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better baking

TopBake Gluten Enhancer

The multi-talent for reducing production costs

The interplay of ingredients during baking

Baking is largely an interaction between gluten and starch. During kneading, the gluten proteins take on 2-3 times their weight in water and form an elastic network that binds the starch particles. The starch takes in additional water through surface adsorption. During baking, the protein denatures and releases some of the water. Simultaneously, the starch grains break open and the starch gelatinises, and takes up the water released by the protein. The perfect interplay of these two processes results in a moist crumb and an attractive appearance.

In addition to this vital role in binding water, the gluten network provides the stability of the dough and thus volume of the bread. If the flour is low in gluten or the dough is highly stressed in the baking process, vital wheat gluten is added. In making sandwich bread by the Chorleywood process for example, 5 % or more vital wheat gluten is added. Since prices for vital wheat gluten have risen steadily in recent years due to growing demand, bakers are looking for alternatives.

ADVANTAGE SUMMARY

- Saves up to 50 % of the vital wheat gluten costs
- Dosage just 1/10 of the amount of vital wheat gluten normally added
- Can replace 50 % or more of added gluten
- Upgrades low-protein flour
- Boosts gluten function
- Does not interfere with standard bread improvers
- Improves baking properties: Increased water binding capacity, optimised dough stability, uniform crumb structure
- Logistics and storage capacity (only 1/10 as much to ship and store)

Background information

The definition of quality depends on customer needs and the raw materials available. The TopBake Gluten Enhancer range aims at replicating and surpassing the functionalities of vital wheat gluten:

- Structure and stability
- Water binding properties

The product is an enzyme compound imparting:

- Dry dough properties
- Good mashinability
- Fine texture
- Good volume

Product example

Product	Effective ingredients	Objective
TopBake Gluten Enhancer 16	Enzymes, plant fibre, hydrocolloids, ascorbic acid	Basic version with balanced mix of ingredients for volume and dough stability
TopBake Gluten Enhancer 22	Enzymes, plant fibre, ascorbic acid	High baking volume yield through varried enzyme systems

Application areas for TopBake Gluten Enhancer (TBGE)

When vital wheat gluten is used in the recipe:

- To strengthen weak flours
- For savings in logistics and storage cost, because only 10 % of the normal gluten amount is needed
- In regional specialties like Easter bread, in order to get the desired typical structure
- When vital wheat gluten prices are high, for economic benefits
- In sandwich bread, hamburger buns etc. at 2-6 % when the process stresses the dough

Gluten replacement dosage

0.1 % TopBake Gluten Enhancer replaces 1 % vital wheat gluten.

Use in sandwich bread and hamburger buns

Hamburger buns and sandwich bread need very fine pores and a soft crumb. This is achieved by adding high energy, as in a Speedy or double cone mixer or in the Chorleywood process. Vital wheat gluten is added in the 2-4 % range in order to stabilise the dough and bind the water. This improves gas retention and gives more volume. At a dosage of 0.2-0.4 %, TopBake Gluten Enhancer 22 can replace the added vital wheat gluten.

Sandwich bread

Component in kg	Standard	TBGE*
Flour	100	100
Vital wheat gluten	3	0
TBGE* 22	0	0.3
Vegetable fat	4	4
Fresh yeast	3.5	3.5
Sugar	2	2
Salt	1.8	1.8
TopBake Toast	0.5	0.5
Water approx.	58	58

Hamburger buns

Component in kg	Standard	TBGE*
Flour	100	100
Vital wheat gluten	3	0
TBGE* 22	0	0.3
Sugar	8	8
Shortening	4	4
Fresh yeast	3.5	3.5
Salt	1.8	1.8
TopBake Bun Pure	0.5	0.5
Water approx.	53	53

Use in Easter bread

Greek Easter bread is in the rich dough category. The high amounts of fat and sugar inhibit yeast action, and loosening up the dough requires long and intensive kneading. The dough is supposed to come out soft and stretchable, without being sticky. Depending on the kind and amount of fruit chunks added, 10 % or more wheat gluten is added. To maintain the requisite chewy structure, only a part of this wheat gluten can be substituted. For example, instead of 12 % vital wheat gluten, 8 % can be used with 0.4 % TopBake Gluten Enhancer 22.

Component in kg	Standard	TBGE*
Flour	88	92
Vital wheat gluten	12	8
TBGE* 22	0	0.4
Sugar	30	30
Whole egg	23	23
Margarine	15	15
Fresh yeast	10	10
Spices, orange essence, Vanillin	2.6	2.6
TopBake Cool Max	2.3	2.3
Salt	1	1
Water approx.	33	33

* TBGE: TopBake Gluten Enhancer

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