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54 **TITULO** PRODUCTOS DE HORNEADO QUE COMPRENEN CARBOHIDRATO OXIDASA

Y/O PIRANOSA OXIDASA

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Patente de Modelo de Utilidad.



Capítulo I.



Capítulo II.

2

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11 FIGURA CARACTERÍSTICA:

12 Solicito la concesión de la patente,

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TITULO PRODUCTOS DE HORNEADO QUE COMPRENDEN CARBOHIDRATO OXIDASA Y/O PIRANOSA OXIDASA

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(54) Title: BAKERY PRODUCTS COMPRISING CARBOHYDRATE OXIDASE AND/OR PYRANOSE OXIDASE

(57) Abstract: The present invention is related to a method for the improvement of shape and width of cuts of bread during the baking process of bakery products which comprises the step of adding a sufficiently effective amount of Carbohydrate oxidase or Pyranose oxidase in said bakery products.

WO 2004/100669 A1

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BAKERY PRODUCTS COMPRISING CARBOHYDRATE OXIDASE AND/OR PYRANOSE OXIDASE

Field of the invention

10 [0001] The present invention is related to improvement of the shape of bread by addition of functional ingredient such as enzymes.

State of the art

15 [0002] Bread-improving and/or dough improving additives are in the bread making process added to the dough in order to improve texture, volume, flavour and freshness of the bread as well as to improve mach inability and stability of the dough. Dough conditioners: Data -
20 esters, oxidants like Ascorbic acid, KBrO_3 , ADA and enzymes like lipase added to strengthen the gluten and improve rheological and handling properties of the dough, improve the shape of the bread significantly. Dough pieces of baguette - type breads and schnittbrötchen are cut
25 respectively after proofing, right before baking, and before proofing in order to improve the shape of the final product due to increased opening of the cuts as a result of the improved oven spring.

[0003] As the use of chemical oxidants like ADA or
30 bromate is forbidden in most countries research is performed in order to replace the chemical oxidants by natural ones like enzymes.

Use of Glucose oxidase, Carbohydrate oxidase and Pyranose oxidase in baking.

[0004] The effect of Carbohydrate oxidase and
5 Pyranose oxidase as a dough improving and bread improving agent are disclosed in respectively WO 99/31990 and WO 97/22257.

[0005] EP 321 811 and EP 338 452 disclose the use of Glucose oxidase, in combination with other enzymes.

10 [0006] The inventors of WO99/31990 found a novel Carbohydrate oxidase which can oxidize the reducing end of an oligosaccharide more efficiently than the corresponding monosaccharide, e.g., preferentially oxidizing maltodextrines or cellodextrines over glucose. This
15 document describes the effect of carbohydrate oxidase on firmness, stickiness, stability and robustness of the dough. Also the increased tolerance of the dough towards increased mixing time, fermentation time and water content is described. The use of the Carbohydrate oxidase may
20 result in an increased volume and improved crumb structure and softness of the baked product, as well as an increased strength, stability and reduced stickiness of the dough.

Aims of the invention

25 [0007] The present invention aims to provide a novel method for improving the shape and width of cuts of bread.

Summary of the invention

[0008] The present invention concerns a method for
30 the improvement of shape and width of cuts of bread during the baking process of bakery products which comprises the step of adding a sufficiently effective amount of Carbohydrate oxidase and/or Pyranose oxidase in said bakery products.

[0009] The method of the present invention is in particular suitable for the improvement of shape and width of cuts of bread during the baking process of bakery products, said baking process comprising forming loafs of a dough, proofing said dough, incising said dough at its top surface and baking said dough, and is characterised in that the method comprises:

- adding a sufficiently effective amount of carbohydrate oxidase and/or pyranose oxidase in said dough before proofing,
- incising said dough at its top surface before or after proofing, and
- obtaining a baked product with at its top surface an improved, wider cut when compared with a reference bread not comprising a sufficiently effective amount of Carbohydrate oxidase and/or Pyranose oxidase.

[0010] Preferably, the method according to the invention further comprises the step of adding other conventionally used baking additives or combinations of baking additives selected from the group consisting of gluten, oxidantia like vitamin C and Azodicarbonamide, emulsifiers like mono-or diglycerides, diacetyl tartaric acid of monoglycerides, sodium stearyl lactylates, sugar esters of fatty acids, lecithin, sugar, salt, fat and/or oil.

[0011] Preferably, the method according to the invention is further characterised in that the Carbohydrate oxidase and/or Pyranose oxidase is added to the ingredients as a dry powder, a granulated or agglomerated powder or a liquid improver.

[0012] Preferably, the method according to the invention is further characterised in that the sufficiently

effective amount of the carbohydrate oxidase and/or pyranose oxidase lies between 5 and 500 u/kg flour.

[0013] Preferably, the method according to the invention is further characterised in that the width of cuts of the baked product is significantly larger than compared with a reference bread not comprising a sufficiently effective amount of Carbohydrate oxidase and/or Pyranose oxidase.

[0014] Advantageously, the method according to the invention is further characterised in that the width of cuts of the baked product is between about 10% and about 400% larger than compared with a reference bread not comprising a sufficiently effective amount of Carbohydrate oxidase and/or Pyranose oxidase.

[0015] Another aspect of the present invention concerns the use of Carbohydrate oxidase and/or Pyranose oxidase in the improvement of the shape and the width of cuts of bread during the baking process of bakery products.

Short description of the drawings

[0016] Fig. 1 represents the results of the baking test from example 1.

Detailed description of the invention

Properties of the Carbohydrate oxidase:

[0017] The oligosaccharide oxidase may be obtained from a strain of *Microdochium* or *Acremonium*, preferably a strain of *M. nivale*, more preferably CBS 100236. WO 99/31990 describes the isolation of the gene encoding the Carbohydrate oxidase from *M. nivale* CBS 100236 and insertion into *E.coli*. and a method for producing a carbohydrate oxidase comprising cultivating the host cell under conditions conducive to expression of the carbohydrate oxidase and recovering the carbohydrate oxidase.

[0018] A preferred carbohydrate oxidase from *M. nivale* is capable of oxidizing oligosaccharides having a degree of polymerization (DP) of DP2-DP5, at a substrate concentration of 0.83mM at a higher rate than the corresponding monosaccharide. Thus the enzyme can hydrolyze both maltodextrins and cellodextrines wherein monosaccharide units are linked by alpha-1, 4 or beta -1, 4 glucosidic bonds, respectively, at a higher rate than glucose. The carbohydrate oxidase can hydrolyze all cellodextrines having DP2-DP5 equally well and at a level around 10-fold higher than the monosaccharide glucose. The carbohydrate is preferably stable at pH 5-7. A preferred Carbohydrate oxidase from *M. nivale* has optimum activity around pH = 6. At 40°C it is stable in the pH range 4-9, but unstable at pH=3.

[0019] The carbohydrate oxidase is preferably stable at 20-45°C. A preferred Carbohydrate oxidase from *M. nivale* has optimum activity around 40°C. At pH 6 it is stable up to 60°C, but inactivated at 70°C. It has a denaturation temperature of 73°C.

Properties of the Pyranose oxidase:

[0020] The Pyranose oxidases, described in the WO97/22257, are enzymes which catalyse the oxidation of several monosaccharides at position C2 with the release of hydrogen peroxide. Glucose in its Pyranose form is the preferred substrate. A number of other substrates e.g. furanoses such as xylose can also be oxidized by the enzyme. The Pyranose oxidase is distinct from glucose oxidase (E.C. 1.1.34) which catalyses the oxidation of glucose at position C1 with the concomitant formation of gluconic acid.

[0021] When Pyranose oxidase is added to dough intended for use in the preparation of baked products, it

may exert an oxidizing effect on dough constituents and thereby serve, e.g. to improve the strength of the gluten structures in the dough and/or baked products and thereby improve the strength of the dough in addition to the
5 rheological and handling properties of the dough. The oxidizing effect is believed to be achieved when the enzyme catalyses the oxidation of monosaccharides present in the flour or dough. WO97/22257 describes an increased volume and improved crumb structure and softness of the baked
10 product, as well as an increased strength, stability and reduced stickiness of the dough, thus resulting in improved machinability when Pyranose oxidase is added to the dough. The Pyranose oxidase can be from a microbial or fungal origin.

15

[0022] This invention is related to the effect of the use of Carbohydrate oxidase and Pyranose oxidase, added to a bread improving and/or dough improving composition, on the oven spring and the shape of the resulting baked
20 product. An example of a Carbohydrate oxidase is described in patent WO 99/31990 and an example of a Pyranose oxidase is described in the patent WO 97/22257. Addition of Carbohydrate oxidase or Pyranose oxidase to a dough intended for use in preparation of baked products which are
25 cut, an incision is made with a sharp razor blade, just before or at the end (right before baking) of proofing results in an improved oven spring, increased width of cuts and improved shape of the final product. Resulting breads are more round than breads prepared without oxidases or on
30 addition of Glucose oxidase.

[0023] The Carbohydrate oxidase or Pyranose oxidase may be added in a composition containing other enzymes like amylase, xylanase, lipase, glucose oxidase, lipoxygenase,

X

peroxidase, and protease. The dough-improving and/or bread improving composition may contain a combination of conventionally used baking additives like: gluten, oxidantia like vitamin C and Azodicarbonamide, emulsifiers
5 like mono-or diglycerides, diacetyl tartaric acid of monoglycerides, sodium stearyl lactylates, sugar esters of fatty acids, lecithin, sugar and/or salt, fat and/or oil. These mixtures of active ingredients can be diluted by appropriate carriers normally used in bakery applications
10 like wheat flour, rye flour, starch, water or oil, to obtain a dosage level appropriate for mixing in doughs for baking properties. The mixtures can be in powder, granulated, agglomerated or liquid form.

15 [0024] Carbohydrate oxidase or Pyranose oxidase should be dosed between 5000 units and 20000 units for 100 kg of flour.

[0025] The effect of addition to the dough of
20 respectively Carbohydrate oxidase and Pyranose oxidase on the volume and the shape of bread are shown in examples 1 to 8.

[0026] The specifications of the standard non-treated wheat flour used for the baking trials presented in
25 the following examples are: 12.68% protein, 0.58% ash, falling number = 235 s, Farinograph A = 57.44%, Farinograph B = 90, Farinograph C = 80.

[0027] All breads are lengthwise cut (incised) with
30 a sharp razor blade. The width of cut of the resulting breads is measured as the largest distance between the two upstanding edges of the cut after baking.

[0028] The standard improver used contains: Fungal alpha amylase (Fungamyl 75.000, Novozymes) 0.9g/100kg flour, xylanase (Belase B210, Beldem) 3g/100 kg flour, vitamin C 10g, Datem (Multec Data HP20, Beldem) 300g/100 kg flour. This is an example of the standard improver. Absolute and relative amounts of additives can vary according to local adaptation to wheat flour and process.

10 Example 1: Comparison of the effect of Glucose oxidase, Carbohydrate oxidase and Pyranose oxidase on the shape of overnight fermented breads (17 hours, 20°C).

[0029] Dough was prepared with standard non-treated wheat flour (100), water (54), fresh yeast (Gelka, Belgium) 15 (0.35), salt (2) standard improver (1). Dough was mixed in a (Diosna SP24) spiral mixer for 2 minutes at low speed and 7 minutes at high speed. Dough temperature after mixing is 24°C. Dough pieces of 350g are rounded and fermented at 25°C for 20 minutes. After moulding (Bertrand, Electrolux 20 Baking) baguette shaped dough pieces are fermented for 17 hours at 20°C, cut lengthwise with 3 straight cuts of 2 mm depth and 10 cm length who overlap each other 1/3, per bread and baked in a deck oven (210°C, 30 minutes, steaming: 0.2L before baking, very little after baking).

Dough	Shape of bread	Volume (cc)	Width of cuts (cm)
1. Reference		1350	5
2. GOX 85u/kg flour	slightly more round	1550	11
3. PO 200u/kg flour	more round Crust less brown	1825	38
4. CO 200u/kg flour	crust less brown	1875	41

[0030] When dosed at 200 units/kg flour and fermented at 20°C for 17 hours both Carbohydrate and Pyranose oxidase improve the form of the bread and the width of the cuts significantly when compared to addition
5 of Glucose oxidase.

[0031] The result of this are depicted in figure 1. The figure shows the reference bread (1), bread comprising 85u/kg flour GOX (2), bread comprising 200u/kg flour PO (3) and bread comprising 200u/kg flour CO (4). It is clear from
10 the figure that the examples obtained according to the invention (3 and 4) show a remarkable improvement in the overall appearance of the bread due to the volume increase and the increase in the width of the cuts 5.

15 Example 2: Comparison of the effect of Glucose oxidase and Carbohydrate oxidase and Pyranose oxidase on the shape of overnight fermented breads (12 hours, 27°C).

[0032] Dough was prepared with standard non-treated
20 wheat flour (100), water (54), fresh yeast (Gelka, Belgium) (0.35), salt (2) and standard improver (1). Dough was mixed in a (Diosna SP24) spiral mixer for 2 minutes at low speed and 7 minutes at high speed. Dough temperature after mixing is 24°C. Dough pieces of 350g are rounded and fermented at
25 25°C for 20 minutes. After moulding (Bertrand, Electrolux Baking) baguette shaped dough pieces are fermented for 12 hours at 27°C, cut lengthwise with 3 straight cuts of 2 mm depth and 10 cm length who overlap each other 1/3, per bread and baked in a deck oven (210°C, 30 minutes,
30 steaming: 0.2L before baking, very little after baking).

Dough	Shape of bread	Volume (cc)	Width of cuts (cm)
1. Reference-Datem + ADA (3g/100kg flour)		2100	6
2. GOX 85u/kg flour	slightly more round	2125	4
3. PO 200u/kg flour	more round Crust less brown	2100	20
4. CO 200u/kg flour	more round crust less brown	2075	22

[0033] When dosed at 200 units/kg flour and fermented at 27°C for 12 hours both Carbohydrate and Pyranose oxidase improve the form of the bread and the width of the cuts significantly when compared to addition of Glucose oxidase.

Example 3: Effect of different dosages of Carbohydrate oxidase on width of cuts of overnight fermented bread.

10

[0034] Dough was prepared with standard non-treated wheat flour (100), water (54), fresh yeast (Gelka, Belgium) (0.35), salt (2) and standard improver (1). Dough was mixed in a (Diosna SP24) spiral mixer for 2 minutes at low speed and 7 minutes at high speed. Dough temperature after mixing is 24°C. Dough pieces of 350g are rounded and fermented at 25°C for 20 minutes. After moulding (Bertrand, Electrolux Baking) baguette shaped dough pieces are fermented overnight, cut lengthwise with 3 straight cuts of 2 mm depth and 10 cm length who overlap each other 1/3, per bread and baked in a deck oven (210°C, 30 minutes, steaming: 0.2L before baking, very little after baking). Tests have been performed with both non-treated Belgian flour and Argentinian flour.

15
20

[0035] Specifications of Argentinian flour are:
Alveograph P = 73 mm H₂O, Alveograph L = 78 mm, Alveograph
W = 197 10E-4 J.

5 3.1. Belgian flour, fermentation: 17 hours, 20°C

Dough	Shape of bread	Volume (cc)	Width of cuts (cm)
1. Reference with GOX 85u/kg flour	Slightly round	1800	18
2. CO 50u/kg flour	round	1750	25
3. CO 100u/kg flour	round	1900	38
4. CO 200u/kg flour	round	1900	37

3.2. Argentinian flour, no Datem, ADA, fermentation: 12h,
27°C

Dough	Shape of bread	Volume (cc)	Width of cuts (cm)
1. Reference with GOX 85u/kg flour - Datem + ADA (3g/100 kg flour)		1850	5
2. CO 100u/kg flour	More round	2000	12
3. CO 200u/kg flour	More round	2000	18

10 [0036] When fermented at 20°C for 17 hours, the optimum dosage of added Carbohydrate oxidase to obtain maximum width of cuts is 100u / kg flour. When fermented at 27°C for 12 hours the optimum dosage of added Carbohydrate oxidase to obtain maximum width of cuts is 200u/kg flour.

Example 4: Effect of different dosages of Pyranose oxidase
on width of cuts of overnight fermented bread

[0037] Dough was prepared with standard non-treated
5 wheat flour (100), water (54), fresh yeast (Gelka, Belgium)
(0.35), salt (2) and standard improver (1). Dough was mixed
in a (Diosna SP24) spiral mixer for 2 minutes at low speed
and 7 minutes at high speed. Dough temperature after mixing
is 24°C. Dough pieces of 350g are rounded and fermented at
10 25°C for 20 minutes. After moulding (Bertrand, Electrolux
Baking) baguette shaped dough pieces are fermented
overnight, cut lengthwise with 3 straight cuts of 2 mm
depth and 10 cm length who overlap each other 1/3, per
bread and baked in a deck oven (210°C, 30 minutes,
15 steaming: 0.2L before, very little after).

[0038] Tests have been performed with both non-
treated Belgian flour and Argentinian flour. Specifications
of Argentinian flour as in example 3.

20 4.1. Belgian flour, fermentation: 17 hours, 20°C

Dough	Shape of bread	Volume (cc)	Width of cuts (cm)
1. Reference with GOX 85u/kg flour	Slightly round	1725	17
2. PO 50u/kg flour	round	1675	12
3. PO 100u/kg flour	round	1775	29
4. PO 200u/kg flour	round	1775	25

4.2. Argentinian flour, no emulsifier, ADA, fermentation:
12h, 27°C

Dough	Shape of bread	Volume (cc)	Width of cuts (cm)
1. Reference with GOX 85u/kg flour - Datem + ADA (3g/100 kg flour)	Slightly round	2050	7
2. CO 100u/kg flour	round	2250	20
3. CO 200u/kg flour	More round than 2	2250	26

[0039] The same conclusions as made in example 3 on
5 addition of Carbohydrate oxidase can be made on addition of
Pyranose oxidase. When fermented at 20°C for 17 hours the
optimum dosage of added Carbohydrate oxidase is 100u/kg
flour while for fermentation at 27°C for 12 hours maximum
width of cut is measured on addition of 200u/kg flour.

10

Example 5: Comparison of the effect of double dosage of
Glucose oxidase and optimum dosage of Pyranose oxidase on
width of cuts of overnight fermented breads.

15 [0040] Dough was prepared with standard non-treated
wheat flour (100), water (54), fresh yeast (Gelka, Belgium)
(0.35), salt (2) and standard improver. Dough was mixed in
a (Diosna SP24) spiral mixer for 2minutes at low speed and
7 minutes at high speed). Dough temperature after mixing is
20 24°C. Dough pieces of 350g are rounded and fermented at
25°C for 20 minutes. After shaping baguette shaped dough
pieces are fermented for 17 hours at 20°C, cut lengthwise
with 3 straight cuts of 2 mm depth and 10 cm length who
overlap each other 1/3, per bread and baked in a deck oven

(210°C, 30 minutes, steaming: 0.2L before and very little after).

Dough	Shape of bread	Volume (cc)	Width of cuts (cm)
1. GOX 85u/kg flour		1925	25
2. GOX 170u/kg flour		1750	15
3. PO 100u/kg flour	more round	1900	37

- 5 [0041] When doubling the usual dosage of added Glucose oxidase width of cuts is not increased. The shape and width of cuts of the breads prepared with Pyranose oxidase are significantly better than those of the reference bread with Glucose oxidase.

10

Example 6: Effect of Carbohydrate oxidase, Pyranose oxidase and Glucose oxidase on the shape and the width of cuts of Argentinian breads (direct proofing and baking).

- 15 [0042] Dough was prepared with standard non-treated wheat flour (100), water (54), fresh yeast (Gelka, Belgium) (0.35), salt (2) and standard improver. Dough was mixed in a (Diosna SP24) spiral mixer for 2minutes at low speed and 7 minutes at high speed). Dough temperature after mixing is
- 20 24°C. Dough pieces of 350g are rounded and fermented at 25°C for 20 minutes. After shaping baguette shaped dough pieces are fermented for 150 minutes at 40°C, cut lengthwise with 3 straight cuts of 2 mm depth and 10 cm length who overlap each other 1/3, per bread and baked
- 25 (210°C, 30 minutes, steaming: 0.2L before, very little after).



Dough	Shape of bread	Volume (cc)	Width of cuts (cm)
1. Reference		1025	9
2. GOX 85u/kg flour		1125	16
3. GOX 170u/kg flour	Slightly more wide	1100	22
4. CO 100u/kg flour	More wide	1075	35
5. CO 200u/kg flour	More wide	1050	32
6. PO 100u/kg flour	more wide	1050	36
7. PO 200u/kg flour	more wide	1125	29

[0043] Also in direct fermented and baked Argentine type bread addition of Carbohydrate oxidase or Pyranose oxidase improves the width of cuts of the baked product 5 more than addition of Glucose oxidase.

Example 7: Effect of Carbohydrate oxidase and Pyranose oxidase on width of cuts of Schnittbrötchen.

10 [0044] Flour (Weizenmehl type 550) (100), water (56), fresh bakers yeast (Gelka, Belgium) (1), salt (2), standard improver (3) are mixed with a spiral mixer (Diosna SP24) for 2 minutes at low speed and 8 minutes at high speed. Dough temperature after mixing is 30°C. After 10 15 minutes bulk fermentation, dough pieces of 1600g are rounded and divided (Rotamat). Dough pieces of 30g are rested for 1 minute at 25°C, moulded (Bertrand, Electrolux Baking), rested for 8 minutes, cut lengthwise (2 cm depth) closed again, turned upside down and fermented for 17 hours 20 at 15°C before baking in a deck oven (16 minutes at 230°C, 0.11 steam before baking and 0.31 steam after baking).

[0045] Specifications of the Weizenmehl used are: 11.4 % protein, Falling number = 310 s, ash content = 0.59%

Dough	Shape of bread	Volume (cc)	Width of cuts (cm)
1. Reference		1725	40
2. GOX 85u/kg flour		1650	40
3. PO 100u/kg flour	more round	1600	47
4. PO 200u/kg flour	more round	1700	52
5. CO 100u/kg flour	more round	1625	53
6. CO 200u/kg flour	more round	1675	57

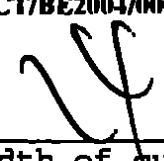
[0046] Width of cut is significantly improved on addition of Carbohydrate oxidase or Pyranose oxidase to the dough while no effect is noticed on addition of Glucose oxidase.

Example 8: Effect of Carbohydrate oxidase and Pyranose oxidase on width of cuts of Schnittbrötchen.

10

[0047] Flour (Weizenmehl type 550) (100), water (56), fresh bakers yeast (Gelka, Belgium) (1), salt (2), standard improver (3) are mixed with a spiral mixer (Diosna SP24) for 2 minutes at low speed and 8 minutes at high speed. Dough temperature after mixing is 30°C. After 10 minutes bulk fermentation, dough pieces of 1600g are rounded and divided (Rotamat). Dough pieces of 30g are rested for 1 minute at 25°C, moulded (Bertrand, Electrolux Baking), rested for 8 minutes, cut lengthwise (2 cm depth) closed again, turned upside down and fermented for 50 minutes at 32°C before baking in a deck oven (16 minutes at 230°C, 0.1l steam before baking and 0.3l steam after baking).

25



Dough	Volume (cc)	Width of cuts (cm)
1. Reference	2025	27
2. GOX 85u/kg flour	2075	31
3. GOX 170u/kg flour	2075	34
4. CO 50u/kg flour	2050	31
5. CO 100u/kg flour	2025	34
6. CO 200u/kg flour	2025	32
7. PO 50u/kg flour	2000	35
8. PO 100u/kg flour	2050	36
9. PO 200u/kg flour	2025	39

[0048] When compared to the reference the width of cuts of Schnittbrötchen prepared with addition of Carbohydrate oxidase or Pyranose oxidase is improved. The
5 effect of Pyranose oxidase is somewhat more pronounced.

CLAIMS

1. Method for the improvement of shape and width of cuts of bread during the baking process of bakery products, comprising forming loafs of a dough, proofing
5 said dough, incising said dough at its top surface and baking said dough, characterised in that the method comprises:

- adding a sufficiently effective amount of carbohydrate
10 oxidase and/or pyranose oxidase in said dough before proofing,
- incising said dough at its top surface before or after proofing, and
- obtaining a baked product with at its top surface an improved, wider cut when compared with a reference bread
15 not comprising a sufficiently effective amount of carbohydrate oxidase and/or pyranose oxidase.

2. Method according to claim 1, further comprising the step of adding other conventionally used baking additives or combinations of baking additives
20 selected from the group consisting of gluten, oxidantia like vitamin C and Azodicarbonamide, emulsifiers like mono- or diglycerides, diacetyl tartaric acid or monoglycerides, sodium stearyl lactylates, sugar esters of fatty acids, lecithin, sugar, salt, fat and/or oil to the dough before
25 proofing.

3. Method according to any of the claims 1 or 2 characterised in that the Carbohydrate oxidase and/or Pyranose oxidase is added as a dry powder, a granulated or agglomerated powder or a liquid improver.

30 4. Method according to any of the claims 1 to 3, characterised in that the sufficiently effective amount of the carbohydrate oxidase and/or pyranose oxidase lies between 5 and 500 u/kg flour.

5. Method according to any of the claims 1 to 4, characterised in that the width of cuts of the baked product is significantly larger than compared with a reference bread not comprising a sufficiently effective amount of Carbohydrate oxidase and/or Pyranose oxidase.

6. Method according to any of the claims 1 to 5, characterised in that the width of cuts of the baked product is between about 10% and about 400% larger than compared with a reference bread not comprising a sufficiently effective amount of Carbohydrate oxidase and/or Pyranose oxidase.

7. Use of Carbohydrate oxidase and/or Pyranose oxidase in the improvement of the shape and the width of cuts of bread during the baking process of bakery products.

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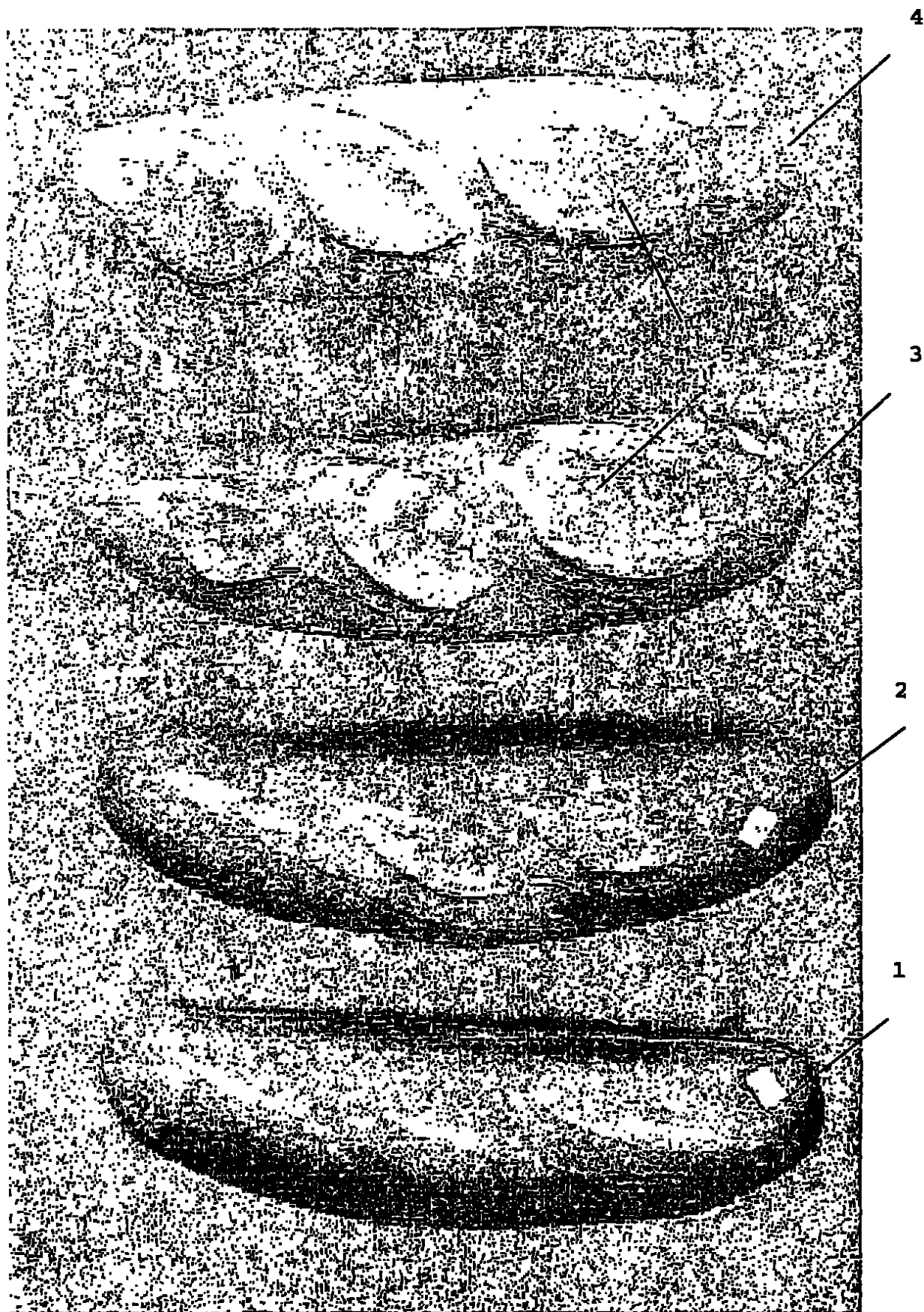


Fig. 1

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Para códigos de dos letras y otras abreviaciones, referirse a las "Notas de guía sobre Códigos y Abreviaturas" que aparecen al comienzo de cada edición de la Gaceta del PCT

(54) Título: PRODUCTOS DE HORNEADO QUE COMPRENDEN CARBOHIDRATO OXIDASA Y/O PIRANOSA OXIDASA.

(57) Resumen: La presente invención se relaciona con un método para el mejoramiento de la forma y ancho de los cortes de pan durante el proceso de horneado de los productos de horneado el cual comprende el paso de agregar una cantidad suficientemente efectiva de Carbohidrato oxidasa o Piranosa oxidasa en dichos productos de horneado.

MEJORA DE LA FORMA DEL PAN

5 Campo de la Invención

La presente invención se refiere a la mejora de la forma del pan mediante la adición de ingredientes funcionales tales como enzimas.

10 Estado de la técnica

Se añaden a la masa de panificación aditivos mejoradores del pan y/o de la masa de pan durante el proceso de elaboración del mismo con el fin de mejorar la textura, volumen, sabor y frescura del pan, así como para mejorar la mecanizabilidad y estabilidad de la masa de panificación. Se añaden acondicionadores de la masa de pan: ésteres Data, oxidantes tal como ácido ascórbico, KBrO_3 y ADA, y enzimas tal como la lipasa, con el fin de fortalecer el gluten y mejorar las propiedades reológicas y de manipulabilidad de la masa de pan, así como para mejorar significativamente la forma de éste. Se cortan trozos de masas de panes de tipo "baguette" y "schnittbrötchen", respectivamente, después del proceso de reposo, inmediatamente antes de hornear, y antes del proceso de reposo, con el fin de mejorar la forma del producto final debido a la mayor apertura de los cortes como consecuencia de un mejor levantamiento de la masa en el horno.

Debido a que está prohibida en la mayoría de países la utilización de oxidantes químicos tales como ADA o bromato, se está investigando con el fin de sustituir los oxidantes químicos por oxidantes naturales, tal como enzimas.

Utilización de glucosa oxidasa, carbohidrato oxidasa y piranosa oxidasa durante el horneo

El efecto de las carbohidrato oxidasas y piranosa oxidasas como agentes mejoradores de la masa de panificación y del pan se da a conocer, respectivamente, en las patentes WO 99/31990 y WO 97/22257.

Las patentes EP 321 811 y EP 338 452 dan a conocer la utilización de glucosa oxidasa, en combinación con otros enzimas.

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Los inventores de la patente WO 99/31990 descubrieron una nueva carbohidrato oxidasa que puede oxidar el extremo reductor de un oligosacárido de manera más eficiente que el monosacárido correspondiente, por ejemplo, oxidando maltodextrinas o celodextrinas con preferencia sobre la glucosa. Dicho documento describe el efecto de la carbohidrato oxidasa sobre la firmeza, viscosidad, estabilidad y robustez de la masa de pan. Además, se describe una mayor tolerancia de la masa de pan a los incrementos del tiempo de mezcla, tiempo de fermentación y contenido de agua. La utilización de la carbohidrato oxidasa puede resultar en un incremento de volumen y en una mejor estructura de miga y suavidad del producto homeado, así como una mayor resistencia, mayor estabilidad y menor viscosidad de la masa.

Objetivos de la invención

La presente invención tiene por objetivo proporcionar un nuevo método para mejorar la forma y la anchura de los cortes del pan.

Sumario de la invención

La presente invención se refiere a un método para mejorar la forma y anchura de los cortes del pan durante el proceso de homeado de los productos de panadería que comprende la etapa de adición de una cantidad suficientemente eficaz de carbohidrato oxidasa y/o piranosa oxidasa en dichos productos de panadería.

La presente invención se refiere a un método que conviene particularmente para mejorar la forma y la anchura de los cortes del pan durante el proceso de homeado de los productos de panadería, dicho proceso de homeado comprende la formación de la masa del pan, fermentación de dicha masa de pan, hacer una incisión de dicha masa de pan en la superficie superior y el homeado de dicha masa de pan, y es caracterizado por que el método comprende:

- Añadiendo una suficiente cantidad de carbohidrato oxidasa y/o piranosa oxidasa en dicha masa de pan antes de la fermentación
- hacer una incisión de dicha masa de pan en la superficie superior antes o después de la fermentación, y

- Obteniendo un producto homeado con una superficie superior mejorada, un corte más ancho que cuando comparado con un pan de referencia no comprende una suficiente cantidad efectiva de carbohidrato oxidasa y/o piranosa oxidasa

5 Preferentemente, el método según la invención comprende adicionalmente la etapa de adición de otros aditivos de horneado de uso convencional, o combinaciones de éstos, seleccionados de entre el grupo que consiste en gluten, oxidantes tal como vitamina C y azodicarbonamida, emulsificantes, tal como mono o diglicéridos, ácido diacetil tartárico de monoglicéridos, estearoil-lactilatos sódicos, ésteres de azúcar de ácidos grasos, lecitina, azúcar, sal, grasa y/o aceite.

10 Preferentemente, el método según la invención se caracteriza adicionalmente porque la carbohidrato oxidasa y/o piranosa oxidasa se añade a los ingredientes en forma de polvos secos, polvos granulados o aglomerados, o mejorador líquido.

15 Preferentemente, el método según la invención se caracteriza adicionalmente porque la cantidad suficientemente eficaz de la carbohidrato oxidasa y/o piranosa oxidasa se encuentra comprendida entre 5 y 500 u/kg harina.

Preferentemente, el método según la invención se caracteriza adicionalmente porque la anchura de los cortes del producto homeado es significativamente mayor en comparación con un pan de referencia que no comprende una cantidad suficientemente eficaz de carbohidrato oxidasa y/o piranosa oxidasa.

20 Ventajosamente, el método según la invención se caracteriza adicionalmente porque la anchura de los cortes del producto homeado es mayor en un intervalo comprendido entre aproximadamente 10% y aproximadamente 400% en comparación con un pan de referencia que no comprende una cantidad suficientemente eficaz de carbohidrato oxidasa y/o piranosa oxidasa.

25 Otro aspecto de la presente invención se refiere a la utilización de carbohidrato oxidasa y/o piranosa oxidasa para mejorar la forma y anchura de los cortes del pan durante el proceso de horneado de productos de panadería.

Breve descripción de los dibujos

30

La figura 1 representa los resultados del ensayo de horneado del Ejemplo 1.

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Descripción detallada de la invención

Propiedades de la carbohidrato oxidasa:

5 La oligosacárido oxidasa puede obtenerse a partir de una cepa de *Microdochium* o de *Acremonium*, preferentemente de una cepa de *M. nivale*, más preferentemente CBS 100236. La patente WO 99/31990 describe el aislamiento del gen que codifica la carbohidrato oxidasa en *M. nivale* CBS 100236 y la inserción de dicho gen en *E. coli*, y un método para producir una carbohidrato oxidasa que comprende el cultivo de las células huésped bajo condiciones que conducen a la expresión de la carbohidrato oxidasa, y la recuperación de ésta.

10 Una carbohidrato oxidasa preferente de *M. nivale* es capaz de oxidar oligosacáridos con un grado de polimerización (DP) de DP2-DP5, a una concentración de sustrato de 0,83 mM, a una tasa mayor que la del monosacárido correspondiente. De esta manera el enzima puede hidrolizar tanto maltodextrinas como celodextrinas, en las que las unidades monosacáridas se unen por enlaces glucosídicos alfa-1,4 o beta-1,4 respectivamente, a una tasa mayor que la glucosa. La carbohidrato oxidasa puede hidrolizar todas las celodextrinas de DP2-DP5 igualmente bien y a un nivel aproximadamente 10 veces más alto que el monosacárido glucosa. El carbohidrato es preferentemente estable a un pH entre 5 y 7. Una carbohidrato oxidasa preferente de *M. nivale* tiene su actividad óptima a un pH aproximado de 6. A 40°C es estable en el intervalo de pH comprendido entre 4 y 9, pero es inestable a pH=3.

20 La carbohidrato oxidasa es preferentemente estable a una temperatura comprendida entre 20 y 45°C. Una carbohidrato oxidasa preferente de *M. nivale* tiene una actividad óptima a aproximadamente 40°C. A pH=6 es estable hasta los 60°C, pero se inactiva a 70°C. Presenta una temperatura de desnaturalización de 73°C.

Propiedades de la piranosa oxidasa:

30 Las piranosa oxidasas, descritas en la patente WO 97/22257 son enzimas que catalizan la oxidación de diversos monosacáridos en la posición C2 con liberación de peróxido de hidrógeno. La glucosa en su forma piranosa es el sustrato preferente. El enzima también puede oxidar varios otros sustratos, por ejemplo furanosas tal como la

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xilosa. La piranosa oxidasa es diferente de la glucosa oxidasa (E.C. 1.1.34), la cual cataliza la oxidación de la glucosa en la posición C1 con la formación concomitante de ácido glucónico.

5 Cuando se añade piranosa oxidasa a la masa que se pretende utilizar para preparar productos de panadería, puede ejercer un efecto oxidante sobre los constituyentes de la masa y de esta manera servir para, por ejemplo, mejorar la fortaleza de las estructuras de gluten en la masa y/o en los productos de panadería y de esta manera mejorar la fortaleza de la masa además de las propiedades reológicas y de manipulabilidad de ésta. El efecto oxidante se cree que se consigue cuando el enzima
10 cataliza la oxidación de monosacáridos presentes en la harina o en la masa. La patente WO 97/22257 describe un volumen incrementado y una mejor estructura de miga y suavidad del producto homeado, así como una mayor fortaleza y estabilidad, y menor viscosidad, de la masa, resultando de esta manera en una mecanizabilidad mejorada cuando se añade piranosa oxidasa a ésta. La piranosa oxidasa puede proceder de un
15 origen microbiano o fúngico.

La presente invención se relaciona con el efecto de la utilización de carbohidrato oxidasa y piranosa oxidasa, añadidas a una composición mejoradora de pan y/o de masa de panificación, sobre el levantamiento de la masa en el horno y sobre la forma del producto homeado resultante. En la patente WO 99/31990 se describe un ejemplo de una
20 carbohidrato oxidasa y en la patente WO 97/22257 se describe un ejemplo de una piranosa oxidasa. La adición de carbohidrato oxidasa o piranosa oxidasa a una masa que se pretende utilizar para preparar productos de panadería que se cortan (se realiza una incisión con una cuchilla afilada), inmediatamente antes o al final (inmediatamente antes del homeo) del proceso de reposo, resulta en un mejor levantamiento de la masa, mayor anchura de los cortes y mejor forma del producto final. Los panes resultantes son más
25 redondos que los panes preparados sin oxidasas o con adición de glucosa oxidasa.

La carbohidrato oxidasa o piranosa oxidasa puede añadirse en una composición que contiene otros enzimas, tal como amilasa, xilanasas, lipasa, glucosa oxidasa, lipoxigenasa, peroxidasa, y proteasa. La composición mejoradora de la masa y/o pan
30 puede contener una combinación de aditivos de panadería de uso convencional, tal como: gluten, oxidantes tal como vitamina C y azodicarbonamida, emulsificantes tal como mono o diglicéridos, ácido diacetil tartárico de monoglicéridos, estearoil-lactilatos sódicos, ésteres de azúcar de ácidos grasos, lecitina, azúcar y/o sal, grasa y/o aceite. Dichas

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mezclas de ingredientes activos pueden diluirse con portadores apropiados utilizados habitualmente en aplicaciones de panadería, tal como harina de trigo, harina de centeno, almidón, agua o aceite, con el fin de obtener un nivel de dosificación apropiado para mezclar en masas de panificación para obtener ciertas propiedades de horneado. Las mezclas pueden estar en forma de polvos, granuladas, aglomeradas o líquidas.

La carbohidrato oxidasa o piranosa oxidasa deberían dosificarse entre 5.000 unidades y 20.000 unidades por cada 100 kg de harina.

Se muestra en los Ejemplos 1 a 8 el efecto de la adición a la masa de, respectivamente, carbohidrato oxidasa y piranosa oxidasa, sobre el volumen y forma del pan.

Las especificaciones de la harina de trigo estándar sin tratar utilizada para los ensayos de horneado presentados posteriormente en los ejemplos son las siguientes: 12,68% de proteína, 0,58% de cenizas, número de caída = 235 s, farinógrafo A = 57,44%, farinógrafo B = 90, farinógrafo C = 80.

Todos los panes se cortaron longitudinalmente (con incisión) utilizando una cuchilla afilada. Se midió la anchura de los cortes de los panes resultantes como la distancia más grande entre los dos márgenes sobresalientes del corte después del horneado.

El mejorador estándar utilizando contenía lo siguiente: alfa-amilasa fúngica (Fungamyl 75.000, Novozymes) 0,9 g/100 kg harina, xilanasa (Belase B210, Beldem) 3 g/100 kg harina, vitamina C 10 g, Datem (Multec Data HP20, Beldem) 300 g/100 kg harina. Lo anterior es un ejemplo del mejorador estándar. Las cantidades absolutas y relativas de los aditivos pueden variar de acuerdo con la adaptación a la harina de trigo y proceso locales.

Ejemplo 1: Comparación del efecto de la glucosa oxidasa, de la carbohidrato oxidasa y de la piranosa oxidasa sobre la forma de panes fermentados durante la noche (17 horas, 20°C).

Se preparó masa de pan con harina de trigo estándar sin tratar (100), agua (54), levadura fresca (Gelka, Bélgica) (0,35), sal (2), mejorador estándar (1). Se mezcló la masa en un mezclador de espiral (Diosna SP24) durante 2 minutos a velocidad reducida y durante 7 minutos a velocidad elevada. La temperatura de la masa después de la mezcla

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- 7 -



era de 24°C. Se amasaron trozos de masa de 350 g y se fermentaron a 25°C durante 20 minutos. Tras moldearlos (Bertrand, Electrolux Baking) para formar trozos de masa con forma de barra, se fermentaron durante 17 horas a 20°C, se cortaron longitudinalmente en cada pan 3 incisiones rectas de 2 mm de profundidad y 10 cm de longitud que se solapaban en 1/3 y se hornearon en un horno de pisos (210°C, 30 minutos, vapor: 0,2 l previamente al horneado, muy poco vapor después de éste).

Masa de pan	Forma del pan	Volumen (cc)	Anchura de los cortes (cm)
1. Referencia		1.350	5
2. GOX 85 u/kg harina	ligeramente más redondo	1.550	11
3. PO 200 u/kg harina	más redondo, corteza menos tostada	1.825	38
4. CO 200 u/kg harina	corteza menos tostada	1.875	41

5 Cuando se dosifican 200 unidades/kg harina y se fermenta a 20°C durante 17 horas, tanto la carbohidrato oxidasa como la piranosa oxidasa mejoran la forma del pan y la anchura de los cortes de manera significativa en comparación con la adición de glucosa oxidasa.

10 Los resultados de este ensayo se ilustran en la figura 1. La figura muestra el pan de referencia (1), el pan que comprende 85 u/kg harina GOX (2), el pan que comprende 200 u/kg harina PO (3), y el pan que comprende 200 u/kg harina CO (4). Resulta evidente a partir de la figura que los ejemplos obtenidos de acuerdo con la invención (3 y 4) muestran una mejora notable en la apariencia general del pan debido al incremento de volumen y de la anchura de los cortes 5.

15 Ejemplo 2: Comparación del efecto de la glucosa oxidasa y de la carbohidrato oxidasa y piranosa oxidasa sobre la forma de panes fermentados durante la noche (12 horas, 27°C).

20 Se preparó masa de pan con harina de trigo estándar sin tratar (100), agua (54), levadura fresca (Gelka, Bélgica) (0,35), sal (2) y mejorador estándar (1). Se mezcló la masa en un mezclador de espiral (Diosna SP24) durante 2 minutos a velocidad reducida y durante 7 minutos a velocidad elevada. La temperatura de la masa después de la mezcla era de 24°C. Se amasaron trozos de masa de 350 g y se fermentaron a 25°C durante 20 minutos. Tras moldearlos (Bertrand, Electrolux Baking) para formar trozos de masa con forma de barra, se fermentaron durante 12 horas a 27°C, en cada pan se realizaron 3 incisiones longitudinales rectas de 2 mm de profundidad y 10 cm de longitud que se solapaban en 1/3, y los panes se homearon en un horno de pisos (210°C, 30 minutos, vapor: 0,2 l previamente al homeo, muy poco vapor después de éste).

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Masa de pan	Forma del pan	Volumen (cc)	Anchura de los cortes (cm)
1. Referencia – Datem + ADA (3 g/100 kg harina)		2.100	6
2. GOX 85 u/kg harina	ligeramente más redondo	2.125	4
3. PO 200 u/kg harina	más redondo, corteza menos tostada	2.100	20
4. CO 200 u/kg harina	más redondo, corteza menos tostada	2.075	22

5 Cuando se dosifican 200 unidades/kg harina y se fermenta a 27°C durante 12 horas, tanto la carbohidrato oxidasa como la piruvato oxidasa mejoran la forma del pan y la anchura de los cortes de manera significativa en comparación con la adición de glucosa oxidasa.

Ejemplo 3: Efecto de diferentes dosis de carbohidrato oxidasa sobre la anchura de los cortes en pan fermentado durante la noche.

10 Se preparó masa de pan con harina de trigo estándar sin tratar (100), agua (54), levadura fresca (Gelka, Bélgica) (0,35), sal (2), y mejorador estándar (1). Se mezcló la masa en un mezclador de espiral (Diosna SP24) durante 2 minutos a velocidad reducida y durante 7 minutos a velocidad elevada. La temperatura de la masa después de la mezcla era de 24°C. Se amasaron trozos de masa de 350 g y se fermentaron a 25°C durante 20 minutos. Tras moldearlos (Bertrand, Electrolux Baking) para formar trozos de masa con forma de barra, se fermentaron durante la noche, en cada pan se realizaron 3 incisiones longitudinales rectas de 2 mm de profundidad y 10 cm de longitud que se solapaban en 1/3, y los panes se hornearon en un horno de pisos (210°C, 30 minutos, vapor: 0,2 l previamente al horneado, muy poco vapor después de éste).

20 Se llevaron a cabo ensayos con harina belga sin tratar y harina argentina.

Las especificaciones de la harina argentina son las siguientes: alveógrafo P = 73 mm H₂O, alveógrafo L = 78 mm, alveógrafo W = 197 x 10⁻⁴ J.

2X 2A

3.1. Harina belga, fermentación: 17 horas, 20°C

Masa de pan	Forma del pan	Volumen (cc)	Anchura de los cortes (cm)
1. Referencia más GOX 85 u/kg harina	ligeramente redondo	1.800	18
2. CO 50 u/kg harina	redondo	1.750	25
3. CO 100 u/kg harina	redondo	1.900	38
4. CO 200 u/kg harina	redondo	1.900	37

5

3.2. Harina argentina, sin Datem, ADA, fermentación: 12 h, 27°C

Masa de pan	Forma del pan	Volumen (cc)	Anchura de los cortes (cm)
1. Referencia más GOX 85 u/kg harina – Datem + ADA (3 g/100 kg harina)		1.850	5
2. CO 100 u/kg harina	más redondo	2.000	12
3. CO 200 u/kg harina	más redondo	2.000	18

10

Cuando se fermenta a 20°C durante 17 horas, la dosis óptima añadida de carbohidrato oxidasa para obtener la anchura máxima de los cortes es de 100 u/kg harina. Cuando se fermenta a 27°C durante 12 horas, la dosis óptima de carbohidrato oxidasa añadida para obtener la anchura máxima de los cortes es de 200 u/kg harina.

15

Ejemplo 4: Efecto de diferentes dosis de piranosa oxidasa sobre la anchura de los cortes en pan fermentado durante la noche.

Se preparó masa de pan con harina de trigo estándar sin tratar (100), agua (54), levadura fresca (Gelka, Bélgica) (0,35), sal (2), y mejorador estándar (1). Se mezcló la

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masa en un mezclador de espiral (Diosna SP24) durante 2 minutos a velocidad reducida y durante 7 minutos a velocidad elevada. La temperatura de la masa después de la mezcla era de 24°C. Se amasaron trozos de masa de 350 g y se fermentaron a 25°C durante 20 minutos. Tras moldearlos (Bertrand, Electrolux Baking) para formar trozos de masa con forma de barra, se fermentaron durante la noche, en cada pan se realizaron 3 incisiones longitudinales rectas de 2 mm de profundidad y 10 cm de longitud que se solapaban en 1/3, y los panes se hornearon en un horno de pisos (210°C, 30 minutos, vapor: 0,2 l previamente al horneado, muy poco vapor después de éste).

Se llevaron a cabo ensayos con harina belga y harina argentina. Las especificaciones de la harina argentina son las mismas que en el Ejemplo 3.

4.1. Harina belga, fermentación: 17 horas, 20°C

Masa de pan	Forma del pan	Volumen (cc)	Anchura de los cortes (cm)
1. Referencia con harina GOX 85 u/kg	ligeramente redondo	1.725	17
2. PO 50 u/kg harina	redondo	1.675	12
3. PO 100 u/kg harina	redondo	1.775	29
4. PO 200 u/kg harina	redondo	1.775	25

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24

4.2. Harina argentina, sin emulsificante, ADA, fermentación: 12 h, 27°C

Masa de pan	Forma del pan	Volumen (cc)	Anchura de los cortes (cm)
1. Referencia más GOX 85 u/kg harina - Datem + ADA (3 g/100 kg harina)	ligeramente redondo	2.050	7
2. CO 100 u/kg harina	redondo	2.250	20
3. CO 200 u/kg harina	más redondo que 2	2.250	26

Las mismas conclusiones a las alcanzadas en el Ejemplo 3 para la adición de carbohidrato oxldasa pueden afirmarse para la adición de piranosa oxidasa. Cuando se fermenta a 20°C durante 17 horas, la dosis óptima añadida de carbohidrato oxidasa es de 100 u/kg harina, mientras que cuando se fermenta a 27°C durante 12 horas, la anchura máxima de los cortes se mide cuando se añaden 200 u/kg harina.

Ejemplo 5: Comparación del efecto de dosis doble de glucosa oxidasa y dosis óptima de piranosa oxidasa sobre la anchura de los cortes en panes fermentados durante la noche.

Se preparó masa de pan con harina de trigo estándar sin tratar (100), agua (54), levadura fresca (Gelka, Bélgica) (0,35), sal (2), y mejorador estándar (1). Se mezcló la masa en un mezclador de espiral (Diosna SP24) durante 2 minutos a velocidad reducida y durante 7 minutos a velocidad elevada. La temperatura de la masa después de la mezcla era de 24°C. Se amasaron trozos de masa de 350 g y se fermentaron a 25°C durante 20 minutos. Tras moldearlos para formar trozos de masa con forma de barra, se fermentaron durante 17 horas a 20°C, se cortaron longitudinalmente en cada pan 3 incisiones longitudinales rectas de 2 mm de profundidad y 10 cm de longitud que se solapaban en 1/3, y los panes se homearon en un horno de pisos (210°C, 30 minutos, vapor: 0,2 l previamente al homeo, muy poco vapor después de éste).

Masa de pan	Forma del pan	Volumen (cc)	Anchura de los cortes (cm)
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29 30

1. GOX 85 u/kg harina		1.925	25
2. GOX 170 u/kg harina		1.750	15
3. PO 200 u/kg harina	más redondo	1.900	37

5 Cuando se dobla la dosis habitual de glucosa oxidasa añadida, no se incrementa la anchura de los cortes. La forma y anchura de los cortes en los panes preparados con piranosa oxidasa era significativamente mejor que aquéllos en el pan de referencia con glucosa oxidasa.

Elemplo 6: Efecto de la carbohidrato oxidasa, piranosa oxidasa y glucosa oxidasa sobre la forma y anchura de los cortes en panes argentinos (reposo directo y homeo).

10 Se preparó masa de pan con harina de trigo estándar sin tratar (100), agua (54), levadura fresca (Gelka, Bélgica) (0,35), sal (2), y mejorador estándar. Se mezcló la masa en un mezclador de espiral (Diosna SP24) durante 2 minutos a velocidad reducida y durante 7 minutos a velocidad elevada. La temperatura de la masa después de la mezcla era de 24°C. Se amasaron trozos de masa de 350 g y se fermentaron a 25°C durante 15 20 minutos. Tras moldearlos para formar trozos de masa con forma de barra, se fermentaron durante 150 minutos a 40°C, se cortaron longitudinalmente en cada pan 3 incisiones rectas de 2 mm de profundidad y 10 cm de longitud que se solapaban en 1/3 y se hornearon (210°C, 30 minutos, vapor: 0,2 l previamente al horneo, muy poco vapor después de éste).

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Masa de pan	Forma del pan	Volumen (cc)	Anchura de los cortes (cm)
1. Referencia		1.025	9
2. GOX 85 u/kg harina		1.125	16
3. GOX 170 u/kg harina	ligeramente más ancho	1.100	22
4. CO 100 u/kg harina	más ancho	1.075	35
5. CO 200 u/kg harina	más ancho	1.050	32
6. PO 100 u/kg harina	más ancho	1.050	36
7. PO 200 u/kg harina	más ancho	1.125	29

5 También en pan de tipo argentino directamente fermentado y homeado la carbohidrato oxidasa y la piranosa oxidasa mejoran la anchura de los cortes del producto homeado más que la adición de glucosa oxidasa.

Ejemplo 7: Efecto de la carbohidrato oxidasa y la piranosa oxidasa sobre la anchura de los cortes de Schnittbrötchen.

10 Se mezclaron harina (Weizenmehl tipo 550) (100), agua (56), levadura de pan fresca (Gelka, Bélgica) (1), sal (2), mejorador estándar (3) en un mezclador de espiral (Diosna SP24) durante 2 minutos a velocidad reducida y durante 8 minutos a velocidad elevada. La temperatura de la masa después de la mezcla era de 30°C. Tras 10 minutos de fermentación de la masa, se amasaron y dividieron (Rotamat) trozos de masa de 1.600 g. Se dejaron reposar trozos de masa de 30 g durante 1 minuto a 25°C, se moldearon (Bertrand, Electrolux Baking), se dejaron reposar durante 8 minutos, se cortaron longitudinalmente (2 cm de profundidad), se cerraron nuevamente, se dieron la vuelta a los panes y se fermentaron durante 17 horas a 15°C previamente al homeado en un horno de pisos (16 minutos a 230°C, 0,1 l de vapor previamente al horneado y 0,3 l después del mismo).

20 Las especificaciones del Weizenmehl utilizado son las siguientes: 11,4% de proteína, número de caída = 310 s, contenido de cenizas = 0,59%.

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Masa	Forma del pan	Volumen (cc)	Anchura de los cortes (cm)
1. Referencia		1.725	40
2. GOX 85 u/kg harina		1.850	40
3. PO 100 u/kg harina	más redondo	1.600	47
4. PO 200 u/kg harina	más redondo	1.700	52
5. CO 100 u/kg harina	más redondo	1.625	53
6. CO 200 u/kg harina	más redondo	1.675	57

La anchura de los cortes mejoró significativamente después de añadir carbohidrato oxidasa o piranosa oxidasa a la masa, mientras que no se observó efecto alguno después de añadir glucosa oxidasa.

5

Ejemplo 8: Efecto de la carbohidrato oxidasa y piranosa oxidasa sobre la anchura de los cortes de Schnittbrötchen.

Se mezclaron harina (Weizenmehl tipo 550) (100), agua (56), levadura de pan fresca (Gelka, Bélgica) (1), sal (2), mejorador estándar (3) en un mezclador de espiral (Diosna SP24) durante 2 minutos a velocidad reducida y durante 8 minutos a velocidad elevada. La temperatura de la masa después de la mezcla era de 30°C. Tras 10 minutos de fermentación de la masa, se amasaron y dividieron (Rotamat) trozos de masa de 1.600 g. Se dejaron reposar trozos de masa de 30 g durante 1 minuto a 25°C, se moldearon (Bertrand, Electrolux Baking), se dejaron reposar durante 8 minutos, se cortaron longitudinalmente (2 cm de profundidad), se cerraron nuevamente, se dieron la vuelta a los panes y se fermentaron durante 50 minutos a 32°C previamente al horneado en un horno de pisos (16 minutos a 230°C, 0,1 l de vapor previamente al horneado y 0,3 l de vapor después del mismo).

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Masa de pan	Volumen (cc)	Anchura de los cortes (cm)
1. Referencia	2.025	27
2. GOX 85 u/kg harina	2.075	31
3. GOX 170 u/kg harina	2.075	34
4. CO 50 u/kg harina	2.050	31
5. CO 100 u/kg harina	2.025	34
6. CO 200 u/kg harina	2.025	32
7. PO 50 u/kg harina	2.000	35
8. PO 100 u/kg harina	2.050	36
9. PO 200 u/kg harina	2.025	39

En comparación con el pan de referencia, mejora la anchura de los cortes de Schnittbrötchen preparados con adición de carbohidrato oxidasa o piranosa oxidasa. El efecto de la piranosa oxidasa es algo más pronunciado.

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Reivindicaciones

1. Método para mejorar la forma y anchura de los cortes del pan durante el proceso de horneado de productos de panadería, que comprende la formación de la masa de pan, fermentación dicha masa de pan, hacer una incisión de dicha masa de pan en la superficie superior y el horneado de dicha masa de pan, caracterizado por que el método comprende:

- Añadiendo una suficiente cantidad efectiva de carbohidrato oxidasa y/o piranosa oxidasa en dicha masa de pan antes de la fermentación
- hacer una incisión de dicha masa de pan en la superficie superior antes o después de la fermentación, y
- Obteniendo un producto horneado con una superficie superior mejorada, un corte más ancho que cuando comparado con un pan de referencia no comprende una suficiente cantidad efectiva de carbohidrato oxidasa y/o piranosa oxidasa

2. Método según la reivindicación 1, que comprende adicionalmente la etapa de adición de otros aditivos de panificación de uso convencional, o combinaciones de éstos, seleccionados de entre el grupo que consisten de gluten, oxidantes tales como vitamina C y azodicarbonamida, emulsificantes tales como mono o diglicéridos, ácido diacetil tartárico de monoglicéridos, estearoil-lactilatos sódicos, ésteres de azúcar de ácidos grasos, lecitina, azúcar, sal, grasa y/o aceite en la masa de pan antes del horneado.

3. Método según cualquiera de las reivindicaciones 1 ó 2, caracterizado porque la carbohidrato oxidasa y/o la piranosa oxidasa se añade en forma de polvos secos, polvos granulados o aglomerados, o mejorador líquido.

4. Método según cualquiera de las reivindicaciones 1 a 3, caracterizado porque la cantidad suficientemente eficaz de la carbohidrato oxidasa y/o la piranosa oxidasa se encuentra comprendida entre 5 y 500 u/kg harina.

5. Método según cualquiera de las reivindicaciones 1 a 4, caracterizado porque la anchura de los cortes del producto horneado es significativamente mayor en comparación

35
3X

con un pan de referencia que no comprende una cantidad suficientemente eficaz de carbohidrato oxidasa y/o piranosa oxidasa.

5 6. Método según cualquiera de las reivindicaciones 1 a 5, caracterizado porque la anchura de los cortes del producto horneado es mayor en un intervalo comprendido entre aproximadamente 10% y aproximadamente 400% en comparación con un pan de referencia que no comprende una cantidad suficientemente eficaz de carbohidrato oxidasa y/o piranosa oxidasa.

10 7. Utilización de carbohidrato oxidasa y/o piranosa oxidasa en la mejora de la forma y la anchura de los cortes del pan durante el proceso de horneado de productos de panadería.

MEJORA DE LA FORMA DEL PAN

10 **(Figura 1)**

37 39

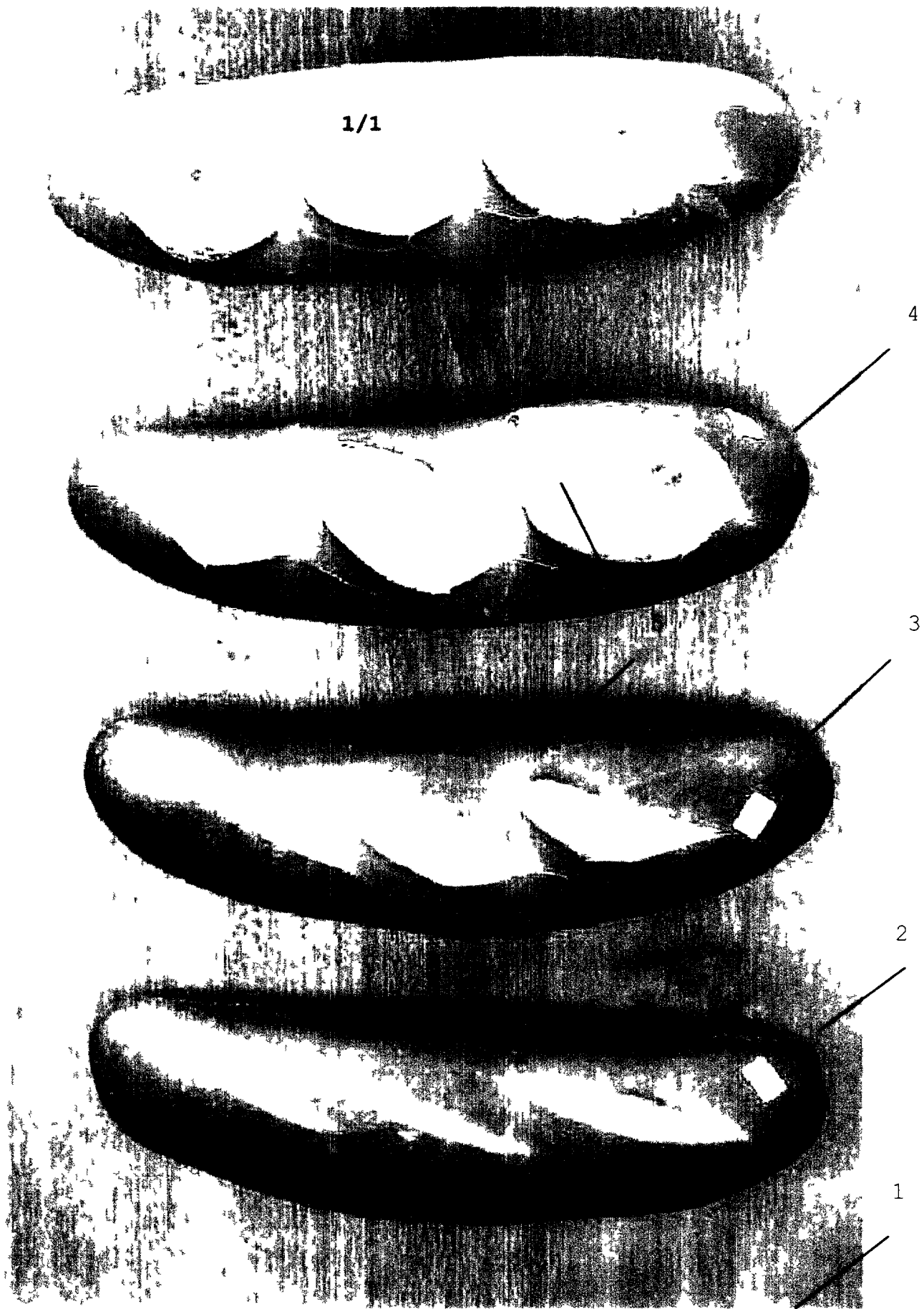


Fig 1

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/BE2004/000077

38

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A21D8/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A21D C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, FSTA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

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(3)-Luxembourg Patent Attorney
(4)-French Patent Attorney
(5)-Dutch Patent Attorney
(6)-European Trademark Attorney
(7)-French Trademark Attorney

COPY

Brussels, 13/05/2005

Re.: PATENT - Examination - W.I.P.O.
Application No. PCT/BE04/000077, filed on 19/05/2004
In the name of PURATOS N.V.

Y. Ref.

O. Ref. BP.PURA.022C/WO

Dear Sirs,

We refer to our letter of 01.03.2005 and our request for a detailed preliminary examination.

Enclosed herewith our comments regarding the documents marked as "of particular relevance (X)" mentioned in the International Search Report as referred to in said letter.

The claims on file, relating to a second non-medical use, meet the requirements of novelty and inventive step as demonstrated below.

Novelty

The effects claimed (an improvement of the shape and with of cut) have not been disclosed or suggested in the art.

The requirements of G2/88, G6/88 and T 1073/96 are met:

- (i) The newly discovered technical effect is described in the application and
- (ii) The claimed use as such is new

An effect not previously described and at the basis of a use invention, has at any event not been made available to the public if it is not revealed so clearly during execution of a known teaching (D1, D2, D3) as to disclose the invention's essential character, at

pronovem group

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SWIFT: GEBABEB36A

Dexia IBAN BE32 5822 9311 0002
SWIFT: GKCCBE33

least potentially, to an unlimited number of skilled persons (T 0208/88).

When determining novelty the decisive question of what has been made available to the public or is new is one of fact in each case (T 0059/87).

Fact is that in the present case:

The art does not contain any reference whatsoever to the claimed effects.

Further, the teachings in the art clearly do not contain any comparative examples (with and without the enzymes in question) that use scarified breads.

In the absence of any tests such as the ones described in the present patent application, the skilled person would remain unaware of the fact that the enzymes in question would - apart from the advantages mentioned in the art - also improve shape and with of cut of a bread (T 0059/87).

A skilled person unaware of the invention - even if he would have observed one of the claimed effects - could have sought the cause - had he reflected at all - amongst various factors such a difference in the making of cuts, any process parameter, any ingredient or combination of ingredients (T 0208/88).

The newly discovered effect thus ends in a new technical application or use that is not unmistakably linked or correlated with already described effects (such as an increase in volume) and that is clearly distinguishable therefrom. This is evident from the many examples given: an improvement in shape or with of cut can occur without any significant increase in volume.

Finally,

The present application and its claims relate to a new use or application that has not been made available to the public before the claimed priority date of the present patent application.

The present invention does not concern an ex post facto attempt to explain known effects from a known use, so that any case law relating thereto is not applicable.

In conclusion, claims 1 and 7 are new.

Inventive step

From the known teachings (D1, D2, D3) it is not obvious that the enzymes in question would have an effect on shape and with of cut.

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Ave Josse Goffin 158
B-1082 Brussels
Belgium

BP.PURA.022C/WO
13/05/2005
Page 3/3

There is no link whatsoever between the effects described in the art and the effects claimed in the present application.

In conclusion, claims 1 and 7 also meet the requirements of inventive step.

A positive preliminary examination report is therefore kindly requested.

We are looking forward to hearing from you.

Yours faithfully,

OFFICE VAN MALDEREN

Pieter VANDERSTEEN
PVB/SVG/MT

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✓13

O.M.P.I.
Chemin des Colombettes 32
CH- 1211 GENEVE 20
SWITZERLAND

Bruselas, 13/05/2005

Asunto: PATENTE-EXAMEN-O.M.P.I.
Solicitud nº PCT/BE04/000077, presentada el 19/05/2004
a nombre de PURATOS N.V.

N. Ref. BP.PURA.022C/WO

Estimados señores,

Nos referimos a nuestra carta del día 1 de marzo de 2005 y a nuestra petición de realización de un examen preliminar detallado.

Adjuntamos nuestros comentarios respecto a los documentos señalados como "de particular relevancia (X)" mencionados en el Informe de Búsqueda Internacional tal como se especificó en dicha carta.

Las reivindicaciones actualmente obrantes en el expediente, relacionadas con una segunda utilización no terapéutica, satisfacen los requisitos de novedad y actividad inventiva tal como se demuestra a continuación.

Novedad

Los efectos reivindicados (una mejora de la forma y de la anchura de corte) no se han dado a conocer ni han sido sugeridos en el estado de la técnica.

Los requisitos de G2/88, G8/88 y T 1073/96 se cumplen:

- (I) El nuevo efecto técnico descubierto se describe en la solicitud, y
- (II) La utilización reivindicada como tal es nueva

Un efecto no descrito previamente y sobre la base de una invención relativa a utilización, no ha sido hecho accesible al público en ningún caso si no se revela de una manera clara durante la ejecución de una enseñanza conocida (D1, D2, D3) de modo suficiente como para dar a conocer el carácter esencial de la invención, por lo menos potencialmente, a un número ilimitado de expertos en la materia (T 0208/88).

Para determinar la novedad, la cuestión decisiva respecto a qué ha sido hecho accesible al público o respecto a qué es nuevo es una cuestión de hecho en cada caso (T 0059/87).

Un hecho es que en el presente caso:

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El estado de la técnica no contiene referencia alguna en relación con los efectos reivindicados.

Además, las enseñanzas del estado de la técnica claramente no contienen ningún ejemplo comparativo (con o sin las enzimas en cuestión) que utilicen pan escarificado.

En caso de no existir ensayos tales como los descritos en la presente solicitud de patente, el experto en la materia no tendría constancia del hecho de que las enzimas en cuestión, aparte de las ventajas mencionadas en el estado de la técnica, también serían aptas para mejorar la forma y anchura de corte del pan (T 0059/87).

Un experto en la materia que no conozca la invención - incluso si hubiera observado uno de los efectos reivindicados - podría haber descubierto la causa - en el caso de que hubiera reflejado - entre diversos factores - algunos tales como una diferencia en la realización de los cortes, cualquier parámetro de procedimiento, o cualquier ingrediente o combinación de ingredientes (T 0208/88).

Por lo tanto, el nuevo efecto descubierto da lugar a una nueva aplicación o utilización técnica que no está vinculada o correlacionada inequívocamente con los efectos ya descritos (tales como un aumento del volumen) y que se puede distinguir claramente de los mismos. Esto resulta evidente a partir de los diversos ejemplos proporcionados: una mejora de la forma o anchura de corte puede producirse sin un aumento significativo en el volumen.

Finalmente,

La presente solicitud y sus reivindicaciones se refieren a una nueva utilización o aplicación que no ha sido hecha accesible al público con anterioridad a la fecha de prioridad reivindicada de la presente solicitud de patente.

La presente invención no se refiere a un intento ex post facto de explicar los efectos de una utilización conocida, de manera que no le será de aplicación ningún precedente legal relacionado con el mismo.

En conclusión, las reivindicaciones 1 a 7 son nuevas.

Actividad Inventiva

A partir de las enseñanzas conocidas (D1, D2, D3) no resulta obvio que las enzimas en cuestión tuvieran efectos sobre la forma y anchura de corte. No existe relación alguna entre los efectos descritos en el estado de la técnica y los efectos reivindicados en la presente solicitud.

En conclusión, las reivindicaciones 1 y 7 también satisfacen el requisito de actividad inventiva.

Por lo tanto, solicitamos que se realice un informe de examen preliminar positivo.

Quedamos a la espera de su respuesta.

Saludos cordiales,

Oficina Van Malderen

Pieter Vandersteen

O.M.P.I.
Chemin des Colombettes 32
CH- 1211 GENEVE 20
SWITZERLAND

Bruselas, 13/05/2005

Asunto: PATENTE-EXAMEN-O.M.P.I.
Solicitud nº PCT/BE04/000077, presentada el 19/05/2004
a nombre de PURATOS N.V.

N. Ref. BP.PURA.022C/WO

Estimados señores,

Nos referimos a nuestra carta del día 1 de marzo de 2005 y a nuestra petición de realización de un examen preliminar detallado.

Adjuntamos nuestros comentarios respecto a los documentos señalados como "de particular relevancia (X)" mencionados en el Informe de Búsqueda Internacional tal como se especificó en dicha carta.

Las reivindicaciones actualmente obrantes en el expediente, relacionadas con una segunda utilización no terapéutica, satisfacen los requisitos de novedad y actividad inventiva tal como se demuestra a continuación.

Novedad

Los efectos reivindicados (una mejora de la forma y de la anchura de corte) no se han dado a conocer ni han sido sugeridos en el estado de la técnica.

Los requisitos de G2/88, G6/88 y T 1073/96 se cumplen:

- (i) El nuevo efecto técnico descubierto se describe en la solicitud, y
- (ii) La utilización reivindicada como tal es nueva

Un efecto no descrito previamente y sobre la base de una invención relativa a utilización, no ha sido hecho accesible al público en ningún caso si no se revela de una manera clara durante la elección de una enseñanza conocida (D1, D2, D3) de modo suficiente como para dar a conocer el carácter esencial de la invención, por lo menos potencialmente, a un número ilimitado de expertos en la materia (T 0208/88).

Para determinar la novedad, la cuestión decisiva respecto a qué ha sido hecho accesible al público o respecto a qué es nuevo es una cuestión de hecho en cada caso (T 0059/87).

Un hecho es que en el presente caso:

El estado de la técnica no contiene referencia alguna en relación con los efectos reivindicados.

Además, las enseñanzas del estado de la técnica claramente no contienen ningún ejemplo comparativo (con o sin las enzimas en cuestión) que utilicen pan escarificado.

En caso de no existir ensayos tales como los descritos en la presente solicitud de patente, el experto en la materia no tendría constancia del hecho de que las enzimas en cuestión, aparte de las ventajas mencionadas en el estado de la técnica, también serían aptas para mejorar la forma y anchura de corte del pan (T 0059/87).

Un experto en la materia que no conozca la invención - incluso si hubiera observado uno de los efectos reivindicados - podría haber descubierto la causa - en el caso de que hubiera reflejado - entre diversos factores - algunos tales como una diferencia en la realización de los cortes, cualquier parámetro de procedimiento, o cualquier ingrediente o combinación de ingredientes (T 0208/88).

Por lo tanto, el nuevo efecto descubierto da lugar a una nueva aplicación o utilización técnica que no está vinculada o correlacionada inequívocamente con los efectos ya descritos (tales como un aumento del volumen) y que se puede distinguir claramente de los mismos. Esto resulta evidente a partir de los diversos ejemplos proporcionados: una mejora de la forma o anchura de corte puede producirse sin un aumento significativo en el volumen.

Finalmente,

La presente solicitud y sus reivindicaciones se refieren a una nueva utilización o aplicación que no ha sido hecha accesible al público con anterioridad a la fecha de prioridad reivindicada de la presente solicitud de patente.

La presente invención no se refiere a un intento ex post facto de explicar los efectos de una utilización conocida, de manera que no le será de aplicación ningún precedente legal relacionado con el mismo.

En conclusión, las reivindicaciones 1 a 7 son nuevas.

Actividad Inventiva

A partir de las enseñanzas conocidas (D1, D2, D3) no resulta obvio que las enzimas en cuestión tuvieran efectos sobre la forma y anchura de corte. No existe relación alguna entre los efectos descritos en el estado de la técnica y los efectos reivindicados en la presente solicitud.

En conclusión, las reivindicaciones 1 y 7 también satisfacen el requisito de actividad inventiva.

Por lo tanto, solicitamos que se realice un informe de examen preliminar positivo.

Quedamos a la espera de su respuesta.

Saludos cordiales,

Oficina Van Malderen

Pieter Vandersteen

PATENT COOPERATION TREATY

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

[Handwritten signature]

To: VAN MALDEREN, Joelle OFFICE VAN MALDEREN Place Reine Fabiola 6/1 B-1083 Brussels BELGIQUE		20-4-2005 NOTIFICATION OF RECEIPT OF DEMAND BY COMPETENT INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY (PCT Rules 59.3(e) and 61.1(b), first sentence and Administrative Instructions, Section 601(a))
Applicant's or agent's file reference BP. PURA.022C/WO		Date of mailing (day/month/year) 15-04-2005
IMPORTANT NOTIFICATION		
International application No. PCT/BE2004/000077	International filing date (day/month/year) 19/05/2004	Priority date (day/month/year) 19/05/2003
Applicant PURATOS Naamloze Vennootschap		

1. The applicant is hereby notified that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

03/03/2005

2. This date of receipt is:

- ☒ the actual date of receipt of the demand by this Authority (Rule 61.1(b)).
- ☐ the actual date of receipt of the demand on behalf of this Authority (Rule 59.3(e)).
- ☐ the date on which this Authority has, in response to the invitation to correct defects in the demand (Form PCT/IPEA/404), received the required corrections.

3. ☒ **ATTENTION:** That date of receipt is after the expiration of 19 months from the priority date. Consequently, in respect of some Offices, the demand does not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)) and the acts for entry into the national phase must therefore be performed within 20 months from the priority date (or later in some Offices). However, in respect of some other Offices, the time limit of 30 months (or later) may nevertheless apply. See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

- ☐ (If applicable) This notification confirms the information given by telephone, facsimile transmission or in person on:

4. Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPEA/



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Netherlands
Tel.: (+31-70) 340-2040
Fax: (+31-70) 340-3016

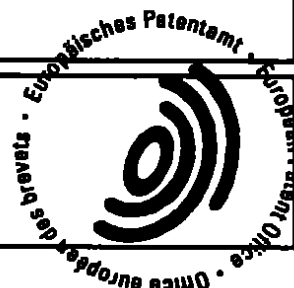
Authorized officer

CARDENAS C E

Tel (+31-70) 340-3370

Form PCT/IPEA/402 (April 2002; reprint January 2004)

(12/04/2005)



PATENT COOPERATION TREATY

48

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To: VAN MALDEREN, Joëlle OFFICE VAN MALDEREN Avenue Josse Goffin 158 B-1082 Brussels BELGIQUE	REÇU 12.08.2005 OFFICE VAN MALDEREN
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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(PCT Rule 71.1)

Date of mailing (day/month/year) 11.08.2005	
Applicant's or agent's file reference BP.PURA.022CWO	IMPORTANT NOTIFICATION
International application No. PCT/BE2004/000077	International filing date (day/month/year) 19.05.2004
Priority date (day/month/year) 19.05.2003	
Applicant PURATOS Naamloze Vennootschap	

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the International preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Lafitte-de Jong, S Tel. +31 70 340-4827
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BP.PURA.022CWO	FOR FURTHER ACTION	See Form PCT/PEA/18
International application No. PCT/BE2004/000077	International filing date (day/month/year) 19.05.2004	Priority date (day/month/year) 19.05.2003
International Patent Classification (IPC) or national classification and IPC A21D8/04		
Applicant PURATOS Naamloze Vennootschap		
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 7 sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☐ sent to the applicant and to the International Bureau a total of sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 807 of the Administrative Instructions). ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. ☐ (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).		
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the opinion ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application		
Date of submission of the demand 03.03.2005	Date of completion of this report 11.08.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Piret-Viprey, E Telephone No. +31 70 340- 1039 	

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/BE2004/000077

Box No. 1 Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-17 as originally filed

Claims, Numbers

1-7 as originally filed

Drawings, Sheets

1/1 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing *(specify)*:
- ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing *(specify)*:
- ☐ any table(s) related to sequence listing *(specify)*:

* If item 4 applies, some or all of these sheets may be marked "superseded."

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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/BE2004/000077

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-7
Inventive step (IS)	Yes: Claims	
	No: Claims	1-7
Industrial applicability (IA)	Yes: Claims	1-7
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/BE2004/000077

The following documents (D1-D3) are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: WO 99 31990 A

D2: WO 97 22257 A

D3: WO 02 30207 A

1 - The application does not meet the requirements of Article 6 PCT, because claims 1, 3-7 are not clear.

Claim 1,3-7 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined.

The terms "carbohydrate oxidase and/or pyranose oxidase" is confusing, knowing that a pyranose oxidase (EC 1.1.3.10) is an example of carbohydrate oxidase.

Glucose oxidase is also an example of carbohydrate oxidase. However, it does not seem included in the scope of the invention, reading the description (on p.6, l.10-12, l.16, on p.8, l.7-19, on p.9, l.13-17). Glucose oxidase would therefore be excluded but this is not specified in the description or in the claims.

2 - Furthermore, the above-mentioned lack of clarity notwithstanding, the subject-matter of claims 1-6 is not new in the sense of Article 33(2) PCT, and therefore the criteria of Article 33(1) PCT are not met.

Remark: The person skilled in the art knows that incising a dough (=scarification) at its top surface is a step of the process for preparing French baguette-type bread.

- D1 describes (on p.7, l.28 - p.9, l.7, ex. 18 and 19, cl. 1,4,5,8) the use of carbohydrate oxidase in baking (e.g. in French baguette-type bread), by adding it in a dough.

The dough may also comprise other dough ingredients, e.g. proteins such as gluten, shortening, an oxidant such as ascorbic acid, azodicarbonamide, a reducing agent, a sugar, a salt. The dough may further comprise an emulsifier such as mono- or di-glycerides. The carbohydrate oxidase may be provided as a bread improving additive in the form of a granulate or agglomerated powder.

The subject-matter of claims 1-3,5,6 is therefore not new.

- D2 describes (on p.7, l.7 - p.10, l.11 and cl. 1,5-13) a bread (e.g. French baguette-type) improver comprising a pyranose oxidase. The enzyme preparation is added in any step of the dough preparation, in an amount corresponding to 0.01-1000 mg enzyme protein per kg of flour. The bread improving composition of the invention may further comprise one or more enzymes such as another oxidase, e.g. a glucose oxidase (on p.5, l.20-32). In addition, or as an alternative, to other enzyme components, the bread improver may comprise a conventionally used baking agent such as milk powder, gluten, an emulsifier, granulated fat, an oxidant, an amino acid, a sugar, and salt, flour or starch.

The subject-matter of claims 1-6 is therefore not new.

- D3 describes (on p.2, l.1-19, p.3, l.3-32, p.4, l.5-11, ex.1 and cl.1,5,7,8) a process for preparing a baked product (e.g. French baguette-type bread) comprising adding to a dough a hydrogen peroxide-forming oxidase, and a protein disulfide isomerase (PDI) and baking the dough. The hydrogen peroxide-forming oxidase may be a monosaccharide oxidase such as glucose oxidase, hexose oxidase, galactose oxidase, pyranose oxidase. The dough may comprise conventional dough ingredients, e.g. proteins, eggs, an oxidant, a sugar, a salt, a fat, an emulsifier. In example 1 of D3, the amount of glucose oxidase added to the dough is 200 U/kg of flour.

The subject-matter of claims 1-6 is therefore not new.

3 - Furthermore, the above-mentioned lack of clarity notwithstanding, the subject-matter of claim 7 is not new in the sense of Article 33(2) PCT, and therefore the criteria of Article 33(1) PCT are not met.

- D1 describes on p. 3, l. 30-33: "the use of an oligosaccharide oxidase may result in an increased volume and an improved crumb structure and softness of the baked product", e.g. "French baguette-type bread" (on p. 8, l. 3).

Example 18 of D1 indicates that "the carbohydrate oxidase increases the elastic module, and hence increases dough elasticity, in a dose-dependant manner."

- D2 describes a bread improver comprising a pyranose oxidase. The improver can be used in French baguette-type bread (on p.9, l.20).

The enzyme improves the rheological properties of the dough and the characteristics of the baked product. (on p.12-14).

- D3 describes a process for preparing a baked product comprising adding to a dough a hydrogen peroxide-forming oxidase, and a protein disulfide isomerase (PDI).

The baked product may be a French baguette-type bread. (on p.3, l.22).

The enzymes improve the characteristics of the baked product (in ex.1).

The use of carbohydrate oxidase as an improving agent in scarified baked product is already disclosed in D1, D2 and D3. Although these documents provide no information that such enzyme exhibit the effect or capability of improving the width of cuts, a carbohydrate oxidase was already used in D1, D2 and D3 as active ingredient for the purpose of improving the characteristics of a scarified (i.e. presenting cuts) baked product, e.g. French baguette-type bread.

Thus the disclosures in D1, D2 and D3 are prejudicial to the novelty of claim 7.

It is immaterial for the purpose of prejudice to novelty that the actual technical effect exhibited by carbohydrate oxidase in scarified baked products is not described in the cited documents. The ex post facto discovery that the "improving the width of cuts effect" of carbohydrate oxidase when used as an active ingredient in scarified baked product can not confer novelty on claim 7, since the latter would require that the newly discovered effect ends indeed in a new technical application or use of carbohydrate oxidase which is not necessarily correlated with the known application or use and can be clearly distinguished therefrom. This is not the case here.

The subject-matter of claim 7 is therefore not new.

4 - The applicant is requested to file new claims which take account of the above comments.

When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims. Care should be taken during revision, especially of the introductory portion and any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Article 19(2)/Article 34(2)(b) PCT).

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/BE2004/000077

5 - Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D3 is not mentioned in the description, nor is this document identified therein.

559068

PATENT COOPERATION TREATY

From the RECEIVING OFFICE

PCT

To:

VAN MALDEREN Joëlle
Office VAN MALDEREN
Place Reine Fabiola 6/1
B - 1083 Bruxelles

REQU

- 9 - 6 - 2004

OFFICE VAN MALDEREN

NOTIFICATION OF THE INTERNATIONAL
APPLICATION NUMBER AND OF THE
INTERNATIONAL FILING DATE

(PCT Rule 20.5(c))

Date of mailing
(day/month/year)

07.06.04

Applicant's or agent's file reference
BPPURA022CWO

IMPORTANT NOTIFICATION

International application No.
PCT/BE2004/000077

International filing date (day/month/year)
19 May 2004 (19.05.2004)

Priority date (day/month/year)
19 May 2003 (19.05.2003)

Applicant PURATOS Naamloze Vennootschap and al

Title of the invention Improvement of the shape of bread.

1. The applicant is hereby notified that the international application has been accorded the international application number and the international filing date indicated above.

2. The applicant is further notified that the record copy of the international application:



was transmitted to the International Bureau on 07-06-2004



has not yet been transmitted to the International Bureau for the reason indicated below and a copy of this notification has been sent to the International Bureau*:



because the necessary national security clearance has not yet been obtained.



because (reason to be specified):

* The International Bureau monitors the transmittal of the record copy by the receiving Office and will notify the applicant (with Form PCT/IB/301) of its receipt. Should the record copy not have been received by the expiration of 14 months from the priority date, the International Bureau will notify the applicant (Rule 22.1(c)).

Name and mailing address of the receiving Office

OPRI / Bruxelles

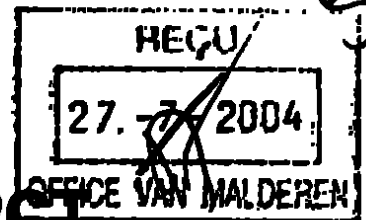
Facsimile No.

Authorized officer

Hamegnies N.

Telephone No. +32-2-208 48 38

PATENT COOPERATION TREATY



From the INTERNATIONAL SEARCHING AUTHORITY

To:
OFFICE VAN MALDEREN
Attn. Van Malderen, Joelle
Place Reine Fabiola, 6/1
B-1083 Bruxelles
BELGIUM

NOTIFICATION OF RECEIPT
OF SEARCH COPY

(PCT Rule 25.1)

Date of mailing
(day/month/year) 20/07/2004

Applicant's or agent's file reference

BPPURA022CWO

IMPORTANT NOTIFICATION

International application No.

PCT/BE2004/000077

International filing date (day/month/year)

19/05/2004

Priority date (day/month/year)

19/05/2003

Applicant

PURATOS Naamloze Vennootschap

1. Where the International Searching Authority and the receiving Office are not the same office:

The applicant is hereby notified that the search copy of the international application was received by this International Searching Authority on the date indicated below.

Where the International Searching Authority and the receiving Office are the same office:

The applicant is hereby notified that the search copy of the international application was received on the date indicated below.

23/06/2004 (date of receipt).

2. ☐ The search copy was accompanied by a nucleotide and/or amino acid sequence listing or tables related thereto in computer readable form.

3. Time limit for establishment of international search report and written opinion of the International Searching Authority

The applicant is informed that the time limit for establishing the international search report and the written opinion of the International Searching Authority is three months from the date of receipt indicated above or nine months from the priority date, whichever time limit expires later (Rules 42.1 and 43bis.1(a))

4. A copy of this notification has been sent to the International Bureau and, where the first sentence of paragraph 1 applies, to the receiving Office.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

ISA/EP

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/BE2004/000077

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A21D8/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A21D C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, FSTA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99/31990 A (NOVONORDISK AS) 1 July 1999 (1999-07-01) cited in the application page 7, line 28 - page 9, line 7 examples 18,19 claims 1,4,5,8	1-3,5-7
X	WO 97/22257 A (NOVONORDISK AS ; WAGNER PETER (DK); SI JOAN QI (DK)) 26 June 1997 (1997-06-26) cited in the application page 5, lines 20-32 page 7, line 7 - page 10, line 11 claims 1,5-13	1-7
	-/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another claim or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

4 October 2004

Date of mailing of the international search report

14/10/2004

Name and mailing address of the ISA

European Patent Office, P.O. Box 5518 Patentkan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-3340, Tlx. 31 651 opo nl,
Fax: (+31-70) 340-3315

Authorized officer

Piret-Wiprey, E

INTERNATIONAL SEARCH REPORT

International Application No

PCT/BE2004/000077

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/30207 A (BUDOLFSEN GITTE ; NOVOZYMES AS (DK); CHRISTIANSEN LUISE (DK)) 18 April 2002 (2002-04-18) page 2, lines 1-19 page 3, lines 18-32 page 4, lines 5-11 example 1 claims 1,5,7,8	1-7
A	DATABASE WPI Derwent Publications Ltd., London, GB; AN 1999-222255 XP002271765 & JP 11 056219 A (AMANO PHARMA CO LTD) 2 March 1999 (1999-03-02) abstract	1
A	WO 96/39851 A (HOESTRUP PERNILLE BAK ; DANISCO (DK); POULSEN CHARLOTTE HORSMANS (D)) 19 December 1996 (1996-12-19) page 5, lines 16-29 page 10, line 24 - page 11, line 21 page 12, lines 1-13 page 15, line 7 - page 16, line 11 example 5 table 5.1 claims 1,2,5,8,11-18,20-27	1-4
A	WO 99/03351 A (DANISCO ; SCHROEDER METTE (DK); SOEE JOERN BORCH (DK); ROUAU XAVIER) 28 January 1999 (1999-01-28) page 3, lines 10-23 page 5, lines 11-28 page 6, lines 6-12 page 10, lines 1-11 page 11, line 1 - page 12, line 3 example 4 tables 4.1,4.2 claims 1,4,15-17,20,21	1-4
A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 08, 29 August 1997 (1997-08-29) & JP 09 098710 A (ORIENTAL YEAST CO LTD), 15 April 1997 (1997-04-15) abstract	1-4

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

BE2004/000077

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9931990	A	01-07-1999	
		AU 753578 B2	24-10-2002
		AU 1751899 A	12-07-1999
		CA 2314996 A1	01-07-1999
		CN 1379989 A	20-11-2002
		CN 1283082 T	07-02-2001
		WO 9931990 A1	01-07-1999
		EP 1041890 A1	11-10-2000
		JP 2001526058 T	18-12-2001
		US 6165761 A	26-12-2000
		US 2003180416 A1	25-09-2003
WO 9722257	A	26-06-1997	
		AT 200848 T	15-05-2001
		AU 705710 B2	27-05-1999
		AU 1366097 A	14-07-1997
		CA 2234620 A1	26-06-1997
		CN 1205614 A ,B	20-01-1999
		DE 69612673 D1	07-06-2001
		DE 69612673 T2	06-12-2001
		WO 9722257 A1	26-06-1997
		DK 869716 T3	13-08-2001
		EP 0869716 A1	14-10-1998
		IN 183383 A1	11-12-1999
		US 6039983 A	21-03-2000
WO 0230207	A	18-04-2002	
		AU 9368401 A	22-04-2002
		WO 0230207 A1	18-04-2002
		EP 1326497 A1	16-07-2003
		US 2004011221 A1	22-01-2004
JP 11056219	A	02-03-1999	NONE
WO 9639851	A	19-12-1996	
		AT 185048 T	15-10-1999
		AU 699331 B2	03-12-1998
		AU 5997296 A	30-12-1996
		BR 9608493 A	06-07-1999
		CA 2224203 A1	19-12-1996
		CN 1190871 A ,B	19-08-1998
		DE 69604491 D1	04-11-1999
		DE 69604491 T2	13-01-2000
		WO 9639851 A1	19-12-1996
		DK 833563 T3	03-01-2000
		EP 0833563 A1	08-04-1998
		ES 2136409 T3	16-11-1999
		JP 11506338 T	08-06-1999
		NZ 309735 A	26-08-1998
		PL 323744 A1	14-04-1998
		US 2003194467 A1	16-10-2003
		US 2004101610 A1	27-05-2004
		US 6358543 B1	19-03-2002
		US 2002064577 A1	30-05-2002
		ZA 9604617 A	12-12-1996
WO 9903351	A	28-01-1999	
		AT 238673 T	15-05-2003
		AU 8334798 A	10-02-1999
		DE 69814088 D1	05-06-2003
		DE 69814088 T2	26-02-2004
		WO 9903351 A1	28-01-1999
		DK 999752 T3	25-08-2003

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/BE2004/000077

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9903351	A	EP 0999752 A1	17-05-2000
		ES 2198059 T3	16-01-2004
JP 09098710	A	15-04-1997 JP 3041225 B2	15-05-2000

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF RECEIPT OF
RECORD COPY

(PCT Rule 24.2(a))

From the INTERNATIONAL BUREAU

To:

VAN MALDEREN, Joëlle
OFFICE VAN MALDEREN
Place Reine Fabiola 6/1
B-1083 Brussels
Belgium

28.06.2004

OFFICE VAN MALDEREN

Date of mailing (day/month/year) 23 June 2004 (23.06.2004)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference BPPURA022CWO	International application No. PCT/BE2004/000077

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

PURATOS Naamloze Vennootschap (for all designated States except US)
ARNAUT, Fillp et al (for US)

International filing date : 19 May 2004 (19.05.2004)

Priority date(s) claimed : 19 May 2003 (19.05.2003)

Date of receipt of the record copy
by the International Bureau : 18 June 2004 (18.06.2004)

List of designated Offices :

AP : BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP : AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG

National : AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 338.71.30

Authorized officer:

Anta NDIAYE (Fax 338-71-30)

Telephone No. (41-22) 338 9847

Continuation of Form PCT/IB/301
NOTIFICATION OF RECEIPT OF RECORD COPY

63

Date of mailing (day/month/year) 23 June 2004 (23.06.2004)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference BPPURA022CWO	International application No. PCT/BE2004/000077

ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

☒ time limits for entry into the national phase - see updated important information (as of April 2002)

☐ requirements regarding priority documents (if applicable)

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

INFORMATION ON TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated on the cover sheet of this Notification by paying national fees and furnishing translations, as prescribed by Articles 22 and 38 and the applicable national laws. In addition, the applicant may also have to comply with other special requirements applicable in certain Offices. It is the applicant's responsibility to ensure the necessary steps to enter the national phase are taken in a timely fashion. Most Offices do not issue reminders to applicants in connection with the entry into the national phase.

The applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date, not only in respect of any elected Office if a demand for international preliminary examination is filed before the expiration of 18 months from the priority date (see Article 38(1)), but also in respect of any designated Office, in the absence of filing of such demand, where Article 22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see PCT Gazette No. 44/2001 of 1 November 2001, pages 18828, 18832 and 18834, as well as the PCT Newsletter, October and November 2001 and February 2002 issues.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For regular updates on the applicable time limits (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the PCT Gazette ("Section IV" part published on a weekly basis), to the PCT Newsletter (on a monthly basis) and to the relevant National Chapters in Volume II of the PCT Applicant's Guide (the paper version of which is updated usually twice a year and the Internet version of which is updated usually on a weekly basis). Finally, a cumulative table of all applicable time limits for entering the national phase is available from WIPO's Internet site, via links from various pages the site including those of the Gazette, Newsletter and Guide, at <http://www.wipo.int/pct/en/index.html>.

Information about the requirements for filing a demand for international preliminary examination is set out in the PCT Applicant's Guide, Volume I/A, Chapter IX. Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents, the following is recalled.

Where the priority of an earlier national, regional or international application is claimed, the applicant must submit a copy of the said earlier application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 18 months from the priority date, provided that any such priority document may still be submitted to the International Bureau before that date of international publication of the international application, in which case that document will be considered to have been received by the International Bureau on the last day of the 18-month time limit (Rule 17.1(a)).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 18-month time limit and may be subjected by the receiving Office to the payment of a fee (Rule 17.1(b)).

If the priority document concerned is not submitted to the International Bureau or if the request to the receiving Office to prepare and transmit the priority document has not been made (and the corresponding fee, if any, paid) within the applicable time limit indicated under the preceding paragraphs, any designated State may disregard the priority claim, provided that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within the time limit which is reasonable under the circumstances (Rule 17.1(c)).

Where several priorities are claimed, the priority date to be considered for the purposes of computing the 18-month time limit (and all other PCT time limits) is the filing date of the earliest application whose priority is claimed (Article 2(x)(b)).

PATENT COOPERATION TREATY

PCT/BE2004/000077

From the INTERNATIONAL BUREAU

PCT

FIRST NOTICE INFORMING THE APPLICANT OF
THE COMMUNICATION OF THE INTERNATIONAL
APPLICATION (TO DESIGNATED OFFICES WHICH
DO NOT APPLY THE 30 MONTH TIME LIMIT
UNDER ARTICLE 22(1))

(PCT Rule 47.1(c))

To:

VAN MALDEREN, Joëlle
OFFICE VAN MALDEREN
Place Reine Fabiola 6/1
B-1083 Brussels
BELGIQUE

REÇU
30.-12-2004
OFFICE VAN MALDEREN

Date of mailing (day/month/year)

23 December 2004 (23.12.2004)

Applicant's or agent's file reference
BPPURA022CWO

IMPORTANT NOTICE

International application No.
PCT/BE2004/000077

International filing date (day/month/year)
19 May 2004 (19.05.2004)

Priority date (day/month/year)
19 May 2003 (19.05.2003)

Applicant

PURATOS Naamloze Vennootschap et al

1. **ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), does apply, please see Form PCT/IB/308(Second and Supplementary Notice) (to be issued promptly after the expiration of 28 months from the priority date).

2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, does not apply, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:
25 November 2004 (25.11.2004)

CH

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, does not apply, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1:

FI, LU, SE, TZ, UG, ZM

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. **TIME LIMITS for entry into the national phase**

For the designated Office(s) listed above, and unless a demand for international preliminary examination has been filed before the expiration of 19 months from the priority date (see Article 39(1)), the applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 20 MONTHS from the priority date.

In practice, time limits other than the 20-month time limit will continue to apply, for various periods of time, in respect of certain of the designated Offices listed above. For regular updates on the applicable time limits (20 or 21 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Simin Baharlou

Facsimile No.+41 22 740 14 35

Facsimile No.+41 22 338 71 30

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

SECOND AND SUPPLEMENTARY NOTICE
INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION (TO DESIGNATED OFFICES
WHICH APPLY THE 30 MONTH TIME
LIMIT UNDER ARTICLE 22(1))

(PCT Rule 47.1(c))

To:

VAN MALDEREN, Joëlle
pronovem - Office Van Malderen
Avenue Josse Goffin 158
B-1082 Bruxelles
BELGIQUE

REÇU

22.09.2005

OFFICE VAN MALDEREN

Date of mailing (day/month/year)

22 September 2005 (22.09.2005)

Applicant's or agent's file reference

BPPURA022CWO

IMPORTANT NOTICE

International application No.

PCT/BE2004/000077

International filing date (day/month/year)

19 May 2004 (19.05.2004)

Priority date (day/month/year)

19 May 2003 (19.05.2003)

Applicant

PURATOS Naamloze Vennootschap et al

1. **ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), does not apply, please see Form PCT/IB/308(First Notice) issued previously.
2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, does apply, has/have requested that the communication of the international application, as provided for in Article 30, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:
25 November 2004 (25.11.2004)

AU, AZ, BY, CN, CO, DZ, EP, HU, KG, KP, KR, MD, MK, MZ, NA, RU, SY, TM, US

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, does apply, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1 :

AE, AG, AL, AM, AP, AT, BA, BB, BG, BR, BW, BZ, CA, CR, CU, CZ, DE, DK, DM, EA, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, ID, IL, IN, IS, JP, KE, KZ, LC, LK, LR, LS, LT, LV, MA, MG, MN, MW, MX, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, SC, SD, SG, SK, SL, TJ, TN, TR, TT, UA, UZ, VC, VN, YU, ZA, ZW

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. **TIME LIMITS** for entry into the national phase

For the designated or elected Office(s) listed above, the applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain of the designated or elected Office(s) listed above. For regular updates on the applicable time limits (30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II. National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Simin Baharlou

Facsimile No.+41 22 740 14 35

Facsimile No.+41 22 338 71 30

From the INTERNATIONAL BUREAU

PCTINFORMATION CONCERNING ELECTED
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Article 31(7) and Rule 61.3)

To:

RECU
VAN MALDEREN, Joëlle
pronovem - Office Van Malderen
Avenue Josse Goffin 158
B-1082 Bruxelles
OFFICE VAN MALDEREN
BELGIQUEDate of mailing (day/month/year)
09 June 2005 (09.06.2005)Applicant's or agent's file reference
BPPURA022CWO

IMPORTANT INFORMATION

International application No.
PCT/BE2004/000077International filing date (day/month/year)
19 May 2004 (19.05.2004)Priority date (day/month/year)
19 May 2003 (19.05.2003)

Applicant

PURATOS Naamloze Vennootschap et al

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

EP: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR**National:** BG, CA, CN, CZ, DE, JP, KP, KR, MN, NO, PL, RO, RU, SK, US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

AP: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW**EA:** AM, AZ, BY, KG, KZ, MD, RU, TJ, TM**OA:** BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG**National:** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BR, BW, BY, BZ, CH, CO, CR, CU, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MW, MX, MZ, NA, NI, NZ, OM, PG, PH, PT, SC, SD, SE, SG, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

3. Since the election(s) was (were) made after the expiration of 19 months from the priority date, the applicant is reminded that he must, subject to the following paragraph, enter the national phase within 20 months from the priority date (or later in some Offices) before some of the designated Offices in respect of which Article 22(1), as modified with effect of 1 April 2002, does not apply, by paying the national fee(s) and furnishing, if prescribed, a translation of the international application.

However, in respect of most other designated Offices, the time limit of 30 months (or later) may nevertheless apply. See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters, the *PCT Newsletter* and the WIPO Internet site, updated regularly.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Simin Baharlou

Facsimile No.+41 22 740 14 35

Facsimile No.+41 22 338 71 30

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

VAN MALDEREN, Joëlle
pronovem - Office Van Malderen
Avenue Josse Goffin 158
B-1082 Bruxelles
Belgium

Date of mailing (day/month/year)

19 April 2005 (19.04.2005)

Applicant's or agent's file reference

BPPURA022CWO

IMPORTANT NOTIFICATION

International application No.

PCT/BE2004/000077

International filing date (day/month/year)

19 May 2004 (19.05.2004)

1. The following indications appeared on record concerning:

☐

the applicant

☐

the inventor

☒

the agent

☐

the common representative

Name and Address

VAN MALDEREN, Joëlle
OFFICE VAN MALDEREN
Place Reine Fabiola 6/1
B-1083 Brussels
Belgium

State of Nationality

State of Residence

Telephone No.

+32 2 426 38 10

Facsimile No.

+32 2 426 37 60

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐

the person

☐

the name

☒

the address

☐

the nationality

☐

the residence

Name and Address

VAN MALDEREN, Joëlle
pronovem - Office Van Malderen
Avenue Josse Goffin 158
B-1082 Bruxelles
Belgium

State of Nationality

State of Residence

Telephone No.

+32 2 426.38.10

Facsimile No.

+32 2 426.37.60

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒

the receiving Office

☒

the designated Offices concerned

☐

the International Searching Authority

☐

the elected Offices concerned

☐

the International Preliminary Examining Authority

☐

other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Peggy Steunenberg

Facsimile No. (41-22) 338.71.30

Telephone No. (41-22) 338 9482

BPPURA022CWO

1/4

PCT REQUEST

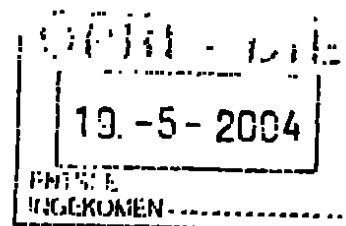
Duplicate of Original

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0	For receiving Office use only	
0-1	International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	

DUPLICATA

0-4	Form PCT/RQ/101 PCT Request	
0-4-1	Prepared Using	PCT-SAFE [EASY mode] Version 3.50 (Build 0002.162)
0-5	Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	Industrial Property Office (Belgium) (RO/BE)
0-7	Applicant's or agent's file reference	BPPURA022CWO
I	Title of invention	IMPROVEMENT OF THE SHAPE OF BREAD
II	Applicant	
II-1	This person is	applicant only
II-2	Applicant for	all designated States except US
II-4	Name	PURATOS Naamloze Vennootschap
II-5	Address	Industrialaan 25 1702 GROOT-BIJGAARDEN Belgium
II-6	State of nationality	BE
II-7	State of residence	BE
III-1	Applicant and/or inventor	
III-1-1	This person is	applicant and inventor
III-1-2	Applicant for	US only
III-1-4	Name (LAST, First)	ARNAUT, Filip
III-1-5	Address	Weverstraat 58 1761 ROOSDAAL Belgium
III-1-6	State of nationality	BE
III-1-7	State of residence	BE



PCT REQUEST

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III-2	Applicant and/or inventor	
III-2-1	This person is	applicant and inventor
III-2-2	Applicant for	US only
III-2-4	Name (LAST, First)	DE MEYER, Karel
III-2-5	Address	Termstraat 60B 9270 LAARNE Belgium
III-2-6	State of nationality	BE
III-2-7	State of residence	BE
III-3	Applicant and/or inventor	
III-3-1	This person is	applicant and inventor
III-3-2	Applicant for	US only
III-3-4	Name (LAST, First)	VAN HAESENDONCK, Ingrid
III-3-5	Address	Beekstraat 10 2800 MECHELEN Belgium
III-3-6	State of nationality	BE
III-3-7	State of residence	BE
IV-1	Agent or common representative; or address for correspondence The person identified below is hereby/ has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name (LAST, First)	VAN MALDEREN, Joëlle
IV-1-2	Address	OFFICE VAN MALDEREN Place Reine Fabiola 6/1 1083 Brussels Belgium
IV-1-3	Telephone No.	+32 2 426 38 10
IV-1-4	Facsimile No.	+32 2 426 37 60
IV-1-5	e-mail	vanmalderen@pronovem.com
IV-2	Additional agent(s)	additional agent(s) with same address as first named agent
IV-2-1	Name(s)	VANDERSTEEN, Pieter; VAN MALDEREN, Michel; VAN MALDEREN, Eric
V	DESIGNATIONS	
V-1	The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.	

PCT REQUEST

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VI-1	Priority claim of earlier regional application		
VI-1-1	Filing date	19 May 2003 (19.05.2003)	
VI-1-2	Number	03447113.6	
VI-1-3	Regional Office	EP	
VII-1	International Searching Authority Chosen	European Patent Office (EPO) (ISA/EP)	
VII-2	Request to use results of earlier search; reference to that search		
VII-2-1	Date	05 March 2004 (05.03.2004)	
VII-2-2	Number	EP 03447232	
VII-2-3	Country (or regional Office)	EP	
VIII	Declarations	Number of declarations	
VIII-1	Declaration as to the identity of the inventor	-	
VIII-2	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	-	
VIII-3	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	-	
VIII-4	Declaration of inventorship (only for the purposes of the designation of the United States of America)	-	
VIII-5	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	-	
IX	Check list	number of sheets	electronic file(s) attached
IX-1	Request (including declaration sheets)	4	✓
IX-2	Description	17	-
IX-3	Claims	2	-
IX-4	Abstract	1	✓
IX-5	Drawings	1	-
IX-7	TOTAL	25	
	Accompanying items	paper document(s) attached	electronic file(s) attached
IX-8	Fee calculation sheet	✓	-
IX-17	PCT-SAFE physical media	-	✓
IX-18	other	EUROPEAN SEARCH REPORT N° 03 44 7232	
IX-19	Figure of the drawings which should accompany the abstract	1	
IX-20	Language of filing of the international application	English	

PCT REQUEST

Duplicate of Original

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X-1	Signature of applicant, agent or common representative	
X-1-1	Name (LAST, First)	VAN MALDEREN, Joëlle
X-1-2	Name of signatory	
X-1-3	Capacity	
X-2	Signature of applicant, agent or common representative	
X-2-1	Name (LAST, First)	
X-2-2	Name of signatory	
X-2-3	Capacity	

FOR RECEIVING OFFICE USE ONLY

10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/EP
10-6	Transmittal of search copy delayed until search fee is paid	

FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	
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The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/ _____

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty.

For International Preliminary Examining Authority use only

Identification of IPEA		Date of receipt of DEMAND	
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION		Applicant's or agent's file reference BP.PURA.022CWO	
International application No. PCT/BE2004/000077	International filing date (day/month/year) 19 May 2004 (19.05.2004)	(Earliest) Priority date (day/month/year) 19 May 2003 (19.05.2003)	
Title of invention IMPROVEMENT OF THE SHAPE OF BREAD			
Box No. II APPLICANT(S)			
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) PURATOS Naamloze Vennootschap Industrialaan 25 1702 GROOT-BIJGAARDEN BELGIUM		Telephone No.	
		Facsimile No.	
		Teleprinter No.	
		Applicant's registration No. with the Office	
State (that is, country) of nationality: BE		State (that is, country) of residence: BE	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) ARNAUT, Filip Weverstraat 58 1761 ROOSDAAL BELGIUM			
State (that is, country) of nationality: BE		State (that is, country) of residence: BE	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) DE MEYER, Karel Termstraat 60B 9270 LAARNE BELGIUM			
State (that is, country) of nationality: BE		State (that is, country) of residence: BE	
☒ Further applicants are indicated on a continuation sheet.			

Continuation of Box No. II APPLICANT(S)

If none of the following sub-boxes is used, this sheet should not be included in the demand.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

VAN HAESENDONCK, Ingrid
Beekstraat 10
2800 MECHELEN
BELGIUM

State (that is, country) of nationality:

State (that is, country) of residence:

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

State (that is, country) of nationality:

State (that is, country) of residence:

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

State (that is, country) of nationality:

State (that is, country) of residence:

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

State (that is, country) of nationality:

State (that is, country) of residence:

☐ Further applicants are indicated on another continuation sheet.

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The following person is ☒ agent ☐ common representative

and ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.

☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.

☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.

Name and address: (Family name followed by given name; for a legal entity, full official designation.
The address must include postal code and name of country.)

Pieter VANDERSTEEN
Avenue Josse Goffin 158
B-1082 BRUSSELS
BELGIUM

Telephone No.

+32 2 426 38 10

Facsimile No.

+32 2 426 37 60

Teleprinter No.

Agent's registration No. with the Office

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION
Statement concerning amendments:*

1. The applicant wishes the international preliminary examination to start on the basis of:

☐ the international application as originally filed

the description ☐ as originally filed

☐ as amended under Article 34

the claims ☐ as originally filed

☐ as amended under Article 19 (together with any accompanying statement)

☐ as amended under Article 34

the drawings ☐ as originally filed

☐ as amended under Article 34

2. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.

3. ☒ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of the applicable time limit under Rule 69.1(d).

4. ☐ The applicant expressly wishes the international preliminary examination to start earlier than at the expiration of the applicable time limit under Rule 54bis.1(a).

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination:

☐ which is the language in which the international application was filed.

☐ which is the language of a translation furnished for the purposes of international search.

☐ which is the language of publication of the international application.

☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.

Box No. V ELECTION OF STATES

The filing of this demand constitutes the election of all Contracting States which are designated and are bound by Chapter II of the PCT.

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (specify) | : | sheets |

For International Preliminary Examining Authority use only

received	not received
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐

The demand is also accompanied by the item(s) marked below:

- | | |
|--|--|
| 1. ☒ fee calculation sheet | 5. ☐ statement explaining lack of signature |
| 2. ☐ original separate power of attorney | 6. ☐ sequence listing in computer readable form |
| 3. ☐ original general power of attorney | 7. ☐ tables in computer readable form related to a sequence listing |
| 4. ☐ copy of general power of attorney; reference number, if any: | 8. ☐ other (specify): |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.

☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the time limit of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

6. ☐ The date of receipt of the demand is AFTER the expiration of the time limit under Rule 54bis.1(a) and item 7 or 8, below, does not apply.

7. ☐ The date of receipt of the demand is WITHIN the time limit under Rule 54bis.1(a) as extended by virtue of Rule 80.5.

8. ☐ Although the date of receipt of the demand is after the expiration of the time limit under Rule 54bis.1(a), the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

REQUISITOS NECESARIOS PARA PRESENTACION Y AGILIZACION DEL TRAMITE

	USUARIO	RADICADOR
PATENTE DE INVENCION ☒	☒	☒
- Indicación de que se solicita la concesión de una patente - Datos de identificación del solicitante o de la persona que se presenta la solicitud. - Descripción de la invención. - Dibujos de ser estos pertinentes. - Comprobante de Pago de las tasas establecidas	☒ ☒ ☒ ☒ ☒	☒ ☒ ☒ ☒ ☒
COMPLETA ☒	INCOMPLETA ☐	☐
DISEÑO INDUSTRIAL ☐		
- Indicación de que se solicita el registro de Diseño Industrial - Datos de identificación del solicitante o de la persona que presenta la solicitud - Representación gráfica o fotográfica del Diseño Industrial o muestra del Material que incorpora el diseño - Comprobante de pago de las tasas establecidas	☐ ☒ ☐ ☐	☐ ☐ ☐ ☐
COMPLETA ☐	INCOMPLETA ☐	☐
ESQUEMA DE TRAZADO ☐		
- Indicación de que solicita el registro de un Esquema de trazado - Datos de identificación del solicitante o de la persona que presenta la solicitud - Representación gráfica del esquema de trazado - Comprobante de pago de las tasas establecidas	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐
COMPLETA ☐	INCOMPLETA ☐	☐

Firma Responsable

Fecha

18 NOV - 05

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REPUBLICA DE COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

Bogotá,
2020

Doctor(a)
CADENA SARMIENTO JUAN PABLO

REFERENCIA	Radicación No.	5 117185
	Solicitud internacional	BE2004/000077
	Fecha inicio fase nacional	19/12/2005
	Trámite	11
	Evento	379
	Actuación	430
	Oficio No.	13577

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

1. La solicitud no contiene la copia del documento en que consta la cesión del derecho a la patente del inventor al solicitante o a su causante. (Art. 26-k) Decisión 486.

2. La solicitud no contiene el poder debidamente otorgado, con el lleno de los requisitos exigidos por los artículos 63 y subsiguientes del Código de Procedimiento Civil. Adicionalmente, deberá presentar el documento que acredita la existencia y representación legal de la sociedad solicitante, cuando ésta fuere persona jurídica.

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Unica No.10 de 2001.


CLARA DE JAIMES
Jefe de la división de Nuevas Creaciones (E)

El anterior requerimiento, fue notificado por fijación en lista de fecha 29 DIC. 2005
adpall