immediate steps to avoid the import, production and sale of lightweight plastic bags. All are to comply with the Australian state and territory regulations that explicitly inhibit the use and sale of lightweight plastic retail bags (currently in place for all states and territories. Refer to APCO's **Australia and New Zealand Single-use Plastic Bans** resource for more detail on applicable plastic bag bans as some states ban bags made from all types of plastic, including degradable and compostable plastics in order to support behaviour change, not just substitution. There is a strong correlation between plastic bag ban implementation and the reduction of plastics bags in the environment. Queensland, for example, saw a 70% drop in plastic bag litter over the two years since the supply of single-use, lightweight plastic shopping bags was banned.[5] The behaviour shift to reusable, durable bags has been successfully achieved in almost all states and territories.

Redesign – For reduction or reuse

Investigate

Investigate options to avoid single-use retail carry bags altogether. Customers could be encouraged to bring their own reusable options, or the retailer could sell reusable bags. In states with existing bans, many retailers have found there is no need to provide a bag as customers have become accustomed to bringing their own. This has resulted in overall cost savings for retailers in avoiding the need to buy and distribute bags to customers free of charge.

Even if shopping bag distribution to customers is out of direct control, product packaging can be designing to be easily carried, therefore avoiding the need for a bag at all. This is also great for brand exposure as the brand is on show when the product is being carried and not hidden in a retail bag. If applicable to the way the product is purchased, consider how handles can be incorporated into product packaging from the start, without additional materials or compromised functionality.

Ongoing

Review packaging regularly against the **Sustainable Packaging Guidelines** – APCO recommend reviewing all new packaging coming to the market, and reviewing current packaging on the market every 3 to 5 years. Additional benefits can be achieved from reviewing more frequently as it enables new innovations to be harnessed as they arise and any changes in behaviours, collection, or recycling processes to be considered.

Replace – With conventionally recyclable alternatives

Phase in

Explore options to replace single-use plastic bags with reusable and recyclable alternatives. The most common alternatives are heavy duty PP bags or paper bags. The best alternative will depend on the strength requirements for its intended use. Aim to include recycled content to fully close the recycling loop. Refer to the 'On notice' list to read more on the approach to **heavy weight plastic bags.**

Utilise the **Australasian Recycling Label (ARL)** Program's Packaging Recyclability Evaluation Portal (PREP) to confirm recyclability via kerbside in Australia and New Zealand. Always communicate recyclability on-pack to ensure that consumers understand how to recycle or dispose of the packaging format. The ARL is exclusive to APCO Members and ensures on-pack labelling for recyclability is evidenced, and consumers know how to correctly dispose of each component of packaging. This is vital as it is estimated that 35% of packaging that is recyclable by design is lost at the point of collection from consumers not knowing how to dispose of the packaging appropriately.[6]

Consider

From a lifecycle analysis point of view, some renewable and recyclable alternatives can receive a worse environmental outcome overall. Always carefully consider alternatives to achieve the best environmental outcome. Avoidance should be prioritised.

Lightweight plastic shopping bags

Resources to support action:

- Quickstart Guide - Designing for Recyclability: Consumer Soft Plastic Packaging
- Quickstart Guide to Design for Recovery: Reuse, Recycling or Composting

Examples of actions already taking place:

- All states and territories have bag ban legislation in place for lightweight plastic bags. Refer to APCO's Australia and New Zealand Single-use Plastic Bans resource. Single-use plastic bag consumption has fallen from 32,700 tonnes in 2002 to 100 tonnes in 2020-21.[6,7]
- **Queensland Department of Environment and Science** is leading national work with the NRA, APCO and retailers to develop a voluntary sustainable shopping bag code of practice. The key principle of the code is to avoid the supply of plastic bags in the first instance, and where a plastic bag is unavoidable, to use products that are more sustainable (e.g. made from recycled content).[8]
- To help retailers who operate across multiple states, the NRA has created a website which summarises all bag ban legislation in Australia, as well as additional resources.
- **GECA** has a standard for Reusable Plastic Bags, to define environmental performance criteria for reusable plastic bags, including the use of a minimum percentage of recycled content.[9]
- **Boomerang Bags** is a community initiative that houses a platform to convert post-consumer waste into reusable alternatives to lightweight, single-use plastic bags.[10]
- There are a long list of international jurisdictions with plastic bag bans or regulation. Some examples include:
  - Bangladesh - 2002, ban on all polyethylene bags.[11]
  - Ireland – 2002, an environmental levy on all plastic bags except those used for fresh produce and reusable bags. There is no exemption for biodegradable bags.[12]
  - China - 2008, businesses are prohibited from manufacturing, selling or using 'thin' plastic bags, and implemented a charge for more durable bags.[13]
  - Belgium – 2007, federal carbon packaging tax introduced on plastic carrier bags (as well as plastic films and disposable cutlery).[14]
  - France – 2014, approved a national ban on non-biodegradable and non-reusable retail bags. Paris had already had a ban in place for single-use plastic bags since 2007.[15]

Detailed Recommendations

Fragmentable plastics

Scope:

A material (however described) made of plastic which includes additives to accelerate the fragmentation of the material into smaller pieces, triggered by ultraviolet radiation or heat exposure, whether or not this is, or may be, followed by partial or complete breakdown of the material by microbial action. This includes but is not limited to oxo-degradable, landfill degradable, biodegradable plastics.

Common uses: Carrier bags, magazine wraps and bin liners.

Excludes: Recyclable conventional plastics and certified compostable packaging. Only certification to Australian standards AS 4736: 2006 Biodegradable plastics suitable for composting and other microbial treatment (Australian Industrial Composting Standard) and the AS 5810: 2010 Biodegradable plastics suitable for home composting (Australian Home Composting Standard) are recognised.

The problem:

- Potential for contamination of both conventional plastics mechanical recycling and organics recycling streams and outputs.
- False or misleading claims of 'degradability', including oxo-degradable and landfill degradable. Possible non-compliance with Australian Consumer Law, which prohibits false or misleading claims.
- Will fragment into microplastics and are likely to contribute to plastic pollution. This is of particular concern when they end up as litter or contaminate compost that is applied to land for food production.
- Consumer and industry confusion around benefits of these materials.

Volumes in the market:

- 2018-19[16]
  - 1,000 tonnes PoM
- 2019-20[17]
  - 2,100 tonnes PoM
- 2020-21[18]
  - 800 tonnes PoM

Actions  Fragmentable plastics

Eliminate – Phase out use from the system

Act now

Brand owners, importers or packaging manufacturers should take immediate steps to avoid the import, production and sale of plastic packaging and items containing additives causing fragmentation that cannot prove conformance to the Australian industrial or home composting standards. Comply with regulations in all applicable states and territories on fragmentable plastics and products (see APCO's **Australia and New Zealand Single-use Plastic Bans** resource).

Ongoing

Educate consumers and customers on the facts about conventional recyclable plastics and compostable plastics. It is industry's role to clearly communicate accurate details and avoid any misleading information regarding their packaging to avoid further confusion. This includes avoiding terms like 'biodegradable' and 'plastic free'.

Redesign – For reduction or reuse

Investigate

Refer to the **APCO Considerations for Compostable Plastic Packaging** guidelines and always reference the waste hierarchy in making decisions on packaging applications. Avoidance and reduction are the priority, followed by reuse, then mechanical recycling.

Utilise existing infrastructure and networks to leverage opportunities for reuse. Food service applications, where food and drinks are consumed in an enclosed area, such as a food court or event space, provide a great opportunity to serve food in durable reusable packaging.

Ongoing

Review packaging regularly against the **Sustainable Packaging Guidelines**. APCO recommend reviewing all new packaging coming to the market and reviewing current packaging on the market every 3 to 5 years. Additional benefits can be achieved from reviewing more frequently as it enables new innovations to be harnessed as they arise and any changes in behaviours, collection, or recycling processes to be considered.

Replace – With conventionally recyclable or certified compostable (to the Australian Standards only) alternatives

Investigate

Refer to APCO's **Considerations for Compostable Plastic Packaging** resource and always reference the waste hierarchy with packaging application choices. Reduction is the priority. See prior Redesign recommended actions before proceeding with a recyclable or certified compostable packaging format.

If the packaging application is not associated with the diversion of food waste from landfill, and the product cannot be avoided (i.e. it is necessary), then the best approach is for it to be designed to be recyclable via kerbside or via current drop-off recycling scheme.

Compostable packaging (Australian certified) should only be considered when it has the benefit of supporting the diversion of food waste from landfill. Even then, this is not beneficial unless an organic waste collection service is in place for the majority of consumers to ensure these recovered organics make their way to an organics recycler. Any compostable packaging must be certified to the Australian Industrial Composting Standard or the Australian Home Composting Standard through the **Australian Bioplastics Association** (ABA). Always clearly communicate certification by utilising the corresponding certification logos so consumers and organics recyclers are aware.

Australian certification is critical as the vast majority of compost produced in Australia through organics recycling ends up on our local agricultural land that is used to produce food. Microplastics are therefore of extreme concern to organics recyclers and the purchasers of the end product compost.

Fragmentable plastics

Resources to support action:

APCO has several resources to support the considered use of compostable packaging. These resources aim to facilitate broader industry understanding of the key challenges and risks with these non-certified fragmentable plastics in our Australian marketplace and environment.

- Considerations for Compostable Plastic Packaging
- Food Services Packaging Sustainability Guidelines
- Sustainable Packaging Guidelines
- Quickstart Guide to Design for Recovery: Reuse, Recycling or Composting
- Quickstart Guide: Designing for Recyclability - Consumer Soft Plastic Packaging
- Packaging Recyclability Evaluation Portal (PREP)

Examples of actions already taking place:

- Australasian Bioplastics Association **(ABA)** – is the peak industry body for manufacturers, converters and distributors of bioplastic products and materials throughout Australia and New Zealand. Contact the ABA for any queries regarding material composition or certification. Fact sheets, position papers and FAQs are available on their website.
- Australian Organics Recycling Association **(AORA)** – is the national association that works with stakeholders in industry to facilitate the conditions through which surplus organic material can be sustainably and cost-effectively recycled. They have a series of facts sheets, case studies and FAQs available on their website.
- Plastic Free Places – a program delivered by Boomerang Alliance, designed to support communities seeking to eliminate single-use plastics. Focused initially on cafes, restaurants and food service providers, the program sought to transition businesses away from six of the key single-use plastic items that regularly appeared at the top of national litter indices. From initiation in Noosa in 2019, Plastic Free Places has since expanded around Australia to Byron Bay (NSW), Bassendean (WA) and a number of precincts in Adelaide (SA).

Detailed Recommendations

EPS food and beverage service and fresh produce retail packaging

Scope:

All consumer single-use food and beverage or fresh produce retail packaging made from expanded polystyrene (EPS). Polystyrene is made from the styrene monomer, a liquid hydrocarbon commercially manufactured from petroleum.

Common uses: Single-use hot and cold cups, tubs, bowls, plates, trays and clamshell containers for food service, e.g. quick service restaurants (QSR), food halls and cafes. Also used to package fresh fruit or meat in a supermarket.[19]

Excludes: Business-to-business fresh produce boxes used to distribute bulk fresh produce at back of house retail. Transport packaging for home delivery service (business-to-home direct deliveries). **EPS loose fill packaging** – addressed separately on page 29. **Moulded EPS packaging for white/brown goods and electronics** – addressed separately on page 32.

The problem:

- EPS is one of the most common materials found in illegally dumped rubbish[20,21], presenting a significant environmental challenge as it is lightweight, highly visible and easily breaks down into small pieces[22].
- EPS is not currently collected through kerbside recycling. These formats of EPS packaging are not recyclable and have no market, even amongst EPS recyclers.
- The national network of drop-off points for EPS is fragmented and not readily accessible to all consumers[23] and is limited to specific types of bulky format EPS.
- EPS takes up a proportionately large space relative to its small weight in transport and landfill, which inhibits landfill compaction and generates extra expenses to local government and businesses that are not reflected in landfill disposal costs.[24]

Volumes in the market: All EPS packaging

- 2018-19[25]
  - 16,400 tonnes PoM
- 2019-20[26]
  - 22,700 tonnes PoM
- 2020-21[27]
  - 29,000 tonnes PoM

Note: EPS packaging data is accurate for local manufacturing but difficult to capture for imported product. This leads to a relatively large accuracy data range.

Actions

EPS food and beverage service and fresh produce retail packaging

Eliminate – Phase out use from the system where possible

Act now

Brand owners, importers or packaging manufacturers should take immediate steps to avoid the import, production and sale of food and beverage service packaging or fresh produce retail packaging that is made from EPS. All are to comply with regulation in all applicable states and territories for these packaging formats (see APCO's **Australia and New Zealand Single-use Plastic Bans** resource). This is of specific importance to suppliers of these packaging formats to small businesses, as those small businesses may not be aware of the issue with these materials and the potential incoming regulations.

Redesign – For reduction or reuse

Investigate

Investigate redesigning the packaging format or delivery model to reduce packaging or introduce reusable packaging. This may include bulk dispensing of product into a reusable vessel.

Utilise existing infrastructure and networks to leverage opportunities for reuse, particularly in food service applications, where a consumer is in a closed environment (like a food court or at an event) where the food or drink is consumed in that area. This is the ideal setting for the product to be served in reusable packaging that can be collected, cleaned and reused by the venue.

Ongoing

Review packaging regularly against the **Sustainable Packaging Guidelines**. APCO recommend reviewing all new packaging coming to the market, and review current packaging on the market every 3 to 5 years. Additional benefits can be achieved from reviewing more frequently as it enables new innovations to be harnessed as they arise and any changes in behaviours, collection, or recycling processes to be considered.

Replace – With conventionally recyclable alternatives

Phase in

EPS food and beverage service and fresh produce retail packaging should be replaced with a material type that is currently recyclable through kerbside or other established systems such as industry recovery programs or drop-off collection and recycling programs. There are many easily accessible alternatives for these common packaging applications. Always aim for recyclable materials that are mono material (made up of one polymer type). Aim to also incorporate as much recycled content as possible to support the circularity of the material. For example, PET can be utilised at 100% food-grade recycled content. Replacement initiatives should be assessed for the net overall benefit and impact.

Utilise the **Australasian Recycling Label (ARL)** Program's Packaging Recyclability Evaluation Portal (PREP) to confirm recyclability via kerbside in Australia and New Zealand. Always communicate recyclability on-pack to ensure that consumers understand how to recycle or dispose of the packaging format. The ARL is exclusive to APCO Members and ensures on-pack labelling for recyclability is evidenced, and consumers know how to correctly dispose of each component of packaging. This is vital as it is estimated that 35% of packaging that is recyclable by design is lost at the point of collection from consumers not knowing how to dispose of the packaging appropriately.[28]

Keep in mind with food and beverage applications, that food residue can negatively impact recyclability, especially for fibre-based packaging. Refer to the **Food Services Packaging Sustainability Guidelines** and **Considerations for Compostable Plastic Packaging** guidelines to support decision making for heavily food contaminated packaging.

EPS food and beverage service and fresh produce retail packaging

Resources to support action:

- Sustainable Packaging Guidelines
- Quickstart Guide to Design for Recovery: Reuse, Recycling or Composting

Examples of actions already taking place:

- Boomerang Alliance Plastic Free Places program is supporting the considered shift away from these single-use problematic packaging applications.
- **WWF** highlighted EPS disposable packaging/containers as one of the top six problematic categories for action in their Roadmap to halve Australian single-use plastic litter.
- **The Ellen McArthur Foundation's** New Plastics Economy identified EPS as an uncommon plastic packaging material that needs fundamental redesign and innovation, with the priority solution to actively explore to replace as a priority, alongside rigid PVC and PS, with known alternatives.[29]
- Expanded Polystyrene Australia **(EPSA)** is the national industry body for all manufacturers and distributors of expanded polystyrene (EPS) products across Australia. Their recycling guidelines and requirements specifically call out acceptance of clean white moulded EPS for small and large packaging appliances, and clean white fruit and vegetable boxes only. No coloured, food contaminated, bean bag beans, peanut shaped loose foam is accepted.[30]

Detailed Recommendations

EPS loose fill packaging

Scope:

All loose fill packaging made from expanded polystyrene (EPS) that is used to protect any product in transport.

Common applications: Packing peanuts or similar. Generally used for void fill or cushioning in e-commerce.

Excludes: EPS business-to-business fresh produce boxes. Specialist EPS applications used for organ transport or pharmaceuticals. **Moulded EPS packaging for white/brown goods and electronics** – addressed separately on page 32.

The problem:

- EPS is one of the most common materials found in illegally dumped rubbish[31,32], presenting a significant environmental challenge as it is lightweight, highly visible and easily breaks down into small pieces.[33]
- EPS is not currently collected through kerbside recycling, and these small format EPS packaging items are not recyclable and have no market, even amongst EPS recyclers.
- The national network of drop-off points for EPS is fragmented and not readily accessible to all consumers[34] and is limited to specific types of bulky format EPS.
- EPS takes up a proportionately large space relative to its small weight in transport and landfill, which inhibits landfill compaction and generates extra expenses to local government and businesses that are not reflected in landfill disposal costs.[35]

Volumes in the market: All EPS packaging

- 2018-19[36]
  - 16,400 tonnes PoM
- 2019-20[37]
  - 22,700 tonnes PoM
- 2020-21[38]
  - 29,000 tonnes PoM

Note: EPS packaging data is accurate for local manufacturing but difficult to capture for imported product. This leads to a relatively large accuracy data range.

Actions

EPS loose fill packaging

Eliminate – Phase out use from the system where possible

Act now

Brand owners, importers or packaging manufacturers should take immediate steps to avoid the import, production and sale of EPS loose fill packaging. This is of particular importance with distribution packaging, both locally when re-packaged for distribution or when importing products and packaging. Advise suppliers that this material is not accepted locally and request alternative solutions to protect the product.

Redesign – For reduction or reuse

Investigate

Investigate redesigning the packaging format or delivery model. This is an opportunity for brand owners, manufactures and retailers to reduce packaging consumption which can also lead to cost savings.

Reusable options in a local setting may also be viable if a more durable material or format is utilised. Engage consumers on this journey of change and articulate the benefits of moving away from EPS loose fill.

Redesigning boxes or parts of the product can also reduce air space and therefore the need to use void fill or cushioning. See APCO Member examples below.

Ongoing

Review packaging regularly against the **Sustainable Packaging Guidelines** – APCO recommend reviewing all new packaging coming to the market, and reviewing current packaging on the market every 3 to 5 years. Additional benefits can be achieved from reviewing more frequently as it enables new innovations to be harnessed as they arise and any changes in behaviours, collection, or recycling processes to be considered.

Replace – With conventionally recyclable alternatives

Phase in

Utilise recyclable materials to deliver the same protective function. Many recyclable alternatives are available, including cardboard or paper and LDPE air pillow padding.

Utilise the **Australasian Recycling Label (ARL)** Program's Packaging Recyclability Evaluation Portal (PREP) to confirm recyclability via kerbside in Australia and New Zealand. Always communicate recyclability on-pack to ensure that consumers understand how to recycle or dispose of the packaging format. The ARL is exclusive to APCO Members and ensures on-pack labelling for recyclability is evidenced, and consumers know how to correctly dispose of each component of packaging. This is vital as it is estimated that 35% of packaging that is recyclable by design is lost at the point of collection from consumers not knowing how to dispose of the packaging appropriately.[39]

Caution

Other emerging material alternatives should be investigated thoroughly to ensure that the end-of-life of that packaging application is neutral or beneficial i.e. starch packing peanuts that claim degradation or 'dissolvable', should be checked for eco-toxicity, and claims of compostability. Refer to Fragmentable plastics on page 26 for further guidance on the need to be certified to the Australian compostable standards.

EPS loose fill packaging

Resources to support action:

- Sustainable Packaging Guidelines
- Quickstart Guide to Design for Recovery: Reuse, Recycling or Composting
- Packaging Recyclability Evaluation Portal (PREP)

Examples of actions already taking place:

- **The Ellen McArthur Foundation's** New Plastics Economy identified EPS as an uncommon plastic packaging material that needs fundamental redesign and innovation, with the priority solution to actively explore to replace as a priority, alongside rigid PVC and PS, with known alternatives.[40]
- Expanded Polystyrene Australia **(EPSA)** is the national industry body for all manufacturers and distributors of EPS products across Australia. Their recycling guidelines and requirements specifically call out acceptance of clean white moulded EPS for small and large packaging appliances, and clean white fruit and vegetable boxes only. No coloured, food contaminated, bean bag beans, peanut shaped loose foam is accepted.[41] Contact the EPSA for assistance or support on EPS packaging functionalities and recovery.
- Current commercial collection services are available, such as manufacturer product stewardship take back programs, which offer a free backhaul customer service as a value added service, such as E-cycle Solutions.[42]
- Identified by **WWF** as one of the six most problematic categories for action in their Roadmap to halve Australian single-use plastic litter. – "EPS goods packaging – with recommendations to ban loose fill EPS e.g. peanuts".
- There are several machines available to businesses that enable unwanted cardboard cartons to be reused as soft packing fill via shredding or perforation.[43] This can save businesses money by avoiding the need to purchase packaging and void fill and eliminating the need for a cardboard collection and recycling service, whilst providing a recyclable solutions for consumers. Brands can utilise local, state and territory government grants to support access to equipment like this.

Detailed Recommendations

Moulded EPS packaging for white/brown goods and electronics

Scope:

Moulded expanded polystyrene (EPS), used to prevent movement, and protect electrical and electronic products, furniture, homewares, etc. Used in both consumer product packaging and Business-to-business or back of house applications.

There may need to be exemptions for large electrical goods if businesses can prove there is no suitable and net beneficial alternative for EPS to protect the product. Brands are encouraged to complete transport and storage protection tests to demonstrate the requirement of moulded EPS packaging.

Common uses: Protective packaging for white/brown goods and electronics, including but not limited to. computers, TVs, printers, fridges, toasters.

Excludes: Business-to-business fresh produce boxes. Specialist applications use for organ transport or pharmaceuticals. **EPS packaging loose fill** – addressed separately on page 29.

The problem:

- EPS is one of the most common materials found in illegally dumped rubbish[44,45], presenting a significant environmental challenge as it is lightweight, highly visible and easily breaks down into small pieces.[46]
- EPS is not currently collected through kerbside recycling.

  The national network of drop-off points for EPS is fragmented and not readily accessible to all consumers[47] and is limited to specific types of bulky format EPS.
- EPS takes up a proportionately large space relative to its small weight in transport and landfill, which inhibits landfill compaction and generates extra expenses to local government and businesses that are not reflected in landfill disposal costs.[48]

Volumes in the market: All EPS packaging

- 2018-19[49]
  - 16,400 tonnes PoM
- 2019-20[50]
  - 22,700 tonnes PoM
- 2020-21[51]
  - 29,000 tonnes PoM

Note: EPS packaging data is accurate for local manufacturing but difficult to capture for imported product. This leads to a relatively large accuracy data range.

Actions  Moulded EPS packaging for white/brown goods and electronics

Eliminate – Phase out use from the system where possible

Act now

Brand owners, importers or packaging manufacturers should take immediate steps to review the necessity of import, production or sale of moulded EPS packaging. Avoiding single-use consumption of plastic packaging is always the priority. This is of particular importance with imported products and packaging of which the industry has limited visibility over.

Consideration does however need to be given to avoid unforeseen or unintended consequences from product damage and loss if elimination, redesign or alternatives are not approached cautiously. See redesign and replace options below to initiate the review of packaging design, materials and alternatives, as well as recovery opportunities and impacts. Engage with suppliers to assess alternative packaging that is suitable for the protection of goods.

Redesign – For reduction or reuse

Investigate

Investigate redesigning the packaging format or delivery model. This is an opportunity for brand owners, manufactures and retailers to reduce packaging consumption which can also lead to cost savings. Redesigning boxes or parts of the product can also reduce air space and therefore the need to use void fill or cushioning. See APCO Member examples below.

Ongoing

Review packaging regularly against the **Sustainable Packaging Guidelines** – APCO recommend reviewing all new packaging coming to the market, and reviewing current packaging on the market every 3 to 5 years. Additional benefits can be achieved from reviewing more frequently as it enables new innovations to be harnessed as they arise and any changes in behaviours, collection, or recycling processes to be considered.

Replace – With conventionally recyclable alternatives

Phase in

Utilise locally recyclable materials to deliver the same protective function. Many recyclable alternatives include cardboard, paper or LDPE air pillow padding. Being a non-food contact application, this is also the perfect opportunity to incorporate as much recycled content as possible.

Utilise the **Australasian Recycling Label (ARL)** Program's Packaging Recyclability Evaluation Portal (PREP) to confirm recyclability via kerbside in Australia and New Zealand. Always communicate recyclability on-pack to ensure that consumers understand how to recycle or dispose of the packaging format. The ARL is exclusive to APCO Members and ensures on-pack labelling for recyclability is evidenced, and consumers know how to correctly dispose of each component of packaging. This is vital as it is estimated that 35% of packaging that is recyclable by design is lost at the point of collection from consumers not knowing how to dispose of the packaging appropriately.[52]

Consider

Currently available or emerging alternatives should be investigated thoroughly to ensure that the use and end-of-life pathway of that packaging application has a neutral or beneficial outcome; consider the use of lifecycle assessments to understand this impact. If the aim is for recycling, utilise PREP to confirm current kerbside recyclability or implement a targeted collection and recovery program. Note that other foamed plastics, such as EPP and EPE, are considered even more difficult to recycle due to lower volumes.

Innovate – Find alternative collection to increase recovery

Explore

Alternative collection models currently available for business-to-business EPS could be investigated for potential to include a drop-off service for consumer packaging. In addition, current drop off locations, such as some council recycling centres, could be expanded to further support the collection of moulded EPS from households and businesses. However, greater investment is needed to educate consumers on these opportunities and need of their engagement. This would also require support from brands to financially support the recovery of these formats.

Moulded EPS packaging for white/brown goods and electronics

Resources to support action:

- Sustainable Packaging Guidelines
- Quickstart Guide to Design for Recovery: Reuse, Recycling or Composting
- Packaging Recyclability Evaluation Portal (PREP)

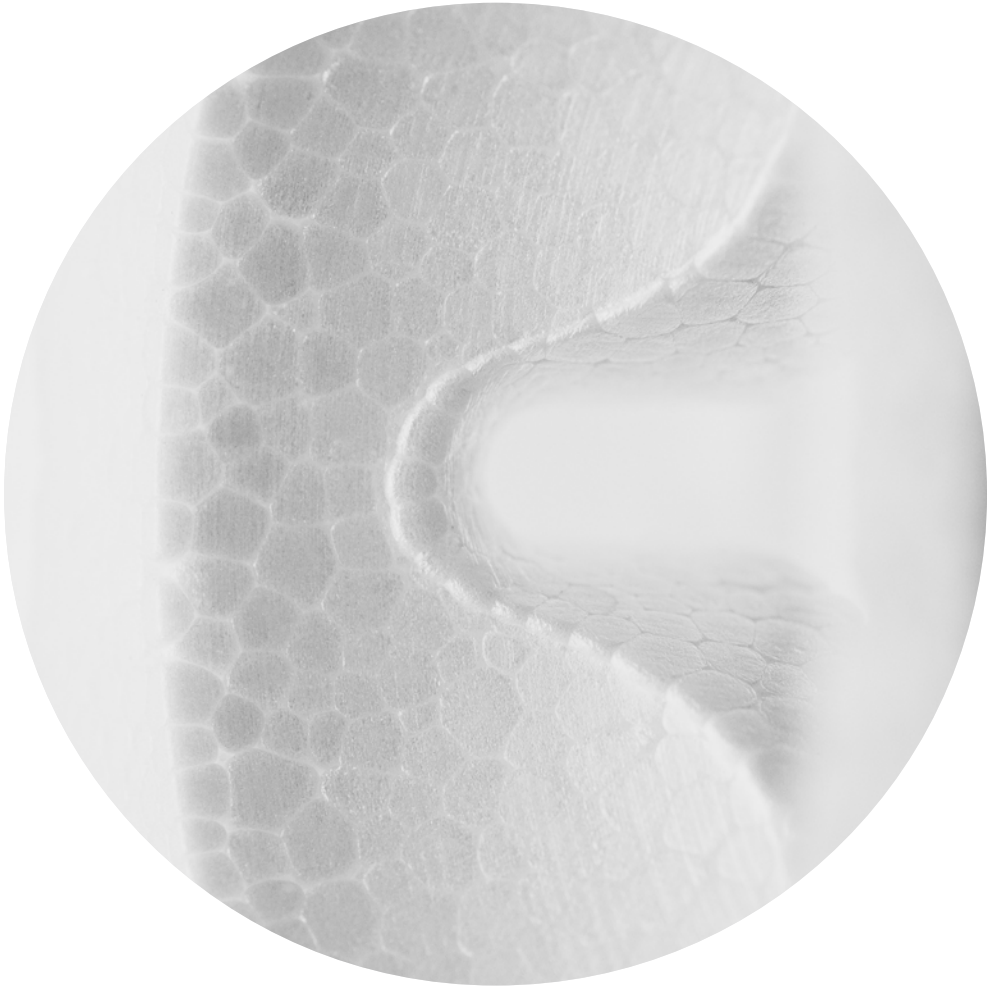
Examples of actions already taking place:

- **The Ellen McArthur Foundation's** New Plastics Economy identified rigid EPS as an uncommon plastic packaging material that needs fundamental redesign and innovation, with the priority solution to actively explore to replace as a priority, alongside rigid PVC and PS, with known alternatives.[53]

- Expanded Polystyrene Australia **(EPSA)** is the national industry body for all manufacturers and distributors of expanded polystyrene (EPS) products across Australia. Their recycling guidelines and requirements specifically support the acceptance of clean white moulded EPS for small and large packaging appliances, and clean white fruit and vegetable boxes only for specialist collections and sites. EPS recycling collections do not accept coloured, food contaminated, bean bag beans, peanut shaped loose foam.[54] Contact the EPSA for assistance or support on EPS packaging functionalities and recovery.

- Current commercial collection services are available, including manufacturer product stewardship take back programs, which offer a free backhaul customer service as a value-added service, such as E-cycle Solutions.[55]

- Planet Ark's Business Recycling website is a valuable resource to find out more information on alternative recovery options.[56]



Detailed Recommendations

Rigid PVC packaging

Scope:

All packaging applications made of rigid polyvinyl chloride (PVC) plastic. This includes applications where the packaging is made from mono-material PVC, as well as applications where PVC is used in a composite structure, e.g. layers in rigid thermoform format.

Exemptions must be considered on a case-by-case basis if there are no proven alternatives yet available to meet specific functional properties or to provide equivalent protection of the product. Consideration must also be taken if specific products have a recognised recovery and recycling system in place.

Common uses: Bottles used for cosmetics, oil, rice, cordial, and food containers. Thermoformed rigid PVC formats are used in bottled for lotion, shampoo, pharmaceutical blister packs, tamper evident clam shells for hardware and cosmetics, and fresh and dried fruit punnets and trays.

Excludes: PVC labels, films or closures.

The problem:

- Rigid PVC packaging volumes are very low (total PVC packaging constitutes approximately 1.3% of all plastic packaging consumed in Australia).[57] These low quantities mean rigid PVC packaging is more difficult to remove economically from current kerbside recycling systems with existing infrastructure in Australia.
- PVC is incompatible in the PET bottle recycling stream due to similar appearance and similar density. Even very small concentrations of PVC (0.005% by weight) lead to significant quality reductions in recycled PET which harms the recycling economics and means losses of resources to landfill.[58]

Volumes in the market: All PVC packaging (rigid and soft)

- 2018-19[59]
  - 15,300 tonnes PoM
- 2019-20[60]
  - 16,900 tonnes PoM
- 2020-21[61]
  - 14,800 tonnes PoM

Actions  Rigid PVC packaging

Eliminate – Phase out use from the system where possible

Act now

Brand owners, importers or packaging manufacturers should take immediate steps to review the import, production and sale of rigid PVC packaging in Australia, where the use of packaging is avoidable. Implementing this change is an acceleration of an existing evolution rather than a revolution. The shares of uncommon polymers (PVC, PS and EPS) in the global packaging market are already declining and the volumes placed on the market in Australia, are following this trend.[62]

Redesign – For reduce or reuse, or new formats to deliver the same or better function

Investigate

Investigate alternative formats to deliver similar or better functionality. This opportunity enables brands, manufactures and retailers to shift to reduce packaging and investigate reusable packaging models, using more durable materials or formats in the varying reusable packaging models. This can include bulk dispense of product into a reusable vessel.

For pharmaceutical applications, please refer to specific requirements for applications, such as **Therapeutic Goods Act**.

Ongoing

Review packaging regularly against the **Sustainable Packaging Guidelines** – APCO recommend reviewing all new packaging coming to the market, and reviewing current packaging on the market every 3 to 5 years. Additional benefits can be achieved from reviewing more frequently as it enables the capture of new innovations as they arise and any changes in behaviours, collection, or recycling processes.

Replace - With conventionally recyclable alternatives

Phase in

Take steps to transition to viable, recyclable alternatives. Not all current applications are using rigid PVC packaging to achieve the desired function, therefore deeming this polymer choice to be unnecessary. Those using rigid PVC packaging in these applications should take immediate steps to transition to kerbside recyclable alternative materials. This can be seen in some food jars, cooking oil bottles, food trays, and health and beauty, and cosmetic sectors. The most suitable alternative material will differ based on functional properties required to provide equivalent or better protection of the product.

Other new technologies are emerging to provide alternative solutions. For example, blow moulded integral handled bottles using PET. Other bottle alternatives have been seen to utilise PET, HDPE or PP. Tray alternatives could utilise PET. Blister packs have also seen significant evolution over recent years to find recyclable solutions. Advances have been seen with PET, polyolefin laminates and aluminium alternatives coming to the market.

Utilise the **Australasian Recycling Label (ARL)** Program's Packaging Recyclability Evaluation Portal (PREP) to evidence and confirm recyclability via kerbside in Australia and New Zealand. Always communicate recyclability on-pack to ensure that consumers understand how to recycle or dispose of the packaging format. The ARL is exclusive to APCO Members and ensures on-pack labelling for recyclability is evidenced, and consumers know how to correctly dispose of each component of packaging. This is vital as it is estimated that 35% of packaging that is recyclable by design is lost at the point of collection from consumers not knowing how to dispose of the packaging appropriately.[63]

Innovate – Find alternative collection and recovery models

Post-industrial rigid PVC is actively reprocessed directly by non-packaging PVC product manufacturers. For those packaging formats where PVC is necessary and cannot be viably redesigned or replaced, this presents an opportunity for **brand owners, importers or packaging manufacturers** to further investigate the potential to access similar end markets and learn from these collection models. End-markets generally include conduit, flooring, hose, ducting and building profiles. New mixed plastics sorting facilities emerging in Australia supports the ability to separate this material, however greater investigations and investments are needed to support the economics to enable commercial recovery.

The **Vinyl Council of Australia (VCA)** has also previously run a product stewardship program that funded the separation of rigid PVC packaging from kerbside collected material, making this recovered material available to local reprocessors for new products. They also commenced a world-first innovative program running the collection and recycling of flexible PVC intravenous drip bags from hospitals in a program with **Baxter Healthcare** and **Welvic**.[64] Brand owners, importers or packaging manufacturers should reach out to the VCA to investigate these potential recovery opportunities.

Other current product collection programs could potentially support the collection of other rigid PVC required packaging applications. For example, the **Return Unwanted Medicines program**, a pharmaceutical lead program that currently collects unused medicines but not packaging.

Rigid PVC packaging

Resources to support action:

- Packaging Recyclability Evaluation Portal (PREP) - Rigid PVC is currently classified as 'Not Recyclable' in the ARL Program due to the lack of active separation at Material Recovery Facilities, and lack of widely-available end markets, as well as risk of contaminating PET bottle recycling.
- Sustainable Packaging Guidelines
- Quickstart Guide: Designing for Recyclability - PET Packaging
- Quickstart Guide to Design for Recovery: Reuse, Recycling or Composting

Examples of actions already taking place:

- **The Ellen McArthur Foundation's** New Plastics Economy identified rigid PVC as an uncommon plastic packaging material that needs fundamental redesign and innovation, with the priority solution to actively explore to replace as a priority, alongside EPS and rigid PS, with known alternatives.[65]
- Vinyl Council Australia represent the PVC vinyl value chain in Australia, working to advance the sustainability of PVC production and the industry. They are committed to continue to engage with Material Recovery Facilities on diverting any separated, uncontaminated rigid PVC to local manufacturing end markets; supporting labelling/marking of PVC packaging to aid separation; and encourage increasing use of recycled PVC in new products through their PVC Stewardship Program.[66]
- Planet Ark's Business Recycling website is a valuable resource to find out more information on alternative recovery options.[67]

Detailed Recommendations

Rigid PS packaging

Scope:

All packaging applications made of rigid polystyrene (PS) plastic (not foamed to make expanded polystyrene).

Common uses: Margarine and yoghurt tubs, bread tags, coffee cup lids, water station cups, CD and video cases, and other products like plastic cutlery.

Excludes: Expanded polystyrene (EPS) – addressed separately: **EPS food and beverage service and retail packaging**, **EPS loose fill packaging** and **moulded EPS packaging for white/brown goods and electronics**.

The problem:

- Volumes of rigid PS are so low that the sorting to remove PS as a single stream or from other plastics streams is costly. This means rigid PS acts as a contaminant in other plastics sorting and recycling, increasing the cost to recover other polymers.
- Has limited to no value in current local recycling markets.
- Rigid PS items have been identified by majority of Australian state and territories for regulatory action or further investigation - see APCO's **Australia and New Zealand Single-use Plastic Bans** resource.

Volumes in the market:

- 2018-19[68]
  - 10,900 tonnes PoM
- 2019-20[69]
  - 17,100 tonnes PoM
- 2020-21[70]
  - 17,200 tonnes PoM

Actions

Rigid PS packaging

Eliminate – Phase out use from the system where possible

Act now

Brand owners, importers or packaging manufacturers should take immediate steps to avoid the import, production, and sale of rigid PS packaging in Australia, where possible. Implementing this change is an acceleration of an existing evolution rather than a revolution. The shares of uncommon polymers (rigid PVC, rigid PS and EPS) in the global packaging market are already declining.[71]

Redesign – For reduction or reuse

Investigate

Explore alternative formats to deliver the same or better functionality. This opportunity enables brands, manufactures and retailers to reduce packaging and investigate reusable packaging models, using more durable materials or formats in the varying reusable packaging models. This can include bulk dispense of product into a reusable vessel. Considerations for accessibility and longevity in food applications are of particular importance.

Ongoing

Review packaging regularly against the **Sustainable Packaging Guidelines** – APCO recommend reviewing all new packaging coming to the market, and reviewing current packaging on the market every 3 to 5 years. Additional benefits can be achieved from reviewing more frequently as it enables new innovations to be harnessed as they arise and any changes in behaviours, collection, or recycling processes to be considered.

Replace - With conventionally recyclable alternatives

Phase in

Investigate viable alternatives that are kerbside recyclable in Australia. Not all current applications are using PS to achieve the desired function, therefore deeming this polymer choice to be unnecessary. Those using PS in these applications should take immediate steps to transition to kerbside recyclable alternative materials. For example, many margarine and yogurt tubs that have already transitioned from PS to PP. Likewise, coffee cup lids used to be made from PP (which is more recyclable than PS) and fibre-based alternatives are now available.

Utilise the **Australasian Recycling Label (ARL)** Program's Packaging Recyclability Evaluation Portal (PREP) to confirm recyclability via kerbside in Australia and New Zealand. Always communicate recyclability on-pack to ensure that consumers understand how to recycle or dispose of the packaging format. The ARL is exclusive to APCO Members and ensures on-pack labelling for recyclability is evidenced, and consumers know how to correctly dispose of each component of packaging. This is vital as it is estimated that 35% of packaging that is recyclable by design is lost at the point of collection from consumers not knowing how to dispose of the packaging appropriately.[72]

Consider

Caution must be taken to avoid using extensive fillers in alternative polymers (such as PP) as this can render the polymer to be not recyclable. This is because fillers can change the density of the polymer, with density used to separate different plastics during the reprocessing (float-sink sortation) stage of recycling.

Innovate – Find alternative collection and recovery models

Explore

Like most materials, rigid PS is technically recyclable, however recycling in practice only works if there is a collection system available and a buyer who will accept the material because it has a value for use in new products or packaging. As such, if a rigid PS packaging application was necessary and none of the above action provided a viable solution, then the next step is to explore alternative collection and recovery models. This is referred to as extended producer responsibility and requires collaboration with the value chain to establish accessible collection or drop-off points, logistics of the collected material to the agreed reprocessors to then turn the recovered material into a viable new product.

Rigid PS packaging

Resources to support action:

- Packaging Recyclability Evaluation Portal (PREP) - Rigid PS is currently classified as 'Not Recyclable' in the ARL Program due to the current lack of active separation and viable end markets.
- Sustainable Packaging Guidelines
- Quickstart Guide to Design for Recovery: Reuse, Recycling or Composting
- Quickstart Guide: Designing for Recyclability - PP Packaging

Examples of actions already taking place:

- **Australian Governments** - Rigid PS items like cutlery and stirrers have been identified by all states and territories as priority single-use plastic items to be addressed through their respective approaches. See APCO's **Australia and New Zealand Single-use Plastic Bans** resource for more details.

- **The Ellen McArthur Foundation's** New Plastics Economy identified rigid PS as an uncommon plastic packaging material that needs fundamental redesign and innovation, with the priority solution to actively explore to replace as a priority, alongside rigid PVC and EPS, with known alternatives.[73]

Detailed Recommendations

Opaque PET bottles

Scope:

Rigid polyethylene terephthalate (PET) bottles that are opaque in colour due to the use of additives, such as titanium dioxide (opacifier). Priority in bottles but also of consideration for thermoformed trays, punnets, etc.

Common uses: PET bottles used to package a light sensitive beverage or product such as dairy or personal care.

Excludes: Crystallised PET (C-PET) and PET glycol (PET-G) as these are generally recycled separately to PET bottles (APET). Refer to **PREP** for recyclability of these polymers.

The problem:

- Additives, such as opacifiers are a major contaminant of reprocessed natural (clear) PET bottle. If included in PET reprocessing, they cause cloudiness in natural PET packaging and product. Opaque PET results in a significant reduction in the quality of the material, reducing value and therefore causing high material losses.
- Natural PET is currently the polymer with the highest recycling rate in Australia and can form 100% recycled content food contact applications. It is highly sought after for use in food contact packaging as part of brand owner pledges toward improved circularity in packaging.
- Opaque PET has a very limited end market, even when separated into single steam. The economics to separate these volumes are currently not viable locally.

Volumes in the market: All PET

- 2018-19[74]
  - 154,000 tonnes PoM
- 2019-20[75]
  - 163,000 tonnes PoM
- 2020-21[76]
  - 149,000 tonnes PoM

Actions

Opaque PET bottles

Eliminate – Phase out from the system where possible

Act now

Brand owners, importers or packaging manufacturers should take immediate steps to avoid the import, production, and sale of opaque PET bottles in Australia. Avoiding single-use consumption, especially of non-recyclable plastics, is the priority.

Redesign - For reduction or reuse

Investigate

Explore alternative formats to deliver the same or better functionality. This opportunity enables brands, manufactures and retailers to shift to reduce packaging and investigate reusable packaging models. This can include bulk dispense of product into a reusable vessel or providing incentive to the consumer to return the packaging to be cleaned and reused again.

Ongoing

Review packaging against the **Sustainable Packaging Guidelines** – APCO recommend reviewing all new packaging coming to the market, and reviewing current packaging on the market every 3 to 5 years. Additional benefits can be achieved from reviewing more frequently as it enables new innovations to be harnessed as they arise and any changes in behaviours, collection, or recycling processes to be considered.

Replace - With conventionally recyclable alternatives

Phase in

Investigate viable alternatives that are kerbside recyclable in Australia. The priority would be to shift to natural PET as it is it the polymer with the highest recovery rate and value locally.

If opacifiers are needed for a specific purpose, such as a light barrier to maintain the integrity and longevity of the beverage product, then shift to a different polymer such as HDPE or PP to achieve similar functionalities. Tinted glass could also be an alternative to investigate or a natural PET bottle with a full shrink sleeve to achieve the necessary light barrier. Use caution when adding shrink sleeves to bottles as this can reduce the ability for the bottle to be correctly sorted and if the sleeve material is not compatible with PET or other polymer recycling, it can cause more harm. In all instances, utilise labels that are compatible for recycling with the primary packaging material.

Utilise the **Australasian Recycling Label (ARL)** Program's Packaging Recyclability Evaluation Portal (PREP) to confirm recyclability via kerbside in Australia and New Zealand. Always communicate recyclability on-pack to ensure that consumers understand how to recycle or dispose of the packaging format. The ARL is exclusive to APCO Members and ensures on-pack labelling for recyclability is evidenced, and consumers know how to correctly dispose of each component of packaging. This is vital as it is estimated that 35% of packaging that is recyclable by design is lost at the point of collection from consumers not knowing how to dispose of the packaging appropriately.[77] There is the option under the ARL Program to instruct consumers to remove large labels and sleeves that could hinder recyclability of the bottle. Design shrink sleeves to have perforations to assist with the removal of the label when being reprocessed.

Consider

Removing labels or sleeves is not always viable for Container Deposit Scheme (CDS) legislation eligible containers. Investigate all state and territory CDS legislation requirements when reviewing the ability to replace opaque PET.

Until a replacement has been found, it is best practice to label these formats as 'Not Recyclable' through the ARL Program so the brand is transparent to consumers and contamination is minimised, which in turn helps support better recycling overall.

Opaque PET bottles

Resources to support action:

- Packaging Recyclability Evaluation Portal (PREP) - Opaque PET is currently classified as 'Not Recyclable' in the ARL Program due to the lack of viable end markets and high risk of contaminating other recyclable materials.
- Quickstart Guide: Designing for Recyclability - PET Packaging
- APCO Member Case Study: Natures Organics

Examples of actions already taking place:

- The European PET Bottle Platform has detailed guidelines on best practice design for recyclability for PET bottles, with additional detail on opaque PET.[78]
- **Container Deposit Schemes** are in place to address the high litter propensity of single-use bottles. These are operational in SA, NT, QLD, NSW, WA, with VIC and TAS coming soon. Refer to each state and territory legislation to ensure beverage containers are compliant for collection, and are designed for improved recyclability by moving away from opaque and coloured PET.

Detailed Recommendations

Rigid plastics with carbon black

Scope:

Any rigid plastic packaging format that includes carbon black, a common black master batch colourant or pigment included in plastic to make it either opaque coloured or black. This is not limited to black coloured plastics as carbon black can be used in many opaque colours.

Common uses: Trays, tubs, caps and closures.

Excludes: Use in inks, labels or soft plastics. Note that if labels cover a large surface area of a packaging item and/or are heavily printed with carbon black inks, they can limit or inhibit recyclability and should be redesigned.

Problem statement:

- Carbon black as a master batch pigment renders the packaging 'undetectable' when it moves through a Material Recovery Facility (MRF) because it reflects almost no light in the visible spectrum and strongly absorbs in the ultra-violet (UV) and infrared (IR) spectral range. The Near Infrared (NIR) technology therefore cannot detect the packaging format to be accurately separated at the MRF. Even if recycled by a householder, these plastics are rejected as waste and lost to landfill.

- Black plastics or heavily coloured plastics have a lower value in comparison to natural polymers as they have limited end-markets.

Volumes in the market:

No data available.

Actions  Rigid plastics with carbon black

Eliminate - Phase out from the system where possible

Act now

Brand owners, importers or packaging manufacturers should take immediate steps to avoid the import, production, and sale plastic packaging that contains carbon black master batch or pigments in Australia.

Redesign - For reduction or reuse

Investigate

Explore alternative formats to deliver the same or better functionality. This opportunity enables brands, manufactures and retailers to reduce packaging and investigate reusable packaging models. This can include bulk dispensing of product into a reusable vessel or providing incentives to the consumer to return the packaging to be cleaned and reused again.

Ongoing

Review packaging against the **Sustainable Packaging Guidelines** – APCO recommend reviewing all new packaging coming to the market, and reviewing current packaging on the market every 3 to 5 years. Additional benefits can be achieved from reviewing more frequently as it enables new innovations to be harnessed as they arise and any changes in behaviours, collection, or recycling processes to be considered.

Replace - With conventionally recyclable alternatives

Phase in

Explore opportunities to avoid dark coloured plastics. Highly coloured and black plastics generally have a low reprocessing rate and low end market value, and contaminate higher value clear or lightly coloured plastics recycling streams.

Alternatively, where highly coloured or black is necessary, for example if the packaging application contains a high level of recycled content, then there is the opportunity to utilise other less pigmented colours and the new NIR detectable black master batch. See Unilever Australia case study below. It is important to note that black plastics can only be recycled back into black plastics, whereas other colours benefit from higher value and a wider choice of reuse colours and applications.

Utilise the **Australasian Recycling Label (ARL)** Program's Packaging Recyclability Evaluation Portal (PREP) to confirm recyclability via kerbside in Australia and New Zealand. Always communicate recyclability on-pack to ensure that consumers understand how to recycle or dispose of the packaging format. The ARL is exclusive to APCO Members and ensures on-pack labelling for recyclability is evidenced, and consumers know how to correctly dispose of each component of packaging. This is vital as it is estimated that 35% of packaging that is recyclable by design is lost at the point of collection from consumers not knowing how to dispose of the packaging appropriately.[79]

Ongoing

Educate and work with brand marketing teams to encourage the shift in colour. Black is perceived as an attractive, high-end colour for packaging applications, however it has limited sorting and reprocessing potential. The benefits of shifting design to achieve a positive environmental outcome should be highlighted.

Innovate – Find alternative collection and recovery models

Explore

There are emerging international technologies that can either better detect carbon black, or detect the new NIR detectable plastic plastics, or even identify specific packaging applications and their origin. These advances will enhance the capability of MRFs and plastics reprocessors to identify polymers for recovery. Although these are innovative solutions and Australia is increasing investment in recycling infrastructure, these technologies are expensive, new, hardly utilised in Australia and globally, and do not solve the end-market limitations. They should therefore not be relied upon as a solution.

Rigid plastics with carbon black

Resources to support action:

- Packaging Recyclability Evaluation Portal (PREP) - any plastic packaging that contains any amount of carbon black is currently classified as 'Not Recyclable' in the ARL Program due to the inability to detect or identify the plastic packaging, and therefore loss of material to landfill.
- Quickstart Guide: Designing for Recyclability - PET Packaging
- Quickstart Guide: Designing for Recyclability - Consumer Soft Plastic Packaging
- Quickstart Guide: Designing for Recyclability - Rigid HDPE Packaging
- Quickstart Guide: Designing for Recyclability: Rigid PP Packaging
- APCO Member Case Study: Unilever

Examples of actions already taking place:

The Ellen McArthur Foundation's New Plastics Economy Catalysing Action report notes that colouring plastics using pigments reduces the value of the recycled materials (up to USD$100-300 per tonne of recyclate). Therefore, moving a greater share of plastic packaging from coloured or opaque materials to clear or light-coloured translucent materials can create substantial value for end-markets As an example, shifting an estimated three quarters of coloured rigid plastic packaging to clear plastics represents an economic opportunity of USD$10-15 per tonne of mixed plastic packaging collected.[80]

Wrap UK have a 'Black plastic packaging hub' that answers common questions of carbon black plastics packaging, noting the best in class alternative packaging to be clear, food grade PET.[81]

Problematic and/or unnecessary single-use plastic packaging 'on notice' for further action

These items are included because the packaging industry has identified them as a concern due to contributions to litter and unnecessary waste, and because there are available alternatives or initiatives already underway. Action is encouraged to avoid them becoming priority problematic and/or unnecessary single-use plastics packaging for immediate action. These materials will be reviewed annually to ensure that industry is provided with timely updates. This is industry's opportunity to get a head start on potential regulation or increasing consumer pressures.

- Problematic multi-material laminate soft plastics

- Heavy weight plastic shopping bags

- Pumps and trigger packs with metal components

- Small caps and closures

- Coloured PET

Detailed Recommendations

Problematic multi-material laminate soft plastics

Scope:

All consumer soft plastics that are made of more than one polymer or material, especially those that contain plastic layers that are not compatible with current polyolefin focused soft plastics recycling programs.

The problem:

- Soft plastics are not recyclable through kerbside recycling. They are problematic when incorrectly recycled as they get entangled in the machinery and contaminate other materials.
- Global shift to design for recycling, informed by the Circular Economy for Flexible Plastics initiative (CEFLEX).

Volumes:

Unavailable.

Approach

Eliminate

Where not necessary, avoid soft plastic packaging, especially if multi-material layers are needed.

Innovate

- Expansion of current drop off models and investigation of alternative collection. The 2020 National Product Stewardship Investment Fund awarded a grant to the Australian Food and Grocery Council (AFGC) for their project that aims to recover up to 190,000 tonnes of soft plastic packaging from the food and grocery supply chain each year, aiming for a recovery rate of 65% by 2023.[82]
- Investigate alternative recycling options e.g. chemical recycling for those formats that cannot be redesigned to be recyclable and be functional.
- Support ongoing research by and with CEFLEX to maintain international alignment and drive collective best practice.

Redesign

- Reduce and lightweight where possible.
- The longer term aim is for all soft plastics to be redesigned to meet the Circular Economy for Flexible Plastics initiative (CEFLEX) **Design 4 A Circular Economy**. This is focused on designing soft plastics to be primarily polyolefin based with specific thresholds for other layers when particular barrier properties are required to protect the product.

APCO Resources

Refer to APCO's **Quickstart Guide: Designing for Recyclability - Consumer Soft Plastic Packaging** when designing soft plastic packaging destined to be consumed and end up in a household kerbside collection bin.

Detailed Recommendations

Heavy weight plastic bags

Scope:

All plastic shopping bags above 35 microns.

The problem:

- Soft plastics are not recyclable through kerbside recycling. They are problematic when incorrectly recycled as they get entangled in the machinery and contaminate other materials.
- Increased use of material compared to lighter weight alternatives.
- A single-use plastic packaging item that can be avoided.

Volumes:

Approximately 9,400 tonnes of LDPE shopping bags in 2020-21.[83]

Approach

Eliminate or redesign

Queensland Department of Environment and Science are leading national work with the **National Retail Association**, APCO and retailers to develop a voluntary sustainable shopping bag code of practice. The key principle of the code is to avoid the supply of plastic bags in the first instance, and where a plastic bag is unavoidable, to use products that are more sustainable (e.g. durable and made from recycled content).[84] All retailers and suppliers are encouraged to participate in this work and utilise the code of practice when developed.

Detailed Recommendations

Pumps and trigger packs with metal components

Scope:

All plastic closures that contain any metal components e.g. springs.

The problem:

- Metal components in pumps or trigger packs can cause significant infrastructure damage to plastics reprocessing equipment.
- Currently classified as 'Not Recyclable' in the Australasian Recycling Label (ARL) Program (under PREP) due to the risk of damage caused by these metal components.

Volumes:

Unavailable.

Approach

Redesign

Reuse is becoming more prevalent in the personal care and cleaning space – where these formats are most used. Provide refill options and communicate to consumers that they can refill and reuse their packaging with a pump or trigger. Ensure design is durable.

Replace

Investigate alternatives that do not contain metal components and are recyclable. Take caution with formats that are new to the market and claiming recyclability. Investigate if recyclability is practical in Australia. Once confirmed via PREP, utilise the **ARL** to instruct consumers on the best disposal method. This consumer communication is extremely vital as designs do transition for not recyclable to recyclable, to avoid not recyclable designs entering the recovery stream and impacting on the ability to recover these materials.

Explore the opportunity to set up an alternative or separate collection scheme to collect pumps and trigger packs to ensure they are actively recovered and reduce contamination and damage to conventional recycling systems.

Detailed Recommendations
Small caps and closures

Scope:

All plastic closures that are separable from the primary packaging, that are below approximately 50 x 50mm in size.

The problem:

- High litter propensity.
- Not recyclable through current kerbside system as they are too small and are lost into the glass stream (causing additional de-contamination costs).
- Loss of generally mono-material, recyclable polymers to landfill.

Volumes:

Unavailable.

Approach

Redesign

Explore the opportunity for tethered caps or lids. This design shift is being driven from the Council of the European Union Circular Economy Action Plan, in particular the Single-Use Plastics Directive that becomes a national legislation in May 2021, requiring caps and lids made of plastic may be placed on the market only if the caps and lids remain attached to the containers during the products' intended use stage.[85] With the aim to avoid the chance of small closures becoming litter, tethered caps or lids means this material can be recovered at kerbside, using the bottle as a vehicle to carry the lid through the Materials Recovery Facility (MRF) for recovery.

Caution must be taken to avoid an increase in material usage to achieve this function. There are many emerging designs internationally, as well as in Australia. If designing for kerbside recycling is the focus, ensure the **Australasian Recycling Label (ARL)** is on-pack, to ensure consumers are confident in recycling at home.

Innovate

In general, these closures are made of clean, mono-material, which means they are recyclable, but difficult to collect via current conventional recycling systems. Investigate the ability to introduce alternative collection mechanisms specifically for all small plastic items, like caps and lids. Some community projects are already underway to achieve this, with innovative end markets including prosthetic limbs.

Detailed Recommendations
Coloured PET

Scope:

All coloured PET, with a focus on PET bottles.

The problem:

- Contaminates natural PET recyclate and is costly for PET processors to separate. Natural PET is currently the polymer with the highest recycling rate in Australia and can be used to provide 100% recycled content in food contact applications. It is highly sought after for use in food contact packaging as part of brand owner pledges toward improved circularity in packaging.

- Coloured PET has limited end markets, even when separated into single steam.

Volumes:

Unavailable.

Approach

Replace

Shift design to clear PET bottles. Most of the time, colour is only used for marketing purposes and provides no functional benefits. For example, Coca-Cola has committed to shift the Sprite brand out of green PET into clear PET.

Utilise the **Australasian Recycling Label (ARL)** Program's Packaging Recyclability Evaluation Portal (PREP) to confirm recyclability via kerbside in Australia and New Zealand. Always communicate recyclability on-pack to ensure that consumers do recycle that packaging format. The ARL is free and exclusive to APCO Members and ensures all recyclability is evidenced, and consumers know how to correctly dispose of each component of packaging.

Innovation

For those applications that may require colour, industry is encouraged to support end market development for coloured PET to ensure it is recycled.

In addition, increased investment in sorting processes at a PET recycling facility will be valuable to reduce contamination, reduce material loss and increase economic viability of all PET recyclate.

Glossary

Term	Definition
Biodegradable	A generic term that indicates a polymer is biologically available for microbial decomposition, with no detail on breakdown products, time or extent of degradation or end environments.
Bioplastics	Plastics that are biobased, biodegradable or both. Bioplastics fall into three broad groupings, which are: biobased (but not biodegradable); biodegradable (but not biobased); or biobased and biodegradable. Conventional polymers (e.g. PET and HDPE) can also be fully or partially 'biobased'.
Business-to-business (B2B) packaging	Packaging used for the containment, protection or handling of product. Typically includes the secondary and tertiary packaging that is used to move products between businesses prior to sale to the end-consumer, but excludes primary packaging.
Certified compostable	Means that claims of compliance with Australian Standard 4736-2006, compostable and biodegradable plastics – "Biodegradable plastics suitable for composting and other microbial treatment" and Australian Standard AS 5810-2010 Home Composting – "Biodegradable plastics suitable for home composting" have been verified.
Circular economy	The circular economy concept is a systems approach to material/energy flows that extends significantly on the 'waste hierarchy', with the objective being to decouple economic growth/development from the use of non-renewable resources (including energy). It is a concept that extends to cover the entire life cycle of products and services, including design. It assumes that the current approach of incremental and fractured improvements in materials and energy efficiency are not sufficient to achieve the potential (much larger) economic and environmental gains that are available.
Collection	Packaging materials collected for recycling.
Compostable packaging	A packaging or packaging component (1) is compostable if it is certified to AS4736 or a similar standard for commercial composting, and if its successful post-consumer (2) collection, (sorting), and composting is proven to work in practice and at scale (3). Also see the related 'Recyclable packaging' and 'Reusable packaging' definitions. Supporting notes: 1. ISO 18601:2013: A packaging component is a part of packaging that can be separated by hand or by using simple physical means (e.g. a cap, a lid and (non in-mould) labels). 2. ISO 14021 clarifies post-consumer material as material generated by households or by commercial, industrial and institutional facilities in their role as end users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain. 3. 'At scale' implies that there are significant and relevant geographical areas, as measured by population size, where the packaging is actually composted in practice.

Term	Definition
Consumer packaging	Packaging used for the containment, protection, marketing or handling of product. Includes the primary packaging that is sold to end-consumer. Also see 'Packaging' and 'Business-to-business (B2B) packaging'.
Container deposit scheme (CDS) collection	Separate collection system for paper, plastic and metal containers.
Disposal	Discarding solid waste to landfill or incineration (without energy recovery).
Drop off points/models	A facility where households can drop off selected materials and household items for recycling and reuse. Also called drop off facilities.
Energy from waste	The terms 'energy recovery from waste', 'waste to energy' or 'energy from waste' can be used interchangeably to describe a number of treatment processes and technologies used to generate a usable form of energy from waste materials. Examples of usable forms of energy include electricity, heat and transport fuels.
End-of-life	A term used to describe the expected disposal option for packaging when the customer/consumer has removed the product.
Kerbside waste/ collection	Waste collected by local councils from residential properties, including garbage, commingled recyclables and garden organics, but excluding hard waste.
Landfill	Discharge or deposit of solid wastes onto land that cannot be practically removed from the waste stream.
Litter	Discarded packaging waste that has been disposed of improperly by accident or deliberately in an open or public place. Littered packaging like plastic wrap, cans and bottles can exist in the environment for long periods of time and cause serious environmental issues in some areas, particularly if it enters waterways and sensitive environmental areas.
Local/Locally	In Australia.
Materials Recovery Facility (MRF)	A centre for the receipt, sorting and transfer of materials recovered from the waste stream prior to transport to another facility for recovery and management. At a MRF materials may undergo mechanical treatment for sorting by characteristics such as weight, size, magnetism and optical density and may include cleaning and compression. Materials may be received as mixed streams such as commingled recyclables from households and businesses or single streams such as metals.
Mechanical recycling/ conventional recycling	The use of physical processes such as sorting, chipping, grinding, washing and extruding to convert scrap plastics to a usable input for the manufacture of new products.
Organics recycling	The treatment of separately collected organics waste by anaerobic digestion, composting or vermiculture.
Packaging	Material used for the containment, protection, marketing or handling of product. Includes primary, secondary and tertiary/freight packaging in both consumer and industrial packaging applications.
PE-HD or HDPE	High density polyethylene (PIC 2). Typically referred to as HDPE.

Term	Definition
PE-LD or LDPE	Low density polyethylene (PIC 4). Typically referred to as LDPE.
PE-LLD or LLDPE	Linear low density polyethylene (PIC 4). Typically referred to as LLDPE.
PET	Polyethylene terephthalate (PIC 1).
Phase out	Phase out means to eliminate the packaging entirely or take action to ensure that it is no longer problematic, unnecessary and single-use through design, innovation, or introduction of alternatives.
PIC	Plastic identification code. Also referred to as the resin identification code (RIC) in some other countries.
Plastic packaging	Plastic packaging contains more plastic by weight than any other substance. Plastic means a polymer material to which additives or substances may have been added (this definition is aligned to the definition by the UK Plastics Pact).
PP	Polypropylene (PIC 5).
Packaging Recyclability Evaluation Portal (PREP)	An online tool that provides clear, consistent and validated information about the recyclability of specific packaging formats.
Primary material	See 'Virgin material'.
Problematic packaging	Problematic packaging is currently either: • difficult to collect for effective reuse, recycling or composting, or • a material that hinders, disrupts or obstructs opportunities to recover other materials or • resources including via existing recycling streams, or • a significant contributor to the litter problem, or • manufactured with hazardous chemicals or materials (e.g., intentionally added PFAS or • BPA) that pose a significant risk to human health or the environment.
Product stewardship	A concept of shared responsibility by all sectors involved in the manufacture, distribution, use and disposal of products, which seeks to ensure value is recovered from products at the end-of-life.
PS-E or EPS	Expanded polystyrene (PIC 6). Typically referred to as EPS.
PVC	Polyvinyl chloride (PIC 3).
Recover / recovery / resource recovery	The process of recovering resources from waste for reuse or reprocessing. This includes collection, sorting and aggregation of materials. To convert waste into a reusable material.

Term	Definition
Recyclable packaging	A packaging (1) or packaging component (2,3) is recyclable if its successful post-consumer (4) collection, sorting, and recycling is proven to work in practice and at scale. Also see the related 'Compostable packaging' and 'Reusable packaging' definitions. Supporting notes: 1. A package can be considered recyclable if its main packaging components, are recyclable according to the above definition, and if the remaining minor components are compatible with the recycling process and do not hinder the recyclability of the main components. The PREP design tool provides information on recyclability of packaging through kerbside collection services. 2. A packaging component is a part of packaging that can be separated by hand or by using simple physical means (ISO 18601), e.g. a cap, a lid and (non in-mould) labels. 3. A packaging component can only be considered recyclable if that entire component, excluding minor incidental constituents (5), is recyclable according to the definition above. If just one material of a multi-material component is recyclable, one can only claim recyclability of that material, not of the component as a whole (in line with ISO 14021). 4. ISO 14021 defines post-consumer material as material generated by households or by commercial, industrial and institutional facilities in their role as end users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain. It excludes pre-consumer material (e.g. production scrap). 5. ISO 18601:2013: A packaging constituent is a part from which packaging or its components are made and which cannot be separated by hand or by using simple physical means (e.g. a layer of a multi-layered pack or an in-mould label).
Recyclate	Recycled material after reprocessing.
Recycle/Recyclables/Recycling	In common practice the term is used to cover a wide range of activities, including collection, sorting, reprocessing and reuse.
Recycled content	Is the proportion, by mass, of pre-consumer and post-consumer recycled material in packaging (AS/ISO 14021). 'Pre-consumer' material is material diverted from the waste stream during manufacturing (excluding rework). 'Post-consumer' material is material waste generated by households or by commercial, industrial and institutional facilities. The amount of renewable or recycled material is expressed as a percentage of the quantity of packaging material put onto the market.

Term	Definition
Reusable packaging	Packaging which has been designed to accomplish or proves its ability to accomplish a minimum number of trips or rotations (1,2) in a system for reuse (3,4). Also see the related 'Compostable packaging' and 'Recyclable packaging' definitions. Supporting notes: 1. A trip is defined as transfer of packaging, from filling/loading to emptying/unloading. A rotation is defined as a cycle undergone by reusable packaging from filling/loading to filling/loading (ISO 18603). 2. The minimum number of trips or rotations refers to the fact that the 'system for reuse' in place should be proven to work in practice, i.e. that a significant share of the package is actually reused (measured e.g. by an average reuse rate or an average number of use-cycles per package). 3. A system for reuse is defined as established arrangements (organisational, technical or financial) which ensure the possibility of reuse, in closed-loop, open-loop or in a hybrid system (ISO 18603). 4. Reuse is an operation by which packaging is refilled or used for the same purpose for which it was conceived, enabling the packaging to be refilled (ISO 18603).
Secondary processing	A process undertaken after sorting in which a recovered material is put through an industrial process to change it so that it can be used as an input for the manufacture of new products. Also see 'Reprocessor'.
Sectors / industry sectors	Groupings of industries used to generalise patterns in waste generation and disposal e.g. construction and demolition, food services including food retail and food manufacturing, small to medium enterprises.
Single-use packaging	Single-use packaging is routinely disposed of after its contents have been unpacked or exhausted, or is not part of an accessible reuse system where packaging can be used again in the same application for which it was originally designed.
Soft plastics packaging	Soft (flexible) plastics are generally defined as plastics that can be scrunched into a ball, unlike 'rigid' plastics such as bottles and tubs, which are moulded and hold their shape.
Unnecessary packaging	Unnecessary packaging can be reduced or redesigned with a fit-for-purpose alternative without diminishing product integrity, compromising product accessibility, hindering ability to meet health or safety regulations, or causing undesirable environmental outcomes.
Virgin material	Material that has been sourced through primary resource extraction. Virgin materials are often referred to as primary materials. Virgin materials are not sourced from recycled materials (sometimes called secondary materials). For example, 'virgin' steel is manufactured from iron ore, and 'virgin' paper is manufactured from plantation sourced wood fibre.
Waste hierarchy	An order for preference for the management of waste, with avoidance being the most preferred option and disposal being the least.
Waste to energy	Refer to Energy from waste.

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Appendices

Click on 'Yes', 'No' or category to create your decision

Click here to see full static version of decision tree

Does the packaging contain more plastic by weight (including additives which form part of the plastic) than any other substance?

YES NO

Examples: Plastic bottles, tubs, and bags.

Click on 'Yes', 'No' or category to create your decision

Click here to see full static version of decision tree

The packaging is single-use.

Consider whether a reusable alternative is feasible - refer to APCO's Scaling up for Reusable Packaging for guidance.

Can the packaging be **avoided** without diminishing product integrity, compromising product accessibility, hindering ability to meet health or safety regulations, or causing undesirable environmental outcomes such as a higher carbon footprint or increased food waste?

YES **NO**

Click on 'Yes', 'No' or category to create your decision

Click here to see full static version of decision tree

Is the packaging **non-recyclable** (i.e., it does not have a collection, sorting, and recycling system that is proven to work in practice and at scale)?

Recycling services may include: kerbside recycling (check the Packaging Recyclability Evaluation Portal (PREP)), widely available commercial services for B2B packaging, or an industry-run product stewardship scheme.

Examples: Fragmentable plastic packaging (e.g., oxo-degradable plastics), PVC, PVDC, PS, EPS, opaque PET, non-detectable carbon black.

YES **NO**