



Food Solutions

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## Solutions for Gluten Free bread

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## Want to Work on Continuous Improvement of Your Gluten-Free Baked Goods?

Dow Food Solutions offers a family of ingredients to help in developing best-in-class Gluten Free bakery products. Our solutions contribute to better dough handling, volume development, homogeneous crumb structure and moisture control.

The combined benefits of our cellulose based gums allow an overall quality increase of gluten free bakery products by reducing defects (e.g. holes, lack of structure, low volume) and improving softness over the shelf life.

### Solutions for gluten free bakery products

METHOCEL™, WELLENCE™ and WALOCEL™ improve the texture of gluten free bakery products thanks to the following properties:

Properties	Benefits
METHOCEL™, WELLENCE™ and WALOCEL™ offer aeration and gas retention	<ul style="list-style-type: none"> <li>Increases volume</li> <li>Improves proofing tolerance</li> <li>Stabilizes crumb structure</li> </ul>
WELLENCE™ and METHOCEL™ form a gel during baking giving structure to the crumb	<ul style="list-style-type: none"> <li>Helps retains volume and control expansion during baking</li> <li>Creates uniform crumb structure in the final product</li> <li>Prevents collapsing during baking and cooling</li> </ul>
METHOCEL™, WELLENCE™ and WALOCEL™ bind water during dough preparation and baking	<ul style="list-style-type: none"> <li>Makes dough smoother and more extensible</li> <li>Possibility to choose between batter or dough processing</li> <li>Increases moisture retention contributing to shelf-life and eating quality</li> </ul>

### Main products recommended for gluten free applications:

METHOCEL™ K4M and K15M	WELLENCE™ Gluten Free 47129	WELLENCE™ Gluten Free 321	WALOCEL™ CRT 10 000 - 50 000 PA
HPMC	HPMC + CMC	HPMC	CMC
Classical HPMC used in Gluten Free Bread, historically the best grades in the standard portfolio.	Blend of HPMC and cellulose gum (Na CMC) designed for gluten free bakery products. Aims to reduce overall stabilizer dosage and increase water binding.	New HPMC with optimized functionality specifically designed for gluten free bread. Helps to improve volume development, crumb structure and proofing tolerance.	Adds viscosity to doughs and improve processability. Stabilizes bread volume.

# WELLENCE™ Gluten Free 321: New generation of HPMC designed to reduce defects and improve processing tolerance

WELLENCE™ GF 321 contributes to reduced defects and provides better processing tolerance while improving crumb structure and softness of Gluten Free Breads. The proven superior performance of WELLENCE™ GF 321 allows the benefits described below:



## 1) More regular crumb structure with less defects

Gluten free bread with 1,3%\* of HPMC:

*Internal trials, Bomlitz, May 2015*



METHOCEL™ K4M



WELLENCE™ GF 321

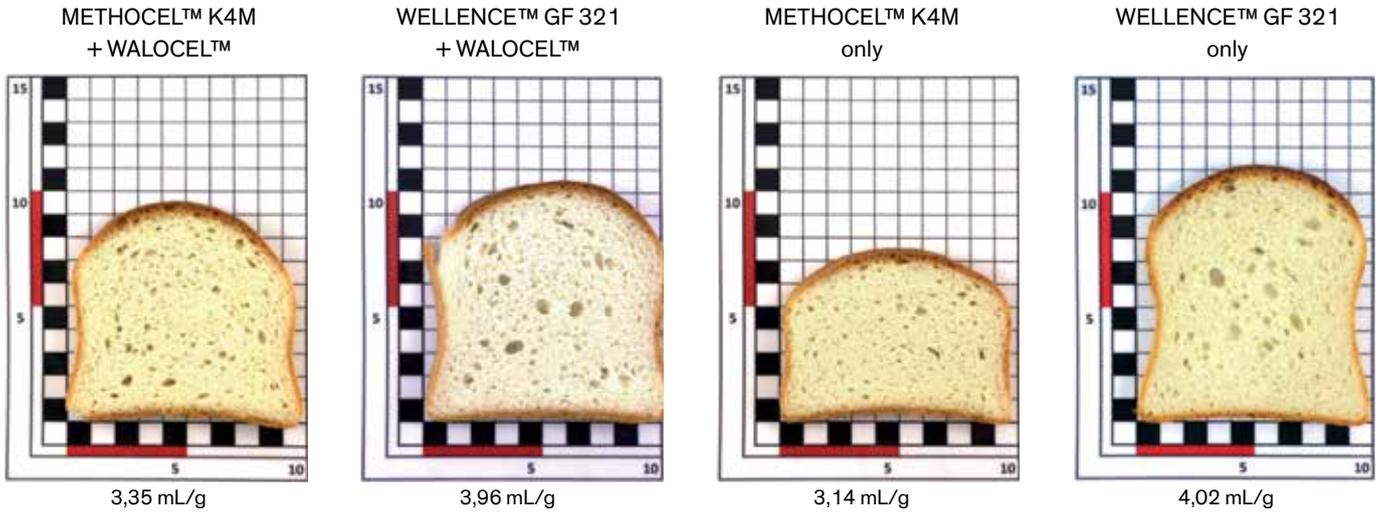
- **Completely different crumb structure at same dosage of HPMC**
- **No holes and less waist line**

\* dosage based on total dough weight

## 2) Allows bigger volume

Gluten free white bread containing 1%\* of HPMC with and without WALOCEL™ (CMC)

Internal trials, Bomlitz, January 2016



- The loaf with METHOCEL™ K4M in combination with WALOCEL™ shows volume improvement. The CMC complements HPMC functionality while adding viscosity to enable dough shaping.
- When using WELLENCE™ GF 321, combination with CMC is less critical to obtain optimal volume and structure since this new HPMC has higher functionality than METHOCEL™ K4M. WALOCEL™ may still be used to increase viscosity of doughs and contribute to crumb softness.

Gluten free white bread containing 1%\* of HPMC at same processing conditions (4 different batches of each HPMC). Confirmed repeatability in baking trials and consistency of Dow's HPMC quality.

Internal trials, Bomlitz, August 2016



- Better gas retention during proofing
- Up to 15% higher bread volume possible
- No big holes despite higher volume

\* dosage based on total dough weight

### 3) Greater proofing tolerance

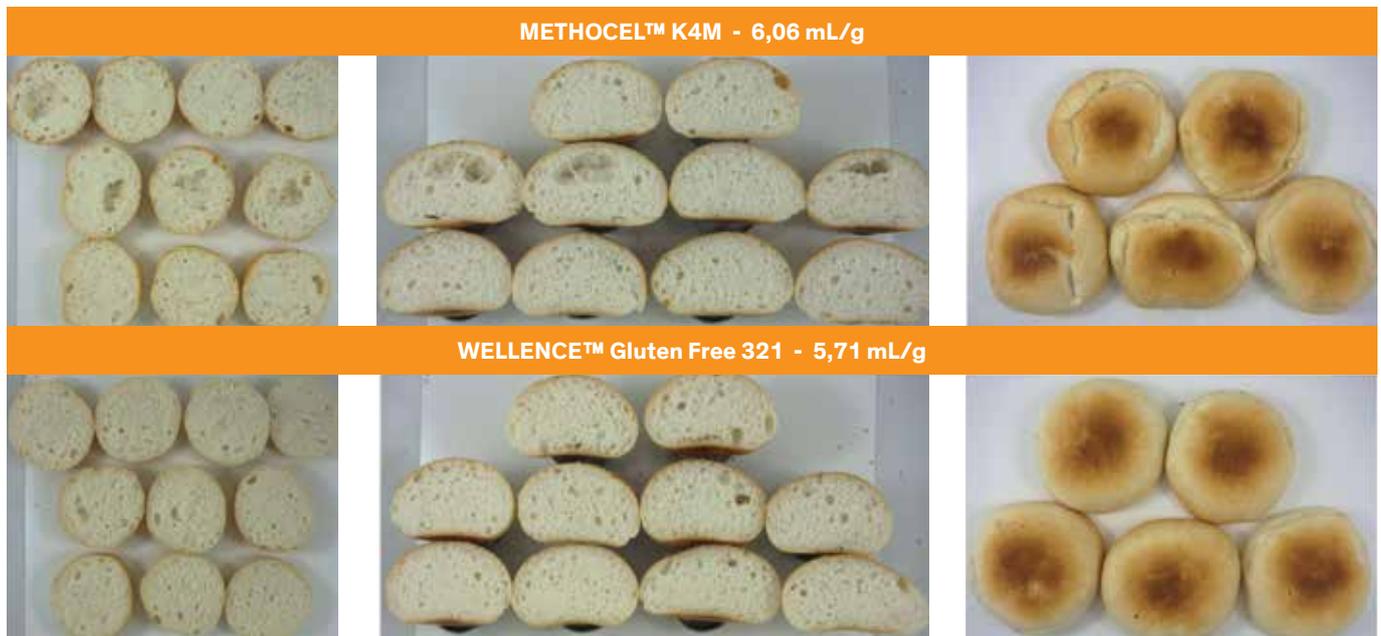
Gluten free burger buns with 1,5%\* of HPMC submitted to different proofing times:

*Internal trials, Bomlitz, January 2016*

**Proofing time: 45 min**



**Proofing time: 65 min**



- **Better structure (less wrinkles)**
- **Control of oven spring: maintain flat shape**
- **Reduction of holes compared to METHOCEL™ K4M after 45 min and 65 min of proofing**

\* dosage based on total dough weight

#### 4) Potential dosage reduction

Gluten free white bread containing WELLENCE™ GF 321 in different dosage levels\*

Internal trials, Bomlitz, August 2016



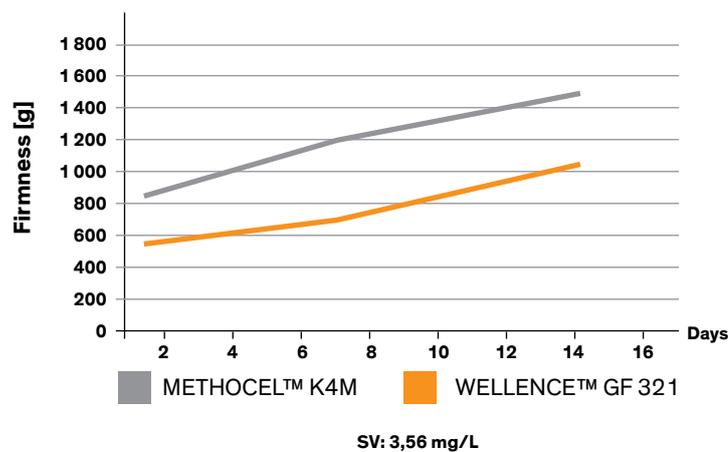
Dosage	1%	0,9%	0,8%	0,7%
SV in mL/g	3,68	3,64	3,77	3,65

- Higher functionality enabled same proofing and processing tolerance even at lower dosage.
- Possible to reduce up to 30% of HPMC dosage due to its improved functionality

#### 5) Improves softness over shelf life

Texture evaluation (firmness) of Gluten Free white bread containing 1%\* of HPMC, at same specific volume:

Texture Analyzer measurements. Loaves were stored in plastic bags at ambient conditions. Internal trials, Bomlitz, August 2016



Gluten free white bread with WELLENCE™ GF 321  
1 day after baking

- Softer initially (day 1) and over shelf life at the same volume
- Volume can be controlled varying proofing times
- Great elasticity for bread with WELLENCE™ GF 321 at softer texture

\* dosage based on total dough weight

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## Choosing the right option for your Gluten Free Bread:

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	METHOCEL™ K4M	WALOCEL™	WELLENCE™ Gluten Free 47129	WELLENCE™ Gluten Free 321
Dough extensibility and handling	+	+++	++	+
Proofing tolerance	+	+	++	+++
Volume development	++	++	++	+++
Uniform crumb structure	++	+	++	+++
Softness over shelf-life	++	+	++	+++

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## What Dow Food Solutions can do for you?

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Dow's capabilities include dedicated experts and state of the art R&D facilities to support new developments of gluten free bakery products. We can offer:

- **Range of recipes for gluten free products**
- **Technical trainings on our solutions**
- **Joint application trials**

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