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Declarations under Rule 4.17:
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
— *of inventorship (Rule 4.17(iv))*

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(54) Title: PACKAGING PRODUCT

(57) Abstract: Disclosed is a dpackaged product comprising a particulate, savoury food material, the packaging comprising a multi-layer packaging film which comprises: an inner layer comprising polypropylene; an outer layer comprising polypropylene; and an intermediate layer comprising polypropylene.

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PACKAGING PRODUCT

Field of the Invention

The present invention relates to packaged food products. More particularly to a packaged product comprising a particulate, savoury food material.

Background of the Invention

Packaging for food products is typically made of multi-layer packaging films. Multi-layer packaging films find wide application in packaging a range of products. Lamination of different materials into a single film allows for making use of each individual material's properties at appropriate parts of the final package. For example, a material used in an outer layer could be easily printable, whilst an inner layer can have properties more suitable for contact with the product, such as for example non-stick properties.

EP 0 524 572 A1 (MITSUBISHI CHEMICAL CORP) discloses a stretched, laminated film comprising at least an outer layer, an intermediate layer and an inner layer, said outer layer and inner layer comprising a polypropylenes composition composed of 100 parts by weight of polypropylenes (A), 2 to 30 parts by weight of polybutene and/or polyisobutylene (B) and 0.2 to 5 parts by weight of a polyglycerin fatty acid ester (C), and said intermediate layer comprising polyesters (D).

WO 98/32603 A1 (TETRA LAVAL HOLDINGS AND FINANCE) discloses packaging laminate intended for the production of packaging containers possessing superior release properties vis-a-vis solid or semi-solid food products such as, for example, various types of cheese.

US6503635 discloses a laminated metallized four layer coextruded biaxial oriented film laminated with polyurethane adhesive to a 90 gauge (23 um) biaxially oriented polypropylene (BOPP) film, available from Mobil Chemical Company as 90SPW-L. The order of layers in the metallized film is referred to as A/B/C/ID for the four layers:. skin layer A was prepared from a blend of butylene-propylene copolymer with a syndiotactic polypropylene, inner layer B, which was between layer A and C, was prepared from Fina 3371 polypropylene sold by Fina Oil company, layer C, which was between layers B and D

was prepared from Chisso 7510 ethylene-propylene-butene terpolymer sold by the Chisso Chemical Company of Japan, outer layer D was prepared from a blend of an ethylene-propylene-butene terpolymer with 5000 ppm methyl methacrylate and propylidene trimethacrylate copolymer spheres and 2400 ppm of SiO2.

US6410124 discloses a three layer film extruded with a base (core) layer B of an isotactic polypropylene homopolymer, sold as Fina 3371, a coextruded skin layer A of a propylene-ethylene-butene-1 terpolymer, sold as Chisso 7510, on one surface of the base layer, and a coextruded layer C of syndiotactic polypropylene, sold as Fina EOD 95-02, on the other surface of the base layer.

The present inventors have recognized that certain challenges present themselves when using conventional multi-layer films for packaging particulate material such as particulate, savoury food materials. In particular the particulate material must be stable to long term storage and thus the multi-layer film must meet stringent oxygen and light exclusion criteria.

In addition, challenges exist in the filling of packaging units with particulate, savoury food materials, for example, the multi-layer films must be able to be processable at high speed to enable reliable filling with the savoury food material without leading to burst packaging or other processing issues.

Furthermore, consumers demand that packaging for particulate savoury materials is recyclable, however, current packaging is poorly recyclable due to the different constituent materials.

There exists a need for a packaging product that meets the industry and consumer processability, storage, and recyclability requirements.

The present inventors have found that by providing a multi-layer film with specific inner, outer and intermediate layers, improved packages for particulate, savoury material can be provided.

Summary of the Invention

In a first aspect, the present invention is directed to a packaged product comprising a cavity delimited by a wall, wherein the wall comprises a multi-layer packaging film comprising:

- an inner layer comprising polypropylene;
- an outer layer comprising polypropylene; and
- an intermediate layer comprising polypropylene and having an outer face facing the outer layer and an inner face facing the inner layer.

wherein one of the inner and outer faces of the intermediate layer is metallized,

wherein a particulate, savoury food composition is contained within the cavity.

The packaged product of the present application may also be referred to as a packaging product in other words a packaging film that contains a cavity which may contain a savoury product.

Provision of such a packaged product allows for effective manufacture of packaging comprising particulate savoury material with improved properties in terms of the storage stability of the particulate, savoury material. With regards to the manufacture, the multi-layer packaging film is capable of being deployed and/or stored in a configuration (such as a roll) wherein the inner and outer layers are in contact.

Thus in a second aspect the present invention is directed to a process for producing packaged food product(s), comprising the step of:

i) providing a multi-layer packaging film comprising:

a. an inner layer comprising polypropylene;

b. an outer layer comprising polypropylene; and

c. an intermediate layer comprising polypropylene and having an outer face facing the outer layer and an inner face facing the inner layer,

ii) forming the multi-layer packaging film into a packaging precursor and filling the packaging precursor with a particulate, savoury material,

iii) sealing the packaging precursor to provide a packaged food product.

In a further aspect the present invention is directed to a process for producing a multi-layer packaging film for a packaged food product, wherein the process comprises the steps of:

(i) providing a first packaging sheet material comprising polypropylene;

(ii) providing a second packaging sheet material comprising polypropylene;

(iii) providing a third packaging sheet material comprising polypropylene and having an inner and an outer face; and

(iv) laminating the first material on the inner face of the third material and the second material on the outer face of the third material

Detailed Description

The packaged food product according to the present invention comprises a particulate, savoury food material. The packaging comprises a cavity delimited by a wall, wherein the wall comprises a multi-layer packaging film comprising:

- an inner layer comprising polypropylene;
- an outer layer comprising polypropylene; and
- an intermediate layer comprising polypropylene and having an outer face facing the outer layer and an inner face facing the inner layer.

wherein one of the inner and outer faces of the intermediate layer is metallized, wherein the particulate, savoury food composition is contained within the cavity.

As used herein, "inner layer" refers to the layer located closest to the cavity, preferably the inner layer abuts the cavity.

As used herein, "outer layer" refers to the layer located furthest from the cavity.

As used herein "intermediate layer" refers to the layer located between the inner and outer layers, such that one face of the intermediate layer faces the inner layer and the other face of the intermediate layer faces the outer layer.

Preferably, one or more of the inner, outer and intermediate layers comprises an anti-static agent, for example, glyceryl esters of fatty acids, tertiary amines, fatty-acid amides, hydroxyl fatty-acid amides, alkali metal sulfonates, polyether-modified polydiorganosiloxanes, polyalkylphenylsiloxanes, and mixtures thereof. Especially preferred are glyceryl esters of C_{10}-C_{40} fatty acids, most preferably the anti-static agent comprises or is glyceryl mono stearate (GMS). In one embodiment the anti-static agent comprises a mixture of glyceryl mono stearate and diethanolamine.

The inner layer preferably comprises the anti-static agent in an amount of from 0.01 to 2% by weight of the layer, more preferably from 0.1 to 1.5% and most preferably from 0.4 to 1.0%.

As packaging films are often stored and deployed onto packaging machines in the form of a roll, migration of the anti-static agent from the inner to the outer layer can often be encountered. To ameliorate this problem the outer layer of the film of the present invention preferably comprises an anti-static agent. Preferably the anti-static agent in the outer layer is substantially the same as the anti-static agent in the inner layer. More preferably the anti-static agent in the outer layer is substantially the same and the amount of anti-static agent in both the inner and outer layers is substantially the same. By "substantially the same is meant that the ratio of the amount (% w/w) of the anti-static agent in the inner layer to the amount (% w/w) of the anti-static agent in the outer layer is in the range 2:1 to 1:2, more preferably 1.5:1 to 1:1.5 and most preferably 1.2:1 to 1:1.2.

The polypropylene of the inner layer is preferably an orientated polypropylene (OPP) as this allows for the inner layer to have good heat-sealing properties.

The inner layer preferably comprises a slip agent to improve reliability during high-speed package manufacture. The slip agent should be of a high molecular weight such that it is non-migratory to the outer layer and also does not interfere with the properties of the anti-static agent. Preferably the slip agent is selected from high molecular weight silicone, poly(methyl methacrylate) and mixtures thereof. By "high molecular weight" is meant a weight-average molecular weight of at least 100,000 g/mol, more preferably at least 200,000 g mol and most preferably from 500,000 to 5,000,000 g/mol. The PMMA preferably is in the form of particles with a weight-average diameter of from 2 to 16 micron, more preferably 4 to 10 micron.

The inner layer preferably has a thickness of from 10 to 100 microns, more preferably from 20 to 60 microns, even more preferably from 25 to 50 microns, most preferably from 40 to 50 micron.

In a preferred embodiment the packaging film is in the form of a roll, wherein the film is arranged with the inner layer in contact with the outer layer.

The polypropylene of the outer layer is preferably oriented polypropylene (OPP) as this allows for good transparency and printing properties as well as desired heat-sealing properties during packaging manufacture.

The outer layer preferably has a thickness of from 5 to 50 microns, more preferably from 10 to 40 microns and most preferably 20 to 30 microns.

Preferably, the outer layer and/or the inner layer do not comprise polyethylene.

Preferably, the outer layer comprises an oxygen barrier agent. Preferably, the oxygen barrier agent is selected from the group consisting of polyvinyl alcohol (PVOH), ethylene vinyl alcohol, and poly(vinylidene chloride). The outer layer preferably comprises polyvinyl alcohol (PVOH).

The intermediate layer comprises polypropylene. The intermediate layer adds durability and strength to the film. Oriented polypropylene is preferred, more preferred is bi-oriented polypropylene (BOPP).

The intermediate layer is metalized. The metallized intermediate layer provides the packaging product with good storage properties. To improve the barrier properties of the film it is preferred that at least one of the inner and outer faces of the intermediate layer is metallized (for example with a thin coating of aluminium). Preferably one face is metallized and the other is not metallized.

Whilst any suitable corona treatment may be used on the intermediate layer, where one of the faces is metallized it is preferred that said face is chemically corona-treated. On the other hand where a face is not metallized it is preferred that the face is electrically corona-treated.

The thickness of the intermediate layer (including any metallized coating) is preferably from 2 to 30 microns, more preferably 5 to 20 microns and most preferably 8 to 16 microns. Preferably, the intermediate layer does not comprise polyethylene terephthalate.

The outer, intermediate and inner layers comprise polypropylene. Preferably, the outer, intermediate and inner layers do not comprise copolymers or terpolymers that comprise polypropylene.

The intermediate layer preferably has an oxygen transmission rate of less than 0.2 $cm^3/m^2/24$ hr.. More preferably the intermediate layer has an oxygen transfer rate of less than 50 $cm^3/m^2/24$ h, more preferably less than 25 $cm^3/m^2/24$ h and most preferably less than 5 $cm^3/m^2/24$ h. The outer layer preferably has an oxygen transfer rate of equal to or less than 80 $cm^3/m^2/24$ h according to ASTM D 3985-17 (23°C, 0% RH).

The multi-layer packaging film preferably has an oxygen transmission rate of less than 0.2, preferably less than 0.1, $cm^3/m^2/24$ hr as measured according to F1927-14 (23°C, 85% RH).

The multi-layer packaging film preferably has an moisture permeability of less than 0.1 $g/m^2/24$ hr. The moisture permeability is determined by American Society for Testing and Materials (ASTM) method F 1249-13 (38°C, 90%RH). More preferably, the intermediate layer preferably has an moisture permeability of less than 0.075 $cm^3/m^2/24$ hr.

Preferably, the intermediate layer is corona-treated. Corona treatment is well known in the art and in conventional lamination processes, the surfaces of the various layer materials are usually corona-treated to allow better adherence during lamination.

The present inventors have found that corona-treatment of the outer layer can provide favourable properties of the final product. Corona-treatment of both faces of the intermediate layer allows for good lamination with the other layers. Therefore in a preferred embodiment the outer and intermediate layers are corona-treated.

Preferably, there will be a first adhesive layer between the intermediate layer and the inner layer and a second adhesive layer between the intermediate layer and the outer layer.

The film may be made by any convenient process but is preferably made by a process comprising the steps of:

(i) providing a first packaging sheet material comprising polypropylene;

(ii) providing a second packaging sheet material comprising polypropylene;

(iii) providing a third packaging sheet material comprising polypropylene and having an inner and an outer face; and

(iv) laminating the first material on the inner face of the third material and the second material on the outer face of the third material.

The first packaging sheet material forms the inner layer, the second the outer layer and the third the intermediate layer.

Lamination can be achieved in step (iv) without corona-treating either of the outer and inner layers. Thus in a preferred embodiment the process does not comprise corona-treating the inner layer and does not comprise corona-treating the outer layer.

The first and second materials are preferably laminated to the third material with adhesive. More preferably the first material is laminated to the third material with solvent-free adhesive and the second material is laminated to the third layer with solvent-based adhesive.

The film of the present invention is preferably used to form a package for particulate, savoury material.

Preferably, the savoury food material is a mixture of dry, savoury food ingredients, preferably wherein the savoury food ingredients are selected from the group consisting of fat, vegetable matter, meat matter, starch and salt.

Preferably, the savoury food material is a dried soup, sauce, stock, gravy or bouillon. Preferably, the particulate, savoury food material has a water content of less than 10 wt.%, by weight of the total food material (excluding the packaging), preferably, less than 8 wt.%, more preferably less than 5 wt.%, even more preferably less than 2.5 wt.%, and most preferably less than 1 wt.%. Preferably, the water content of the particulate, savoury food material is in the range of 0-10 wt.%, by weight of the total food material, preferably in the range of 0.5-8wt.%, more preferably in the range of 1-5 wt.%.

In another aspect, the present invention relates to a process for producing a packaged food product, comprising the step of:

i) providing a multi-layer packaging film comprising:

a. an inner layer comprising polypropylene;

b. an outer layer comprising polypropylene; and

c. an intermediate layer comprising polypropylene and having an outer face facing the outer layer and an inner face facing the inner layer,

ii) forming the multi-layer packaging film into a packaging precursor and filling the packaging precursor with a particulate, savoury material,

iii) sealing the packaging precursor to provide a packaged food product.

Preferably, the packaging precursor defines an (open) cavity into which the particulate, savoury material is filled.

More preferably regions of the outer layer are heat-sealed together to form the package. Heat-sealing may also involve sealing regions of the outer layer and the inner layer together and/or regions of the inner-layer together.

The package comprises a cavity delimited by a wall, wherein the wall comprises the film and the cavity contains a particulate, savoury material. Preferably the wall comprises the film oriented with at least part of the inner layer facing the cavity.

The particulate material could be any powder or granular savoury material. Preferably however, the particulate material is a savoury material such as dried soup, sauce, stock, gravy or bouillon.

Where a feature is disclosed with respect to a particular aspect of the invention (for example a packaged product of the invention), such disclosure is also to be considered to apply to any other aspect of the invention (for example a process of the invention) *mutatis mutandis*.

Although the invention has been described with reference to specific embodiments, various modifications of the described modes for carrying out the invention which are apparent to those skilled in the relevant fields are intended to be within the scope of the following claims.

For the avoidance of doubt, the word "comprising" is intended to mean "including" but not necessarily "consisting of" or "composed of". In other words, the listed steps or options need not be exhaustive.

The disclosure of the invention as found herein is to be considered to cover all embodiments as found in the claims as being multiply dependent upon each other irrespective of the fact that claims may be found without multiple dependency or redundancy

Examples

Example 1

A packaged product according to the invention was manufactured with the following structure:

A packaging product comprising a multi-layer film was manufactured with the following structure:

Outer layer – Heat-sealable OPP. Both sides are corona treated. Thickness of 20 micron or 21 micron with 1 micron PVOH coating. The oxygen transfer rate is determined by American Society for Testing and Materials (ASTM) method D 3985-17 (Standard Test Method for Oxygen Gas Transmission Rate Through Plastic Film and Sheeting Using a Coulometric Sensor).

Intermediate layer – BOPP metallized on the outer face. Chemically-corona treated on the metallized face and electrically-corona treated on the other face. Thickness of 20 micron. The intermediate layer preferably has an oxygen transfer rate of equal to or less than 80 $cm^3/m^2/24$ h (ASTM method D 3985-17).

Inner layer –OPP. Thickness of 40 microns

Lamination of the inner and intermediate layers was achieved through a thin layer of adhesive without solvent whereas lamination of the outer and the intermediate layers was achieved with adhesive with solvent. Excellent lamination was achieved.

The final multilayer film has an oxygen transmission of 0.1 $cm^3/m^2/24$ hr as measured according to F1927-14 (23°C, 85% RH).

The film was heat-sealed into a pouch and dosed with dry savoury material, either using a rotary forming filling sealing machine has speed of 85 ppm or a horizontal forming filling sealing machine has speed of 140 ppml The resulting packaged product showed excellent in-use properties and, in particular did not demonstrate any decomposition of the savoury material. The packaging has excellent processability on filling lines and is amenable to recycling.

Comparative example A

The terpolymer film of US 6503635 B1 cannot be processed on high speed packaging lines used above in Example 1. The terpolymer film is not suitable for use a savoury packaging film due to the poor processability and recyclability of such a film.

Comparative example B

The film US 6410124 B1 is not suitable for use a savoury packaging film. The film has a high oxygen transmission rate of 4.9 cm3/m2/24hr, meaning that packaging consisting of this film has a poor storage stability.

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Claims

1. A packaged product comprising a cavity delimited by a wall, wherein the wall comprises a multi-layer packaging film comprising:
    - an inner layer comprising polypropylene;
    - an outer layer comprising polypropylene; and
    - an intermediate layer comprising polypropylene and having an outer face facing the outer layer and an inner face facing the inner layer,

    wherein one of the inner and outer faces of the intermediate layer is metallized, wherein a particulate, savoury food composition is contained within the cavity

2. The packaged product according to claim, wherein one of the inner and outer faces of the intermediate layer is a metallized, chemical corona treated layer.

3. The packaged product according to claim 1 or claim 2, wherein the the non-metalized surface of the inner and outer faces of the intermediate layer is an electrical corona treated layer.

4. The packaged product according to any one of the preceding claims, wherein the polypropylene of the inner layer is an orientated polypropylene (OPP).

5. The packaged product according to any one of the preceding claims, wherein the polypropylene of the outer layer is an oriented polypropylene (OPP).

6. Packaging product according to any one of the preceding claims, wherein the multilayer packaging film has an oxygen transmission rate of less than 0.2 $cm^3/m^2/24$ hr as measured according to F1927-14.

7. The packaged product according to any one of the preceding claims, wherein the outer layer comprises an oxygen barrier agent, preferably the oxygen barrier agent is selected from the group consisting of polyvinyl alcohol (PVOH), ethylene vinyl alcohol, and poly(vinylidene chloride).

8. The packaged product according to any one of the preceding claims, wherein the savoury food material is a mixture of dry, savoury food ingredients, preferably wherein

the savoury food ingredients are selected from the group consisting of fat, vegetable matter, meat matter, starch and salt.

9. The packaged product according to any one of the preceding claims, wherein the savoury food material is a dried soup, sauce, stock, gravy or bouillon.

10. Packaging product according to claim 8, wherein the wall comprises the film oriented with at least part of the inner layer facing the cavity.

11. A process for producing a packaged food product according to any of claims 1-10, comprising the step of:
    i) providing a multi-layer packaging film comprising:
        a. an inner layer comprising polypropylene;
        b. an outer layer comprising polypropylene; and
        c. an intermediate layer comprising polypropylene and having an outer face facing the outer layer and an inner face facing the inner layer,
    ii) forming the multi-layer packaging film into a packaging precursor and filling the packaging precursor with a particulate, savoury material,
    iii) sealing the packaging precursor to provide a packaged food product,
    wherein one of the inner and outer faces of the intermediate layer is metallized.

12. The process according to claim 11 wherein the inner layer comprises a non-migratory slip agent selected from high molecular weight silicone, poly(methyl methacrylate) and mixtures thereof.

13. A process for producing a multi-layer packaging film for a packaged food product, wherein the process comprises the steps of:
    (i) providing a first packaging sheet material comprising polypropylene;
    (ii) providing a second packaging sheet material comprising polypropylene;
    (iii) providing a third packaging sheet material comprising polypropylene and having an inner and an outer face; and
    (iv) laminating the first material on the inner face of the third material and the second material on the outer face of the third material,
    wherein one of the inner and outer faces of the intermediate layer is metallized.

14. The process according to claim 13 wherein the first packaging sheet comprises a non-migratory slip agent selected from high molecular weight silicone, poly(methyl methacrylate) and mixtures thereof.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. B32B5/14 B32B7/12 B32B15/085 B32B15/20 B32B17/10
B32B27/16 B32B27/18 B32B27/30 B32B27/32 B29C65/00
B65B25/00

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)
B32B B65B B29C

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 practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 503 635 B1 (KONG DAN-CHENG [US] ET AL) 7 January 2003 (2003-01-07) column 1, line 5 - column 2, line 11; column 3, lines 35-53 and column 7, line 59 - column 8, line 10; column 6, lines 21-29, 42-46 and 61-65; examples 1-3	1-6,8,9, 11
X	US 6 410 124 B1 (PEET ROBERT G [US]) 25 June 2002 (2002-06-25) column 3, line 65 - column 4, line 9; column 4, lines 14-21 and 52-62; column 5, lines 30-38; column 6, lines 1-15; example 1	1,4-11
X	US 2003/186032 A1 (ROSENBERGER KAROLINA [CH] ET AL) 2 October 2003 (2003-10-02) paragraphs 1, 48, 55, 71, 76	1,4,8,9

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family 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 application or patent 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 citation or other special reason (as specified)

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"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 January 2020	27/03/2020

Name and mailing address of the ISA/	Authorized officer
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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/084489

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	WO 2019/158231 A1 (UNILEVER PLC [GB]; UNILEVER NV [NL]; CONOPCO INC D/B/A UNILEVER [US]) 22 August 2019 (2019-08-22) the whole document -----	1-11

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2019/084489

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-10(completely); 11(partially)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10(completely); 11(partially)

A multilayer packaging film for a savoury food composition, the film comprising three layers comprising polypropylene, the intermediate layer being metallised on one face.
The problem solved is to provide a packaging film having an internal barrier.

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2. claims: 12, 14(completely); 11, 13(partially)

A method for producing a multilayer packaging film for a savoury food composition, comprising three polypropylene layers, the center layer being metallised; the inner layer comprising a slip agent.
The problem solved is to provide a multilayer packaging film which leads to less friction problems when used in a form/fill/seal packaging process.

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3. claim: 13(partially)

A method for producing a multilayer packaging film suitable for any type of food product, comprising three layers comprising polypropylene.
The problem solved is to produce any multilayer film comprising three layers comprising polypropylene, suitable for any type of food product, without limitation, and without reference to the other inventions.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2019/084489

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