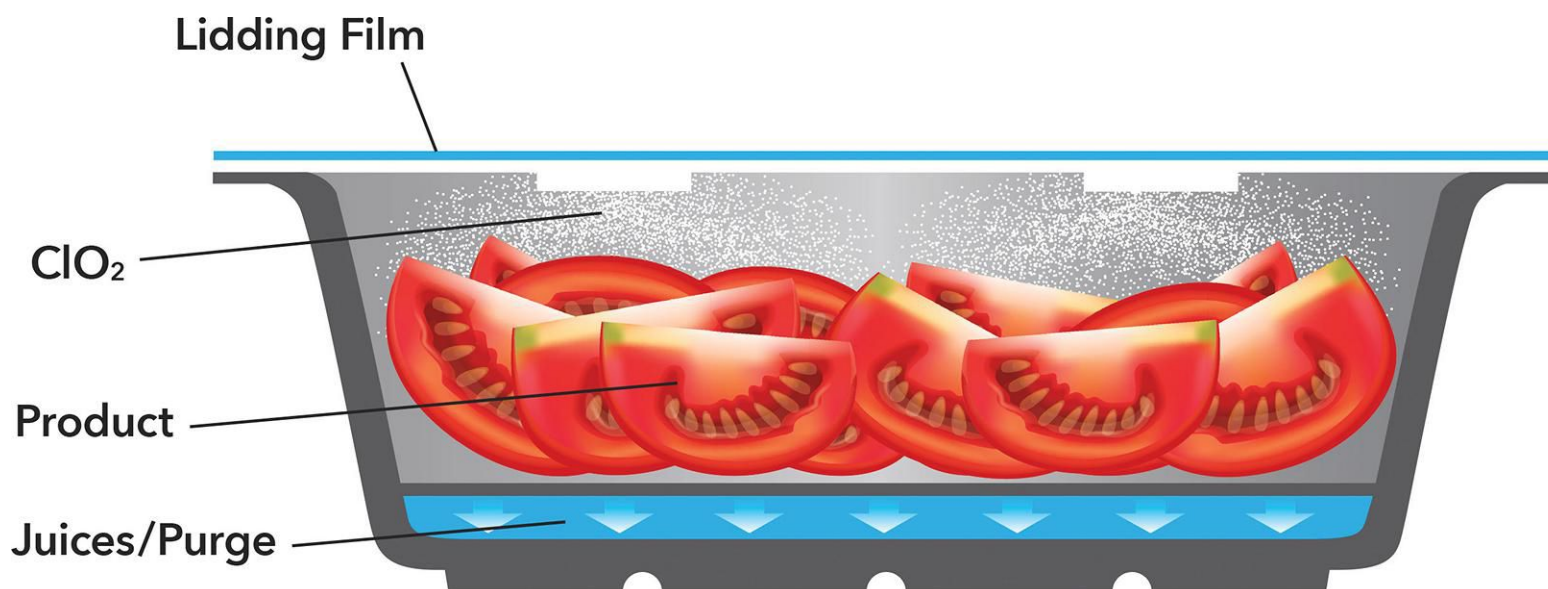


ACTIVE PACKAGING FUNCTIONS GAIN MORE TRACTION

One solution was modified to work for foods as well as pharmaceuticals.

BY KRISTEN KAZARIAN | EDITOR IN CHIEF



An active packaging solution, created with a 3-Phase Activ-Polymer, is used for sliced and diced tomatoes to provide longer shelf life, fresh taste and product safety.

Active, smart and intelligent packaging solutions are used with food, pharmaceuticals and several other types of products to help extend shelf life, monitor freshness with temperature control, display information on quality, improve safety and improve user convenience.

A report by market intelligence and advisory firm, Mordor Intelligence, states that the active and intelligent packaging market was valued at U.S. \$17.5 billion in 2019, and

is expected to reach a value of \$25.16 billion by 2025, registering a CAGR of 6.78% during the forecast period of 2020-2025. Demand is driven by the food processing companies to keep food fresh longer, especially during transit in the supply chain, in order to reduce food waste and promote more convenient packaging for consumers.

Active and intelligent packaging uses permitted additives in packaging film or right in packaging containers for the maintenance and extension of the product's shelf life. Active packaging allows packages to interact with food.

SPOTLIGHT

The evolution of intelligent packaging systems, with the use of sensor technologies, indicators (including freshness, integrity and time-temperature indicators, TTI), and radio frequency identification (RFID), has been assessed for the potential use in meat and meat products as well.

PROTECTING FOOD FROM HARMFUL BACTERIA AND VIRUSES

Aptar Food + Beverage Group, a leader in premium active packaging systems and processing equipment, recently launched InvisiShield™. This anti-pathogenic packaging solution seamlessly integrates into sealed packages to protect fresh-cut produce from harmful pathogens like bacteria, fungi and viruses. Easy to incorporate into existing or new produce packaging lines, the technology mitigates pathogen growth without negatively impacting the product.

"... We have material science expertise that we are applying to food safety solutions at a critical time when consumers are demanding

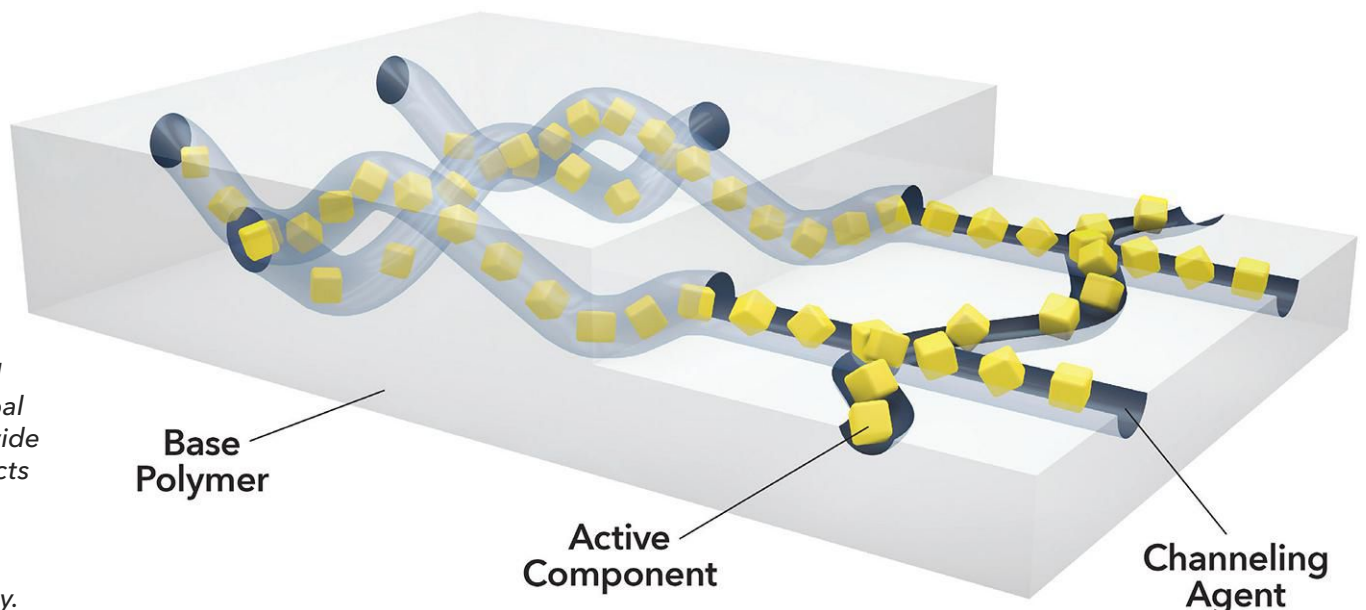
better and healthier food packaging outcomes," stated John Belfance, president, Aptar CSP Technologies.

InvisiShield has a 3-Phase Activ-Polymer™ technology, patented by Aptar CSP Technologies, a division of AptarGroup with more than 20 years of expertise in material science. The 3-Phase Activ-Polymer technology is currently used by leading global brands with a wide range of products to extend shelf life, maintain freshness and improve efficacy in industries such as pharmaceuticals, medical devices and food safety.

The 3-phase polymer entails a base polymer, channeling agent and an active ingredient. Today it is used on sliced and diced tomatoes and is getting approval for other fresh products such as pico de gallo and fresh fruit. The company is moving forward with fresh products in order to maintain quality and a high level of safety.

The pharmaceutical sector has used the polymer for more than 20 years. "It is now being used for food (InvisiShield). There

InvisiShield's 3-Phase Activ-Polymer is used by leading global brands with a wide range of products to extend shelf life, maintain freshness and improve efficacy.





ActivShield strips can be used simply in a plastic zip bag with an N95 mask to disinfect it within about three hours.

are so many ways this could be beneficial to food — it could be odor or moisture scavenging,” explains Angela Morgan, Ph.D., director, business development at Aptar Food + Beverage – Food Protection.

The 3-phase polymer can be modified at the channel agent. In this case, it is triggered by moisture and the active agent is chlorine.

Right now, the technology needs to be employed in a headspace, not directly in contact with food. The trigger is moisture. It’s not thick, and it doesn’t need to be used with Aptar Packaging. Any tray, bag, etc. can reap the benefits.

A DISINFECTANT FOR N95 MASKS

ActivShield is technically similar to InvisiShield, but the parameters are different. In April, Aptar sought out U.S. FDA Emergency Use Authorization (EUA) for a solution that allows easy disinfecting of N95 filtering facepiece respirators (N95 masks). To date, Aptar is awaiting news from the U.S. FDA Emergency Use Authorization.

It’s just a little strip that goes into a bag with the facemask. The decontaminant is activated with water and the strip does the rest. The key differentiator is that it simplifies the process to the point where the mask doesn’t need to leave its wearer’s possession.

In this disinfecting process, the N95 mask and the small strip of ActivShield are placed inside a one-gallon plastic bag. The strip releases a controlled amount of chlorine dioxide inside the sealed bag to decontaminate the N95 mask. The process takes only three hours until the mask is ready to wear again. And it can be performed on-site at the local hospital where the mask is being used.

The R&D department at Aptar is working to find other ways to use the solution. They are looking at leafy greens, using a proprietary blend — not the chlorine dioxide. Other antimicrobial, etc. **PS**

For more information about Aptar Food + Beverage’s InvisiShield, visit [aptarfoodprotection.com](https://www.aptarfoodprotection.com) and for ActivShield, visit [csptechnologies.com](https://www.csptechnologies.com).