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The Reality of Fashion

The journey towards Fashion for Good is only just beginning...

January 2022

Collaboration is the key to change – for good

It is two years since Fashion for Good published its report, "Polybags in the fashion industry: evaluating the options". Since then, as in many other industries, there has been a continued focus on the reduction of plastics in packaging, particularly single use. This has been driven by high-profile global campaigns such as those highlighting the damage being done to our oceans and their wildlife, and an overall awareness of the need to protect our planet, thanks to the focus on climate change during events such as COP26.

Our own new research with UK consumers reveals the majority (87%) consider the recyclability of the packaging of fashion items such as clothes, sunglasses and accessories bought online or by mail order is important when making their purchasing decision. Over half (52%) said that poor packaging recyclability puts them off buying items online or by mail order altogether. We also know that consumers have genuine concerns about the environmental harm caused by plastic, 58% of consumers said it is plastic breaking down to microplastics in the ocean and harming wildlife which concerned them most. This was followed by plastics going to landfill (24%) and being incinerated and causing more pollution (12%). All points echoed in the Fashion for Good report.

Yet, despite increasing pressure for alternative packaging solutions as part of a green revolution, progress is slow, with the majority of garment and accessory bags still made from Low Density Polyethylene (LPDE), and billions used every year. Of course, fashion products need to be protected on their journey to the consumer to ensure they arrive in perfect condition, so packaging is a necessity. It must protect from moisture, be strong and puncture resistant, heat sealable and also be suitable for labels and bar codes. However, should these functional attributes be at the expense of the end-of-life of the packaging?

The reality is that there are a range of packaging alternatives available which offer more favourable end-of-life options in terms of recycling and biodegradability, albeit none are yet the silver bullet the industry seeks and there are challenges to overcome before they are adopted widely. However, they are a significant improvement on LPDE and far less harmful to the environment.

Brands need to be aware that packaging innovation has delivered solutions which are now readily available, including starch based compostables and new-generation plastics such as Hydropol, which is based on PVA, and offers all of the functionality of LDPE, but are fully recyclable and biodegradable without producing harmful microplastics which are so damaging to the environment. So, if these products offer all of the product protection provided by traditional plastic packaging without the negative environmental impact, why aren't they being widely adopted?

The answer is chicken and egg. Although materials made with Hydropol are fully recyclable – indeed, in combination with paper, it actually enhances the recovery of paper fibres in the recycling process - we still have to work with the existing recycling infrastructure which has yet to fully adjust to the circular economy. The more brands collaborate and adopt new packaging technologies such as Hydropol, increasing the volume of PVA material, so will the viability of recycling around the world, closing the loop and making the circular economy a reality.

The paper recycling stream is an existing and generally available route to economic, technical and viable end of life which the consumer understands and, in many cases, has access to the collection stream. We also need to ensure consumers are educated about the benefits and attributes of choosing alternative packaging. They need more choice in terms of how they can dispose of their packaging, whether it is through the recycling system, dissolving it in the dishwasher or washing up water, or compositing it.

When it comes to packaging, we are on a journey of continuous improvement and waiting for the perfect solution is not the answer. To paraphrase Einstein - to keep using the same materials in the same way expecting a different result - in this case delivering circular economy solutions - is a definition of insanity. There is a huge opportunity for fashion industry brands can make a positive impact right now by switching to the alternative packaging solutions which are already available – the more that do, the quicker the pace of change. **For good.**

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The Reality of Fashion for Good

The journey is only just beginning...

Executive Summary

In December 2019, Fashion for Good published their "Polybags in the fashion industry: evaluating the options" report. Since then, there has been a continued consumer focus on the reduction of plastics, especially single-use packaging. This report aims to give a reality-check on progress and options available two years on.

Whilst the ideal would be to eliminate all packaging from the fashion supply chain, it is needed to keep garments in the condition consumers expect, especially when shipping around the world from manufacturing bases to distribution and retail outlets.

Although packaging is only one part of a garment's lifecycle, it is an area in which brands can make an impact on its journey towards fashion for good (or even perfect). There is now more information available regarding polybag options as well as the impact of alternatives on the environment.

The good news is that it is possible to retain the functionality of traditional LDPE ones whilst reducing the overall life-cycle impact by providing multiple options for disposal at end-of-life, including biodegradability and compostability as well as reuse to enable food to clean energy production

The Reality of Fashion for Good

Has the packaging landscape changed since 2019?

The majority of garment & accessory bags are still made from Low Density Polyethelene

LDPE

Flexible products are more difficult to recycle

especially as they tend to be contaminated by the item they are packaging.

*Source: **Plastic Expert**

Only 29%

Of recycling capacity across Europe can recycle LDPE. Of this 15% is in Germany, 14% in Italy, 13% Spain

*Source: **Plastic Recyclers Europe**

Film recycling challenges remain

- Low collection rates & low quality of input materials
- Lack of design for recycling
- Evolution of the recycling technologies needed

*Source: **Plastic Recyclers Europe**

In the UK, just 6%

of ALL* flexible plastic packaging is recycled. This includes Polypropylene, PET and LDPE!

*Source: **The UK Plastics Pact**

The most common barrier to recycling plastic packaging remains **uncertainty [of consumers] over which plastics can be recycled,** often resulting in material entering the wrong waste stream and being lost to the economy

*Source: **Sustainability.com**

Still far to go

... but change is possible

Even though LDPE (low density polyethylene) is technically recyclable, the recycling rate could be much better.*

There are now more alternatives on the market – including starch based compostables that improve end-of-life options as well as new-gen plastics such as Hydropol™ that retain the functionality of LDPE whilst giving multiple ed-of-life options.

Change is possible by reviewing existing packaging and evaluating alternatives based on brand and consumer needs

* Source Fashion for Good 2019 + Plastic Recyclers Europe

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Impacts

Garment bag options at a glance

An overview of LDPE vs Compostable vs Hydropol Garment Bags

Whilst traditional garment bags provide protection and functionality, their end of life disposal is limited to recycling which is not always available. Compostables (assuming this option is chosen by the end user) offer lower environmental impact but reduced functionality. New-gen materials such as Hydropol retain the properties needed to protect items together with multiple end of life options, removing the reliance on end-users to leave no trace on the environment.

Required Properties		LDPE Bags	Starch-Based Compostable Bags	Hydropol™ Bags
Transparency (to see garments, read labels and scan bar codes)		✔	✗	✔✔
Moisture permeability		✗	✔	✔✔
Strength		✔✔	✔	✔✔✔
Puncture resistance		✔	✗	✔✔✔
Heat seal		✔✔	✔	✔✔✔
End-of-life	Reuse / Recycling	✔	✗	✔
	Biodegradability	✗	✔	✔
	No Microplastics	✗	✔	✔
	Dissolvable	✗	✗	✔✔✔
	Non-toxic to environment	✗	✔	✔✔

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Impacts

Mailing (e-commerce) bag options at a glance

An overview of traditional mailing bags vs paper-lined alternatives

Whilst traditional mailing bags provide protection, being made from PE are limited in reuse and often recycling which is not always available.

Paper is seen as more environmentally friendly by consumers thanks to its kerb-side recyclability.

Compostables (assuming this option is chosen by the end user) offer lower environmental impact but reduced functionality.

New-gen materials such as Hydropol when combined with paper retain the properties needed to protect items whilst giving multiple end of life options, removing the reliance on end-users to leave no trace on the environment.

Product Comparisons

	Kraft Paper Bag	Paper Envelope	Paper e-commerce Mailer	Padded 'Jiffy Bag' FSC	Card Mailer	PE Mailing Bag	Compostable Mailer
Material	Kraft paper laminated wtih Hydropol	Paper	Kraft Paper	Paper padded with shredded recyclable paper	Card	PE	Sugar cane and potato starch
Size (mm)	380x250	320x230	425x255	270x200	350x250	650x450	350x250
Bag Weight (g)	25	14	48	54	TBC	15	10
Material Spec	40 gsm paper / 25 mu Hydropol	130 gsm	120 gsm	250 gsm	650 gsm	50 mu	40 mu
Puncture Resistance (kg/f)	2.70	0.80	2.27	3.29	5.61	1.12	2.70
Seal Strength (N)	71	28	159	69	120	18	9
Kerbside Recyclable	✔	✔	✔	✔	✔	✗	✗
End-of-life Options	Recyclable Biodegradable	Recyclable Biodegradable	Recyclable Biodegradable	Recyclable Biodegradable	Recyclable Biodegradable	Landfill or recycled at stores	Compostable Biodegradable

Kraft lined with Hydropol is up to **20% stronger & 50% lighter** than alternative paper e-commerce mailers

The Future of Fashion

Making a difference now & into the future

Factors to consider when reviewing Fashion packaging

- Review and decide the functionality actually needed by packaging through the supply chain.
  - Protecting items through the supply chain
  - Retail store needs eg swing tag information, barcode reading etc
  - Ecommerce needs to protect items in transit
  - Options available for reuse and disposal through the supply chain
  - Options available to reuse and disposal by consumers at home – and check actual recycling / composting rates mean they are a realistic option
- Determine if current packaging can be modified or a new solution needed
- Complete due diligence on current and new material options
- Functionality
  - Environmental impact including carbon footprint through the supply chain and end of life options
  - End use options for consumers
  - Environmental impact if accidentally released (will it biodegrade in weeks/months). Is it Marine-safe and will not harm turtles, polar bears, flora or fauna
  - Does it enables other materials eg paper mailing bags to be recycled
- Plan your journey – changes that can be made now plus collaborations to develop alternatives into the future

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Example checklist for evaluating new materials

Functionality & Environmental considerations		Yes / No	Notes
Transparency			Is 100% transparency needed? Can there be a trade-off between transparency and compostability/biodegradability? Can it be printed on without corona treatment
Moisture permeability			Is it hydropohilic (water loving) or hydropohobic (water hating). Does it allow fabrics to 'breathe'?
Strength / puncture resistance			How strong does the item need to be? What are consumer perceptions on strength?
Barrier properties			Are these needed? Is there a new-gen plastic that can remove 1+ layer yet retain the barrier needed?
Heat seal			Can the item be heatsealed? If not, an analysis on the adhesive being used needs to be made
Bio source available			Can the material be biosourced? If not currently available is there a route to biosource?
End-of-life	Reuse		Is it easy for the customer to reuse the item? What as? How many times?
	Recycling		Can all the components / materials be recycled? How many times? Is recycling widely available for end users (if so what are recycling rates)? Does it enable
	Biodegradability		Does it biodegrade?
	Are harmful microplastics formed during biodegradabity		Is it a Hydropohic or Hydrophilic material?
	Dissolvability		Does the material dissolve? Can this be done by a consumer during everyday activities eg kettle of hot water / dishwasher? Will it biodegrade without harmful microplastics in the waste water stream?
	Non-toxic to environment		Will it biodegrade in soil and sea? Does it produce or attract harmful microplastics or toxins? What is it effect on oceana flora and fauna plus wildlife such as turtle, whales and polar bears?

The Future starts now

Case Study:

Finisterre's packaging for change

Sustainability has always been at the heart of B Corp Outdoor brand, Finisterre and two years after the launch of their Leave No Trace garment bag, they have saved over 1 million garment bags going into landfill by switching to #LeaveNoTrace bags made from Hydropol. 2022 sees them furthering this with new strong Hydropol-lined mailing bags that can be recycled as paper.

Intro to Hydropol

- Retain the functionality of PE but offer more than recycling as an end-of-life options
- Can be managed in current waste streams
- Gives consumers choice eg reuse a food waste bag (contribute to gas yield in food waste to energy plants); dissolve in dishwasher or washing up water (no additional energy used); compostable
- Circular economy friendly - recycling is possible; more volume needed to encourage waste management companies to activate
- Minimises against environmental impact if accidentally released (will biodegrade in weeks/months). Marine-safe and will not harm turtles, polar bears, flora or fauna
- Enables other materials eg paper mailing bags to be recycled

Hydropol's Carbon Reduction Benefits

- Reduce lifecycle carbon emissions with lighter packaging
  - Hydropol bags are 3x stronger than PE so can be down-gauged
  - Mailing bags lined with Hydropol are 20% stronger and 50% lighter than paper ecommerce mailers and can reduce paper usage by up to 70%. E.g. light weight material optimises shipping and distribution, reducing operational cost and carbon impact. Kraft paper lined with Hydropol's strength x weight x gauge ratio enables 50% more bags per 40' container than standard paper mailing bags.

In 2018 we made a commitment to eradicate, non-degradable plastic from our supply chain. Our sustainable packaging commitment covers everything from the swingtag to the bag you receive your order in.

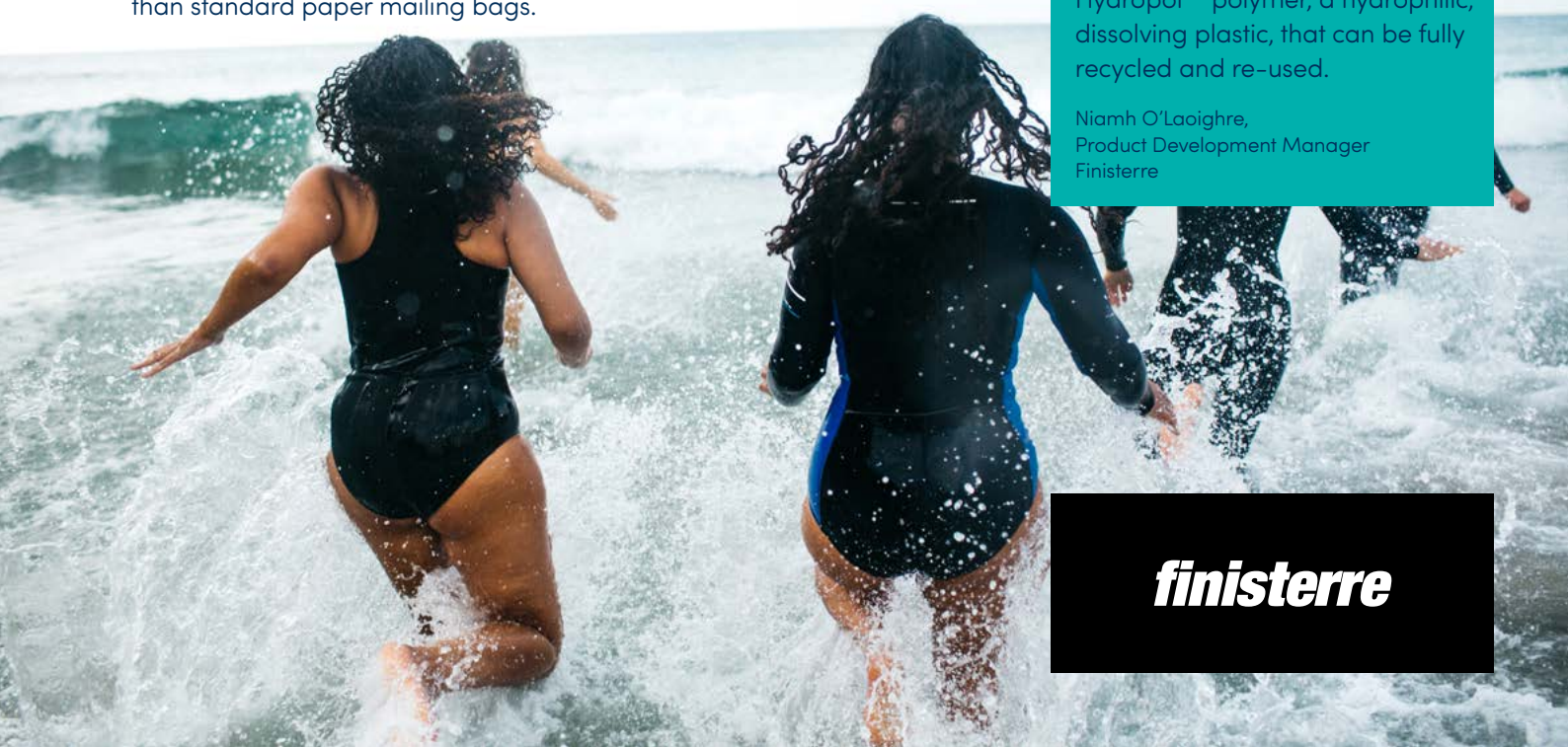
The decision on what material to use for our garment bag was a lengthy and in depth research into what was available and what aligned with our core values.

We knew for sure that we needed a garment bag to protect the integrity of our products, not only during shipping, but also whilst in storage and transit to customers. We also knew that we needed a solution to the end of life of this bag, and not create more problems.

We looked into compostable bags, but for us, the end of life didn't suit as industrial composting is not readily available to the general public and that is the best end of life for those types of bags, in order for them to perform correctly. A compostable bag cannot be added to your kerbside recycling collection.

We needed a product that had multiple end of life options, and crucially, something that completely broke down, leaving no microplastics or harmful toxins. Enter Aquapak with their Hydropol™ polymer, a hydrophilic, dissolving plastic, that can be fully recycled and re-used.

Niamh O'Laoighre,
Product Development Manager
Finisterre



finisterre

The Future starts now

The Hydropol checklist

Functionality & Environmental considerations		Yes / No	Notes
Transparency		✔✔	Hydropol is s 100% transparent. Barcodes can be read through it. It is easy to print upon and does not require corona treatment
Moisture permeability		✔✔	Hydropol is hydropohilic (water loving), allowing fabrics to 'breathe'?
Strength / puncture resistance		✔✔✔	3x strength of LDPE. Possible opportunities to down-gauge without loss of strength
Barrier properties		✔✔✔	Good oil and grease barrier to prevent product damage
Heat seal		✔✔✔	Yes, Hydropol is ideal for heatseal. Removes need for adhesive strip and tearstrip waste
Bio source available		✔	There is a route to biosource once volumes increase
End-of-life	Reuse	✔	Long lasting and easy to reuse between distribution and stores plus to/from customer
	Recycling	✔	It is possible to recycle Hydropol however waste management facilities not yet geared up due to low demand atm
	Biodegradability	✔	Inherently biodegradable in land and sea. Non toxic and marine-safe. Will leave no trace in the environment even if it is accidentally released
	Are harmful microplastics formed during biodegradabity	✗	No toxic microplastics form thanks to the hydrophilic nature of Hydropol
	Dissolvability	✔✔✔	Garment bags easy to dissolve in hot water and best disposal option for consumers using kettle or in dishwasher. Option for reuse as food waste bag as they will dissolve in AD plants and also commercial compostic (anaerobic and aerobic digestion)
	Non-toxic to environment	✔✔	Non toxic to environment. Will not harm oceana flora and fauna. If eaten by wildlife such as turtles, whales and polar bears, it will be digested by them although not as nutritious as food

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Polyvinyl alcohol (PVOH) is a polymer with unique properties that has the potential to contribute to the future direction of plastics within a circular economy and reduction of environmental impacts. Results of our investigations of the environmental implications of dissolved PVOH are consistent with previous reports that this material is innocuous to aquatic life for the variety of organisms that have been tested.

Further investigation into the decomposition of PVOH within the environment by abiotic and biotic factors is ongoing to establish rates and processes. These analyses will enhance understanding of how the attractive properties and unique opportunities of PVOH could be part of the solution to achieve circular economies for plastics.

Extracted from, **"Consideration of PVOH as part of the solution to achieve circular economies for plastics"** by Theodore B. Henry, PhD, Professor of Environmental Toxicology; David Bucknall, Professor of Materials Chemistry; Tony Gutierrez, Assoc Prof of Environmental Microbiology & Biotechnology.

Report created in conjunction with:

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