

Edible coatings for fruit to reduce wastage and increase sustainability: Liquidseal keeps fruit fresh for twice as long - with the help of Kuraray Poval.

Environmentally friendly coatings from Liquidseal with high-quality polyvinyl alcohols from Kuraray keep fruit and vegetables fresh for far longer - Kuraray Poval™ 5-88 FA facilitates edible coatings

Leiden/Hattersheim, **August 18th, 2021**. According to the German aid organization Welthungerhilfe, 1.3 billion tonnes of food are thrown away every year. About a third of this amount is food that has gone off or was damaged during transport. A new coating technology from the Dutch company Liquidseal keeps fruit and vegetables fresh for up to twice as long. In this way, the company is helping to avoid food waste and reduce packaging waste. High-quality polyvinyl alcohols (PVOH) from Kuraray, one of the world's leading speciality chemicals producers, which has its European headquarters in Hattersheim, Germany, play a key role in this. Using the portfolio of high-quality PVOH polymers from Kuraray, Liquidseal can optimize its formulations carefully for established processes and adhesion to different types of peel. In addition, Kuraray is supporting the coating experts in registration processes and helping Liquidseal gain access to new areas of application. Liquidseal is currently working on a new edible coating for plums, apples and peaches based on a new PVOH grade: Kuraray Poval™ 5-88 FA

“When fruit and vegetables come into contact with oxygen, oxidation starts and micro-organisms are able to breed faster. As a result, the fruit or vegetable goes off. To slow this process, so far agricultural producers have used coatings based on wax or sugar, or the produce is wrapped in additional plastic packaging. That is often inefficient and bad for the environment,” explains Glenn Groenewegen, R&D Manager at Liquidseal. “Our new solution can more than double the shelf life of avocados, for example. At the same time, our coatings are far better for people and the environment.” Liquidseal coatings are water-based and do not contain organic solvents. Thanks to high-quality Kuraray Poval PVOH materials, they are also fully biodegradable.

Excellent barrier properties for long-lasting freshness

In the development of its coating technologies, Liquidseal has worked closely with Kuraray's PVOH experts from the beginning. “Two of our founders, Victor Monster and Eugene van Berg, developed our first coating solution in 2005. That was a coating for bulbs. Our home base in Leiden is known for its lilies and tulips,” says Glenn Groenewegen. “It was clear early on that PVOH offered ideal properties for this application. Kuraray is the biggest producer

of this polymer in Europe - with the Kuraray Poval brand - and that's how our collaboration started.”

The ideal PVOH for different coating processes

A very thin layer of Liquidseal coating is applied directly to the peel of fruits such as oranges, lemons and mangoes. To ensure efficient processing of the protective coating and make sure it adheres to the surface and gives the fruits optimum protection from ambient oxygen, polyvinyl alcohols with excellent film-forming and barrier properties are required. Kuraray offers precisely the materials Liquidseal needs for its coating formulations - in consistently high quality. Liquidseal benefits above all from the wide range of PVOH materials marketed by Kuraray.

“Various methods of applying protective coatings are established in agriculture. For example, waxing machines are used for citrus fruits, while dipping and spraying processes are more common for other types of fruit,” explains Glenn Groenewegen. “Kuraray's experts used their experience to help us adjust our formulations accurately for the various processes. Agricultural producers can simply apply our coatings with their existing machinery, without major investment or adjustments.”

Reducing the use of agrochemicals

Two other major benefits for Liquidseal are the compatibility of PVOH materials with organic substances and their excellent barrier properties. Liquidseal coatings have a very balanced pH. As a result, they have very good compatibility with modern, bio-based crop protection agents that use bacteria cultures rather than synthetic active ingredients. Thanks to the very good barrier properties of Kuraray Poval, the coatings hold agrochemicals exactly where they are needed. That means products that protect fruits from mould during transportation can be used more selectively and considerably reduces the amount required.

Liquidseal also benefits from Kuraray's expertise on regulatory issues. “We believe it's important to give our customers the best possible support, especially on registration-related issues and aspects such as the environment, health and product stewardship,” says Joris Bohets, Market Development Manager at Kuraray. “We give our customers access to extensive information such as reports, brochures and certificates. That is unique in the sector. And we're continuously working on the development of our PVOH materials, for example, to improve sustainability. Our new product Kuraray Poval™ 5-88 FA is a good example.”

Kuraray Poval™ 5-88 FA enables new, edible coating

Kuraray Poval™ 5-88 FA was developed specifically to meet the high demands of the food and feed additive sectors and for pharmaceutical applications. It complies with the specification for E 1203 (Regulation (EC) No. 1333/2008 including E 1203 for tablet coatings) and is produced in conformance with stringent GMP guidelines. Liquidseal is using KURARAY POVAL™ 5-88 FA in the

development of a new edible coating solution. “So far, our coatings are only approved for use on fruit and vegetables that have to be peeled before they are eaten,” says Glenn Groenewegen. “Therefore, we’re currently working on a new formulation to keep products with an edible peel fresh for longer. KURARAY POVAL™ 5-88 FA is the ideal basis for that.”

Captions/source of photos: Kuraray & Liquidseal



[Photo 1] “Our coatings keep fruits like oranges, mangoes and avocados fresh for longer,” says Glenn Groenewegen, R&D Manager at Liquidseal. “Our solutions enable the industry to offer fruit in a quality that meets consumers’ expectations. At the same time, our coatings help reduce waste throughout the supply chain in the food industry - and they also reduce the use of agrochemicals.” (Photo: Liquidseal)



[Photo 2] “I’m constantly impressed by the innovative products our partners develop with our materials. Liquidseal is a good example: it offers coatings that reduce food waste,” says Joris Bohets, Market Development Manager at Kuraray. “We believe it’s important to support our customers, especially with registration-related issues and aspects such as the environment, health and product stewardship. Our extensive product portfolio enables us to offer PVOH materials tailored exactly to different applications.” (Photo: Kuraray)



[Photo 3] Maintaining quality and flavour and reducing packaging waste: thanks to their excellent barrier properties, Liquidseal's coatings minimize gas exchange and slow down the ageing process. That means fruit and vegetables stay fresh for much longer than in conventional processes. For example, they can more than double the shelf life of avocados. (Photo: Liquidseal)



[Photos 4 and 5] An environmentally compatible protective coating: a very thin layer of Liquidseal coating is applied directly to the peel of oranges, lemons, mangoes and avocados. Liquidseal has very high environmental compatibility, and is 100 percent biodegradable and compostable. Kuraray's high-quality PVOH materials play an important part in this. (Photos: Liquidseal)



[Photo 6] Kuraray Poval™ offers a wide range of high-grade PVOH material in excellent purity and constant quality that meet the highest safety and sustainability requirements. One example is Kuraray Poval™ 5-88 FA. Kuraray developed this material specifically for the food and feed additives sectors. Thanks to this material, Liquidseal will be able to supply coatings edible in the future, for example, for apples and plums. (Photo: Kuraray)

Liquidseal

Liquidseal was established in Leiden, The Netherlands, in 2005. Four friends and neighbours pooled their expertise to make the world more sustainable and developed their first product - a coating that greatly increased the yield and quality of lily bulbs. In 2011, they developed a method to keep rose petals fresh for longer. And in 2016, Liquidseal launched its coatings for fruit and vegetables. Today, the company is led by two of the former co-founders, Victor Monster and Eugene van Berg, its technologies are available worldwide and play a part in improving the shelf life and quality of agricultural produce. At the same time, they reduce food and packaging waste and the use of agrochemicals.

About Kuraray

Established in 1991, Kuraray Europe GmbH is based in Hattersheim, near Frankfurt am Main, Germany. In 2020 the company generated annual sales of EUR 593 million. It has more than 800 employees in Germany at its sites in Hattersheim, Frankfurt and Troisdorf. Kuraray is a global speciality chemicals company and one of the largest suppliers of industrial polymers and synthetic microfibres for many sectors of industry. Examples are Kuraray Poval™, Mowital®, Trosifol® and Clearfil™. Kuraray Europe also has around 215 employees at six other European sites. They are also working on the development and application of innovative high-performance materials for a wide range of sectors, including the automotive, paper, glass and packaging industries, as well as for architects and dentists.

Kuraray Europe is a wholly owned subsidiary of the publicly listed Kuraray Co., Ltd., which is based in Tokyo, Japan, and has more than 11,200 employees worldwide and sales of EUR 4.4 billion.

The press release and photos are also available on our website:

<https://www.kuraray.eu/de/unternehmen/presse>

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