

Maintain Product Quality Whilst Removing Aluminium

Case Study

Summary

Sodium aluminium phosphate (SALP) is an excellent leavening acid that has been used for many years due to its easy 1:1 usage ratio with sodium bicarbonate, as well as its ability to impart a fine, bright crumb to baked goods.

However, health related concerns related to aluminium intake in baked goods have been raised by consumers and governmental agencies in several countries. These concerns often revolve around potential health risks associated with aluminium accumulation in the body over time, particularly its links to neurological disorders, such as Alzheimer's, as well as other health issues.

Our **OPUS™** SALP replacer has been designed to match the reaction profile and characteristics of SALP to provide the same great end-product, whilst eliminating the use of aluminium and its risks.

What **OPUS™** SALP Replacer Can Do For You

- Provide the same quality, shape and taste whilst removing the aluminium and its associated negative health impacts.
- Mimic the reaction profile of SALP and maximise end-product volume.
- Ensure a fine, resilient and bright crumb in your baked goods.

Our aluminium-free **OPUS™** range of acidulant blends can be used in a wide range of bakery applications including sponge cakes, scones, doughnuts, tortillas, premixes and many more.

Background

Research has revealed that the consumption of aluminium may be linked to neurodegenerative diseases such as Alzheimer's. As a result, SALP has been banned by European Union legislation since 2014.

Globally, concerns over aluminium intake have gained momentum, leading to significant changes in key markets. In the United States, while SALP remains classified as Generally Recognized As Safe (GRAS) by the FDA, growing consumer awareness and recent legislative efforts, such as the Agricultural Food Chemical Reassessment Act of 2024, signal a shift toward reevaluating the safety of aluminium-containing additives in food.

As more countries inevitably follow the EU's lead, combined with rising consumer demand for cleaner, safer ingredient labels, we anticipate further global governmental action aimed at reducing or restricting the use of SALP in food and bakery products.

Challenge

Achieving the bright, flaky crumb desired by consumers in American biscuits, along with the distinctive reaction profile brought by SALP in fast-baked, high-temperature goods, presents a formidable challenge. Off-the-shelf acidulants struggle to match SALP's reaction speed which is crucial for maintaining consistent baking profiles and delivering the desired end product.

Maintain Product Quality Whilst Removing Aluminium

Solution

Our **OPUS™** SALP Replacer has been scientifically developed to closely replicate the reaction profile of SALP, using a unique blend of acidulants designed to deliver equivalent baking performance. When combined with sodium or potassium bicarbonate, it creates the perfect aluminium-free baking powder for a wide range of bakery applications.

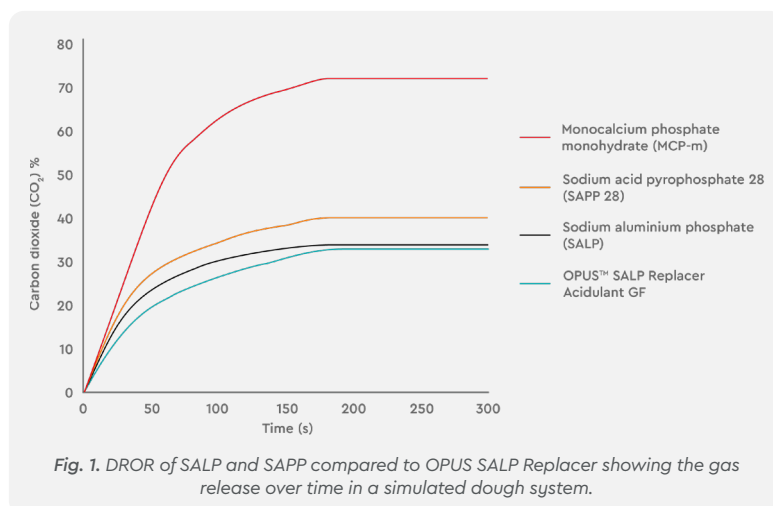
OPUS™ SALP Replacer integrates seamlessly into existing recipes, offering a simple change from SALP without the need for process adjustments. While SALP's distinctive 1:1 ratio with sodium bicarbonate is unique, achieving the same high-quality results with **OPUS™** SALP Replacer requires only a minor dosage adjustment which our experts can work out for you. This straightforward change ensures consistent volume, crumb structure, and brightness, maintaining product integrity, and removing aluminium from the end-products.

Sodium acid pyrophosphates (SAPP) and monocalcium phosphates (MCP) are other acidulants often used in baking. However, these both have considerably different rates of reactions when combined with sodium bicarbonate than SALP and our **OPUS™** SALP Replacer.

These differences in rates of reaction translate into the bake, with the product rising and setting at different points, changing the volume, shape and structure of the product. When the gas is released too quickly, you risk the baking powder gassing off too soon

in the dough, and the products either won't get a suitable rise in the oven, due to the reaction occurring too early, or biscuit doughs may end up spreading outwards rather than upwards.

The slower reaction profiles of SALP and **OPUS™** SALP Replacer allow for more production of carbon dioxide in the oven, rather than in the dough, just before the starch gelatinisation and the structure sets. This will support optimum end-product volume and shape.



SALP – Sodium aluminium phosphate

OPUSTM SALP replacer

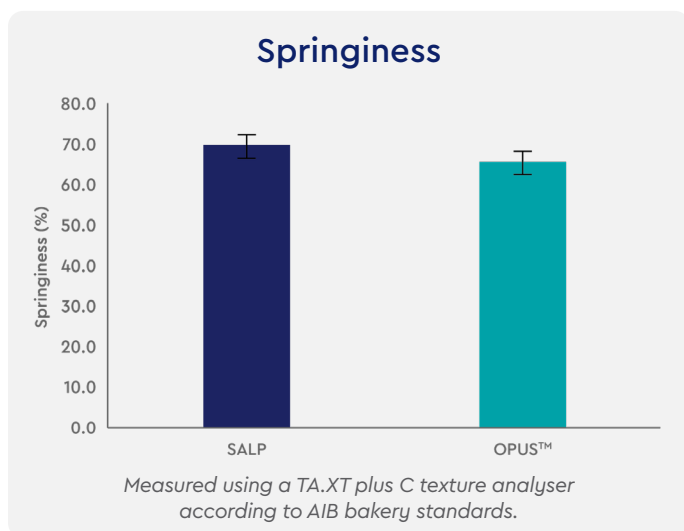
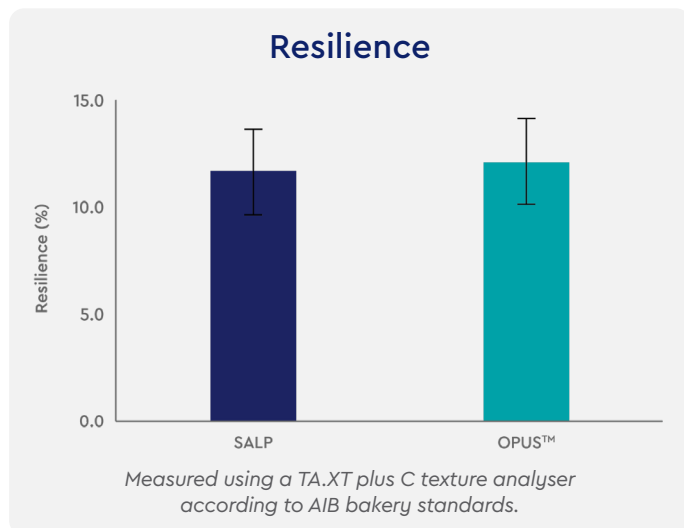
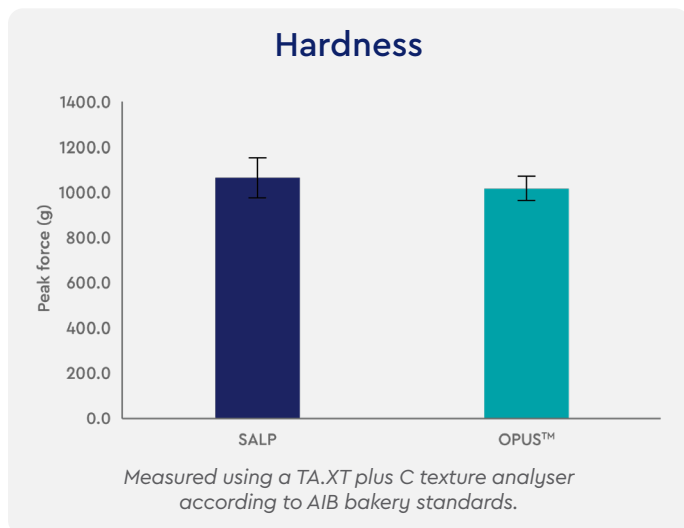


The American biscuits were visually similar, with comparable surface and side cracking, as well as consistent heights.

Maintain Product Quality Whilst Removing Aluminium

Texture Analysis

The texture of the American biscuits made with SALP and **OPUS™** SALP Replacer was very similar.



OPUS™ SALP replacer isn't just perfect for American biscuits, but also works wonderfully in cakes, muffins, pancakes, flatbreads and more!

Get in Touch

Our expertise has been developed through years of bakery industry experience combined with in-depth scientific knowledge of leavening agent chemistry.

Our team of highly skilled chemists and bakers are always on hand to support our customers in finding the right solution for their bakery projects.

Contact us at: info@kudosblends.com or +44 (0)1299 271 333