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DESCRIPTION FR2618726A1

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- ¹³ The present invention relates to a waterproof multilayer internal complex for a tubular packaging body made of composite materials comprising one or more layers of a material more rigid than said material. complex and, optionally, an outer layer, whether or not printed, such as a label, or a layer guaranteeing leaktightness¹ the complex itself being composed of three layers and the layer in contact with the body of the tubular packaging being in Kraft paper.
- ¹⁸ The existing packaging of the type boxes, containers, barrels, barrels, are all composed of a tubular body, of round or polygonal section, or any other sections, of a cover and a bottom.
- ²⁰ The structure of the tubular body, produced by spiral, straight, convolute or other winding, is generally as follows - a tight internal complex, compatible with the product to be packaged, normally comprising three layers, the layer having the barrier properties ensuring a 'perfect seal' being made of an aluminum film. Usually, an optimum seal is obtained with a thickness of the aluminum layer of the order of 7 to 12 μ m⁴. This aluminum layer is covered, on each side, with a layer of a different material, namely on one side of kraft paper and on the other with a thermoplastic film. Kraft paper is normally used with a basis weight of between 40 and 60 g / m² and a polyethylene film, preferably high density, because it slides better during spiraling, with a thickness of between 12 and 40 μ m. The assembly of these different layers is carried out either by lamination, or by extrusion or co-extrusion, or by calendering.
- ³⁰ - One or more layers of a material more rigid than the internal complex, generally cardboard, the number of layers depending, of course, on the desired rigidity.
- ³² - an external layer or complex, printed or not. It may be a single layer, for example a label printed with the trade name of the product or other indications. It could also be a complex guaranteeing optimum sealing from the outside to the inside, in order to protect the different layers of cardboard from any damage caused by an external product.
- ³⁶ The bottom and the cover of such packages are, in general, currently, made of steel or aluminum crimped onto the body of the package.

- 38 The cover of the packaging can also be in the form of an aluminum membrane, for example of a thickness of about 60, covered with a coating which welds to the polyethylene. Optionally, this membrane can be surmounted by a cap or a protective cap made of synthetic material.
- 41 However, these packaging have a certain number of drawbacks, linked mainly to the presence of aluminum in the composition of the internal complex.
- 43 Indeed, aluminum has the particularity of being extremely fragile and it cracks very easily, for example, during the mechanical forces transmitted to the packaging when crimping or sealing the bottom and / or the cover on the body. of the packaging.
- 46 The aluminum, which tends to wrinkle, then risks breaking at the folds, which inevitably leads to microporosities and microleaks. Such a phenomenon leads to sealing, corrosion and delamination problems. These problems are particularly troublesome, among others for the packaging of aggressive products, such as carbonated drinks, fruit juices, paints, or for pasteurized or sterilized products, and are further increased when the can is pressurized, for gas the products.
- 52 Furthermore, the internal complex is placed inside the body of the packaging by spiral, straight, convolute or other winding. One end of the complex is folded over and is welded to the other end of said complex. It follows two folds at the level of the internal complex, therefore inevitably at the level of the aluminum layer, which leads, as we have seen previously, to breaks and leaks.
- 57 The general problem to be solved by the object of the present invention is therefore to design a waterproof multilayer internal complex for a tubular packaging body which is resistant and which does not break when it is folded, as is the case, either. during the crimping or welding of the cover or the bottom on the body of the packaging, or during the positioning of the complex by winding inside said body of the packaging.
- 62 This complex must therefore be more mechanically resistant to crimping and welding, have a greater resistance to pressure, and therefore have better resistance to the aggressiveness of the packaged products, this while having the desired barrier properties, in particular as regards relates to oxygen permeability, water vapor permeability and tensile strength.
- 66 According to the present invention, the problem is solved in that the intermediate layer of waterproof multilayer internal complex is a polymer or copolymer film, assembled by laminating, extrusion, coextrusion or calendering.
- 69 The invention will be better understood, thanks to the description below, which relates to a preferred embodiment, given by way of non-limiting example, and explained with reference to the appended schematic drawings, in which FIG. sectional view of a packaging body provided with an internal complex according to the invention, and FIG. 2 is a perspective and sectional view, on a different scale, of a packaging body at the level of welding one end of the internal complex according to the invention to the other end of said complex.
- 75 According to the invention, the intermediate layer 5 of the internal complex of the tubular packaging body 1 is a polymer or copolymer film, assembled by laminating, extrusion, coextrusion or calendering.
- 78 This layer 5 may advantageously have a thickness of between 12 and 20 μ and be covered with a metallization 7, with a thickness of approximately 300 μ .

- 80 According to a first variant of the invention, the intermediate layer 5 is made of polyester or copolyester.
- 82 By way of nonlimiting example, it is possible to use a metallized polyester of 12 P thickness of the type X 870, known under the trade name Melinex and manufactured by the company ICI, a polyester which also allows excellent bonding of the metallization. . This type of polyester has an oxygen permeability of 0.5 cm / m / 24 h corresponding to standard ASTM D 1434 (temperature 23 °C, relative humidity 0%), a vapor permeability of water of 0.15 g / m² / 24 h corresponding to standard ASTM D 1434 (temperature 23 °C, relative humidity 85%), and a tensile strength, lengthwise, of 2.36 dN and in the transverse direction of 2.58 dN, corresponding to the ASTM D 882 75B standard.
- 90 A complex provided with such an intermediate layer 5 therefore presents, unexpectedly and surprisingly, the desired barrier conditions, in particular excellent impermeability values, while being much more resistant to folding and to pressure than complex whose intermediate layer is aluminum. For example, the breaking strength of a 99.2% aluminum layer of 12 U thickness has a breaking strength in the length direction of 1.12 dN. and in the transverse direction of 0.96 dN.
- 95 According to a second variant of the invention, the intermediate layer 5 is made of polyamide or copolyamide.
- 97 Such a polyamide film could, for example, be that known under the trade name Selar manufactured by the company Du Pont de Nemours.
- 99 According to another variant of the invention, the intermediate layer 5 is made of polyurethane.
- 100 It may, of course, be made of other polymer or copolymer materials, such as a polyethylene terephthalate, a polybutylene terephthalate, etc.
- 102 By way of non-limiting example, the complex may have one of the following compositions, respectively for layers 4, 5 and 6 - kraft paper 4 / metallized polyester film 5 / polyethylene film 6 - kraft paper 4 / metallized polyester film 5 / polypropylene film 6 - kraft paper 4 / metallized polyester film 5 / ionomer film 6 - kraft paper 4 / polyamide film 5 / polyethylene film 6 - kraft paper 4 / polyamide film 5 / polyacrylonitrile film 6; - kraft paper 4 / metallized polyester film 5 / ionomer film and polyethylene film coextruded 6.
- 108 As ionomer film 6, one can advantageously use that known under the trade name Surlyn manufactured by the company Du Pont de Nemours.
- 110 As indicated above, the three layers 4, 5 and 6 can be assembled together by lamination, extrusion, coextrusion or calendering.
- 112 In the laminating variant, it is possible to use a barrier adhesive, such as, for example, a polyvinyl chloride (PVDC) adhesive.
- 114 The present invention also relates to a tubular packaging, the body 1 of which is made of composite materials comprising one or more layers 3, optionally an outer layer 2, printed or not, such as a label or a layer guaranteeing sealing as well as a waterproof multilayer internal complex in accordance with the invention The layers 3 forming the framework of the packaging body 1 will, in general, be made of cardboard, while the external layer 2 will be in the form of a single layer (label) or a complex guaranteeing waterproofing from the outside to the inside.
- 120 The bonding of layers 2, 3 and 4 can be ensured, in a known manner, by sealing or gluing.
- 121 Of course, the invention is not limited to the embodiment described and shown in the

accompanying drawings. Modifications remain possible, in particular from the point of view of the constitution of the various elements, or by substitution of technical equivalents, without thereby departing from the scope of protection of the invention.