

BOX FOR TRANSPORTING VARIOUS PRODUCTS

Object of the invention.

The present invention relates to a box for transporting various products,
5 such as food products or other products that require special protection during
their transport and storage thereof, with regard to the waterproof and the stiffness
of the box, to maintaining the internal temperature at the levels required by the
product contained therein, to preventing internal or external moisture from
affecting the consistency and stability of the box; and/or to enabling the box to be
10 labelled or printed on the outside.

Field of application of the invention.

This invention is applicable in the sector of packaging, storage and
transportation of various products and especially food products.
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State of the art.

Currently, several boxes intended mainly for transporting fish and other
food products that must be kept in cold conditions for the preservation thereof are
known.

20 Specifically, some boxes widely used for these uses are boxes made of
expanded polystyrene also known as "white cork", which are waterproof and
thermally insulated.

However, these boxes made of expanded polystyrene have certain
drawbacks when used, among which it is worth mentioning: the low mechanical
25 strength thereof with the consequent risk of breaking upon receiving impacts, and
the need to have walls of at least 2 centimetres in order to ensure correct thermal
insulation, such that during transportation a significant portion of the volume
corresponds to the box and not to the product contained therein, this
circumstance making the air transport of goods more expensive.

30 Another drawback is that these boxes made of expanded polystyrene are
not collapsible and maintain a constant volume, whether they are empty or when
they contain product, for which reason they require a large space for storage.

These boxes made of expanded polystyrene have an irregular outer
surface that is not particularly suitable for performing printing with a certain quality
35 and by conventional techniques on the outer surface of the box, usually resorting

to the use of self-adhesive printed sheets for marking and identifying them, which make the final cost of the box more expensive.

Finally, it should be mentioned that another drawback of these boxes is that expanded polystyrene is a material which is harmful for the environment, since it takes hundreds of years to biodegrade.

Other prior art of boxes for food products are also known, such as the one described in the Spanish utility model ES1078709 U which comprises a prismatic body and a closing cover thereof, both being made of a board of corrugated cardboard with an inner face and an outer face covered by corresponding continuous and waterproof sheets made of polyethylene or vinyl polymer. With these features, the box in question has a series of advantages, such as the possibility of folding, with respect to the aforementioned boxes made of expanded polystyrene, although it does not have a high mechanical strength which ensures, for example, the stacking of several units on a pallet, nor performing quality prints by conventional techniques on the outer surface thereof.

Spanish utility model ES1079037U describes a box for food products comprising a prismatic body and a closing cover, made of a board of corrugated cardboard which has a continuous and waterproof coating on the outer and inner faces thereof, which is formed, on at least one of said faces, by a layer of waterproof paint; the coating of one of said faces may be a waterproof sheet made of polyethylene or vinyl polymer.

This box, despite fulfilling the purpose for which it was created, has some drawbacks when used, such as the possibility of the waterproof paint layer coming off due to scratching during transportation with the consequent loss of waterproofing of the corresponding side and consequently with the absorption of moisture and loss of consistency of the interior board of corrugated cardboard. Another drawback of this box is the difficulty in performing quality prints, by conventional techniques, on the outer surface thereof.

Description of the invention.

The box for products object of this invention, having a prismatic body and a cover, has features aimed at satisfactorily solving the problems set out above and which enable it to offer the following properties: maintaining the internal temperature at the levels required by the product that it contains, for example, low temperatures for transporting fish and shellfish; which is 100 % recyclable

and has suitable robustness in order to withstand normal transportation practices, i.e., stacking boxes at several heights on pallets and loading and unloading operations; ensuring that the materials and the composition of the box are protected from external and internal moisture so that it does not deteriorate during use; enabling correct printing of the outer surface of the box by conventional techniques and directly, i.e., without requiring the use of additional elements such as self-adhesive printed sheets.

The box for food products object of the invention is of the type mentioned in the preamble of the first claim, i.e., it comprises a prismatic body provided with a closing cover, the body and cover being formed by a multilayered material including an intermediate thermal insulation board with an inner face and an outer face both respectively provided with an inner coating and an outer coating.

According to the invention, the inner coating comprises: - a paper sheet attached to the inner face of the intermediate thermal insulation board, and - a single-layered or multilayered stiffening and waterproof sheet made of vinyl or recyclable polymer that forms the inner surface of the box.

The intermediate thermal insulation board is made of cardboard and has hollow cavities arranged between two parallel walls and oriented parallel to said walls, as a corrugated cardboard; or transversely, as a honeycomb.

The intermediate thermal insulation board is responsible for ensuring that the product contained in the box is maintained in adequate temperature conditions.

The stiffening and waterproof sheet forming the inner surface of the body and the cover increases the mechanical strength of the box, further preventing moisture or liquids released by the product contained in the box from reaching and deteriorating the intermediate thermal insulation board.

The flexible and waterproof sheet of the outer coating provides the same protection against external moisture, but does not substantially increase the mechanical strength of the box precisely to prevent it from cracking during the folding and shaping of the prismatic body or the cover of the box.

The first strong paper layer of the outer coating, which forms the outer surface of the box, is an optimal surface for printing any graphic motif, even in high quality, by conventional printing techniques.

Preferably, the outer coating comprises, on the first strong paper layer forming the outer surface of the box, a transparent protective layer made of

varnish, paraffin or similar, the purpose of which is to protect said paper layer and the motifs printed thereon from possible external moisture and scratching that could deteriorate the outer appearance of the box.

5 **Description of the figures.**

As a complement to the description provided herein, and for the purpose of helping to make the features of the invention more readily understandable, the present specification is accompanied by a set of drawings which, for illustrative and non-limiting purposes, the following has been represented:

10 - Figure 1 shows a schematic view of an exemplary embodiment of the box for transporting various products according to the invention, with the cover separated from the body and provided on the outside with prints covered by a protective varnish layer.

15 - Figure 2 shows a stepped cross section of a portion of the material forming the body and the cover of the box of the previous figure, without the protective varnish layer, the structure of the intermediate board and of the inner and outer coatings thereof being visible in this cross section.

Preferred embodiment of the invention.

20 In the exemplary embodiment shown in Figure 1, a box for transporting various products according to the invention can be seen, provided with a prismatic body and a cover made entirely of a multilayered material (10), the cross section of which can be seen in Figure 2.

25 This multilayered material comprises: an intermediate thermal insulation board (11); an inner coating (12) oriented towards the inside of the box and attached to the inner face of the intermediate board (11); and an outer coating (13) forming the outer surface of the box, attached to the outer face of said intermediate board (11).

30 In the example shown, the intermediate thermal insulation board (11) is formed by corrugated cardboard which has hollow cavities (110) oriented longitudinally and arranged between two parallel walls (111,112).

35 The inner coating (12) comprises a paper sheet (121) attached to the inner face of the intermediate board (11) and a stiffening and waterproof sheet (122) that forms the inner surface of the box and which, in this specific case, comprises one or more layers made of recyclable polymer, for example, polyethylene or

polypropylene.

The outer coating (13) comprises: a first strong paper layer (131) which forms a printable outer surface; a second strong paper layer (132) attached to the intermediate thermal insulation board (11); and a flexible and waterproof sheet
5 made of recyclable polymer (133) arranged between the two layers of paper (131 and 132).

As seen in Figure 1, the first strong paper layer (131), forming the outer surface of the box, is suitable for printing various motifs (14); the outer coating (13) having in this specific example a protective varnish layer (134) which protects
10 both the first layer of paper (131) and the motifs (14) printed thereon.

Having sufficiently described the nature of the invention, as well as an example of a preferred embodiment, it is hereby stated for the relevant purposes that the materials, shape, size and layout of the described elements may be modified, provided that it does not imply altering the essential features of the
15 invention claimed below.

CLAIMS

1. A box for transporting various products comprising a prismatic body and a closing cover formed by a multilayered material (10) including an intermediate thermal insulation board (11) with an inner face and an outer face, respectively
5 provided with an inner coating (12) and an outer coating; **characterised** in that:
- the inner coating (11) comprises:
 - a paper sheet (121) attached to the inner face of the intermediate thermal insulation board (11); and
10 - a single-layered or multilayered stiffening and waterproof sheet (122) made of vinyl or recyclable polymer that forms the inner surface of the box;
 - the outer coating (13) comprises:
 - a first layer made of strong printed paper (131) or strong paper suitable for printing, which forms an outer surface of the box;
15 - a second strong paper layer (132) attached to the intermediate thermal insulation board (11); and
 - a single-layered or multilayered flexible and waterproof sheet made of recyclable polymer (133) arranged between the first (131) and the second layers (132) of strong paper; and
 - 20 - the inner coating (12) and the outer coating (13) cover the entire surface of the inner and outer faces of the intermediate thermal insulation board (11).
2. The box according to claim 1, **characterised** in that the intermediate thermal insulation board (11) is made of cardboard and has hollow cavities (11)
25 arranged between two parallel walls (111, 112) and oriented parallel to said walls, as a corrugated cardboard, or transversely, as a honeycomb.
3. The box according to claim 1, **characterised** in that the outer coating (13) comprises on the first strong paper layer (131), forming the outer surface of the
30 box, a protective layer (134) made of varnish, paraffin or similar.