E-free bakery solutions

MILLBO

Now for cakes and sweet goods

How to improve product performance

and maintain a “clean” label

Adding value without adding to the label

Millbo can make a huge difference to your bread, yeast raised goods and cakes, with a range of E-free solutions designed from natural ingredients.

- **Improve:** volume and fermentation tolerance
- **Add:** taste, texture and flavour
- **Reduce:** staling and mould

Create outstanding products with a clean label using Millbo E-free solutions.

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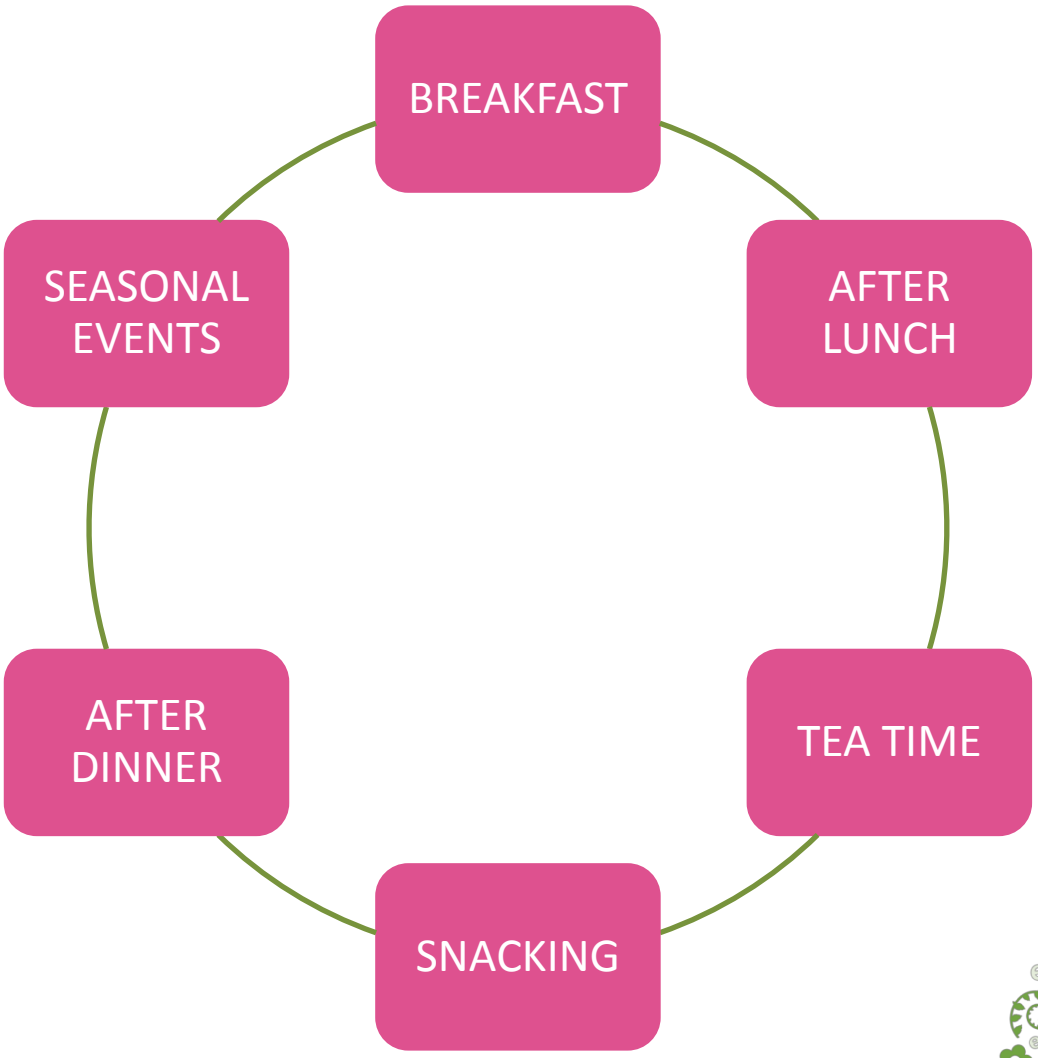
Time to eat

Food habits depend on different factors: country of origin, age, seasonal events. From an early age, taste and tradition influence behavior towards food. There are different moments of consumption which depend on the time of the day.



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Drivers

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Drivers

Batter stabilization

A key element to quality and softness of the final product.

Egg reduction

Due to the increasing cost of eggs, it's advantageous to reduce the quantity without compromising product quality.

Fat content reduction

Fat, in cake recipes, contributes to eating quality, but nutritionists recommend a balanced, healthy and low-fat diet.

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Drivers

Freshness and shelf life extension

Consumers expect freshness from a baked product.

"Freshness", as perceived by the consumer, is usually associated with the softness and moistness of the cake.

Staling describes the changes to product texture and eating quality, caused by changes in the starch and crumb characteristics, which adversely affect the perceived freshness of a product.

Appearance and easy handling for excellent biscuits

Homogeneity and machinability of the dough and ease of moulding are important to obtain a regular final biscuit shape and appearance. Enzymes, like proteases, increase the pliability of the dough thus facilitating moulding.

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Drivers

Volume

It’s determined by carbon dioxide (from the baking powder), air (incorporated during mixing) and steam.

Strength, elasticity of the dough in puff pastry

It is important to ensure that the gluten network in the dough has good extensibility otherwise the baked products will lack volume. An increase in the flour strength makes the dough more extensible, which, in turn, will lead to extra lift.

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E-free: now also for cakes

The E-free concept was developed initially for bread, but now it has been extended also to cakes and sweet goods.

E-free, clean label

In food legislation, bakery enzymes are regarded as processing aids as they are added during processing for technical reasons.

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The role of enzymes

•An enzyme will act as a catalyst till the substrate is available or the enzyme itself becomes inactive (denatured) usually by oven heating. Enzymes are used at ppm levels because they are catalyst: enzymes accelerate the conversion of the substrate into the desired finished product.

•Enzymes are substrate specific i.e. a particular enzyme can only work on a specific substrate (or very similar substrates). An enzyme greatly accelerates a specific chemical reaction, converting a starting material (substrate) into the desired final product.

•An enzyme will continue working until deactivated usually by heating or until the substrate has been completely converted.

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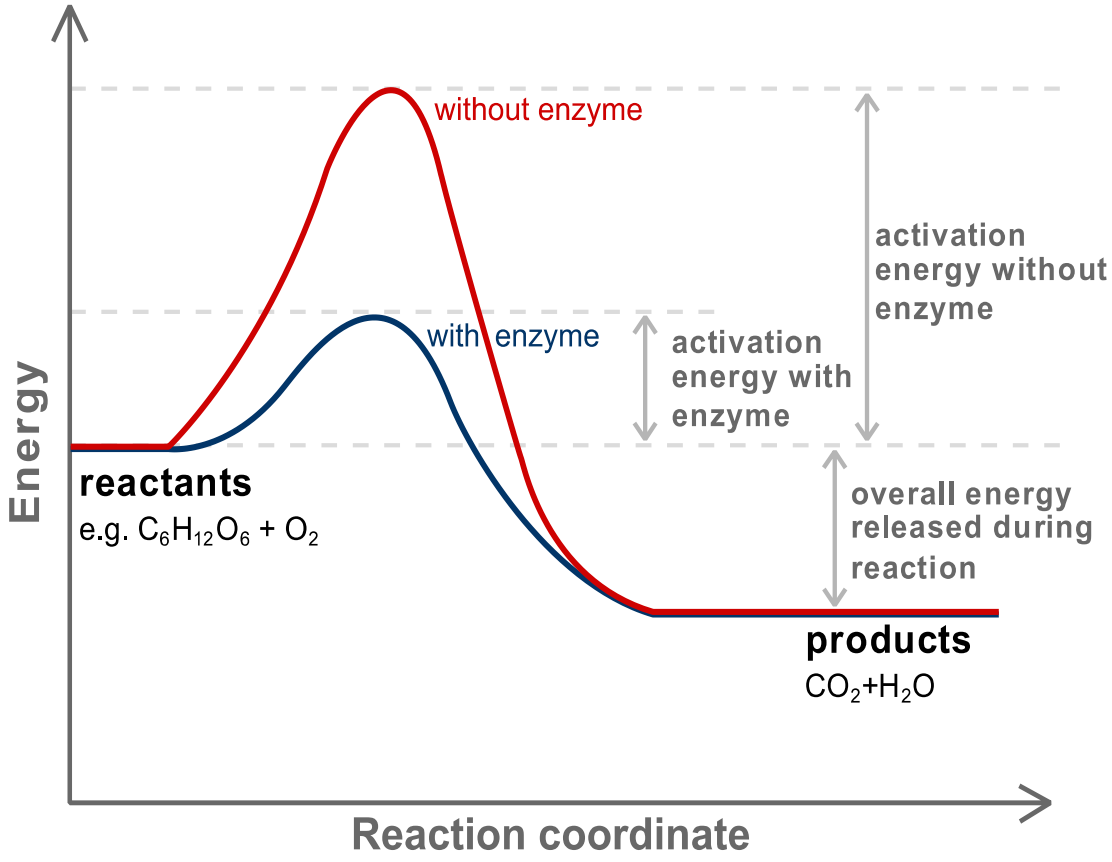
The role of enzymes

Enzymes are proteins which act as a catalyst



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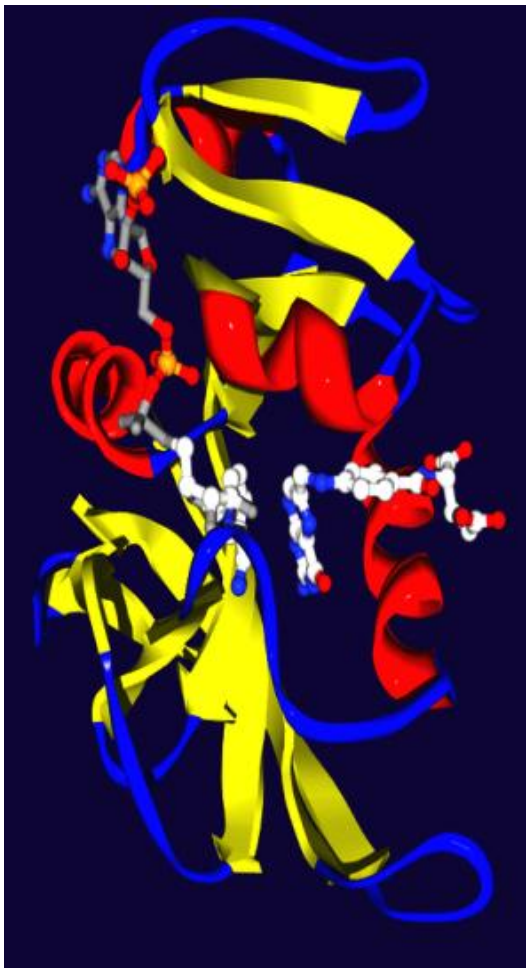
The role of enzymes

•Enzymes do not have to appear in the list of ingredients of products sold directly to the consumer.

•Enzymes by definition are non-gmo as they are proteins and not organisms.

•Enzymes have been used since the end of the 70's. There is no need for users to take special safety precautions.

•Extremely high or low pH values generally result in complete loss of activity for most enzymes. The enzymes in the EF.Fecto line are active at pH between 6 and 10.



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Our new range of products

Millbo has developed a new range of products specially for cakes and sweet goods:

Ef.fectoCake
Ef.fectoDanish
Ef.fectoEgg
Ef.fectoLite
Ef.fectoCake840
Ef.fectoBiscuit920
Ef.fectoFreeze

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Volume is a feature that positively affects consumer perception

Softness is an important crumb characteristic and it's affected directly by the level of moisture remaining in the product

Freshness and change in eating quality are big factors in determining customer acceptance of cake products

More volume

Softness, good structure

Freshness, shelf life, antistaling

Ef.fectoCake

E-free Clean Label

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Ef.fectoCake

Dosage 0,5% on the total recipe

Improving softness, volume and shelf life

It has been developed to improve softness, volume, shelf life of product.
3 features in one product focused on specific needs.
By reducing additives in recipe, it will be possible to obtain a “clean label”.

Technical datasheet

General information

Product description	Enzymatic solution
Ingredients	Phospholipase, amylase
Application	Soft cakes and morning goods
Dosage	0,5% on the total recipe
GMO information	GMO free

Nutritional analysis (average)

Energy	360 Kcal/100g – 1534kJ/100g	
Protein	12 +/- 1,0	Grams/100g
Carbohydrates	73 +/-1,0	Grams/100g
Fats	1,9 +/-0,5	Grams/100g
Fibers	2 +/- 1,0	Grams/100g
Ashes	1,5 +/-0,5	Grams/100g
Sodium	2 +/-0,5	mg/100g

Microbiological analysis

Total plate count	1.000	CFU/g
Yeast & moulds	100	CFU/g
Coliforms	100	CFU/g
Salmonella	Absent in 25/g	
Filth test	25 fragments max on 50 g	

Packaging

Bag size	20 Kg
Bag type	Multiply paper bags with liner

Shelf life

Suggested storage conditions	Ambient, dry
Shelf life	One year from date of manufacture

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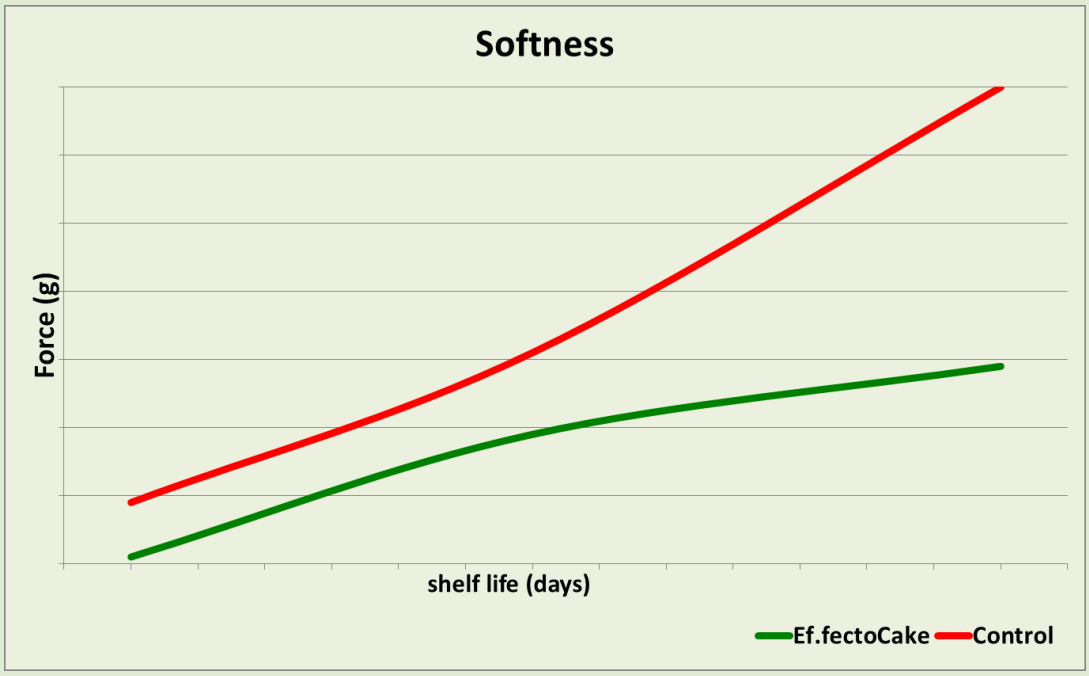
Ef.fectoCake

It’s an enzymatic solution, based on a specific cocktail containing a special phospholipase, which assists in creating greater volume, softness and shelf life.
Product performance are improved with a clean label.



RESULTS

- Increased softness
- Increased volume and specific volume
- Optimum structure and texture
- Retarded staling and extended shelf life

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Strength and elasticity of the dough guarantees an excellent volume in morning goods

Strength, elasticity of the dough

Ef.fectoDanish

E-free
Clean Label

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Ef.fectoDanish

Dosage 0,5% on the total recipe

Improving dough resistance and protecting frozen bakery goods

This enzyme has been developed to improve the resistance of the dough and the volume of the finished product. These factors are very important to obtain an even rise in puff and danish pastry, as the water evaporates into steam during baking time.

Technical datasheet

General information

Product description	Enzymatic solution
Ingredients	Glucose-oxidase , xylanase, new generation special enzymes
Application	Extension of frozen shelf life and structure improvement in danish and puff pastry
Dosage	0,5% on the total recipe

Nutritional analysis (average)

Energy	362 Kcal/100g – 1538kJ/100g	
Protein	12 +/- 1,0	Grams/100g
Carbohydrates	73 +/-1,0	Grams/100g
Fats	1,9 +/-0,5	Grams/100g
Fibers	2 +/- 1,0	Grams/100g
Ashes	1,5 +/-0,5	Grams/100g
Sodium	2 +/-0,5	mg/100g

Microbiological analysis

Total plate count	1.000	CFU/g
Yeast & moulds	100	CFU/g
Coliforms	100	CFU/g
Salmonella	Absent in 25/g	
Filth test	25 fragments max on 50 g	

Packaging

Bag size	20 Kg
Bag type	Multiply paper bags with liner

Shelf life

Suggested storage conditions	Ambient, dry
Shelf life	One year from date of manufacture

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Ef.fectoDanish

It’s an enzymatic solution, based on glucose-oxidase, xylanase and new generation special enzymes, which assists in both improving the extensibility and the strength of the dough.

RESULTS

- Increased extensibility
- Increased volume
- Improved gas retention
- Increased stability during dough resting time

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Reduce egg quantity, without compromising product quality

Egg reduction

Ef.fectoEgg

E-free Clean Label

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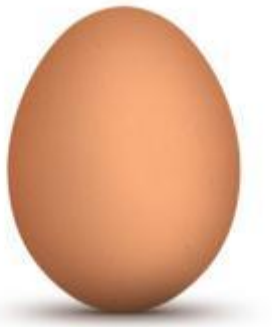
Ef.fectoEgg



Dosage 0,5% on total whole liquid eggs

Reducing eggs

Reduce the amount of eggs up to 25%, with cost saving, in view of the increasing cost of eggs.

Technical datasheet

General information

Product description	Enzymatic solution
Ingredients	Phospholipase
Application	Cakes and sweet morning goods
Dosage	0,5% on total whole liquid eggs
GMO information	GMO free

Nutritional analysis (average)

Energy	367 Kcal/100g – 1560kJ/100g	
Protein	12 +/- 1,0	Grams/100g
Carbohydrates	73 +/-1,0	Grams/100g
Fats	1,9 +/-0,5	Grams/100g
Fibers	2 +/- 1,0	Grams/100g
Ashes	1,5 +/-0,5	Grams/100g
Sodium	2 +/-0,5	mg/100g

Microbiological analysis

Total plate count	1.000	CFU/g
Yeast & moulds	100	CFU/g
Coliforms	100	CFU/g
Salmonella	Absent in 25/g	
Filth test	25 fragments max on 50 g	

Packaging

Bag size	20 Kg
Bag type	Multiply paper bags with liner

Shelf life

Suggested storage conditions	Ambient, dry
Shelf life	One year from date of manufacture

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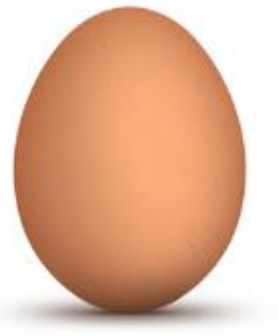
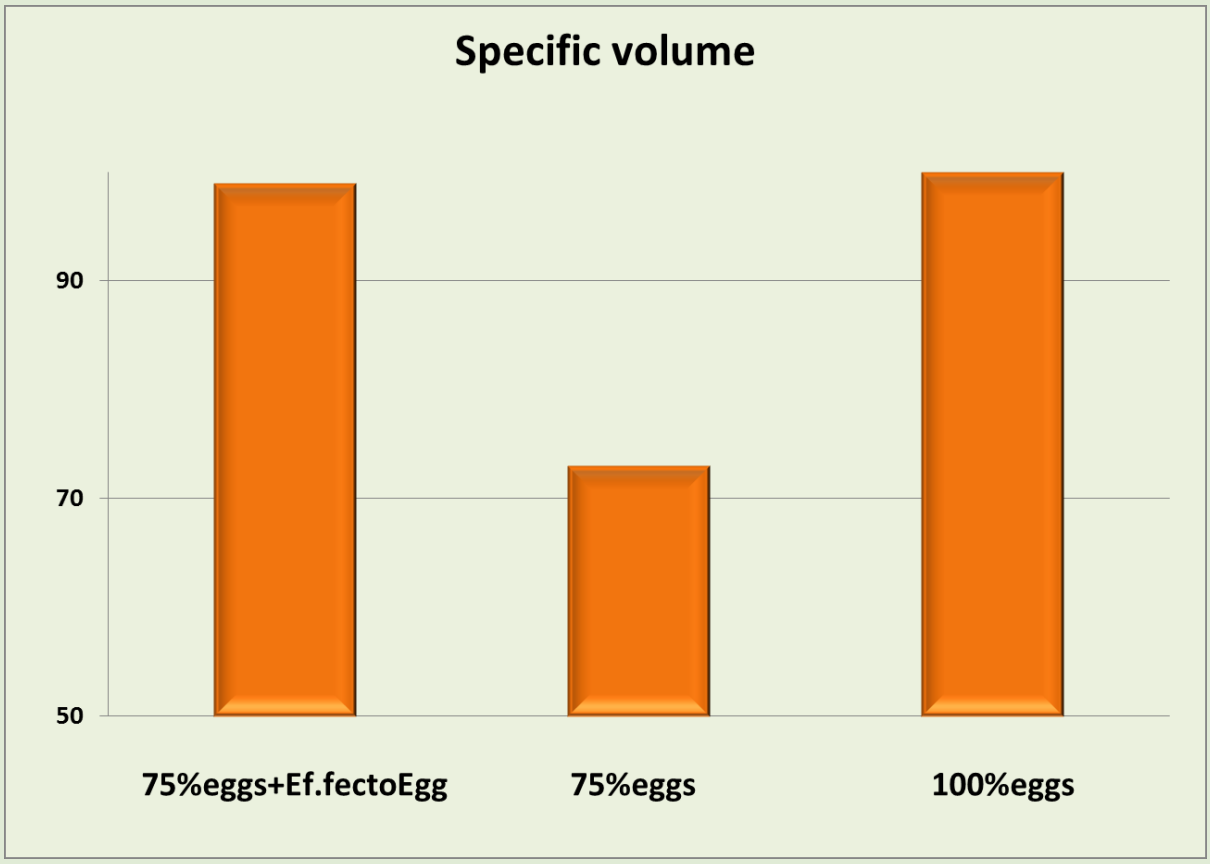
Ef.fectoEgg



It’s an enzymatic solution, based on a phospholipase, which aims at the reduction of eggs in recipes, without compromising softness and volume.



RESULTS

- Volume and specific volume are very similar to the control test (100% egg)
- Structure very similar to test with 100% egg

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Fat in cake recipes gives a softer product and contributes to the flavour

50% Fat reduction

Ef.fectoLite

E-free Clean Label

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Ef.fectoLite

Dosage 5% on the total recipe

Reducing fat

A unique concentrate, developed to reduce the fat ratio in recipes, without compromising product standard. Ideal for cakes and sweet goods.

Technical datasheet

General information

Product description	Concentrate
Ingredients	Tapioca starch, amylase
Application	Cakes and sweet morning goods
Dosage	5% on the total recipe
GMO information	GMO free

Nutritional analysis (average)

Energy	300 Kcal/100g –1290 kJ/100g	
Protein	1 +/-0,5	Gram/100g
Carbohydrates	71 +/- 1,0	Grams/100g
Fats	0,15 +/- 0,5	Grams/100g
Fibers	-	Grams/100g
Ashes	0,5 +/- 0,5	Grams/100g
Sodium	200 +/-0,5	mg/100g

Microbiological analysis

Total plate count	1.000	CFU/g
Yeast & moulds	100	CFU/g
Coliforms	100	CFU/g
Salmonella	Absent in 25/g	
Filth test	25 fragments max on 50 g	

Packaging

Bag size	20 kg
Bag type	Multiply paper bags with liner

Shelf life

Suggested storage conditions	Ambient, dry
Shelf life	One year from date of manufacture

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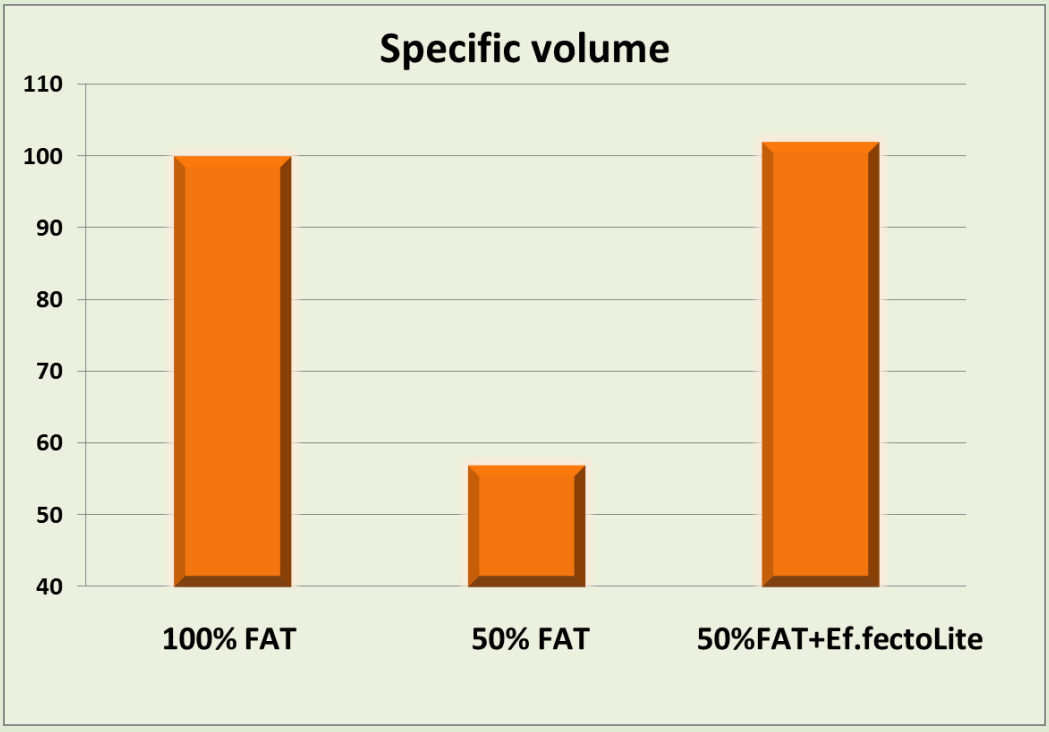
Ef.fectoLite

It has been developed to reduce fat in recipes without compromising product standards such as volume, softness and cake structure. A low fat diet is very important for human health. Several sectors of the food industry already offer low or reduced fat products.



RESULTS

- Fat reduction
- Volume and softness are similar to the standard recipe with 100% fat
- Cake structure similar to control test

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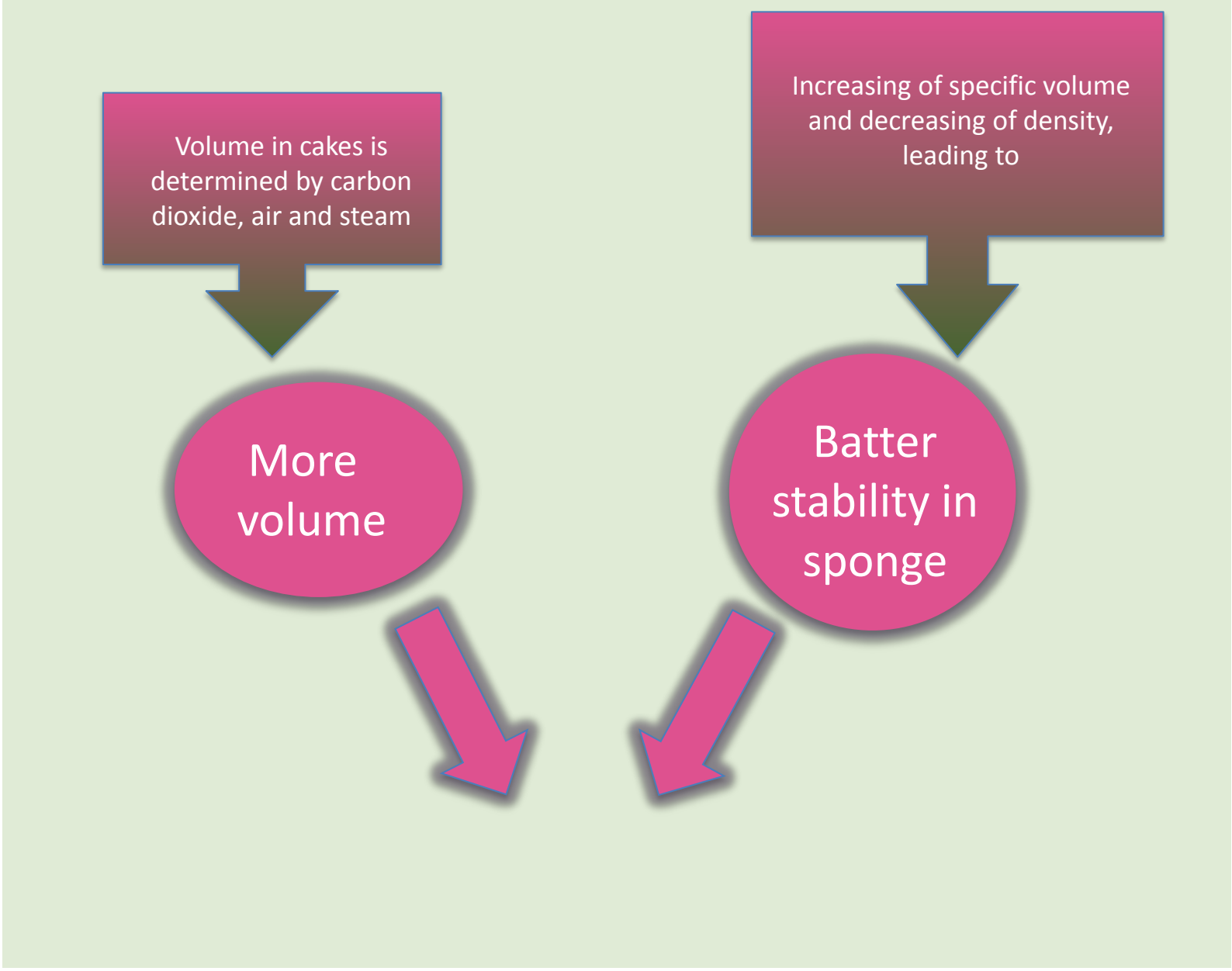

Ef.fectoCake840

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Ef.fectoCake840

Dosage 50-150ppm on the total recipe

Improving batter stability and volume in sponge cakes

Special concentrated cake enzyme in powder form. Delivering batter stability in sponge, volume, shelf life extension. Emulsifier reduction.

Technical datasheet

General information

Product description	Phospholipase conc
Ingredients	Phospholipase
Application	Cakes and sweet morning goods
Dosage	50-150ppm on the total recipe
GMO information	GMO free

Microbiological analysis

Total plate count	1.000 CFU/g
Yeast & moulds	100 CFU/g
Coliforms	100 CFU/g
Salmonella	Absent in 25/g
Filth test	25 fragments max on 50 g

Packaging

Bag size	20 Kg
Bag type	Multiply paper bags with liner

Shelf life

Suggested storage conditions	Ambient, dry
Shelf life	One year from date of manufacture

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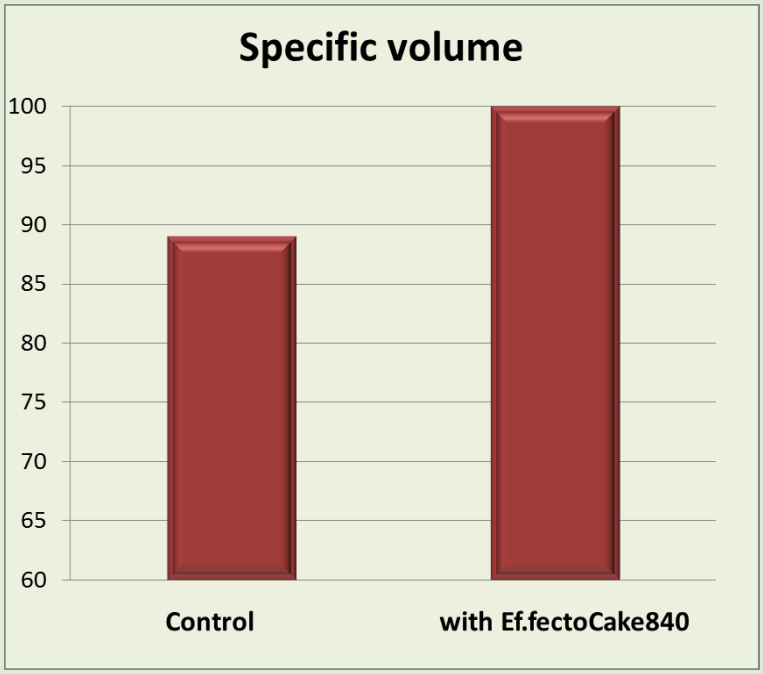
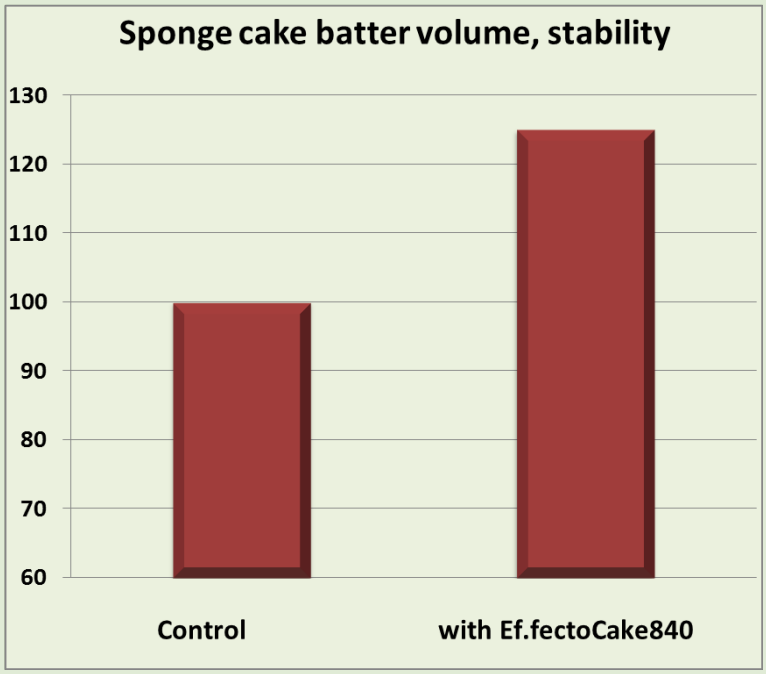
Ef.fectoCake840

Improved volume in all types of cakes.
Improved batter stability in sponge cake and extended freshness during cake shelf life.
Reduced or eliminated emulsifiers for a cleaner label.





RESULTS

- Volume
- Batter stability
- Emulsifier reduction

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Machinability is an important feature in biscuit dough.

Machinability and shape

Ef.fectoBiscuit920

E-free Clean Label

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Ef.fectoBiscuit920

Dosage 10 – 100 ppm

Improving dough consistency and machinability

This enzyme will assist in obtaining major benefits in dough consistency and machinability, product shape and appearence and final product texture and mouth-feel.

Technical datasheet

General information

Product description	Protease
Ingredients	Neutral Protease
Application	Biscuits
Dosage	10-100 ppm on the total recipe
GMO information	GMO free

Microbiological analysis

Total plate count	1.000 CFU/g
Yeast & moulds	100 CFU/g
Coliforms	100 CFU/g
Salmonella	Absent in 25/g
Filth test	25 fragments max on 50 g

Packaging

Bag size	20 Kg
Bag type	Multiply paper bags with liner

Shelf life

Suggested storage conditions	Ambient, dry
Shelf life	One year from date of manufacture

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Ef.fectoBiscuit920

It’s an enzymatic solution, based on a protease with the aim of assisting product friability by reducing dough tenacity.
Degradation of the gluten structure leads to better machinability of the dough because energy input is less.
In biscuit making there is the need for the flour gluten to be weakened to enable the dough to be properly moulded and printed.

RESULTS

- Friability
- Dough consistency and machinability
- Product shape and appearance
- Mouth-feel

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Guar gum is used to improve the quality of frozen bread but today is scarcely available

Guar substitution

Ef.fectoFreeze

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Clean Label

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Ef.fectoFreeze

Dosage 0,5%

Substituting guar gum in frozen bread

Technical datasheet

General information

Product description	Enzymatic guar substitute
Ingredients	Wheat flour, enzymes
Application	Frozen bread
Dosage	0,5%
GMO information	GMO free

Nutritional analysis (average)

Energy	335 Kcal/100g – 1401,64 kJ/100g
Protein	12,30 +/- 1,0 mg/100g
Carbohydrates	72,70 +/- 1,0 Grams/100g
Fats	1,90 +/- 0,5 Grams/100g
Fibers	2,10 +/- 1,0 Grams/100g
Ashes	1,66 +/- 0,5 Grams/100g
Sodium	2,0+/-0,5 mg/100g

Microbiological analysis

Total plate count	100.000 CFU/g
Yeast & moulds	1000 CFU/g
Coliforms	100 CFU/g
Salmonella	Absent in 25/g
Filth test	25 fragments max on 50 g

Packaging

Bag size	25 kg
Bag type	Multiply paper bags with liner

Shelf life

Suggested storage conditions	Ambient, dry
Shelf life	One year from date of manufacture

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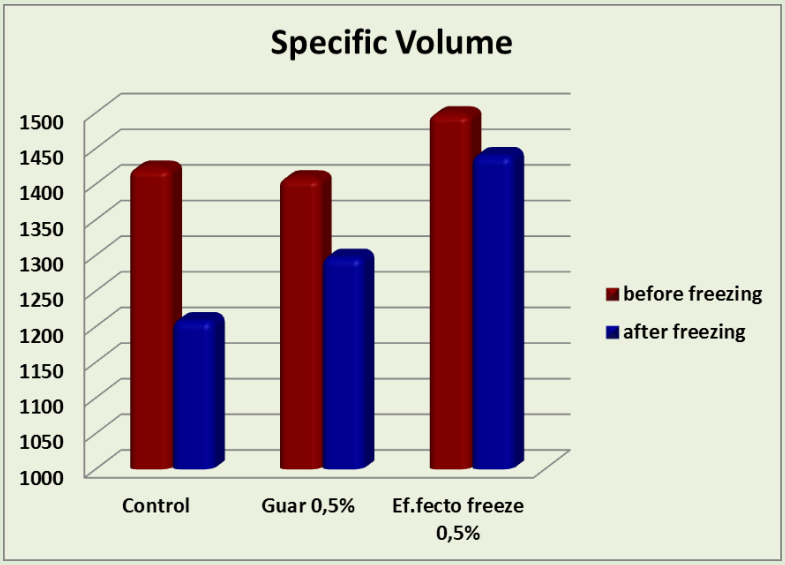
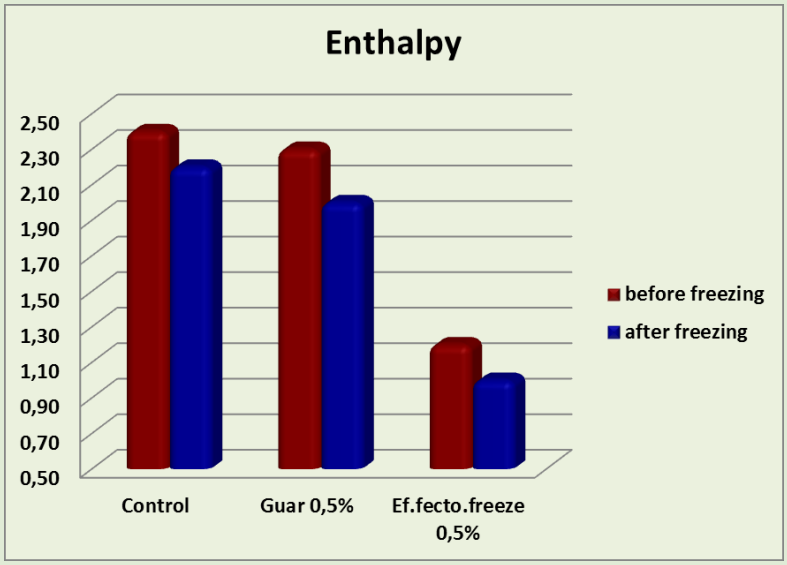
Ef.fectoFreeze

RESULTS

- Increase volume
- Enhance crumb softness
- Reduce staling
- 1:1 substitution of guar gum





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Dosages

PRODUCT	CODE	Dosage ppm on the recipe	Dosage % on the recipe	Dosage mg/Kg of recipe	Dosage g/100Kg of recipe
Ef.fectoCake	3000	5000	0,5	5000	500
Ef.fectoCake840	3040	50-150	0,005-0,015	50-150	5,0 - 15,0
Ef.fectoLite	3030	50.000	5,0	50.000	50.000
Ef.fectoDanish	3001	5000	0,5	5000	500
Ef.fectoBiscuit920	3041	10-100	0,01-0,001	10-100	10-100

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Conclusions

Remarkable improvement of product performance: volume, softness, shelf life, structure

Cost savings on raw materials (ie. Eggs)

Clean label

E-free solution

Tailor made solutions for different customers: mills, premix manufacturers, bakers

Capture the attention of consumers with healthy lifestyle, thanks to reduction of fat and eggs

Sustainability: bake more with less.
Reduce carbon foot print.
Reduce impact on environment

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Thank you

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For more information visit:
www.millbo.com