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**NEW STUDY PROVES THAT INNOVATIVE NEW BARRIER TECHNOLOGY SOLVES THE PROBLEM OF
PAPER RECYCLING AND PLASTIC WASTE**

Soluble barrier promotes improved fibre separation critical to meeting circular economy

No compromise on packaging functionality

***Hydropol proven to give real improvement when set against current regulations which allow the
'recyclable' label to be used if there is up to 15% unrecyclable material in the product***

A new study commissioned by DS Smith and Aquapak shows that innovative, bio-digestible barrier coatings increase paper recycling rates and fibre yield, without compromising functionality, providing a viable new packaging alternative which is ready and available for use.

The independent research, "*Considerations for process, product and environmental fate testing of soluble bio-digestible barriers for paper and board packaging*", shows that new barrier technologies such as Hydropol provide an alternative to conventional plastic coatings used in paper packaging by promoting improved paper fibre separation and removing plastic waste from the recycling process, dramatically reducing the negative impact of paper packaging on the environment.

DS Smith and Aquapak have been working together to find a solution to the issue of non-recyclable paper packaging, the use of which has increased as the industry has moved to replace conventional, hard to recycle and single use plastics. This has resulted in a wide variety of fibre-based packaging formats combined with alternative functional barriers being introduced into the recovered paper recycling streams. However, the materials currently being used to give paper the packaging functionality required for products such as food, drink and household goods, are not easily recyclable and mean that the paperboard is rejected because paper mills cannot process the paper and plastic combinations. Instead, they are incinerated or go to landfill.

To provide a solution to this problem, Aquapak has developed Hydropol, a commercially available fully soluble, biodigestible barrier polymer, which can be adhesive- or extrusion coated onto paper and brings a number of benefits to fibre-based packaging, including oil and grease resistance together with a high gas barrier. It is non-toxic, marine safe, dissolves in water and subsequently biodegrades but still provides the much-needed functionality required for food, drink and household product packaging.

The tests used in the study show that Hydropol is compatible with the processes used by high volume recycling mills and enables high fibre recovery, whilst reducing insoluble single-use plastics which are ejected and sent to landfill or waste to energy. Hydropol is also now proven to give real improvement on current regulations which allow the 'recyclable' label to be used if there is up to 15% unrecyclable material in the product. The results obtained in the study provide packaging designers with a clear route as to how to meet the Paperbased Packaging Recyclability Guideline set out by the European association representing the paper industry (Cepi), and which are there to:

1. Ensure that the paper fraction of the packaging breaks down into single fibres when pulped within a specified timeframe
2. Give preference to polymers and other sealing agents that can be dealt with efficiently by the papermill process and effluent treatment systems and do not compromise the finished product, the production process or the environment whilst being recycled.

A previous study* shows that Hydropol has also been shown to increase some paper strength properties (tear, burst, puncture and tensile strength), allowing coated or laminated papers to be heat-sealed for 'form, fill and seal' fibre packaging applications.

Mark Lapping, Chief Executive Officer, Aquapak, comments: "The new research is hugely important for the packaging industry as it proves that they now have an alternative solution to existing plastics which is commercially available and, crucially, does not compromise on functionality or the end of life of the materials. It is now up to the industry to embrace the new technology available to them and create a new generation of packaging which meet the needs of the circular economy."

Nick Thompson, Materials Development Director, DS Smith Group R&D commented: "It's clear that materials used in paper-based packaging have to be designed into the packaging with recycling in mind from the start. This is why DS Smith developed circular design principles; to ensure repulpability, recyclability and no negative impact on the end of life of the materials used. It seems like the Aquapak Hydropol product during recycling, has now been shown to help fibre separation and can itself be eliminated from the process with no negative impact and with no need for finding an outlet for unwanted waste material, such as difficult to recycle plastics."

For full results of the study *“Considerations for process, product and environmental fate testing of soluble bio-digestible barriers for paper and board packaging”*, visit

<https://www.aquapakpolymers.com/request-white-paper-2/>

Hydropol™ - all the benefits of plastic packaging but without the problems with recycling

Aquapak has developed a novel biodegradable, non-toxic and water-soluble polymer called Hydropol™ which is three times stronger than alternatives and is designed to be used in existing thermo-processing equipment, giving it a wider range of applications. Hydropol™ enables up to 100% paper/board recovery whatever the percentage packaging makeup.

The base plastic is currently used for dishwasher tablets, ingestible pill casings and soluble stitches. Hydropol™ 's resistance to low temperature solubility and high barrier to elements adds functionality, providing a wider range of uses. It can be recycled, re-pulped, composted and is distinctively compatible with anaerobic digestion. Furthermore, if unintentionally released into the natural environment, Hydropol™ – which is non-toxic and marine safe - will dissolve and subsequently biodegrade, leaving no trace.

Blown film products commercially available and made from Hydropol™ include garment bags, ESD bags, organic waste disposal bags and laundry bags for infection control. Its solubility makes it easy to separate from other materials, simplifying the confusing recycling options that exist for different packaging.

Extrusion coatings and laminates for paper/board applications are at customer production trial stage, including a number of home delivery and ecommerce applications, packaging for dried pet food, snacks, cooked meat and convenience food applications.

Other applications under development with customers and development partners include injection mouldings and injection moulded parts such as golf tees, non-woven fibre for applications such as wet wipes and cellulose combinations for thermoformed trays.

www.aquapakpolymers.com

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Notes to editors

* *'Designing recyclability into fibre-based packaging using fully soluble bio-digestible barrier systems'*, visit [Aquapak Releases White Paper Exploring Fibre Based Recycling | aquapak \(aquapakpolymers.com\)](https://www.aquapak.com/news/aquapak-releases-white-paper-exploring-fibre-based-recycling)

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