

PPA Sustainability: Guidance Document on Children's Magazines

Version 1, 18th March 2021

Magazines provide children with the opportunity to engage with literacy, to be creative and to learn about the world around them. Throughout the COVID-19 pandemic we have seen growing interest across the market for children's magazines, especially as an engaging alternative to screen time, at a time where our lives have become inevitably more digital. A recent survey shows that 66% of girls and 56% of boys regularly engage with magazines¹.

An integral element of the magazine experience is the covermounted gifts which complement the content and provide stimulus for play, creativity and learning. Educational and activity-based magazines are a popular format, supported by covermounts that support these objectives. What is more, the value proposition of a children's magazine with no-free gift is considered as considerably lower than the value proposition of a children's magazine bearing a free gift².

The printed magazines themselves are fully recyclable, but the packaging (both the magazine wrapping and the packaging of the covermounts) is inherently single-use and recycling of this packaging can be challenging depending on the materials used. The covermounts are designed to be durable and multi-use but they are manufactured from a range of materials which may or may not be recyclable at the end of their useful life.

Research recently commissioned by the PPA on behalf of its members³ highlights the fact that consumers value covermounted gifts as part of the offer. When asked about initiatives that would make parents feel better about sustainability going forward, the preferred solutions involved better quality covermounts / gifts and no plastic wrap packaging. Elimination of covermounts altogether was the option least preferred.

The concept of the circular economy recognises the need to shift production and consumption from the traditional linear models to circular processes where materials are re-used and recycled to maximise efficiencies. This approach minimises the need for extraction of new raw materials whilst reducing the pressures on final end-of-life waste management solutions (landfill and energy recovery). The circular economy concept reinforces the aims of the waste hierarchy, which also enshrines the concept of waste prevention as a first objective. In line with the concept of the circular economy, and in recognition of their unique relationship with children and their families, and as responsible publishers, PPA members are committed to maximising the circularity of children's magazines.

The PPA and its membership have been monitoring the use of plastic across the magazine industry for several years. In relation to plastic wrapping, the PPA Sustainability Action Group (SAG) has dedicated resources to reducing usage through material light-weighting, investigating alternative materials and promoting recycling of plastic wrap wherever possible. Many publishers have moved to fully recyclable

¹ The Future of Magazines in the Children's Space, Kids Industries, 2020 (commissioned by PPA and available to PPA members)

² In response to the question "What type of magazines, including any subscriptions, do you tend to buy for your child?", 42% of respondents answered positive to "Educational" and 41% answered positive to "Activity-based". From The Future of Magazines in the Children's Space, Kids Industries, 2020 (commissioned by PPA and available to PPA members)

³ The Future of Magazines in the Children's Space, Kids Industries, 2020 (commissioned by PPA and available to PPA members)

magazine wrapping options such as paper and LDPE, and an increasing number are part of the OPRL (On Pack Recycling) scheme, adopting this labelling system to signify whether the material is recyclable or not and advise consumers on the most suitable disposal method for their wrap.

As for covermounts, PPA members recognise the need to maximise the circularity of materials used in their products and many have reduced the frequency of plastic covermounted items, opting for alternative gifts as a substitute. Investment and developments now mean that many publishers are participating in covermount returns schemes and new recycling models that facilitate increased collection and valorisation of magazine wrapping and/or covermount packaging and/or covermounts. A simple move away from plastic does not necessarily enhance sustainability or reduce carbon impact of a magazine covermount, which is why all decisions need to be carefully researched and analysed to monitor the whole life cycle impact of all products.

Subsequently, publishers are encouraged to take a number of actions which will enhance the circularity of children’s magazine wrapping, the packaging of covermounted gifts, and ultimately of the covermounts themselves.

SUMMARY OF KEY ACTIONS

Action 1	Adopt recyclable materials for magazine wrapping and covermount packaging; adopt OPRL labelling; nominal targets are for 100% FSC/PEFC or recycled paper/card packaging from Autumn/Winter 2021 and 30% recycled plastic packaging target by 2025.
Action 2	Limit the presence of non-recyclable components in plastic covermounts.
Action 3	Collaborate through the PPA and industry forums to develop and evolve best practice, continually improving sustainability and exploiting technological advances to reduce waste.

Action 1 - Circular and sustainable packaging

Covermounts may be contained within the magazine wrapping or may be in separate packaging sufficiently secured to the magazine.

The PPA recently commissioned research on behalf of its members into the environmental impacts of magazine wrapping materials⁴. Magazine wrapping may be of plastic film or paper wrapping. For plastic films, currently LDPE and PP are the most common formats used. Mostly virgin material is currently used. LDPE magazine wrapping is classified as recyclable by the OPRL (it can be returned to stores alongside carrier bag collections) but PP is currently labelled according to the OPRL scheme as “not currently recycled”. Some publishers have also experimented with compostable/biodegradable starch-based films. However, the PPA research suggests that these films should be avoided, due to concerns relating to the prevalence of capacity to handle this material and concerns relating to the impact of this material on the quality of recycle if it enters the material recycling stream. Paper wrapping is inherently recyclable in existing kerbside paper collection schemes, and offers a

⁴ Evaluation of alternatives to standard single-use plastics for magazine wrapping, Michael Sturges and Clare Taylor, 2019 (commissioned by PPA and available to PPA members)

sustainable solution for many, particularly postal subscription copies. However, it does not offer a viable solution for newsstand packaging in most circumstances, and can be vulnerable to damage in the course of delivery.

Covermount packaging may consist of plastic film, a variety of rigid plastics and/or card. The considerations for magazine film wrap also apply to plastic film used for covermount packaging. The recyclability of rigid packaging components is highly variable and needs to be evaluated on a material-by-material basis. Card packaging components (such as backing card or cartonboard) are inherently recyclable in existing kerbside paper collection schemes.

Children's publishers should pursue more circular and sustainable packaging solutions through the following actions:

Using recyclable magazine wrapping – members should apply the learnings of the PPA-funded research into alternative magazine wrapping materials and should adopt recyclable materials for magazine wrapping. This means currently utilising either LDPE film or paper wrapping. PP films should not be used except in exceptional circumstances (e.g. where specific functionality of finish is required) and for the time being the use of compostable/biodegradable polywrap should be avoided.

Using recyclable covermount packaging – where the publisher has influence over the specification of the covermount packaging, recyclable packaging materials should be chosen except in exceptional circumstances (e.g. where specific functionality of finish is required). A traffic light list of materials deemed recyclable is provided for guidance as Annex 1 of this document. As knowledge and recycling technologies develop, this list will be revised regularly.

Clear recyclability labelling – members should be OPRL registered and use the ORPL recyclability labelling on all packaging items over which they have control of the artwork.

Sustainable packaging materials – publishers should favour recycled content plastic packaging where available and economically viable for both polybags and covermount packaging. The nominal target is to use 30% recycled content plastic packaging by 2025, depending on availability and economics. PPA members should favour FSC/PEFC and/or recycled content paper packaging. The nominal target is to use 100% FSC/PEFC or recycled content paper wrapping and backing cards by Autumn/Winter 2021.

Action 2 - Circular and sustainable covermount gifts

Covermounts in the children's sector include plastic toys, art materials, stickers, etc. Although designed to be durable and multi-use, many have a limited lifespan and will end up in the waste stream. Currently, the majority of items will be disposed of rather than recycled, due to the fact that they are not recyclable, or capacity for separate collection and/or recycling does not exist, or the consumer is unaware that the item is recyclable.

Publishers should seek to make covermounts more circular and sustainable through the following actions:

Limiting the presence of non-recyclable components in plastic covermounts - where the publisher has influence over the specification of the covermount, recyclable materials should be chosen where these offer an appropriate level of durability and fulfil all performance and legal requirements. Components which impinge on the recyclability of covermounts should be avoided except where these are required for safety reasons, to deliver functionality or for increased durability of the

covermounted gift or where there is currently no economically viable alternative. A traffic light list of covermount materials deemed recyclable and of items which impact on recyclability is provided as guidance in Annex 2 of this document. As knowledge and recycling technologies develop, this list will be revised regularly.

Action 3 – investigate new solutions and build best practice

Actions 1 and 2 are based on the current situation and knowledge base, but state-of-the-art technology in materials and recycling is fast developing. Therefore, in parallel, children’s publishers should monitor and investigate solutions to the following:

- Alternative materials for magazine wrapping and/or covermount packaging and/or covermount components (reducing reliance on single-use and virgin plastics and/or promoting bio-based solutions with enhanced and genuine end-of-life options);
- New recycling models that facilitate increased collection and valorisation of magazine wrapping and/or covermount packaging and/or covermounts, such as the Recycle to Read project⁵, TerraCycle⁶, and other initiatives that may emerge.

The actions and recommendations in this document may be adjusted to reflect the emergence of new solutions which offer sustainable alternatives.

How this Guidance Document relates to Other Initiatives

There are many initiatives focused on reducing consumption of single-use plastics and/or increasing recycling of plastic waste streams. This document is intended to be complimentary to these existing initiatives, but with a specific focus on meeting the challenges for children’s magazines, namely the packaging of the magazine and their covermounted gifts, and the use of materials in the covermounted gifts themselves.

Following this guidance document will contribute to publishers’ efforts to meet the commitments of these other initiatives and position the sector as a leader in sustainability and circularity.

Examples of existing initiatives include:

- The UK Plastics Pact

A collaborative initiative that aims to create a circular economy for plastics. It brings together businesses from across the entire plastics value chain with UK governments and NGOs to tackle plastic waste. The UK Plastics Pact aims to transform the UK plastic packaging sector by meeting four world-leading targets:

- 100% of plastic packaging to be reusable, recyclable or compostable by 2025;

⁵ The Recycle to Read project aims to build infrastructure, capacity and participation in end-of-life toy recycling, <https://recycleto.read.org/>

⁶ TerraCycle offers free recycling programmes funded by brands, manufacturers, and retailers around the world to help collect and recycle hard-to-recycle waste streams, <https://www.terracycle.com/en-GB/>. TerraCycle currently operates recycling programmes for L.O.L. Surprise![™] products, packaging and accessories and for Hasbro toys and games

- 70% of plastic packaging effectively recycled or composted by 2025;
- Take actions to eliminate problematic or unnecessary single-use packaging items through redesign, innovation or alternative (reuse) delivery models;
- 30% average recycled content across all plastic packaging by 2025.

This guidance ties in with the aims of the UK Plastics Pact by targeting 100% recyclable magazine wrapping and covermount packaging and 30% recycled content plastic packaging. Also, clear recycling labelling will help to promote appropriate recycling of used magazine wrapping and covermount packaging.

- Tesco Sustainable Children's Magazine sector targets

This commits publishers supplying Tesco to use recyclable LDPE magazine wrapping, to be OPRL registered, to use FSC / PEFC or recycled paper for backing cards, and to eliminate glitter, polystyrene and PVC (from blister packs and VAC trays) from covermount packaging.

This document goes beyond the objectives of Tesco and anticipates the need to address the recyclability and sustainability of the covermount gifts themselves.

- UK plastic packaging tax

The UK plastic packaging tax will encourage the use of recycled plastic instead of new plastic within packaging. It will create greater demand for recycled plastic, and in turn stimulate increased levels of recycling and collection of plastic waste, diverting it away from landfill or incineration. From April 2022, the Plastic Packaging Tax will apply at a rate of £200 per tonne of plastic packaging which does not contain at least 30% recycled plastic.

This guidance ties in with the aspirations of the UK Plastic Packaging Tax by committing publishers to utilising 30% recycled content plastic packaging for magazine wrapping and for covermount packaging by 2025, depending on availability and economics.

Governance

This document has been prepared by the PPA Children's Publishing Working Group (CPWG). The CPWG is the Steering Group which has been convened to respond to sustainability developments and share best practise. The group consists of the following members: DC Thomson, DJ Murphy, Story House Egmont, First News, Immediate Media, Kennedy Publishing, Creature Media, Redan Publishing, Seymour, Signature Publishing. The CPWG meets regularly to ensure the industry remain on track to achieve the actions set out in this document and to review how emerging priorities and challenges can be reflected in publishers' sustainability work.

Annex 1: Recyclable and non-recyclable packaging materials for magazine and covermount packaging

Material or component	Recyclability	Comment
PE film (fossil-based)	● GREEN	PE film arising as waste in households is separately collected for recycling by some local authorities and an agreement is in place that magazine wrapping can be placed in the carrier bag bring banks available at some larger grocery stores. Subsequently, PE magazine wrap can be labelled using the appropriate on-pack recycling label (OPRL).
PE film (bio-based)	● GREEN	Bio-based PE is identical to standard PE except that it is produced from precursor chemicals derived from plants rather than fossil fuels. It is an exact replica of standard fossil-based PE, providing the same properties, processability, functionality and end-of-life options. Subsequently, bio-based PE films can be recycled alongside standard PE films.
PP film	● RED	PP film is found in two forms: cast unoriented polypropylene (CPP) and biaxially oriented polypropylene (BOPP). Technically, both forms are recyclable, but there is no capacity for collection and recycling of PP films in the UK. Subsequently, today PP films such as PP magazine wrapping are not collected for recycling and are currently classified by the on-pack recycling label (OPRL) scheme as not currently recycled
Paper wrapping	● GREEN	Paper is a highly recyclable material. Paper wrapping can be recycled within existing paper recycling streams and can be labelled using the OPRL “widely recycled” label.
Starch-based compostable film	● RED	<p>Starch-based which have been certified as industrially compostable can in theory be reprocessed in open windrow composting facilities, in-vessel composting and/or anaerobic digestion systems. This means that starch-based films that have been certified as compostable could potentially be collected as part of food waste collection schemes or green waste collection. In reality, these materials are not wanted at the reprocessing facilities:</p> <ul style="list-style-type: none"> • Many of the films certified as compostable do not actual breakdown within the standard operating duration for windrow composting facilities. • Operators of in-vessel composting and anaerobic digestion systems also report that the materials are not compatible with their processes <p>Biodegradable plastic materials are also not wanted in recycling processes. Mixing biodegradable or compostable plastic with recyclable plastic contaminates the recycling stream. Recyclers report that levels as low as 2 – 10% could cause problems.</p>

<p>Card (e.g. backing cards, cartons, etc)</p>	<p>● AMBER</p>	<p>Card is a highly recyclable material and can be recycled within existing paper recycling streams and can be labelled using the OPRL “widely recycled” label. However, laminated card can be a problem for the recycling process. According to industry guidance⁷, most paper mills would prefer not to receive plastic laminated board. Designers should restrict plastic content to 5% of pack weight as a maximum, although the industry would prefer no more than 3% by weight.</p>
<p>PVC</p>	<p>● RED</p>	<p>PVC is not a favoured packaging material, as its production causes the release of harmful chemicals and plasticisers used to soften the substrate are known to bioaccumulate in the environment and may disrupt the hormones of animals, causing birth defects, infertility and developmental problems in their young.⁸ This type of plastic is not recyclable and should be placed in the bin.⁹ Furthermore, it can be a contaminant to PET recycling. Contaminants which generate acidic compounds during extrusion cause problems when recycling PET, as these catalyse ester depolymerisation reactions, decreasing intrinsic viscosity. A range of contaminants including PVC can act as sources of acids. PVC contamination even at low levels is a potentially major problem for PET recycling as the similar appearance and overlapping range of densities make the two polymers difficult to separate.¹⁰</p>
<p>PET</p>	<p>● AMBER</p>	<p>PET used for blisters or trays is potentially recyclable alongside PET bottles. Plastic blisters marked PET or PETE can be recycled by most local authorities.¹¹ However, the introduction of a Deposit Return Scheme for PET bottles may make it uneconomical for local authorities to collect the residual PET packaging once PET bottles are excluded from the household waste stream.</p>

⁷ Paper and Board Packaging Recyclability Guidelines, Confederation of Paper Industries, 2019

⁸ <https://www.greenmatters.com/p/why-is-pvc-bad-environment#:~:text=PVC%20is%20not%20considered%20eco-friendly.%20It%20is%20made,does%20a%20lot%20of%20harm%20to%20the%20environment.>

⁹ <https://www.recyclenow.com/what-to-do-with/pvc-packaging#:~:text=PVC%20is%20a%20type%20of%20plastic%20that%20is,and%20should%20be%20placed%20in%20the%20waste%20bin.>

¹⁰ Core Principles for Plastic Packaging Recycling: A Summary of Recyclability by Design, Recoup/British Plastics Federation, 2019

¹¹ <https://www.recyclenow.com/what-to-do-with/gift-toy-packaging-0>

PS	● RED	Polystyrene can be rigid, flexible (film) or expanded foam (EPS). EPS and PS film is not recycled. Rigid PS is generally not recycled. Some local authorities accept it in their recycling collections although it is unlikely to actually be recycled. ¹²
Coloured plastic	● AMBER	<p>Colour interferes with the mechanical recycling process in two main ways: Firstly, strongly coloured plastic material has a much lower economic value than non-pigmented plastic. Secondly, heavily coloured (and hence strongly light absorbing) plastic may interfere with automated sorting machinery that uses NIR spectroscopy to identify the nature of the plastic. Such equipment relies on the reflection of NIR radiation and thus there is an issue in identifying plastic items containing carbon black pigment.</p> <p>The amount of colour to be used should be minimised as much as possible. Where use of colour is necessary, designers are encouraged to consider alternative approaches that will further facilitate recyclability. Sometimes using colour may offer other benefits, for example, packaging manufacturers use scrap produced from a mixture of colours by adding black pigment and recycling into black plastic. This also enables a high level of recycled content.</p>
Sticky tape	● AMBER	<p>Sticky tape is not recyclable and should be disposed of in the general waste¹³.</p> <p>Recyclable versions of sticky tape are available on the market, but these have been tested by publishers and have not performed well enough to be adopted. Therefore, continued use of standard sticky tape is necessary. However, whilst undesirable in the recycling mill, due to the small quantities involved these will have a negligible impact on the overall recyclability of the magazine. Consumers should be encouraged to remove all loose strands of sticky tape from other packaging items before they are placed in the recycling stream.</p>
Metals (steel and aluminium)	● GREEN	Steel and aluminium are both inherently recyclable. They are classified as “permanent materials” meaning that they can be recycled indefinitely without any loss of performance. They are classified as recyclable under the on-pack recycling label (OPRL) scheme.
Glitter in paper	● RED	Glitter should not be used in paper as it passes into the finished product, causing imperfections in the finished product and causing paper to be unprintable. Glitter can

¹² <https://www.recyclenow.com/what-to-do-with/polystyrene-1>

¹³ <https://www.recyclenow.com/what-to-do-with/sticky-tape-1>

also melt within the process acting like glue, ripping the paper and building up within the process.

Annex 2: Recyclable and non-recyclable covermount materials and components

Generally, there are no collection and recycling routes specific to the items that will make up covermount gifts. Some household waste recycling centres accept toys and games for recycling, but it is best to check first¹⁴. The exception will be paper and board products (books, craft materials, etc), which are inherently recyclable. Some plastic components may be potentially recyclable but currently they are likely to be separated out from kerbside collected packaging materials and sent for disposal. TerraCycle UK offers a Toys Zero Waste Box, which allows consumers to post used toys (Cards, dice, game boards, packaging from board games, Stuffed animals, baby toys, building sets, puzzle pieces, game pieces and action figures) in for recycling.¹⁵ However, this box is expensive (£135-£301, depending on size) and is only appropriate if consumers have a large quantity of toys that they wish to dispose of.

Material or component	Recyclability	Comment
Rigid PE components	● AMBER	Rigid PE packaging is common (milk bottles are HDPE, shampoo bottles can be HDPE or LDPE). These packaging materials are recyclable and are commonly collected through kerbside collection schemes. However, non-packaging items are unlikely to be welcome in these recycling streams and are likely to be separated out and sent for disposal. New technologies for mixed plastics recycling are emerging, and rigid PE is potentially recyclable through the Recycle to Read Scheme /Impact Recycling's technology, should this become established as a viable collection/recycling route.
Rigid PP components	● AMBER	Rigid PP packaging is common (some bottles are PP). These packaging materials are recyclable and are commonly collected through kerbside collection schemes. However, non-packaging items are unlikely to be welcome in these recycling streams and are likely to be separated out and sent for disposal. New technologies for mixed plastics recycling are emerging, and rigid PP is potentially recyclable through the Recycle to Read Scheme /Impact Recycling's technology, should this become established as a viable collection/recycling route.
Paper	● GREEN	Paper is a highly recyclable material and can be recycled within existing paper recycling streams.
Card (e.g. backing cards, cartons, etc)	● AMBER	Card is a highly recyclable material and can be recycled within existing paper recycling streams. However, laminated card can be a problem for the recycling process.

¹⁴ <https://www.recyclenow.com/what-to-do-with/toys-games-0>

¹⁵ https://zerowasteboxes.terracycle.co.uk/collections/all/products/toys-zero-waste-boxes?utm_source=www.terracycle.com&utm_medium=main_button&utm_campaign=ZeroWasteBox

		According to industry guidance ¹⁶ , most paper mills would prefer not to receive plastic laminated board. Designers should restrict plastic content to 5% of pack weight as a maximum, although the industry would prefer no more than 3% by weight.
PVC components	● AMBER	PVC is not a favoured material, as its production causes the release of harmful chemicals and plasticisers used to soften the substrate are known to bioaccumulate in the environment and may disrupt the hormones of animals, causing birth defects, infertility and developmental problems in their young. ¹⁷ Furthermore, this type of plastic is not recyclable and should be placed in the bin. ¹⁸ However, the more pliable properties that PVC offers allows certain products to be produced which are safer for the end-user. For example, sharp points, which can be created using more brittle plastics, are avoided which makes for safer covermounts for young children. Depending on the covermount, PVC may also be favoured over polymers where durability is required.
ABS components	● AMBER	ABS is potentially recyclable, but it is not currently collected by local authorities.
PS components	● RED	Polystyrene can be rigid, flexible (film) or expanded foam (EPS). EPS and PS film is not recycled. Rigid PS is generally not recycled. Some local authorities accept it in their recycling collections although it is unlikely to actually be recycled. ¹⁹
CDs and DVDs	● AMBER	These discs are accepted at some local recycling centres but this service does vary across the country. ²⁰ TerraCycle UK offers a Storage Media Zero Waste box, which allows consumers to post used CDs and DVDs (along with other storage media) in for recycling. ²¹ However, this

¹⁶ Paper and Board Packaging Recyclability Guidelines, Confederation of Paper Industries, 2019

¹⁷ <https://www.greenmatters.com/p/why-is-pvc-bad-environment#:~:text=PVC%20is%20not%20considered%20eco-friendly.%20It%20is%20made,does%20a%20lot%20of%20harm%20to%20the%20environment.>

¹⁸ <https://www.recyclenow.com/what-to-do-with/pvc-packaging#:~:text=PVC%20is%20a%20type%20of%20plastic%20that%20is,and%20should%20be%20placed%20in%20the%20waste%20bin.>

¹⁹ <https://www.recyclenow.com/what-to-do-with/polystyrene-1>

²⁰ <https://www.recyclenow.com/what-to-do-with/cds-dvds-0>

²¹ https://www.terracycle.com/en-GB/zero_waste_boxes/storage-media-en-gb

		box is expensive (£148-£260, depending on size) and is only appropriate if consumers have a large quantity of Storage Media that they wish to dispose of.
Fabric, clothes and textiles	● GREEN	Clothes and textiles that are in good condition can be donated or sold for re-use. Items that are not suitable to be passed on can be recycled and made into new items such as padding for chairs and car seats. Many schemes exist, including bring banks and collection bags. ²²
Pens	● GREEN	TerraCycle UK offers a bring scheme sponsored by Bic. Consumers can drop off pens and markers at specified locations for free for recycling. ²³
Stationary	● AMBER	TerraCycle UK offers a Stationary Zero Waste Box, which allows consumers to post used stationary (pens, pencils, markers, clips, clamps, tape dispensers, plastic dividers and folders, etc) for recycling. ²⁴ However, this box is expensive (£121-£241 depending on size) and is only appropriate if consumers have a large quantity of used stationary materials they wish to dispose of.
Arts and Crafts materials	● AMBER	TerraCycle UK offers an Arts and Crafts Zero Waste Box, which allows consumers to post used materials (brushes, water colour palettes, crayons, charcoals, canvases, sponges, notebooks, easels, markers and tape) for recycling. ²⁵ However, this box is expensive (£140-£231 depending on size) and is only appropriate if consumers have a large quantity of used arts and crafts materials they wish to dispose of.
Glue sticks and bottles	● AMBER	TerraCycle UK offers a Glue Sticks and Bottles Zero Waste Box, which allows consumers to post empty glue sticks and bottles for recycling. ²⁶ However, this box is expensive (£129-£277 depending on size) and is only appropriate if consumers have a large quantity of empty glue sticks and bottles they wish to dispose of.
Holiday decorations and party supplies	● AMBER	TerraCycle UK offers a Holiday Decorations and Party Supplies Zero Waste Box, which allows consumers to post used materials (used holiday decorations, bows, balloons,

²² <https://www.recyclenow.com/what-to-do-with/clothing-textiles-0>

²³ <https://www.terracycle.com/en-GB/brigades/bic-uk>

²⁴ https://zerowasteboxes.terracycle.co.uk/products/office-supplies-zero-waste-box?utm_source=www.terracycle.com&utm_medium=main_button&utm_campaign=ZeroWasteBox

²⁵ https://zerowasteboxes.terracycle.co.uk/collections/all/products/art-supplies-zero-waste-boxes?utm_source=www.terracycle.com&utm_medium=main_button&utm_campaign=ZeroWasteBox&variant=692939425

²⁶ https://zerowasteboxes.terracycle.co.uk/collections/all/products/art-supplies-zero-waste-boxes?utm_source=www.terracycle.com&utm_medium=main_button&utm_campaign=ZeroWasteBox&variant=692939425

		etc) for recycling. ²⁷ However, this box is expensive (£129-£249 depending on size) and is only appropriate if consumers have a large quantity of items they wish to dispose of.
Coloured plastics	● AMBER	<p>Colour interferes with the mechanical recycling process in two main ways: Firstly, strongly coloured plastic material has a much lower economic value than non-pigmented plastic. Secondly, heavily coloured (and hence strongly light absorbing) plastic may interfere with automated sorting machinery that uses NIR spectroscopy to identify the nature of the plastic. Such equipment relies on the reflection of NIR radiation and thus there is an issue in identifying plastic items containing carbon black pigment.</p> <p>The amount of colour to be used should be minimised as much as possible. Where use of colour is necessary, designers are encouraged to consider alternative approaches that will further facilitate recyclability. Sometimes using colour may offer other benefits, for example, manufacturers use scrap produced from a mixture of colours by adding black pigment and recycling into black plastic. This also enables a high level of recycled content.</p>
Metals (steel and aluminium)	● GREEN	Steel and aluminium are both inherently recyclable. They are classified as “permanent materials” meaning that they can be recycled indefinitely without any loss of performance. Steel and aluminium components should be recyclable alongside steel and aluminium packaging materials.
Glitter	● RED	Glitter is not wanted in recycling streams, as it contaminates the end product.

²⁷ https://zerowasteboxes.terracycle.co.uk/products/zero-waste-box-1? pos=1& sid=97bf67cda& ss=r&utm_source=www.terracycle.com&utm_medium=header_button&utm_campaign=ZeroWasteBox&variant=31395064709198