

# Hamburger and Hot Dog Buns IMPROVED RESILIENCE & SPRINGINESS



Fresh hamburger and hot dog buns represent a significant category of bakery products, with sales of \$2.1 billion (over 52 weeks, ending March 24, 2019)<sup>1</sup>. Despite the traditional white or wheat bun being a preferred carrier for burgers<sup>2</sup>, most bakery categories, including buns, are facing new and versatile consumer demands, such as for clean label, health and wellness, artisan style products, gluten-free, “better for you”, “free from”, ethnic products, convenience, et.<sup>3</sup> There-

fore, product developers are facing new formulation challenges while still needing to deliver the quality consumers expect. Freshness, uniform shape and size, appealing flavor and texture are some of the hamburger bun features that consumers consider when they make purchase decisions. **The crumb of hamburger and hot dog buns has to be soft with small and evenly distributed cells, yet strong and resilient enough to resist deformation during handling of the product** (depanning, slicing, packaging, transportation, handling in stores). Low resilience of buns is a frequent problem that leads to loss of product height and shape symmetry, and ultimately the product becomes less appealing to customers. Due to stacking of buns in packages and retail, products at the bottom of the stack are especially susceptible to loss of desirable shape.

Image 1: Buns are post compression test. Left, control bun without fiber. Right, JRS bun with VITACEL® HF200 and P95.



## JRS Fibers Improve Resilience of Hamburger Buns

JRS fiber solution for hamburger buns, consisting of VITACEL® Oat Fiber HF200 and VITACEL® Psyllium P95, is the right combination of insoluble and soluble dietary fibers that delivers improved resilience and springiness, and helps to maintain crumb softness throughout the shelf life of the product (Image 1).



JRS dietary fibers are widely used for fiber fortification of bakery products but are also highly functional in improving various properties of baked goods, as well as troubleshooting a variety of product quality issues. They are well suited for **clean label solutions**, providing a new set of tools for product developers that are facing reformulation challenges.

Product	Benefit	Use Level
VITACEL® HF 200 Insoluble Oat Fiber	Improves crumb structure, resilience and springiness Interferes with starch retrogradation and retards crumb staling	2 - 3% (based on flour weight)
VITACEL® P95 Psyllium Husk Fiber	Soluble and gel forming with high water holding capacity Improves strength and flexibility of crumb and retains moisture to prolong freshness of crumb over time	0.2 - 0.5% (based on flour weight)

<sup>1</sup>IRI, Chicago 2019

<sup>2</sup>BurgerCravings.com: Burger Bun Trends and menu Ideas

<sup>3</sup>Kerry Health and Nutrition Institute 2019, State of the Industry 2018: Building a diversified buns and rolls portfolio

<sup>4</sup>Santos et al., Cereal Chem. 85(4):455-463

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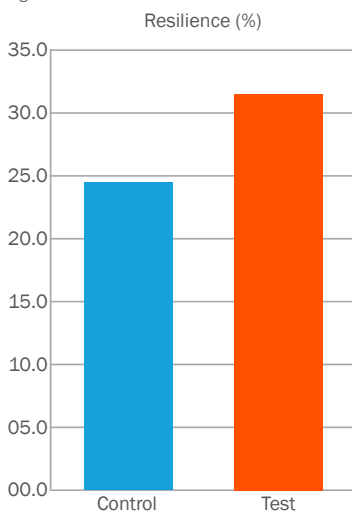


## Results

To demonstrate the effect of JRS fibers on hamburger bun quality, two sets of standard white buns, Control and Test, were prepared, stored at room temperature for 1 week, and subjected to texture measurement. The only difference between Control and Test formulae was the addition of **VITACEL® Oat Fiber HF200** and **VITACEL® Psyllium P95** in the Test formula, and accordingly the adjustment of water absorption. Buns were subjected to texture analysis with Texture Analyzer TA-XT2i, using Texture Profile Analysis (TPA) method, and TA-40 probe (cylindrical aluminum plate). The resulting data provided information about bun resilience, springiness, and firmness.

## Resilience

Figure 1:



Resilience of hamburger buns increased by **33%** with the addition of **VITACEL® Oat Fiber HF200** and **VITACEL® Psyllium P95** when compared to the Control (Figure 1). The combination of JRS fibers improved the ability of buns to regain their original shape after being subjected to compression.

J. RETTENMAIER USA LP



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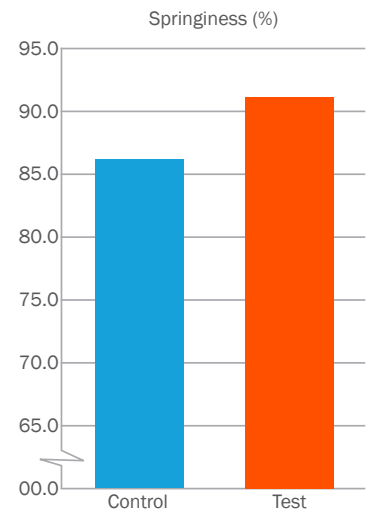
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The long and flexible fibers of **VITACEL® Oat Fiber HF200** and **VITACEL® Psyllium P95** gel help to reinforce the structure of crumb while keeping it sufficiently flexible.

## Springiness

The improved flexibility of hamburger buns led to better ability of buns to recover their initial height after compression. Hence, the **Test buns were able to recover 92% of their original height after being exposed to compression as demonstrated by Figure 2.**

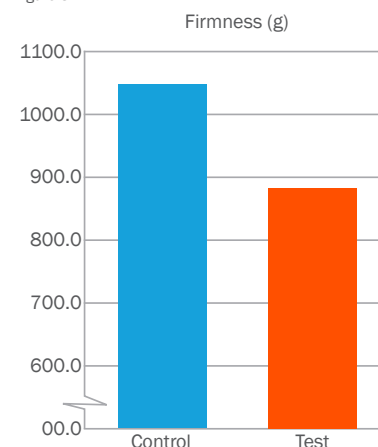
Figure 2:



## Freshness/Texture

Freshness of hamburger buns was also positively impacted by the combination of **VITACEL® Oat Fiber HF200** and **VITACEL® Psyllium P95**. Hamburger buns with JRS fibers retained softer texture than the Control buns during storage, as presented by firmness data (Figure 3). Firming of crumb during shelf life is a typical manifestation of staling of baked products. It occurs both in the Control and Test product; how-

Figure 3:



ever, **VITACEL® Oat Fiber HF200** and **VITACEL® Psyllium P95** have the ability to slow down this process. Fibers have been shown in past to reduce the rate of starch retrogradation.<sup>4</sup>

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