

**Packaging process and packaging for
preservation and/or cooking or
reheating of food products.**

5 The present invention relates to a packaging process and packaging for the preservation and/or cooking or reheating of food products. In one particularly interesting - though in no way limiting - application the process and packaging according to the invention are intended to permit preservation and cooking or reheating of all fresh food products such as raw or precooked vegetables or fruits or various cooked food products by saturating steam using a
10 microwave oven.

Numerous food products such as some fresh or precooked vegetables or fruits or some cooked dishes are sold in dishes made from synthetic material covered by a retractable film, for example made from polyethylene or the like, with, if necessary, instructions
15 recommending ways of cooking or reheating them in a microwave oven.

This manner of packaging has at least two disadvantages, ie.:

- a risk of accelerated dehydration of the food products if the dishes of such products are not kept in the most favourable conditions with respect to temperature and
20 hygrometry;
- a risk of premature desiccation when placed in the microwave oven, causing the consistency, organoleptic qualities and vitamins of the products to deteriorate.

A device is known (EP-701995A, EP-732275A) for the packaging and preserving of fresh
25 food products such as meats, fish or the like tending to exude liquids which promote the proliferation of bacterial flora which thus limit their period of consumption allowed, this device being formed by a dish made from synthetic material comprising an impermeable base and a false base having perforations, disposed above and spaced apart from the base, an absorbent pad being disposed between the said base and the said false base, this absorbent
30 pad containing a chemical inhibitor for neutralisation of secretions from the products, and

possibly other agents such as a regeneration reagent capable of modifying the atmosphere of confinement of the said products depending upon the secretions therefrom.

Although a device of this type can solve the problem of the treatment of exudations coming from food products of animal origin such as tripe, pieces of meat, fish, etc., it does not solve the afore-mentioned problem of preservation and/or cooking or reheating by saturating steam of products such as fresh vegetables, cooked preparations or the like by placing them in the microwave oven, linked to the occurrence of dehydration of these products.

The invention therefore proposes to solve this specific problem.

In accordance with the invention this aim is achieved by means of a packaging process and packaging, according to which the food products are housed in a hermetically closed package comprising a container or dish having an impermeable base and a false base provided with perforations, disposed above and spaced apart from the base, a saturating or humidifying pad soaked in water, which may or may not have a treatment agent added to it, being placed between the said base and the said false base, the container or dish being closed by a synthetic material film bonded to the periphery of the said container.

According to another provision which is characteristic of the invention, the package, ie. the dish and the closure film, are produced from materials which are transparent to microwaves and resistant to the heat released in microwave ovens during use.

The process and the packaging according to the invention provide several advantages:

- they avoid accelerated desiccation of the fresh food products during the period between their being packaged and consumed;
- they provide a considerable improvement in the life span of the packaged products by reason of the naturally occurring regulation inside the container according to a principle of photosynthesis (oxygen + water + light);
- they permit rapid cooking or reheating, without dehydrating the fresh, raw,

precooked or cooked products, which are packaged, for example in portions of 50g to 1kg;

- they make it possible to achieve better preservation of the organoleptic qualities, vitamins and flavours contained in the products.

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The aims, features and advantages stated above and others will become clearer from the following description and the attached drawing in which:

- Figure 1 is a half view in longitudinal cross-section and on enlarged scale of packaging produced in accordance with the invention;
- 10 - Figure 2 is a partially cut-away view in plan and in cross-section along the line 2-2 of Figure 1.

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Reference is made to the said drawing to describe an interesting - although in no way limiting - example of implementation of the packaging process and of an embodiment of the packaging according to the invention.

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In the following description it is stated that the word "packaging" when it is not used as a complement to a noun in the expression "packaging process" designates an article formed by a package and the food product contained therein.

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This packaging comprises a container or dish 1 provided with a double base formed by a base 2, which is preferably impermeable to water, and a false base 3 disposed above and spaced apart from this base. The false base 3 is provided with a plurality of perforations 4, for example of circular shape, and preferably regularly spaced and distributed over the whole of the surface of the said false base.

The container 1 is, for example formed by a double shell comprising an outer shell 5 comprising the base 2 and an inner shell 6 of smaller dimensions comprising the perforated false base 3 and fitted into the said outer shell 5.

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In consideration of the interesting application of the process and of the packaging of the invention to the sale of products intended to be cooked or reheated using a microwave oven, the dish 1 and, consequently, in the illustrated example, the outer shell 5 and inner shell 6 can be produced from any materials transparent to microwaves, impermeable to water and able to withstand the heat released by microwave ovens designed for cooking, during their use, ie. practically at a heat at least equal to 100°C, causing no deformation or migration of their components to the food or water contained in the packaging. The shells are, for example thermoformed from any food-quality, synthetic, semi-rigid material fulfilling the above-mentioned requirements such as, for example polypropylene (PP).

The outer shell 5 and inner shell 6 can be fixedly attached to each other by any suitable process such as by means of a thermo-bonding operation at the upper edge of the peripheral walls of the said shells or by their bases, one of which, in this case, comprises ribs permitting this bonding and the maintenance of a space between the said bases 2 and 3.

In a manner which is known per se the shells 5 and 6 constituting the rigid dish or container 1 can comprise ribs to provide rigidity.

In the space E provided between the base 2 and the false base 3 a saturating or humidifying pad 7 is disposed, preferably occupying all or almost all of the said space.

This humidifying pad 7 is formed by a layer of spongy material, for example of the food-quality absorbent type, soaked in water. This spongy layer can be formed by a non-woven fabric of fibres of vegetable, animal or synthetic origin. In an advantageous manner the weight of the volume of water held in the humidifying pad is 40 to 60 times greater than the weight of the said pad in the non-impregnated state.

The water impregnating the layer of spongy material can have added to it at least one agent for treatment of the food products 8 housed in the package 1-9 such as, for example, a preservative, a chemical or natural flavouring agent, etc.

The fresh food products 8 such as raw or precooked vegetables or fruits, cooked preparations or the like are housed in the container or dish 1 and held therein by means of a transparent film 9 fixed by thermal bonding, for example, to the circumference of the upper edge of the said dish. This transparent film can be produced from any synthetic material
5 having the qualities required for production of the packaging and the cooking or reheating of the foodstuffs, such as transparency to light and microwaves, flexibility, the ability to expand and retract, compliance with food regulations, resistance to the heat released by the microwaves, resistance to the pressure generated by the steam in the enclosure of the container during cooking, permeability to air (permitting fresh products to breath without
10 direct contact with the ambient air so that they are not stifled and do not deteriorate prematurely).

The transparent film 9 can, for example be formed from polyethylene or polyethylene terephthalate (PET) and more precisely and preferably from non-misting retractable
15 polyolefine, with a co-extruded multi-layer structure.

The packaging produced according to the invention is prepared by distributors of raw or precooked vegetables or fruits or by industrial producers of cooked dishes before passing into retail sale networks so that the products thus packaged are kept until consumption in a
20 certain environment of a hygrometry which retards the process of desiccation of the said products.

On the other hand, when the packaging is placed in a microwave oven in order for the food product it contains to be cooked or reheated, the water contained in the saturating or
25 humidifying pad 7 is rapidly converted into steam. This steam escapes via the holes 4 provided in the false base 3 of the container 1 and comes to occupy the whole of the volume defined by the said container and the closure film 9.

The principle of cooking by microwaves thus simultaneously acts on the solid products and
30 the water contained in the package, creating ideal conditions for cooking or reheating by

saturating steam, thus avoiding any dehydration of the said products.

5 In order to avoid any over-pressure leading to undesirable deformation of the container during cooking, a perforation 10 is provided in the closure film 9. This perforation is made during production of the packaging. In order to avoid any contact of the products with the ambient air a detachable, sealing, food-quality plug or label 11 is stuck over the perforation after the packaging has been produced, in order to close the said perforation. This detachable sealing plug is removed by the consumer before placing the packaging in the microwave oven.



CLAIMS

- 1 Packaging process for the preservation and/or cooking or reheating of fresh food products such as raw or precooked vegetables or fruits or cooked dishes, according to which the said food products (8) are housed in a hermetically closed package formed, on the one hand, by a container or dish (1) having a base (2) and a false base (3) provided with perforations (4), disposed above and spaced apart from the said base, and, on the other hand, a synthetic material covering film (9) bonded to the said container (1), characterised in that a saturating or humidifying pad (7) soaked in water is placed in the lower part of the container (1) in the space (E) provided between the base (2) and the false base (3) of the container.
- 2 Packaging for the preservation and/or cooking or reheating of fresh food products such as raw or precooked vegetables or fruits or cooked dishes, comprising a hermetically closed package in which the said food products (8) are placed, this package comprising, on the one hand, a container or dish (1) having a base (2) and a false base (3) provided with perforations (4), disposed above and spaced apart from the said base (2), and, on the other hand, a synthetic material film (9) covering the container and its contents and bonded to the said container, characterised in that it also comprises a saturating or humidifying pad (7) soaked in water placed in the space (E) provided between the base (2) and the false base (3) of the said container (1).
- 3 Packaging process according to claim 1, characterised in that a perforation (10) is provided in the closure film (9) and in that this perforation is closed by means of a detachable sealing plug or label (11) which can be removed before the packaging is placed in the microwave oven.
- 4 Packaging according to claim 2, characterised in that the components (1, 9) of the package are produced from materials which are transparent to microwaves and resistant to the heat released by microwave ovens.



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- 5 5 Packaging according to claim 2, characterised in that the closure film (9) is provided with a perforation (10) closed by means of a detachable sealing plug or label (11) which can be removed before the said packaging is placed in the microwave oven.
- 6 6 Packaging according to one of claims 2 or 4, characterised in that its container (1) is produced from synthetic material and, for example from polypropylene (PP).
- 7 7 Packaging according to any one of claims 2, 4 or 6, characterised in that the closure film (9) is produced from polyethylene or polyethylene terephthalate (PET).
- 10 8 Packaging according to any one of claims 2, 4 or 6, characterised in that the closure film (9) is produced from non-misting, retractable polyolefine with a co-extruded multi-layer structure.
- 15 9 Packaging according to claim 2, characterised in that the saturating or humidifying pad (7) is formed from a layer of spongy material.
- 20 10 Packaging according to one of claims 2, or 9, characterised in that the water impregnating the saturating or humidifying pad (7) contains at least one agent for treatment of the food products (8) housed in the package (1-9) such as, for example, a chemical or natural flavouring agent.