InvisiShield™

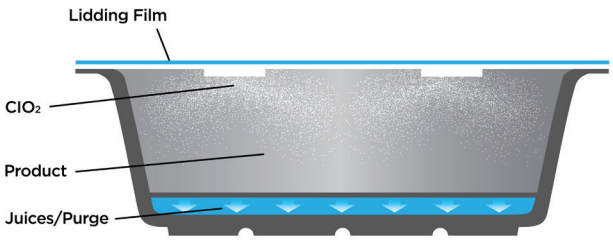
Redefining food protection

Aptar
Active Material Science

aptarfoodprotection.com

Pathogen reduction on pico de gallo using InvisiShield™ technology to deliver antimicrobial Chlorine Dioxide

InvisiShield™



Case Study Overview

Use of Aptar's InvisiShield™ technology against multiple strains of foodborne pathogens *Listeria monocytogenes*, *Salmonella enterica* and Pathogenic *Escherichia coli* on commercially packaged pico de gallo without negatively impacting organoleptics.

Case Study Scope

Commercially purchased pico de gallo was inoculated with three foodborne pathogen cocktails and treated in Aptar's InvisiShield™ technology trays in temperature-controlled storage (7°C) for up to 8 days at a 3rd party lab. Inoculated pico de gallo experienced pathogen reductions. The levels of chlorine dioxide used were safe for food and did not negatively impact the pico de gallo, as demonstrated in the sensory panel results.

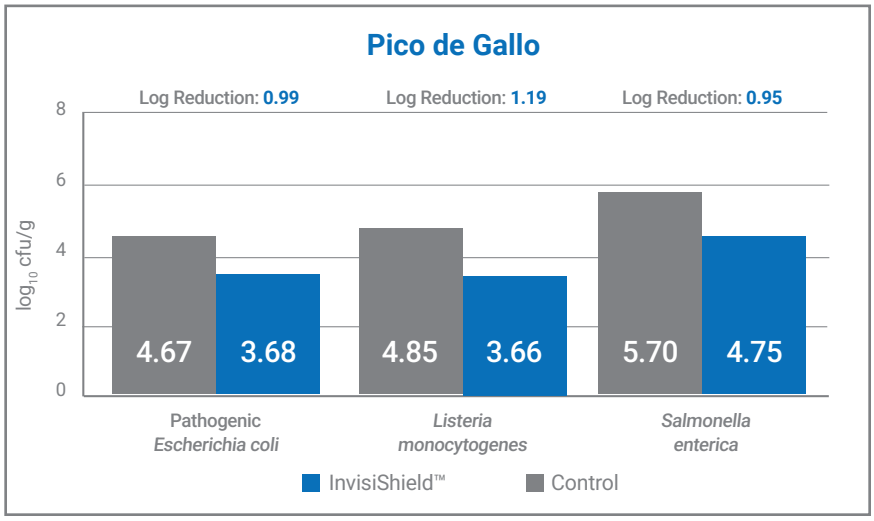
Benefits

- Differentiated active packaging solution
- Protect high-risk products such as fresh produce
- Self-determined GRAS
- Easy to implement on existing equipment

The InvisiShield™ material is extruded and remains stable throughout the supply chain distribution. It contains a base polymer, a channeling agent and the active ingredient (ClO_2). The release kinetics of ClO_2 is triggered by relative humidity in the package. ClO_2 then migrates through the same channels or through the polymer blend itself into the surrounding environment in a controlled release manner.

Chlorine and chlorine dioxide have been used effectively for many years as an antimicrobial intervention in water treatment and produce. We've unlocked the power of this highly effective agent in a sealed package so it can be utilized commercially. Chlorine dioxide gas is an effective antimicrobial solution with broad-spectrum properties, demonstrating efficacy against both gram-negative and gram-positive microorganisms.

~1 log reduction observed in *E.coli*, *Listeria* and *Salmonella* for pico de gallo



Aptar's novel InvisiShield™ technology fulfills an unmet need with antimicrobial intervention delivered as a final step inside the package. This highly-engineered system delivers a controlled ClO_2 dose in the package, eliminating ~90% of pathogens while maintaining the quality of the product with no organoleptic impact.

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