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Food Item

The invention relates to a food item comprising at least one cheese and a sealed packaging enclosing the said cheese.

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It is known to provide food packaging intended to enclose portions of cheese in order to ensure that they are protected against undesirable external influences.

Packaging intended for a particular material has also been disclosed, in order to form a controlled atmosphere within the interior of the packaging. The objective of such packaging is for example to control the development of microorganisms on a sliced surface of a portion of cheese.

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There are however cheeses that are still difficult to package, particularly as they have intrinsic characteristic features, particularly in terms of their respiration, which is not easy to control.

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It is known from the document US 2014/311098 to modify the atmosphere within the interior of the packaging in order to be able to control respiration.

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One of the objects of the present invention is to propose a food item comprising a cheese of the family of blue cheeses and an associated packaging enabling at least one of the intrinsic characteristics of this cheese to be controlled without modifying the atmosphere in the interior of the packaging by addition of gas or even by application of a vacuum.

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Thus, the invention relates to a food item comprising at least one cheese and a sealed packaging enclosing the said cheese, the said cheese being whole, not sliced, soft and blue-veined and with a flowered rind, the flowered rind covering substantially all the cheese, and the said packaging being hermetically sealed.

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According to the invention the said packaging has at least one wall with a selective permeability to oxygen and/or carbon dioxide and/or water vapour, so as to control the

respiration of the said cheese, the said wall with selective permeability having a thickness of between 550 μm and 1050 μm .

5 The packaging comprises a body, so-called receptacle, and a film, so-called cover, the receptacle and cover being hermetically sealed to one another.

The said receptacle is formed of walls having a selective permeability, the thicknesses of the walls being between 550 μm and 1050 μm .

10 The food item relates to a soft blue-veined cheese, in other words a blue cheese, the said cheese being covered by a flowered rind. This means that the food item of the invention relates to a blue cheese with a flowered rind or white rind. Blue cheese is known to have specific requirements as regards respiration, requirements that are different from those of white rind cheese.

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Here, the food item has the advantage of providing a packaging for this particular cheese that has a blue part, and another, white part. The packaging according to the invention is advantageously provided with a wall of selective permeability, which has a thickness of between 550 μm and 1050 μm , since particularly advantageous results in terms of
20 respiration of this cheese were found with this type of wall.

Thus, the present invention effectively proposes a food item comprising a cheese of the family of blue cheeses, combined with a packaging that has at least one wall of selective permeability and of given thickness, enabling at least one of the intrinsic characteristic
25 features of the cheese, namely its respiration, to be controlled.

According to various embodiments of the invention, which may be combined or taken individually:

- the said cheese has a cylindrical shape,
- 30 - the receptacle and cover are hot sealed to one another,
- the sealing between the receptacle and the cover is a hot seal,
- the said receptacle is made of plastic material,
- the said receptacle is made of polystyrene,

- the said receptacle is made of polyethylene,
- the said receptacle is made of polyethylene terephthalate,
- the said receptacle is formed having walls of selective permeability, the thickness of the walls being of the order of 800 μm ,
- 5 - the said receptacle is obtained by thermoforming,
- the transmission rate of oxygen of the plastic film intended to form the said receptacle is, before thermoforming, between 100 and 150 cm^3 oxygen/ $[\text{m}^2 \cdot \text{d} \cdot \text{atm}]$, measured at 23° C and at 0% relative humidity,
- the transmission rate of oxygen of the walls of the said receptacle after
- 10 thermoforming is of the order of 3 cm^3 oxygen/[receptacle.d.air], measured at 23° C and at 0% relative humidity,
- the said cover is formed from a wall of selective permeability,
- the said cover is formed from a wall of selective permeability free from micro-perforations,
- 15 - the said cover is made of plastic material,
- the said cover is made of polyethylene,
- the said cover is made of polyethylene terephthalate,
- the said cover is obtained by cutting a plastic film,
- the transmission rate of oxygen of the plastic film intended for the said cover
- 20 is, before cutting, less than 40 cm^3 oxygen/ $[\text{m}^2 \cdot \text{d} \cdot \text{atm}]$, measured at 23° C and at 0% relative humidity,
- the transmission rate of oxygen of the cover after cutting is of the order of 0.05 cm^3 oxygen/[cover.d.air], measured at 23° C and at 0% relative humidity, for a cover surface area of the order of 78.5 cm^2 ,
- 25 - the food item of the invention also comprises a cardboard box intended to enclose the said receptacle,
- the assembly of the receptacle and the box is an assembly formed by a cooperation of shapes and/or by gluing and/or by forcible fitting,
- the dismantling of the receptacle and of the box is possible without providing
- 30 a special tool,
- the food item of the invention also comprises a base part of cardboard intended to cover the said cover,

- the base part made of cardboard is designed so as to protect the cover against possible external damage to the said food article,
- the oxygen content by volume in the interior of the said packaging is less than 1% ,
- 5 - the oxygen content by volume in the interior of the said packaging is between 0 and 1%,
- the oxygen content by volume in the interior of the said packaging is between 0.001% and 1%,
- 10 - the carbon dioxide content by volume in the interior of the said packaging is between 4% and 13%.

The invention will be better understood, and other aims, details, characteristic features and advantages of the latter, will appear more clearly from the following detailed explanatory description of at least one embodiment of the invention given by way of
15 example in a purely illustrative and non-limiting manner, with reference to the accompanying schematic drawing:

- Fig. 1 is a schematic illustration of an embodiment of a packaging of the food item according to the invention.

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As illustrated in Fig. 1, the invention relates to a food item comprising at least one cheese and a sealed packaging 10 enclosing the said cheese, wherein the said cheese is whole, not sliced, and is a soft blue-veined cheese with a flowered rind.

25 The expression “sealed packaging enclosing the cheese” is understood to mean a rigid packaging, preferably not pressing against the cheese. In other words, the packaging 10 is different from a film in contact with the cheese. Again, in other words, the packaging 10 is not plastically deformable when normally held by the fingers of a user.

30 The expression “whole cheese, not sliced” is understood to mean a whole cheese. In other words, a cheese that is in the form of a portion. Again, in other words, this cheese is not formed by cutting a piece from a whole cheese.

The expression “soft blue-veined cheese with a flowered rind” is understood to mean a cheese obtained in the following way: an inoculation with *Penicillium roquefortii* combined with a stage of mechanical pricking of the curds to produce the blue vein in the soft cheese, followed by spraying the curds with microorganisms of the species *Penicillium candidum* and/or *Geotrichum candidum*, which produces a flowered rind during ripening in a ripening room; ivory-coloured to beige-coloured rind in the micro-cellar, here also called white rind.

The said flowered rind or white rind substantially covers all the cheese. Preferably, the white rind covers all the cheese. In exceptional cases discrete parts of the cheese may not be covered. The said cheese advantageously has a cylindrical shape, with possibly rounded edges, though this shape is not exclusive.

According to the invention the said packaging 10 comprises at least one wall 21, 26, 31 having a selective permeability to oxygen and/or to carbon dioxide and/or to water vapour, so as to control the respiration of the said cheese, the said wall 21, 26, 31 of selective permeability having a thickness of between 550 µm and 1050 µm.

In other words, the said at least one wall 21, 26, 31 of selective permeability will allow gaseous exchanges between the interior and exterior of the packaging 10. Again, in other words, the atmosphere in the interior of the packaging 10 will be advantageously modified by the microbial activity of the cheese in the rigid packaging that does not press against the cheese. Thus, it is not envisaged to modify the atmosphere in the interior of the packaging 10 by adding gas or even by applying a vacuum.

The packaging 10 comprises a body, the so-called receptacle 20, and a film, the so-called cover 30, the receptacle 20 and the cover 30 being hermetically sealed to one another, preferably by applying heat, by a thermal sealing process.

This sealing can also be an ultrasound sealing, or a sealing produced by induction, or also by all other technologies enabling an airtight closure to be obtained between the receptacle 20 and the cover 30.

Thus, the packaging 10 is hermetically sealed.

This means that the gaseous exchanges between the interior and exterior of the packaging 10 do not take place via the thermal sealing zone or zones. This sealing is identified in Fig.

5 1 by the reference numerals 22 and 32, and will preferably be in the form of a bead 22, 32.

As mentioned above, any other mechanical assembly between the receptacle 20 and the cover 30 enabling a perfect seal to be obtained there can be envisaged, without departing
10 from the scope of the invention, for example a glue bead 22, 32.

The receptacle 20 is made of plastic material, advantageously obtained by thermoforming. It can be made from polystyrene, polyethylene, polyethylene terephthalate, or any other plastic material enabling walls of selective permeability to be
15 obtained, in particular for gaseous exchanges between the interior and exterior of the packaging 10. The cover 30 will advantageously be obtained by cutting a plastic material, in particular by cutting a plastic film. The plastic film used for the cover 30 will advantageously be obtained by extrusion.

20 The receptacle will advantageously have a base wall 26 and one or more side walls 21.

Advantageously the selective permeability of the walls 21, 26, 31 mentioned above will not be obtained by means of micro-perforations. Alternatively, the selective permeability of the wall 31 forming the cover 30 will be micro-perforated, without departing from the
25 scope of the invention.

Advantageously the receptacle 20 will be formed having walls 21, 26, the thicknesses of which will be of the order of 800 μm .

30 By way of example, the transmission rate of oxygen of the plastic film intended for the formation of the walls 21, 26 of the said receptacle 20, before thermoforming, will be between 100 and 150 cm^3 of oxygen/ $[\text{m}^2.\text{d}.\text{atm}]$. By way of example, again after thermoforming, the transmission rate of oxygen of the walls 21, 26 of the said receptacle

20 will be of the order of 3 cm^3 of oxygen/[receptacle.d.air]. By way of example, again the transmission rate of oxygen of the plastic film intended for the said cover 30, before cutting, will be less than $40 \text{ cm}^3 \text{ oxygen/m}^2 \cdot \text{d.atm}$, and, after cutting, of the order of $0.05 \text{ cm}^3 \text{ oxygen/[cover.d.air]}$, in particular for a cover surface area of the order of 78.5 cm^2 .

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The measurements given here are carried out at 23°C and at 0% relative humidity.

The food item of the invention may moreover comprise a cardboard box 40 intended to enclose the said receptacle 20. In other words, the box 40 will be porous for gaseous exchanges.

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On the other hand, the said box 40 will be designed so as to surround the said receptacle 20. The box 40 may have one or more head bulges 48, the said one or more head bulges 48 having for example an aesthetic function. In the example illustrated here the box 40 is advantageously cylindrical, and the head bulge or bulges 48 are in the form of a single bulge 48, integrally formed with the rest of the cardboard box 40, the said bulge 48 following the circumference of the box 40, and protruding from the box 40 starting from its base wall 46. The said base wall 46 is advantageously designed to cooperate with the base wall 26 of the receptacle 20 so as to ensure the positioning of the said box 40 relative to the said receptacle 20.

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The box 40 will advantageously have an aesthetic function. In other words, the said box 40 will be able to enhance the appearance of the receptacle 20.

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The said positioning of the receptacle 20 in the interior of the box 40 will advantageously be realised by an assembly involving cooperation of shapes and/or by gluing and/or by forcible fitting, in particular between the indicated zones 20 and 44 in Fig. 1.

Separating the receptacle 20 and the box 40 from one another will be possible without having to provide a special tool, for example by the user exerting an extremely high force with his/her hands. However, this operation will not require the use or manipulation of a tool. This is particularly advantageous in terms of recycling the packaging 10 of the

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invention after consuming all the cheese that is part of the food item that is the subject matter of the present description.

5 The said food item will also comprise a base part 50, also made of cardboard, intended to cover the said cover 30. In other words, the said base part 50 will be porous to gaseous exchanges.

10 The said base part 50 will advantageously be designed so as to protect the said cover 30 against possible external influences. It will have an edge/peripheral feet ensuring its positioning and maintenance of position with the receptacle 20. These edges/peripheral feet, identified by the reference numeral 51 in Fig. 1, will allow a simplified assembly and dismantling of the said base part 50 and the receptacle 20. The said base part 50 will also serve as a support for the cheese once it has been removed from the receptacle 20.

15 It should be noted that the oxygen content by volume in the interior of the said packaging 10 will advantageously be less than 1%. The expression "oxygen content by volume in the interior of the said packaging" is understood to mean an oxygen content in the atmosphere between the cheese and the walls 21, 26, 51 of the packaging 10, measured in the interior of the said receptacle 20. More specifically, this oxygen content by volume
20 will be between 0 and 1%, and more specifically between 0.001% and 1%.

On the other hand, the content of carbon dioxide by volume in the interior of the said packaging will advantageously be between 4% and 13%.

25 These contents or levels can be measured in the interior of the receptacle 20 by conventional methods. They are dynamic levels. This means that the measurements carried out in the interior of the receptacle 20, both as regards the content of oxygen and the content of carbon dioxide, will be in the given value ranges, irrespective of the age of the cheese contained in the packaging 10.

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It should also be noted that different forms of implementation are of course possible. In particular it can also be envisaged, in supplementary embodiments, that the cheese is pre-packaged in a paper that does not prevent the respiration of cheese, and this for

reasons of practicality or for aesthetic reasons (for example in order allow the printing of information on the outer surface of the said paper).

5 It can also be envisaged that the receptacle is obtained by plastic injection, directly in a given and predefined thickness, the walls forming the receptacle having a selective permeability to oxygen and/or to carbon dioxide and/or to water vapour, so as to control the respiration of the said cheese, in particular in order to ensure a content of oxygen by volume in the interior of the packaging 10 of the invention of less than 1%, and/or a content of carbon dioxide by volume in the interior of the said packaging 10 of between 10 4% and 13%, without departing from the scope of the invention.

Patentkrav

1. Fødevareartikel omfattende mindst en ost og en lukket emballage (10), der omslutter osten, idet osten er hel, ikke skiveskåret, med blød blåskimlet masse og
5 med en skimmelskorpe, idet skimmelskorpen dækker i alt væsentligt hele osten, idet emballagen (10) er hermetisk lukket, **kendetegnet ved, at** emballagen (10) har mindst en væg (21, 26, 31) med selektiv oxygen- og/eller carbondioxid- og/eller vanddampgennemtrængelighed for at kontrollere ostens respiration, idet væggen (21, 26, 31) med selektiv gennemtrængelighed har en tykkelse på
10 mellem 550µm og 1050µm, idet emballagen (10) omfatter et legeme, kaldet beholder (20), og en film, kaldet låg (30), idet beholderen (20) og låget (30) er hermetisk forseglet med hinanden, især varmeforseglet, idet beholderen (20) består af vægge (21, 26) med selektiv gennemtrængelighed, hvis tykkelser er på mellem 550µm og 1050µm.
- 15
2. Fødevareartikel ifølge det foregående krav, hvor osten har en cylindrisk form.
3. Fødevareartikel ifølge et hvilket som helst af de foregående krav, hvor beholderen (20) er fremstillet af plastmateriale, især polystyren, polyethylen eller
20 polyethylenterephthalat.
4. Fødevareartikel ifølge et hvilket som helst af de foregående krav, hvor beholderen (20) er dannet af vægge (21, 26) med selektiv gennemtrængelighed, hvis tykkelser er omtrent 800µm.
- 25
5. Fødevareartikel ifølge et hvilket som helst af de foregående krav, hvor låget (30) består af en væg (31) med selektiv gennemtrængelighed, især uden mikro-perforering.
- 30
6. Fødevareartikel ifølge et hvilket som helst af de foregående krav, der endvidere omfatter en kartonæske (40) beregnet til at omslutte beholderen (20).
7. Fødevareartikel ifølge et hvilket som helst af de foregående krav, der endvidere omfatter en bunddel (50) fremstillet af karton beregnet til at dække låget (30),

idet bunddelen (50) fremstillet af karton er udformet til at beskytte låget (30) mod eventuelle eksterne beskadigelser af fødevareartiklen.

8. Fødevareartikel ifølge et hvilket som helst af de foregående krav, hvor
5 oxygenindholdet pr. volumen inden i emballagen (10) er mindre end 1%.

9. Fødevareartikel ifølge et hvilket som helst af de foregående krav, hvor
carbondioxidindholdet pr. volumen inden i emballagen (10) er mellem 4% og
13%.

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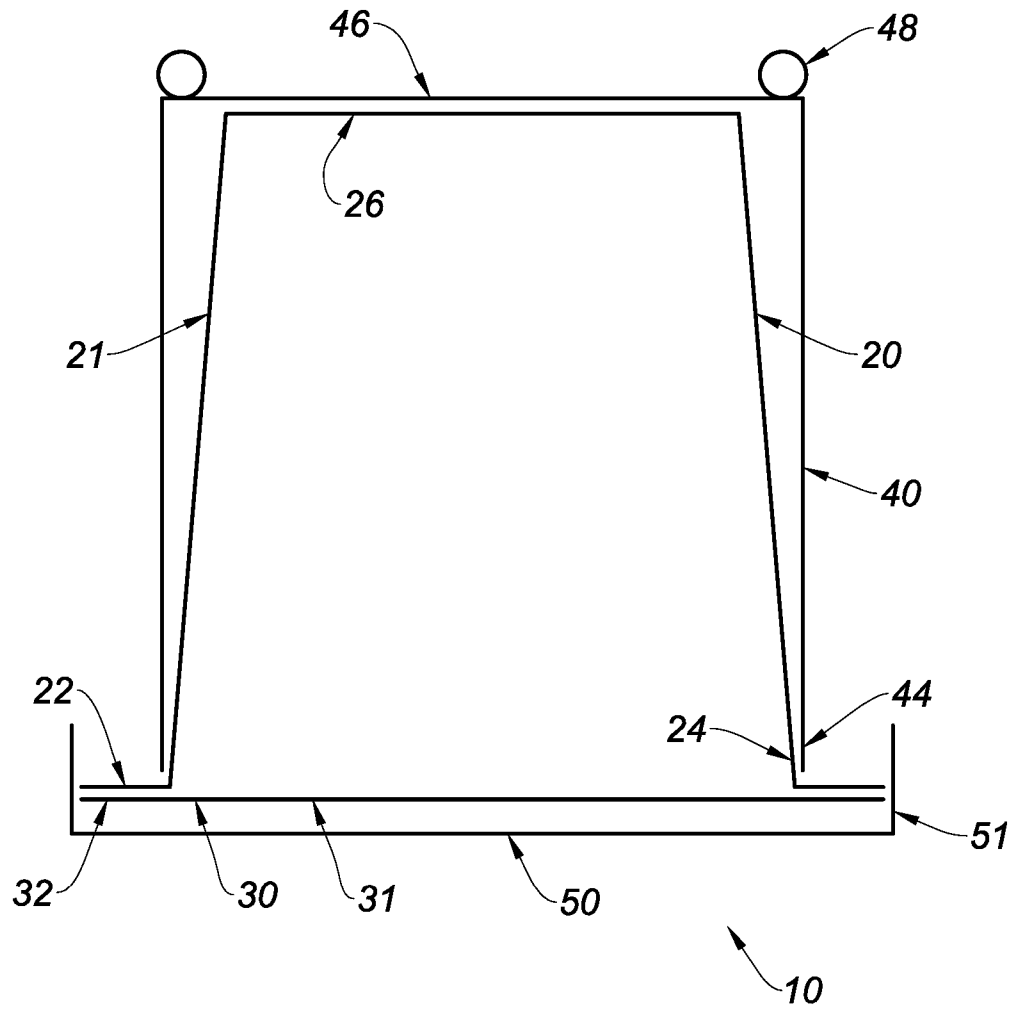


Fig. 1