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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	861133.00068
	Application Number	
Title of Invention	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
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Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

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Tucson	AZ	US

Mailing Address of Inventor:

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Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Luke		Rogers	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

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Tucson	AZ	US

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City	Tucson
State/Province	AZ
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Country	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

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☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	34282		
Email Address	pat-dept@quarles.com	Add Email	Remove Email
Email Address	yakov.sidorin@quarles.com	Add Email	Remove Email

Application Information:

Title of the Invention	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION		
Attorney Docket Number	861133.00068	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	5	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	34282		

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	861133.00068
	Application Number	
Title of Invention	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION	

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status [ ] Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Claims benefit of provisional	62614568	2018-01-08

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	861133.00068
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Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

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Title of Invention	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor

● Person to whom the inventor is obligated to assign. | Person who shows sufficient proprietary interest

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	SIGMA TECHNOLOGIES INT'L., LLC		
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Address 1	10960 N. Stallard Place		
Address 2			
City	Tucson	**State/Province**	AZ
Country	US	Postal Code	85737
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

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Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

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NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Yakov S. Sidorin/			Date (YYYY-MM-DD)	2019-01-03
First Name	Yakov	Last Name	Sidorin	Registration Number	63507

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This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present international application claims priority from and benefit of the U.S. Provisional Patent Application No. 62/614,568 filed on January 08, 2018, the disclosure of which is incorporated by reference herein.

TECHNICAL FIELD

[0002] Embodiments of the present invention relate to radiant barrier insulation configured for use in paper-containing packaging, where such packaging is intended and structured to be recyclable and/or recycled as paper, and, in particular, to such radiant barrier insulation in which a radiant barrier material is used to facilitate thermal insulation in packaging intended to preserve temperature sensitive food or pharmaceutical goods.

SUMMARY

[0003] Embodiments of the invention provide a recyclable packaging that includes (i) a paper layer with first and second surfaces; (ii) a polymer layer with third and fourth surfaces, where the third surface is affixed to the second surface; (iii) an aluminum layer deposited on the fourth surface (here, the aluminum layer has a first thickness of 200 nanometers or less to cause emissivity of an outer surface of the packaging to be equal to or smaller than a first value of 0.10). The aluminum layer is characterized by becoming fully oxidized with no visible aluminum present in (accepted for forming the recyclable packaging) material that results from the packaging being subjected to a particular treatment. Such particular treatment includes a) blending the packaging in a Waring Blender to form a first material; b) disintegrating the first material into water with a British Disintegrator at 125 (± 10) degrees F at 3000 rpm to form a second material; c) separating the second material in a 0.01 inch screen with a 1 inch water head for 20 minutes to form a fourth material; and d) drying the fourth material in an oven for 4 hours at 221 degrees F. In one embodiment, the recyclable packaging may additionally include a protective coating, over the aluminum layer, which has a second thickness of 1 micron or less. (The second thickness is defined to maintain the first value of the emissivity of the outer surface

after the aluminum layer has been coated with the protective coating and to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating does not impede oxidation of the aluminum layer caused by the treatment.) Alternatively or in addition, the protective coating may include a material selected from: wax, polymer, and lacquer. In any embodiment, the polymer layer may include a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene. In any embodiment, the polymer layer may include a material selected from film and fabric.

[0004] Embodiments of the invention additionally provide a recyclable packaging that contains (i) a paper layer with first and second surfaces; (ii) a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface; (iii) an intermediate coating applied to the fourth surface; (iv) an aluminum layer carried by the intermediate coating (where the aluminum layer has a first thickness of 200 nanometers or less and where the aluminum layer causes an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10). Such aluminum layer is characterized by becoming fully oxidized with no visible aluminum present in a recyclable material (suitable for manufacture of the recyclable packaging) that results from the packaging being subjected to a treatment that includes a) blending in a Waring Blender; b) disintegrating into water with a British Disintegrator at about 125 (± 10) degrees F at 3000 rpm; c) separating in a 0.01 inch screen with a 1 inch water head for 20 minutes; and d) drying in an oven for 4 hours at 221 degrees F. In one implementation, the aluminum layer is disposed directly on the intermediate coating. In any implementation, the intermediate coating may have a thickness between 10 nm and 2000 nm and include a material selected from polymer and oligomer. In any implementation, the recyclable packaging may additionally include a protective coating over the aluminum layer (such protective coating having a second thickness of 1 micron or less, the second thickness being defined i) to maintain the emissivity of the outer surface of the packaging at the first value after the aluminum layer has been coated with the protective coating and ii) to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating does not impede oxidation of the aluminum layer as a result of the treatment). Alternatively or in addition, the protective coating may include a material selected from wax, polymer, and lacquer and/or the polymer layer may

include a material selected from low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene. In any embodiment, the polymer layer may be configured as a film or fabric.

[0005] Embodiments of the invention additionally provide a method for thermally insulating a good within a recyclable packaging. The method includes placing a reflective insulation material at a pre-defined proximity distance from the good, where pre-defined proximity distance is chosen to provide adequate thermal insulation to the good. In one embodiment, the reflective insulation material is used to wrap or otherwise enclose the good. In any embodiment the reflective insulation material includes the recyclable packaging that contains: (i) a paper layer with first and second surfaces; (ii) a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface; (ii) an intermediate coating applied to the fourth surface; (iii) an aluminum layer carried by the intermediate coating, which aluminum layer has a first thickness of no more than 200 nanometers to cause an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10, and which aluminum layer becomes fully oxidized with no visible aluminum present in a material as a result of subjecting the recyclable packaging to a pre-defined treatment. The pre-defined treatment includes a) blending the packaging in a Waring Blender to form a first material; b) disintegrating the first material into water with a British Disintegrator at 125 (± 10) degrees F at 3000 rpm to form a second material; c) separating the second material in a 0.01 inch screen with a 1 inch water head for 20 minutes to form a fourth material; and d) drying the fourth material in an oven for 4 hours at 221 degrees F.

[0006] Embodiments further provide a method for manufacturing a recyclable packaging, the method containing steps of attaching a polymer layer to a paper layer (here, an inner surface of the polymer layer is affixed to a first surface of the paper layer); depositing an aluminum layer on the polymer layer (with the aluminum layer having a first thickness of 200 nanometers or less and being configured to cause an outer surface of the polymer layer to have emissivity that is equal to or smaller than a first value of 0.10), which aluminum layer possesses a quality of becoming fully oxidized with no visible aluminum when the packaging is exposed to a treatment that includes: a) blending in a Waring Blender; b) disintegrating into water with a British Disintegrator at 125 (± 10) degrees F at 3000 rpm; c) separating in a 0.01 inch screen with a 1

inch water head for 20 minutes, and d) drying in an oven for 4 hours at 221 degrees F. Alternatively or in addition, the method may include a step of applying a protective coating over the aluminum layer (where the protective coating has a second thickness of 1 micron or less, and where the second thickness is defined a) to maintain the emissivity of the outer surface at the first value after the aluminum layer has been coated with the protective coating and b) to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating does not impede oxidation of the aluminum layer as a result of the treatment.

[0007] Embodiments additionally provide a method for thermally insulating a good within a recyclable packaging. Such method involves placing a reflective insulation material in a pre-defined proximity with a good, the pre-defined proximity being suitably chosen to provide adequate thermal insulation to the good, wherein said reflective insulation material comprises the recyclable packaging that includes: - a paper layer with first and second surfaces; - a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface; - an aluminum layer deposited on the fourth surface (where the aluminum layer has a first thickness of 200 nanometers or less and where the aluminum layer causes an emissivity of an outer surface of the packaging to be equal to or smaller than a first value of 0.10, which aluminum layer is characterized with a property of becoming fully oxidized with no visible aluminum present in a material that results from the packaging being subjected to a pre-determined treatment. The pre-determined treatment is defined to include a) blending the packaging in a Waring Blender to form a first material; b) disintegrating the first material into water with a British Disintegrator at 125 (± 10) degrees F at 3000 rpm to form a second material; c) separating the second material in a 0.01 inch screen with a 1 inch water head for 20 minutes to form a fourth material; and d) drying the fourth material in an oven for 4 hours at 221 degrees F.

BACKGROUND

[0008] A variety of thermal insulation materials are used for perishable and other temperature sensitive goods. Common types of thermal insulation include rigid and flexible foams, bags or batts of fibrous materials, and reflective insulation. Reflective Insulation is any type of insulation intended to insulate against heat gain and heat loss by reducing, reflecting, or not emitting radiant heat; this is accomplished by applying a low emissivity material, such as aluminum, to one or more surfaces. Simply incorporating a low emissivity material as part of the package

could reduce the weight or dimensions of the total package, as compared for example to other types of insulation commonly used in packaging (such as foams or bulk fibrous insulation). However, current methods and applications of low-emissivity material impairs the recyclability of the total package, which understandably causes problems in related industries. Thus, there is a need for low-emissivity packaging material that is fully recyclable.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The invention will be more fully understood by referring to the following Detailed Description of Specific Embodiments in conjunction with the not-to scale Drawings, of which:

[0010] Fig. 1 is a graphical representation of the variations of optical density of Aluminum Polyester as a function of time, during simulated repulpability test conditions.

[0011] Fig. 2 shows graphical and tabular representations of emissivity of Aluminum Polyester (PET) film as a function of the initial optical density of the film.

[0012] Fig. 3 is a plot of the detectable lower limit of optical density of Aluminum in an Equivalent Black Area (EBA) test.

[0013] Figs. 4, 5, and 6 show various layers and combinations of layers of the fully recyclable low-emissivity packaging material.

[0014] Fig. 7 presents graphical and tabular representations of changes in emissivity values for different types of coatings (Polymer, 201; Wax, 202) in relation to the thicknesses of such coatings.

[0015] Fig. 8 contains plots illustrating changes in emissivity figure(s) as a function of thickness of protective coating layer(s) made of itemized materials.

[0016] The sizes and relative scales of elements in Drawings may be set to be different from actual size and scales to appropriately facilitate simplicity, clarity, and understanding of the Drawings. For the same reason, not all elements present in one Drawing may necessarily be shown and/or labeled in another.

DETAILED DESCRIPTION

[0017] Embodiments of the invention address the problem(s) caused by inability of the related art to fully recycle a low-emissivity packaging material, and solve such problem(s) by using a specifically structured packaging that contains a particular aluminized polymeric film

characterized by emissivity of equal to, or less than 0.10, yet is thin enough such that when the packaging material is subjected to the recycling process, what little amount of aluminum is present is "crumbled" and fully oxidized (and, as a result, does not affect the recyclability of the packaging material as a whole). Such specifically-structured aluminized polymeric film may have an optional protective coating (which would be generally less than one micron in thickness) to protect the aluminum in the film from corrosion during the use of the packaging. However, this protective coating is judiciously configured to not raise the emissivity of the aluminized surface above the 0.10 value and, at the same time, to still allow for the aluminum material it covers to be removed in the repulping and recycling process such that the aluminum material in the stack of materials of the packaging is factually fully oxidized and corroded in the heat and at humidity levels used in the recycling process. It is this specific configuration that permits the aluminum of the packaging material to be included in the recycled portion of the packaging material.

[0018] Repulping is the first stage in paper recycling. Features of the method employed for testing the repulpability of a paper-based containers are summarized in Part I of the document titled "The Voluntary Standard For Repulping and Recycling Corrugated Fiberboard Treated to Improve Its Performance in the Presence of Water and Water Vapor", published by the Fibre Box Association (available at fibrebox.org), the disclosure of which is incorporated herein by reference for all purposes. This test method is recognized in related industry - and, in particular, by the Fibre Box Association and Corrugated Packaging Alliance - and represents the commonly-used test, the exposure of a given container or packaging to which is required to be able to determine whether such given corrugated container or packaging can be classified as repulpable or recyclable. The first part of this test method addresses repulpability. In particular, a sample / portion of the container is blended in a Waring Blender and disintegrated into water with a British Disintegrator at 125 (± 10) degrees F at 3000 rpm, and separated in a 0.01" screen with a 1 inch water head for 20 minutes. The specimens of the resulting material are then dried in an oven for 4 hours at 221 degrees F to remove water. The dried weights (of what passes through the screen after such a treatment) is compared to rejects (or what is rejected by the screen). The material that passed through is considered / defined to be repulpable, implying that such material can be used, according to industrial standards, to be reused / remade into paper at a mill. At the

same time, the rejects that are left behind by the screen are considered to be the unusable waste and, generally, are rejected and sent to the landfill or otherwise disposed of. It is well recognized that in order for the container material to pass the first stage of this test, a portion of at least 85 weight-% of the total, overall amount of the initial container material has to be classified as repulpable.

[0019] The second stage of the test involves the use of the accepted pulp for making paper. Here, using a Carver press at 350 degrees F at 500 psi, the accepted pulp (sometime referred to as "accepts") is pressed together to form hand sheets, and the excess moisture is blotted away. Then several (often - three) hand sheets of the so-formed new paper are inspected for defects or "spots". This inspection is aided by TAPPI-developed test methods. TAPPI is a registered, not-for-profit, international Non-Governmental Organization, see tappi.org, involved in research and development in the fields of pulp, paper, and packaging (such as corrugated fiberboard, flexible packaging, lamination, adhesives, coatings and extrusion). This organization, among other things, develops and provides industry standards and test methods. Guidance for identifying spots include assessment of visually-recognizable discoloration (according to TAPPI T-537 and TAPPI T-563, incorporated herein by reference and available at tappi.org/Publications-Standards/Standards-Methods/), and assessment of physical adhesion of a spot to pulp caused by melted plastic or "stickies" (according to TAPPI T-277, also incorporated herein by reference and available at tappi.org/Publications-Standards/Standards-Methods/).

[0020] For example, if a small amount of dirt or aluminum foil comes through the paper and makes its way into the pulp during the repulping phase, it could be made into paper, but could at the same time leave the paper with visual blemishes, and would be a cause for rejection of the final paper product. Alternatively, if a polymeric coating disposed over a paper layer is adhered to the pulp and makes it through the filter with the pulp during the repulping phase (in either a liquid form or in small enough pieces, for example), such piece of polymeric coating would be re-softened or re-melted in the paper-making process and could cause "sticky" areas or portions (referred to as "stickies"), in the newly-formed paper, that affect the physical properties of such paper. It is known in industry that for the newly-formed paper to be accepted and the final product to be considered recyclable according to this test, no more than 15 of either kind of spots can be present (when visually observed) in an area that is equal to or greater than 0.4 square

mm. An inert material that is both visually transparent (therefore resulting in no visually-recognized defects) and that does not adhere to paper material at 350 degrees F (thereby preventing the formation of sticky areas in the mater material) would not be a cause for rejection, according to such test.

[0021] Notably, practically all perishable or temperature sensitive goods shipped in small volumes are shipped with the use of corrugated cardboard boxes, which are easily and commonly recycled. According to the "Advancing Sustainable Materials Management: 2014 Fact Sheet", for example, published by the EPA (and available at epa.gov/facts-and-figures-about-materials-waste-and-recycling/advancing-sustainable-materials-management), cardboard boxes were recycled at a rate of 89.5%, whereas PET plastic bottles were recycled at a rate of 31.2%, and HDPE plastic bottles were recycled at a rate of 29.5%, with other plastic materials being recycled at lower rates. In practice, few insulating products are as easy to recycle as a corrugated cardboard box.

[0022] For the category of insulating products referred to as reflective insulation or radiant barrier, the thermal performance is highly dependent on the surface emissivity. Emissivity represents the ability for heat, provided by a given surface, to radiate from the surface into an adjacent air space. As used herein, the term emissivity (of the surface of a material) is generally referred to the effectiveness of such surface in emitting energy as thermal radiation, that is as the material's ability to emit energy as IR radiation (and not visible light), in the range between about 700 nm and about 1 micron wavelengths. Emissivity is commonly measured according to the test method discussed in ASTM C1371 (available at astm.org/Standards/C1371.htm and incorporated herein by reference), for example with the use of a tabletop portable emissometer. The value of emissivity is stated as a number between 0 and 1, where 0 represents the case of emission of no radiant heat and 1 represents the case of emission of all radiant heat from a given surface. The higher the emissivity value, the more heat is emitted; and the lower the emissivity, the less heat is emitted. For the purposes of the product comparison, the emissivity of typical brown paper used in corrugated cardboard boxes has a value between 0.80 and 0.90, aluminized paper has an emissivity value between 0.10 and 0.50, aluminum foil or aluminized film with a polymeric film applied to both sides of such film has emissivity between 0.20 and 0.70, and aluminized polymeric film without any protection over the aluminum has emissivity between

0.03 and 0.05. When insulating an object with a low emissivity surface facing the air space, the lower the emissivity of the surface, the better quality of the insulation. The ASTM C1313 (available at astm.org/Standards/C1313.htm and incorporated herein by reference) is the industry standard specification for a radiant barrier, and defines a radiant barrier as a material having an emissivity of 0.10 or less, used in the construction of an insulating system. (There currently appears to be no maximum value of emissivity for a material to be called a reflective insulation.)

[0023] The sizes of the air spaces, formed during the insulation of a given workpiece or good, also makes a difference for the quality of insulation of the workpiece of good. During the propagation of heat flow through a given air space, a certain percent of heat travels (is transferred) with moving air (or via convection), and a certain percent of heat propagates in the form of infrared radiation. When the heat is transferred downward, convection is minimized and the predominant means of heat transfer is radiation. In this case, the larger the air space between the packaging and the good, the better the quality of insulation. Circumstances change, however, when the flow of heat is directed upward or sideways, as convection in this case has a greater impact. In these cases, practical balance must be found in that a sufficiently large air space (between the container or wrapper and the workpiece or good, which this container / wrapper protects) should be identified the size of which is, nevertheless, is judiciously limited to not allow for easy air movement inside the air space. In Chapter 26, Table 3 of the Handbook of Fundamentals by America Society of Heating, Refrigerating, and Air0Conditioning Engineers, or ASHRAE (available at ashrae.org/technical-resources/ashrae-handbook/ashrae-handbook-online), which is incorporated herein by reference, insulation values are provided for differently sized air spaces (ranging from 1/2 inch to 3.5 inches) and at different temperature settings, with surfaces of varying emissivities (from 0.03 to 0.82). In Table 1 of that document, surfaces with emissivities of 0.05 and 0.20 are given as examples of "reflective" and 0.90 is called out as an example of "non-reflective" surfaces. According to ASHRAE, a 3/4 inch air space has a greater overall insulation value than a 1/2 inch air space for upward and sideways heat flow, but at 1 inch of space the insulation value diminishes. When it comes to insulated packaging and shipping, air spaces may conceivably be smaller than 1/2 inch, and multiple insulated liners could be used.

[0024] A person of skill in the art will readily recognize that a variety of different products may be used to reduce the emissivity of a given surface. The use of aluminum foil, for example, is a common approach, as aluminum foil is relatively inexpensive. Aluminum foil has very low mechanical strength, but is easy enough to handle when laminated to paper. In the lamination process, a foil with thickness of 6 to 18 microns is commonly preferred in industry (as at these thicknesses, the aluminum foil has some protection against oxidation and corrosion when exposed to high heat and moisture). Aluminum oxide develops on the outermost layer of the foil, but only in a "skin layer" of it - down to tens of nanometers at the thickest - and typically does not propagate deeper into the body of the foil. As a result, after the initial value of the foil's emissivity (of 0.03 to 0.05) increases to about 0.08 to 0.12, the value of emissivity of the oxidized surface of the aluminum foil remains relatively constant and stable.

Another industrial test, ASTM D3310 (the description of which is available at astm.org/Standards/D3310.htm and is incorporated herein by reference), is used to test resistance of a material to corrosion, and is specifically called out as the preferred test for a radiant barrier per ASTM C1313. (Emissivity testing after corrosion resistance testing is one method of testing, but the ASHRAE Handbook, Chapter 26, Table 2, specifically calls out a few specific surfaces and materials, including bright aluminum foil as having an emissivity of 0.05 and aluminum sheet as having an emissivity of 0.12.) A recognized disadvantage to using an aluminum foil in an insulating packaging container is that the aluminum foil is very difficult to remove from the paper if such a container is to be repulped or recycled. In particular, the aluminum foil is so soft that it can and often does break apart or crumble, and its crumbs or particles make their way into the paper pulp.

The use of aluminized paper is considered to be another approach. Here, using a vacuum deposition process, such as sputtering or electron beam evaporation, a low emissivity aluminum layer is applied to a paper. Since the amount of aluminum applied using this method is miniscule (200 nanometers or less in thickness), the weight of the aluminum layer is insignificant compared to the weight of the paper products. Therefore, it is generally assumed that when aluminized paper is submitted for repulping, it is easily able to meet the requirement that at least 85% is made into usable pulp, and that the exact weight of the aluminum is practically unmeasurable in the confines of the repulpability test. Since these papers may generally contain

clay coatings, lacquer coatings, printed inks, and other materials that could contribute to a failure from "spots" or "stickies" in the recyclability test, the ratio of non-paper to paper products is minimized, aluminum included. Since the paper generally does not have a smooth, planar surface, the emissivity of the paper surface does not reach as low a value as that of aluminum foil. Depending on the type of paper, the amount of moisture in the paper, roughness of the paper surface and some other factors, we measured the emissivity of aluminized paper samples to be between 0.50 and 0.10. In fact, ASHRAE lists "Aluminum coated paper, polished" as having an emissivity of 0.20. Understandably, lower values of emissivity are always preferred for reflective insulation, and a range in emissivity values that large, and with emissivity values still not qualifying it as a radiant barrier, aluminized paper leaves much to be desired. Combined with the fact that paper naturally contains a certain amount of moisture and that the aluminum may be uncoated or unprotected, the aluminized paper remains susceptible to corrosion in the presence of steam or condensation, which may occur in the normal use of packaging perishable goods. All in all, while aluminized paper may arguably present a better (from the point of view of repulpability and recycling) option than paper with aluminum foil laminated on it, the operational properties of the aluminized paper are substantially sacrificed to achieve such improved repulpability / recycling properties.

[0025] Yet another material that can be considered to achieve low emissivity is a metalized polymeric film. Notably, because such film is not paper itself, it simply cannot be repulped for paper recycling, and instead must be separated from the paper to which it is affixed, beforehand, to allow the remaining paper portion to be recycled. The aluminum or other metal can be applied to a film by vacuum deposition, like sputtering or electron beam evaporation (by analogy with the process of formation of the aluminized paper), but the higher figure of flatness of the surface of the film facilitates the achievement of lower emissivity value even at thicknesses of metallic material of 200 nanometers or less. For example, it was empirically shown in one of our studies that the aluminized polyethylene terephthalate film can achieve an emissivity value of 0.03, while the aluminized low density polyethylene film can achieve an emissivity value of 0.05. The advantage of using a polymeric film for intended purposes is that such film contains little to no moisture, can be coated onto the chosen surface prior to metallization to further smooth the surface, and the metallic material can even be further covered with a coating or film after

metallization to further protect it from corrosion. A light top coating, less than one micron, may increase the emissivity over the level of 0.03 but still keep it below 0.10, while a thick 6 micron to 24 micron polymer film laminated over the aluminum can increase the emissivity to 0.20 to 0.70 (depending on the film thicknesses and types of polymers). (As a comparison, plain brown kraft paper has an emissivity of 0.80, and regular glass has an emissivity of 0.84.) If a metalized film is going to be coated for corrosion protection though, the coating must be thin enough for it to not absorb significant radiant heat and significantly increase the emissivity.

[0026] There are a few metalized film products on the insulated packaging market. One such product is a low density polyethylene bubble packaging material with an aluminized polyethylene terephthalate film facer on one or both sides, making an insert, pouch, or envelope to contain perishable goods. One challenge with this product is that it is a mixed polymer. The Society of the Plastics Industry (SPI) Resin Identification Code and ASTM D7611 (available at astm.org/Standards/D7611.htm) put mixed polymers in the category of "other", numbered with a 7. Blue Apron explains says their bubble liner is "fully recyclable" but as a category 7, would be very difficult to recycle and would often be excluded from recycling streams altogether, ending up in the landfill. It can vary by the community to community whether or not it can be collected and how it can be handled. The State of California has a "CA Cash Refund" program in place to take such items, but other states do not.

[0027] An example of a product that advertises sustainability and uses a reflective insulation is a box liner called "northbox" made by Cascades Inc. Each wall of the liner includes two aluminized layers, each between two layers of polymeric films, with each of those polymeric film/aluminum/polymeric film layer structure separated by a honeycomb paper structure, and the entire assembly is inserted into the shipper box. The Cascades Inc. describes the reason for applying a polymeric film to both sides of the aluminum as "eliminating the risk of crumbling in the pulp during the recycling process", similar to the problems incurred with aluminum foil/paper laminates described above. As was already alluded to above, however, thin aluminum is especially vulnerable when exposed to water and humidity and corrodes easily if not adequately protected. The polymeric film on both sides of the aluminum serves dual purposes of both preventing the aluminum from crumbling off and getting into the pulp in the recycling process, and preventing corrosion that might occur with an unprotected aluminized film in use

during the life of the packaging product. A benefit to the "northbox" product is that it is described as being "pulper-safe" and is illustrated in the Cascade's literature as the film/aluminum/film assembly being fully removed in the pulping process without the aluminum ever making its way into the pulp. There are two problematic issues with a Cascade's product and similar products, however. First, the polymeric films used to protect the aluminum dramatically increase the emissivity, resulting in a product that - while being reflective to visual light - is not nearly as heat-reflective as bare aluminum, and simply does not qualify as a radiant barrier. Second, the films add additional plastic weight, which when processed at the paper recycling mill, is additional waste destined for the landfill instead of being repulped. The ratio of weight of paper to weight of non-paper in a product is one factor in determining if a product can be called repulpable or recyclable as paper.

[0028] When a radiant barrier / reflective insulation is to be repulped and recycled as paper, the preferred / ideal product or material from which such radiant barrier / reflective insulation is made would be one in which:

- The emissivity of at least one surface is 0.10 or less for optimum performance;
- The aluminum present in the preferred material is prevented or protected from corrosion or otherwise unlikely to corrode in normal use, where the normal use is defined as the conditions that the product could reasonably be expected to be subjected to during shipping. For example, if the material is on the inside of a cardboard box and the goods being insulated are within that box, the normal use would be having that box ship across the country. Whereas, if the material is not on the inside surface of the box, but instead located as an insert within the box, then the outside box may provide additional protection from the elements, from temperature variations, from humidity, etc. If the material is instead configured as a mailer or envelope, then it may not be protected as well as if it were in a box.
- The process of protecting the aluminum in the material or product does not result in excess ratio of the weight of the protective layer to paper, so as to more easily meet the 85% / 15% ratio of repulped material to rejected material when tested according to the "The Voluntary Standard For Repulping and Recycling Corrugated Fiberboard Treated to Improve Its Performance in the Presence of Water and Water Vapor" repulpability test.

Additionally, the protective layer should be sufficiently thin to maintain the desired emissivity of the aluminum surface of the material, and be sufficiently thick to prevent oxidation of the aluminum surface during normal use of the packaging, but does not impede oxidization of the aluminum surface as a result of the treatment. The amount of protection the protective layer or coating needs to provide will depend on the products normal and expected use. Overall, the protective coating needs to ensure that the outer surface of the material used for packaging maintains the required emissivity;

- Any material that does make it through the repulping process is able to be made into paper without excess "spots" or "stickies" per "The Voluntary Standard for Repulping and Recycling Corrugated Fiberboard Treated to Improve Its Performance in the Presence of Water and Water Vapor" recyclability test.

[0029] While flakes, specs or spots of reflective material would certainly contribute to a product's disqualification in the recyclability portion of the test, we discovered surprisingly that the use of a very thin coating over the aluminum as protection against corrosion (as opposed to the use of an aluminum foil or a aluminized layer encapsulated within polymeric film) allows to maintain the low level of emissivity while offering the protection against corrosion and, at the same time, minimizing the weight of a portion of the material that is unable to be made into usable pulp. Because the thickness of the aluminum used in an embodiment of the invention is so thin, any aluminum that does make it into (is processed into) the accepts portion produced by the repulping process ends up being fully oxidized and corroded in the heat and humidity levels used in the process. Aluminum oxide is visually transparent, when observed with the human eye (that is, substantially not visible or not visually-perceivable), and thus, for the purposes of this disclosure and the claims, the aluminum is considered fully oxidized when the aluminum is substantially transparent instead of silver-colored, for example. Using an optical densitometer, the optical density of the aluminum can be measured. Optical density is a measurement of transparency/opacity of the material, and is often defined as the logarithmic ratio of the radiation incident on the material to the radiation transmitted by the medium (at a given wavelength). Since aluminum oxide is transparent and un-oxidized aluminum has varying opacity depending on its thickness, the aluminum is considered to be transparent, for the purposes of this disclosure, when the optical density (OD) is less than 0.09. This threshold value was determined based on

the following observations. Bright white paper or pulp, which would result in aluminum sticking out the most, had a maximum of 253 lumens, a minimum of 219 lumens, and a mode of 248 lumens. According to TAPPI T-563, the software will count as a spot anything darker (lower) than 30 lumens below the chosen mode. This means that while darker areas may be detected, they are not counted if they are close enough in optical properties to the background. In this case, 30 below the mode would be 218 lumens.

[0030] In one case, a sample of bright white paper with a gradient of aluminum (analyzed according to TAPPI T 563) had a brightness of a maximum of 251 lumens, a minimum of 168 lumens, and a mode of 247 lumens. This sample allowed the software to plot a curve of the areas 30 below the mode. By looking at the curve on the identical film sample, we could determine that the average optical density across the curve was 0.092. Since the accuracy of the a typical optical densitometer is limited at about .001, the performed measurements allowed us to conclude with confidence that the optical density of aluminum required to pass the TAPPI T 563 test should be less than OD 0.09.

[0031] Contrary to the prevailing, in related industry, opinion that an aluminum component of the radiant barrier or reflective insulation (as well as other non-paper products) must be prevented from being collected in the pulp for fear of contamination of the paper in the paper repulping and recycling processes, small amounts of aluminum are both undetectable and harmless to the paper being made. We have empirically found that actually allowing and not actively preventing small amounts of aluminum to enter the pulp is not detrimental to the process, and is a way of allowing a paper-containing radiant barrier material to be recyclable as paper. This result is achieved, according to an implementation of the idea of the invention, because the present aluminum is allowed to fully oxidize at the temperatures and humidity levels used in the test. The resulting aluminum oxide is transparent in visual "spot" testing and does not adhere to pulp in the mechanical "stickies" testing. To this end, Fig. 1 illustrates the optical density of Aluminum Polyester during simulated repulpability test conditions. Here, the reference numeral 101 indicates the graphical line for aluminum polyester with an initial optical density of 1.00 and reference numeral 102 indicates the graphical line for aluminum polyester with an initial optical density of 2.00. As the aluminum material corrodes, the optical density falls. Fig. 2 shows a graphical and tabular representation of the emissivity levels of Aluminum

Polyester (PET) film as a function of the initial optical density of the film. As aluminum material corrodes, and the optical density falls, a new (current) value of emissivity can be assessed based on the new (current) value of the optical density. The linear fit allows for extrapolation of an optical density value for a target emissivity value along the fit line.

[0032] Appendix B of the "Voluntary Standard for Repulping and Recycling Corrugated Fiberboard Treated to Improve Its Performance in the Presence of Water and Water Vapor" (available at corrugated.org/wp-content/uploads/PDFs/Recycling/ and incorporated herein by reference) discusses causes for rejection of the pulp. Once the pulp is produced, "spots" are evaluated. There are three methods it specifically calls out to identify "spots": TAPPI T 537 is a dirt count estimator, TAPPI T 277 is a method of identifying a sticky substance that adheres to the pulp, and TAPPI T 563 uses image analysis to measures visual discoloration over an area. (The description of each of these methodologies is available, for example, at standards.globalspec.com/std/1359444/tappi-t-537, standards.globalspec.com/std/1682094/tappi-t-277, and standards.globalspec.com/std/9918295/tappi-t-563, respectively, and is incorporated by reference herein.)

[0033] Specifically, according to the TAPPI T 563 method, a scanner is used to analyze the EBA (equivalent black area) or a dark-colored area on a background of white paper or pulp. Since un-oxidized aluminum is silver-ish or grey-ish in color, and oxidized aluminum is substantially colorless and transparent, the aluminum content of the embodiment of the invention is judiciously chosen such as to be fully oxidized (~ oxidized to the extent beyond the limits of the registration / detection capability of the used scanner to recognize such aluminum content as "spot(s)". To this end, Fig. 3 demonstrate a graphical representation of the empirically-determined detectable lower limit of optical density of aluminum in an EBA test.

[0034] Aluminum is likely not the only material that would provide a low level of emissivity in use while remaining visually transparent and not pulp-adhering after repulpability and recyclability testing, but aluminum would likely be the most practical in use. For example, silver or indium tin oxide could also satisfy the requirements of the present embodiment, but would likely be prohibitively expensive as compared to aluminum.

[0035] Implementation of the present idea includes the use of an aluminized polymeric film - either with a coating less than about one micron in thickness to protect the aluminum from

corrosion in use and not raise the emissivity of the aluminized surface greater than 0.10, or with no coating at all if it is not required for normal operation of a packaging article - to keep the emissivity as low as possible. The various layers and combination of layers are shown in Figs. 4, 5, and 6.

[0036] The embodiment 400 of Fig. 4 contains a paper layer 410 with a first surface 411 and a second surface 412; a polymer layer 420 with a third surface 423 and a fourth surface 424, where the third surface 4233 is affixed to the second surface 412; and an aluminum layer 430 is deposited on the fourth surface 424. The corrugation sub-layer of the paper layer indicated between the surfaces 411, 412 with the line 413, is generally optional.

[0037] Fig. 5 shows a related structure 500, which, in comparison with the structure 400, additionally contains a protective coating 5 over the aluminum layer 430, where the coating layer 510 is generally less than one micron in thickness.

[0038] Similarly, Fig. 6 shows a structure 600 that additionally includes a second coating layer 610 disposed between the polymer layer 420 and the aluminum layer 430.

[0039] Each of these various layered structures 400, 500, and 600 is configured to ensure that the aluminum-containing portion of the structure is removable during the repulping and recycling process, while the aluminum material on the aluminized film is actually allowed to "crumble" into the pulp as the blender and disintegrator scratches, scrapes and otherwise removes and separates the paper products from the non-paper products, thereby facilitating the propagation of the aluminum material towards and into the accepts area for the pulp – against the conventional wisdom of keeping non-paper components and/or materials out of the pulp. Overall, the result will be a material product configured such that achieves a degree of insulation comparable or better than that of a reflective insulation and that does, when applied to a paper product or component, increase the probability of the final, multilayer product being repulpable and recyclable as regular paper.

[0040] It was empirically found that there are two requirements that any coating covering the aluminum material of an embodiment of the invention would need to meet. First, such coating has to be such that the coated aluminum material meets the appropriate emissivity requirement to be considered a radiant barrier, (in other words, to demonstrate emissivity of less than or equal to 0.10 when tested to ASTM C1371). Fig. 7 shows how the emissivity of different types of

coatings change in relation to the thicknesses of the coatings, where the polymer graph line is indicated with reference numeral 701, and the wax graph line is indicated by reference numeral 702.

[0041] Second, the coating must pass the TAPPI T 277 test method, as called out in the "Voluntary Standard For Repulping and Recycling Corrugated Fiberboard Treated to Improve Its Performance in the Presence of Water and Water Vapor" to detect sticky "spots" which would be cause for failure of the standard. For example, during the deposition of fischer tropsch wax (with a 221 F melting point) onto an aluminized film with an initial emissivity of 0.03 (empirically obtained as a result of testing according to the requirements of ASTM C1371), as the thickness of the wax increases from 0.14 microns to 1.05 microns, the emissivity does not increase or otherwise change abruptly, only reaching the value of 0.06 when the wax-coating thickness reaches 1.05 microns. However, the 1.05 micron thick wax is believed to be too thick a layer to pass the "Voluntary Standard for Repulping and Recycling Corrugated Fiberboard Treated to Improve Its Performance in the Presence of Water and Water Vapor", because the presence of the wax material resulted in "stickies" when tested according to TAPPI T 277.

[0042] It was discovered that, in order to comply with the "Voluntary Standard for Repulping and Recycling…", the layer of wax should be less than 0.70 microns thick. A sample with a 0.7 micron thick layer of deposited wax was subjected to testing according to the TAPPI T 277 test method. It will be appreciated that a given product can fail the TAPPI T 227 (the "stickies" test) in one of two ways: if a stickie spot count is greater than 15, and if the spot counts are greater than 30% of the control group. Since the results of the conducted test demonstrated on an average just one spot per sheet, it was concluded that, when the thickness of this type of coating is chosen to be less than 0.7 microns, this coating does not contribute to generation of the defects resulting in rejection of the material from the repulpability / recyclability point of view. If a control figure of merit is set at zero spots per sheet, even one per sheet would result in failing the test, so keeping the thickness of the wax coating under 0.7 micron would result in satisfying (meeting) the "Voluntary Standard for Repulping and Recycling…". To this end, Fig. 8 contains a table illustrating the number of "stickies" defects empirically determined when various embodiments of the invention containing coatings made of materials listed in this table were tested according to TAPPI T 277.

[0043] Another example of a protective coating would be a radiation-cured acidic acrylic copolymer. This copolymer, when deposited onto an aluminized film with an initial emissivity of 0.03, behaves very different from the wax. As the thickness of the copolymer is increased from 0.20 microns to 1.55 microns (see curve 701 of Fig. 7), the emissivity of the so-coated aluminized film rises at a significantly greater rate than in the case of the wax-coated aluminized film (compare with the curve 702). At a polymer thickness of 0.98 microns, the coated surface has emissivity of 0.12 and, therefore, no longer meets the emissivity requirement that must be met by a radiant barrier. Because the copolymer is a thermoset and not a thermoplastic, it does not soften, melt, or contribute to "stickies" when subjected to testing at 221 F at 100% RH for 4 hours, per the "Voluntary Standard For Repulping and Recycling …" and, therefore, passes the required test.

[0044] Examples of a reflective insulation packaging product comprising an embodiment of the present invention are various and diverse, and some of such examples are listed below:

- A box liner with the thin coated aluminized film facing outward, designed in such a way that when fold and closed has tabs or flanges between 1/2 and 3/4 inches, protruding out from all six sides so that when inserted into a corrugated shipper box, the coated and protected metalized film is facing into air spaces between 1/2 and 3/4 inches;
- A standard box with thin coated aluminized film on the outside of the entire box, designed to fit inside a slightly larger box with separate spacers between the inner and outer box;
- A single panel of corrugated paper or cardboard with thin coated aluminized film on one side, designed to fit snugly inside a box containing goods where the height of the goods does not reach all the way to the top of the box, and the panel can be inserted with the coated metalized film facing into the above air space;
- A standard box where the inside of the box is lined with a thin coated aluminized film, where the goods do not completely fill the box and an air space is created by the size and shape of the goods themselves in relation to the walls of the box.

[0045] Examples of normal use of the embodiments of the packaging product of the present invention are substantially dependent on the type of good that is shipped in such packaging product. In one example, if the good is perishable food that needs to remain fresh, the good may

require to be at 40 degrees F on the interior of the packaging while the exterior may be at the ambient in the summer, and while the good would need to maintain its temperature anywhere from 24 to 72 hours (depending on the mode of shipping). On the other hand, if the good is a frozen perishable good, then the internal temperature (in the container or packaging) could be required to be anywhere from 0° to 32° F. If the good is candy or chocolate, then the temperature inside the packaging would be above 32° F but below 65° F. If the good is a pharmaceutical, then it may be subject to its own unique temperature requirements.

[0046] Specific examples of normal use include, but are not limited to, the following examples:

[0047] (1) A recyclable cardboard radiant barrier box liner is made with the aluminum surface facing into an airspace between the cardboard liner and the cardboard box. The liner is packaged with 12 lbs. of dry ice and 10 lbs. of frozen beef. The frozen beef starts off at -5° F and the dry ice at -109° F. The box is shipped through a standard ground service from Los Angeles to Phoenix (48 hours), in the middle of July, when the outside temperature is approximately 75° F in Los Angeles and 110° F in Phoenix. The added condensation created by the dry ice may cause an aluminum portion of the packaging to corrode if not coated, so a protective polymer or wax coating may be necessary. Either the recyclable liner itself must be able to insulate against the temperature difference between the goods and the outside air, or else additional insulation would preferably be used (such as foam, cellulose insulation, or perhaps a second recyclable radiant barrier box liner).

[0048] (2) A recyclable radiant barrier box is made with the aluminum surface facing inward, toward the goods. The box contains 9 lbs. of chocolate and 5 lbs. of frozen gel packs. The chocolate starting off at 65° F and the frozen gel packs at 5° F. The box of chocolate is shipped via overnight air transport (24 hours) from Los Angeles to New York, in December. The temperature of outside air starts off at 55° F in Los Angeles, decreases to about 45° F in the cargo area of the plane, and is at 35° F when the shipment arrives in New York. The temperature differences being smaller than in the previous example, and the aluminum facing the inside instead of the outside, means that vapor condensation on the aluminum surface would be unlikely, and a protective coating over the aluminum material in the embodiment of this packaging may not be necessary. The goods, only needing to arrive at or below 65° F, and the

external air temperature not being as extreme, means that the insulation required to maintain the required temperature of the goods may be achieved with the recyclable radiant barrier box alone.

[0049] (3) A recyclable cardboard radiant barrier insert component is placed at the bottom of a box, which is otherwise insulated with a cotton insulation on the walls and under the lid which would compress under the weight if it was on the bottom. The cardboard radiant barrier insert component is folded or constructed in such a way as to both hold the weight of the payload without compressing and maintain an airspace facing the radiant barrier surface. This insulated box is packed with 8 bottles of juice at 12 oz. each against the insulation on the walls and a 24 oz. frozen gel pack in the center. The juice starts off at 40° F with the frozen gel pack at 10° F. The insulated box is shipped from San Diego, CA to San Francisco, CA in early January. The radiant barrier cardboard insert component holds up the weight of the juice, preventing crushing or collapsing of insulation, while at the same time providing reflective insulation to prevent heat gain from the bottom of the box. The air temperature that day in San Diego is 80° F, the overnight the temperature drops to 60° F, and the packaged good arrives in San Francisco where the temperature is 60° F. The juice arrives safely at its destination at a refrigerated temperature of less than 40° F.

[0050] (4) A recyclable radiant barrier heavy paper bag, with a radiant barrier facing toward the inside, is enclosed around 9 lbs. of food and 6 lbs. of frozen gel packs, and inserted into a large box as a meal delivery kit. Of the 9 lbs. of food, 3 lbs. are frozen meats that start off at 20° F, and 6 lbs. are fresh fruits and vegetables that start off at 35° F, with 6 lbs. of frozen gel packs placed surrounding the meats. This meal kit ships in the winter from Dallas, TX where the temperature is 60° F and travels by ground to Tulsa, OK where the temperature drops down to 40° F at night and is back up to 60° during the day. The meats arrive at a refrigerated temperate of under 40° F, and the fresh fruits and vegetables are still cool to the touch.

[0051] (5) A recyclable radiant barrier box is constructed with outward facing tabs to create air space between it and a larger shipper box, with one radiant barrier surface facing into that air space. The radiant barrier box is filled with 8 frozen tamales at 25° F. No other refrigerant is added. The box ships from Tucson, AZ in early February to New York, NY via two day air transportation. The temperature in Tucson is 70° F the afternoon the package leaves for the

terminal and 70° F the next day before boarding the plane. The temperature decreases to 45° F in the cargo area of the plane, and the package arrives in New York where the temperature is 40° F. The tamales arrive at a temperature under 40° F.

[0052] (6) A recyclable radiant barrier cardboard insert comprises a radiant barrier surface on both sides. The box is constructed with tabs to separate it from an exterior shipping box so that the outward radiant barrier is facing into the air space between it and the shipper box, and the inward radiant barrier is facing into the air space of the interior of the box and any intermittent air spaces created by the positioning of the goods. The good in this case are 32 oz. of refrigerated yogurt and 3 lbs. of frozen gel packs. The frozen gel packs start off at 25° F and the yogurt starts off at 35° F. The package is shipped from Los Angeles, CA to Sacramento, CA in the summer via one-day ground shipment. The outside air temperature across the trip is at about 80° F with little variation. The yogurt is partially frozen for the first 12 hours, but thaws and arrives in Sacramento under 40° F.

[0053] In stark contradistinction with technologies of related art, an embodiment of the present invention complies with the repulpability requirement, yet still provides insulation with very low emissivity figure(s). An embodiment may have a metalized film on one side and paper on the other, with the metal facing outwardly. Optionally, a protective top coating can be added, if required. Thus, an embodiment of the invention includes a paper layer with first and second surfaces; a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface and an aluminum layer is deposited on the fourth surface. Optionally, an embodiment of the invention may include an intermediate layer, where the purpose of the intermediate layer may be to smooth the fourth surface prior to applying the aluminum in order to achieve better emissivity, or it may serve the purpose of being easily removable in order to separate the aluminum from the fourth surface after use. The intermediate layer may, for example, be a polymer or an oligomer.

- The packaging product would possess the emissivity of well under 0.10, and typically closer to 0.05. This would give it superior insulating performance.
- The packaging product would pass the "Voluntary Standard …", as empirical discovery of how vacuum deposited aluminum behaves during the "Voluntary Standard…" test. If

the aluminum is allowed to oxidize under the conditions of the test, then the transparent aluminum oxide can be mixed in the pulp and not be cause for failure.

- As is well known in related art, the industry has been so concerned with aluminum showing up in the pulp (which does happen in the case of the use of aluminum foil) that either the aluminized plastic is not used at all, or else the aluminum portion is fully encapsulated, which solution both adds weight (which could still cause a failure of the Voluntary Standard) and increases emissivity (which significantly diminishes the insulation performance).

  However, in contradistinction with the products of related art, when applied to 60 lb. kraft paper, as might be configured to make an insulated pouch for example, the single layer of 48 gauge PET complemented with the aluminum and top coating layers as proposed in this disclosure results in meeting the 85% / 15% weight criteria for the repulpability test according to the Voluntary Standard.

[0054] A summary of the comparison between the existing technologies and an embodiment of the present invention is shown with reference to two possible products:

[0055] *Product 1*: An insulating pouch using a strong and heavy paper, with a reflective surface on one side, where the reflective surface is:

- The film/aluminum/film product - neither low emissivity nor recyclable;
- Aluminum foil - very low emissivity but is not recyclable;
- Metalized paper - recyclable and somewhat low emissivity;
- An embodiment of the present invention - both recyclable and very low emissivity.

[0056] *Product 2*: An insulating box or insert for a box, using cardboard, with a reflective surface on one side where the reflective surface is:

- The film/aluminum/film product - not low emissivity, but may be recyclable depending on the weight and type of cardboard used;
- Aluminum foil - very low emissivity but is not recyclable;
- Metalized paper - recyclable and somewhat low emissivity;
- An embodiment of the present invention - both recyclable and very low emissivity.

[0057] Thus, as illustrated in the above examples, an embodiment of the present invention may be successfully used to effectively insulate an object during shipment, mail delivery, etc. with the

added benefit that the packaging may then be recycled once it has served its purpose. The method of packaging an object that is perishable, or may otherwise be temperature sensitive, comprises placing the object in suitable proximity to an embodiment of the invention such that adequate thermal insulation is provided. Adequate thermal insulation (of an object or good) is defined as protection (of such good) from heat, cold, or changes between heat and cold, such that the desired temperature range of such object is maintained during and throughout the shipment, mail delivery, etc. time frame.

[0058] As broadly used and described herein, the reference to a material layer being "carried" on a surface of a chosen element refers to a material layer that is disposed directly on the surface of such chosen element or disposed on another coating, layer or layers that are disposed directly on the surface of the chosen element. For the purposes of this disclosure and the appended claims, the use of the terms "substantially", "approximately", "about" and similar terms in reference to a descriptor of a value, element, property or characteristic at hand is intended to emphasize that the value, element, property, or characteristic referred to, while not necessarily being exactly as stated, would nevertheless be considered, for practical purposes, as stated by a person of skill in the art. These terms, as applied to a specified characteristic or quality descriptor means "mostly", "mainly", "considerably", "by and large", "essentially", "to great or significant extent", "largely but not necessarily wholly the same" such as to reasonably denote language of approximation and describe the specified characteristic or descriptor so that its scope would be understood by a person of ordinary skill in the art. In one specific case, the terms "approximately", "substantially", and "about", when used in reference to a numerical value, represent a range of plus or minus 20% with respect to the specified value, more preferably plus or minus 10%, even more preferably plus or minus 5%, most preferably plus or minus 2% with respect to the specified value. As a non-limiting example, two values being "substantially equal" to one another implies that the difference between the two values may be within the range of +/- 20% of the value itself, preferably within the +/- 10% range of the value itself, more preferably within the range of +/- 5% of the value itself, and even more preferably within the range of +/- 2% or less of the value itself. The use of these term in describing a chosen characteristic or concept neither implies nor provides any basis for indefiniteness and for adding a numerical limitation to the specified characteristic or descriptor. As understood by a skilled artisan, the practical deviation of the exact value or characteristic of such

value, element, or property from that stated falls and may vary within a numerical range defined by an experimental measurement error that is typical when using a measurement method accepted in the art for such purposes.

[0059] While the invention is described through the above-described exemplary embodiments, it will be understood by those of ordinary skill in the art that modifications to, and variations of, the illustrated embodiments may be made without departing from the inventive concepts disclosed herein.

[0060] For example, related embodiments provide a receptacle (that is, a container or device configured to receive and hold contents in a cavity defined by the walls of the container) that includes (i) a first shell made from a first material and defining a first cavity therein, the cavity having a first volume, the shell having a first surface facing outwardly and a second surface facing inwardly towards the cavity, said first and second surfaces being separated by a thickness of the shell, and (ii) at least one piece of second material having a third surface and disposed inside the first volume with the third surface facing the second surface and separated from the second surface by a target separation distance. Here, the target separation distance is greater than 3 millimeters; any of the second and third surfaces is metallized. A metallized surface of the receptacle is characterized by an energy-radiating parameter of no greater than 0.1, while an energy-radiating parameter of the first surface is no less than 0.50. The receptacle is recyclable. In one implementation, the at least one piece of the second material is configured as a second shell defining a second cavity therein, the second cavity having a second volume, the second shell having the third surface facing outwardly towards the second surface and a fourth surface facing inwardly towards the second cavity. In a specific case of such implementation, any of the third and fourth surfaces is metallized.

[0061] Embodiments also provide a receptacle that includes (i) a first shell made from a first material and defining a first cavity therein, the cavity having a first volume, the shell having a first surface facing outwardly and a second surface facing inwardly towards the cavity, the first and second surfaces being separated by a thickness of the shell, and(ii) at least one piece of second material having a third surface and disposed inside the first volume with the third surface facing the second surface and separated from the second surface by a target separation distance of greater than 3 millimeters. Here, any of the second and third surfaces is metallized, and an

emissivity of a metallized surface of the receptacle is no greater than 0.1 while an emissivity of the first surface is no less than 0.50. The receptacle is recyclable. In one implementation, any of the second and third surfaces is metallized while the first surface is not metallized. Alternatively or in addition, at least one piece of the second material is configured as a second shell defining a second cavity therein, the second cavity having a second volume, the second shell having the third surface facing outwardly towards the second surface and a fourth surface facing inwardly towards the second cavity.

[0062] Accordingly, the invention should not be viewed as being limited to the disclosed embodiment(s).

CLAIMS

What is claimed is:

1. **A recyclable packaging** comprising:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an intermediate coating applied to the fourth surface;

an aluminum layer carried by the intermediate coating, wherein the aluminum layer has a first thickness of 200 nanometers or less and wherein the aluminum layer causes an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10; and

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material resulting from the packaging being subjected to a treatment that includes

a) blending in a Waring Blender;

b) disintegrating into water with a British Disintegrator at about 125 (± 10) degrees F at 3000 rpm;

c) separating in a 0.01 inch screen with a 1 inch water head for 20 minutes; and

d) drying in an oven for 4 hours at 221 degrees F.

2. The recyclable packaging of claim 1, wherein the aluminum layer is disposed directly on the intermediate coating.

3. The recyclable packaging of claim 1, wherein the intermediate coating has a thickness between 10 nm and 2000 nm and includes a material selected from polymer and oligomer.

4. The recyclable packaging of claim 1, further comprising:

a protective coating over the aluminum layer, wherein the protective coating has a second thickness of 1 micron or less, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value after the aluminum layer has been coated with the protective coating and ii) to prevent oxidation of the aluminum layer during

normal use of the packaging, while the protective coating does not impede oxidization of the aluminum layer as a result of the treatment.

5. The recyclable packaging of claim 4, wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

6. The recyclable packaging of claim 1, wherein the polymer layer includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene.

7. The recyclable packaging of claim 1, wherein the polymer layer is a material selected from: film and fabric.

8. **A method for manufacturing a recyclable packaging**, the method comprising:

attaching a polymer layer to a paper layer, wherein an inner surface of the polymer layer is affixed to a first surface of the paper layer;

depositing an aluminum layer on the polymer layer, wherein the aluminum layer has a first thickness of 200 nanometers or less, and wherein the aluminum layer causes an outer surface of the polymer layer to have emissivity that is equal to or smaller than a first value of 0.10; and

wherein said aluminum layer becomes fully oxidized with no visible aluminum when the packaging is exposed to a treatment that includes:

a) blending in a Waring Blender;

b) disintegrating into water with a British Disintegrator at 125 (± 10) degrees F at 3000 rpm,

c) separating in a 0.01 inch screen with a 1 inch water head for 20 minutes, and

d) drying in an oven for 4 hours at 221 degrees F.

9. The method of manufacturing a recyclable packaging of claim 8, further comprising:

applying a protective coating over the aluminum layer, wherein the protective coating has a second thickness of 1 micron or less, and wherein the second thickness is defined

a) to maintain the emissivity of the outer surface at the first value after the aluminum layer has been coated with the protective coating and

b) to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating

does not impede oxidization of the aluminum layer as a result of the treatment.

10. **A recyclable packaging** comprising:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an aluminum layer deposited on the fourth surface, wherein the aluminum layer has a first thickness of 200 nanometers or less and wherein the aluminum layer causes an emissivity of an outer surface of the packaging to be equal to or smaller than a first value of 0.10; and

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material that results from the packaging being subjected to a treatment that includes

a) blending the packaging in a Waring Blender to form a first material;

b) disintegrating the first material into water with a British Disintegrator at 125 (± 10) degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

11. The recyclable packaging of claim 10, further comprising:

a protective coating, over the aluminum layer,

wherein the protective coating has a second thickness of 1 micron or less,

wherein the second thickness is defined to maintain the first value of the emissivity of the outer surface after the aluminum layer has been coated with the protective coating and to prevent oxidation of the aluminum layer during normal use of the packaging,

while the protective coating does not impede oxidization of the aluminum layer caused by the treatment.

12. The recyclable packaging of claim 11, wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

13. The recyclable packaging of claim 10, wherein the polymer layer includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene.

14. The recyclable packaging of claim 10, wherein the polymer layer includes a material selected from: film and fabric.

15. **A method for thermally insulating a good within a recyclable packaging**, the method comprising:

placing a reflective insulation material in a pre-defined proximity with a good, the pre-defined proximity being suitably chosen to provide adequate thermal insulation to the good, wherein said reflective insulation material comprises the recyclable packaging that includes:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an aluminum layer deposited on the fourth surface, wherein the aluminum layer has a first thickness of 200 nanometers or less and wherein the aluminum layer causes an emissivity of an outer surface of the packaging to be equal to or smaller than a first value of 0.10; and

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material that results from the packaging being subjected to a treatment that includes

a) blending the packaging in a Waring Blender to form a first material;

b) disintegrating the first material into water with a British Disintegrator at 125 (± 10) degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

16. **A method for thermally insulating a good within a recyclable packaging**, the method comprising:

placing a reflective insulation material at a pre-defined proximity distance from the good, said pre-defined proximity distance chosen to provide adequate thermal insulation to the good, wherein said reflective insulation material comprises the recyclable packaging that includes:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an intermediate coating applied to the fourth surface;

an aluminum layer carried by the intermediate coating, wherein the aluminum layer has a first thickness of no more than 200 nanometers to cause an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10; and

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material as a result of subjecting the recyclable packaging to a treatment that includes

a) blending the packaging in a Waring Blender to form a first material;

b) disintegrating the first material into water with a British Disintegrator at 125 (± 10) degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

ABSTRACT

Material for packaging - and package or receptacle made of such material - that contains a particular aluminized polymeric film with emissivity of equal to, or less than 0.10 and yet sufficiently thin to withstand and satisfy industrial requirements of the recycling process due to substantially complete oxidization of aluminum during the recycling. An optional protective coating (less than one micron in thickness) may be added to protect aluminum in the film from corrosion during the normal use of the packaging. Protective coating is configured to not raise emissivity of the aluminized surface above the 0.10 value and, at the same time, to still allow for the aluminum material it covers to be removed due to becoming fully oxidized and corroded in the heat and at humidity levels used in the recycling/repulping process. Proposed configuration permits the aluminum of the packaging material to be included in the recycled portion of the packaging material.

Optical Density of Aluminum Polyester During Simulated Repulpability Test Conditions

Initial OD	After 20 min in Warm Water	After Drying 8 hours	After Drying 12 hours	After Drying 16 hours
1.00	0.93	0.39	0.03	0.03
2.00	1.90	0.33	0.03	0.03

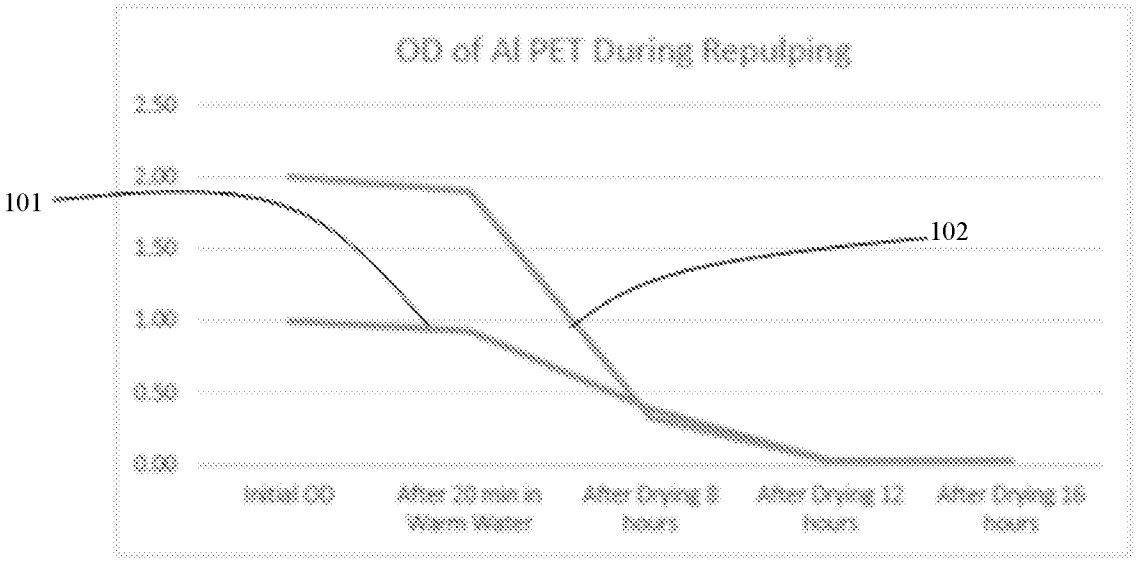

Fig. 1

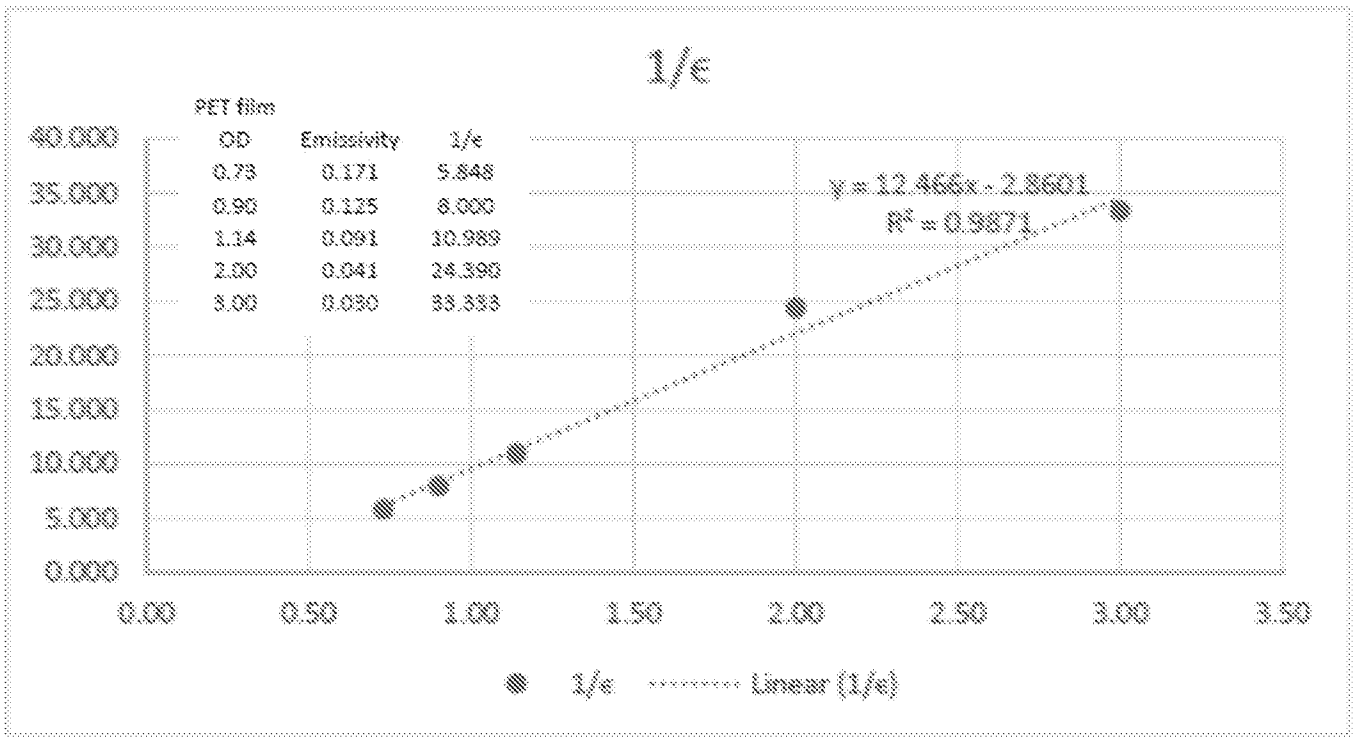

Fig. 2

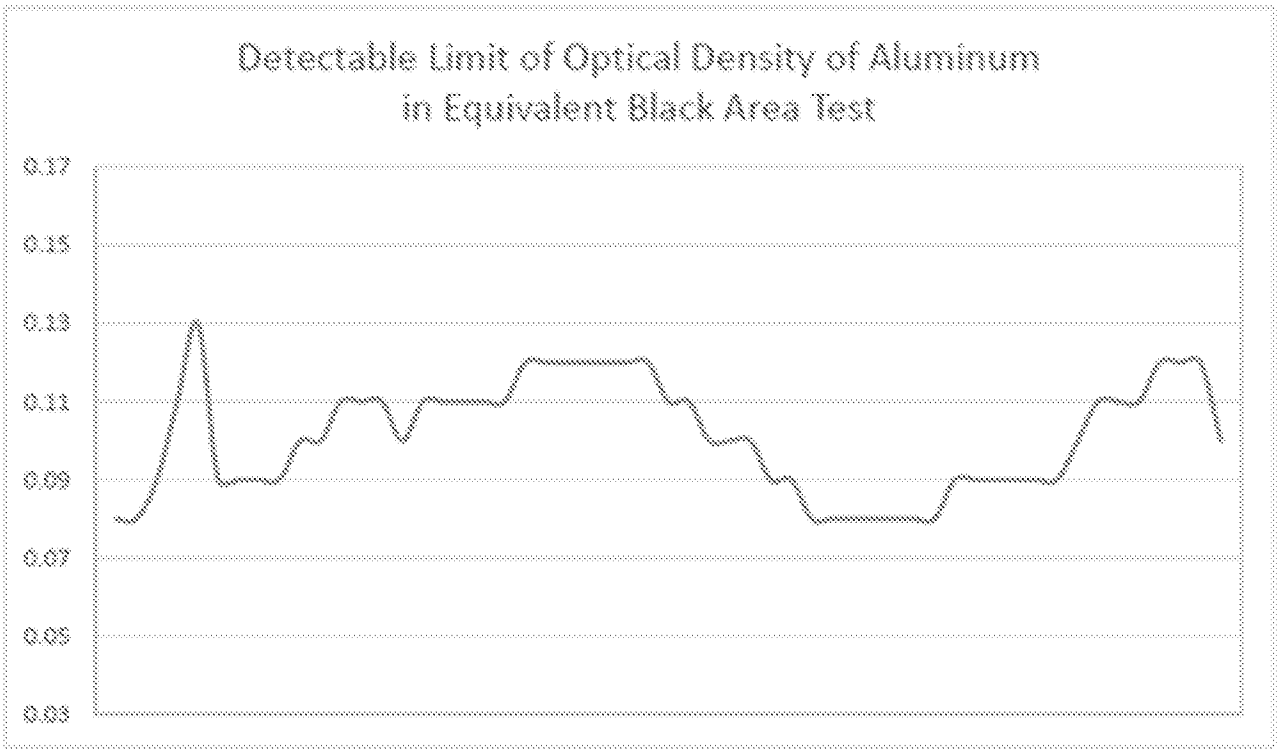
Detectable Limit of Optical Density of Aluminum
in Equivalent Black Area Test
0.17
0.15
0.13
0.11
0.09
0.07
0.05
0.03
High: 0.13
Low: 0.08
Avg: 0.10

Fig. 3

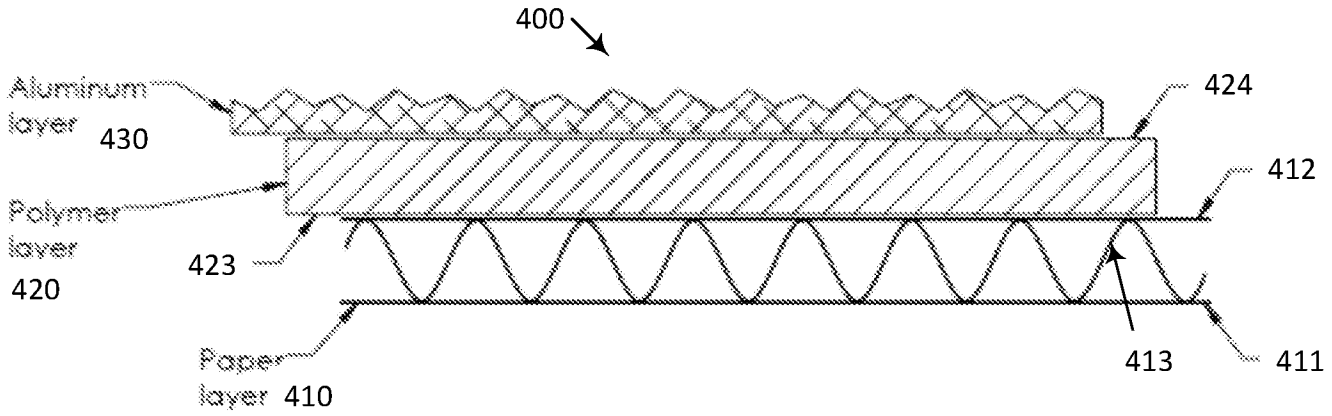

Fig. 4

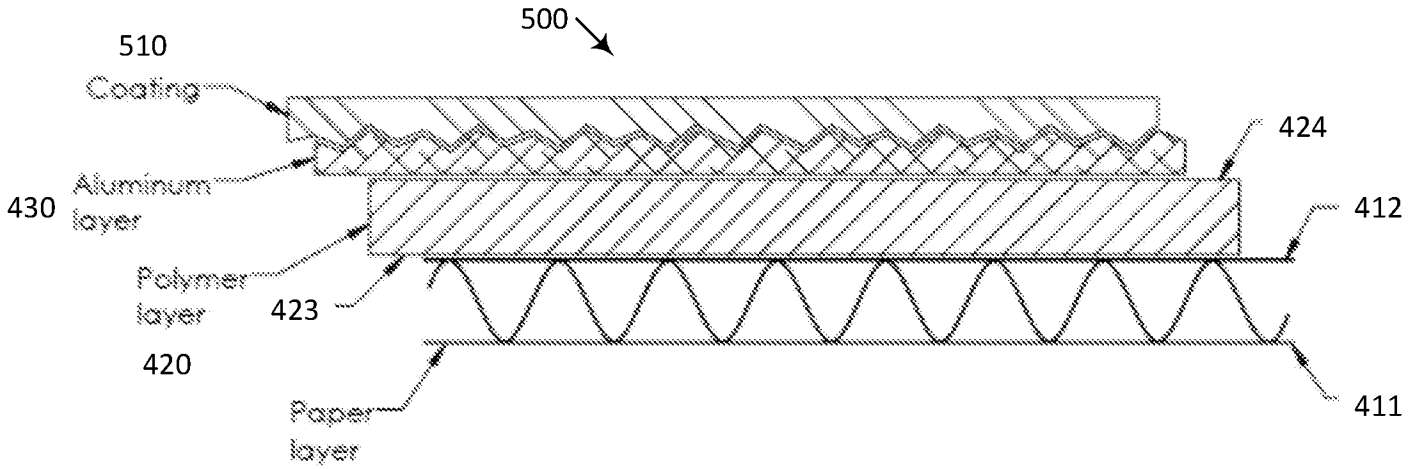

Fig. 5

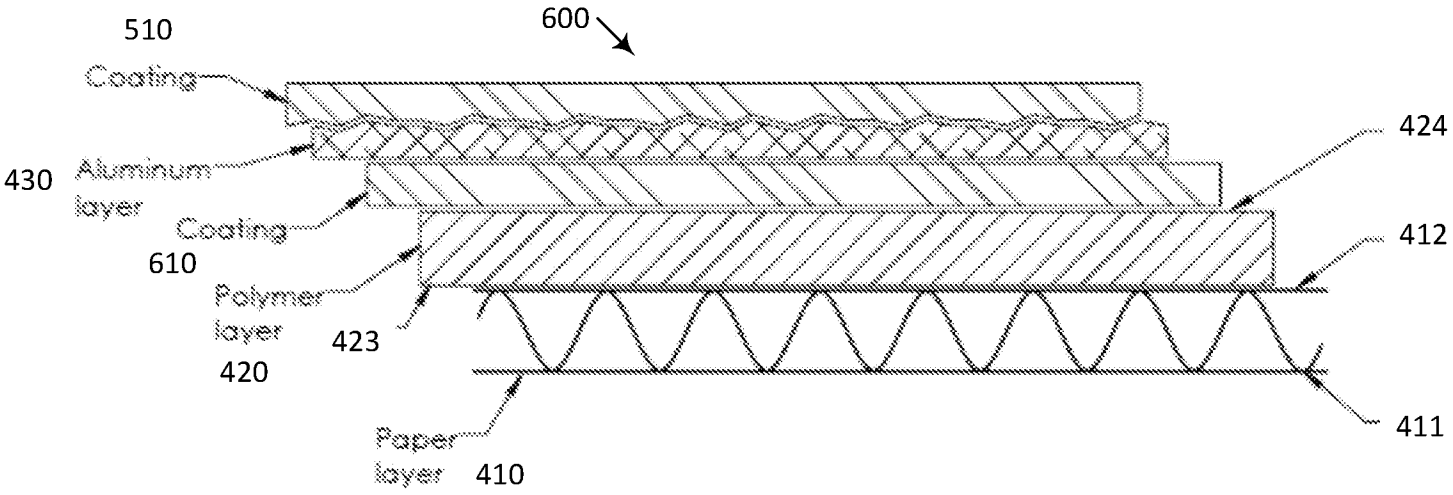

Fig. 6

Polymer	um	*	
	0.20		0.04
	0.35		0.04
	0.38		0.04
	0.43		0.03
	0.66		0.07
	0.96		0.11
	1.35		0.22

Wax	um	*	
	1.05		0.06
	0.70		0.04
	0.35		0.03
	0.23		0.03
	0.14		0.03

Fig. 7

Stickies Count on Pressed Pulp Sheets

Type of Coating Over Aluminum	# of Stickies
0.70 micron Fischer Tropsch Wax	3
1.05 micron Fischer Tropsch Wax	294
0.98 micron Thermoset Copolymer	0

Fig. 8

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Filer:	Yakov S. Sidorin/Leslie Lowery
Attorney Docket Number:	861133.00068

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
LATE FILING FEE FOR OATH OR DECLARATION	2051	1	80	80
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**865**

Electronic Acknowledgement Receipt

EFS ID:	34752117
Application Number:	16238998
International Application Number:	
Confirmation Number:	5903
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Customer Number:	34282
Filer:	Yakov S. Sidorin/Leslie Lowery
Filer Authorized By:	Yakov S. Sidorin
Attorney Docket Number:	861133.00068
Receipt Date:	03-JAN-2019
Filing Date:	
Time Stamp:	15:20:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$865
RAM confirmation Number	010419INTEFSW00001696170055
Deposit Account	170055
Authorized User	Leslie Lowery

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	861133_00068_ADS.pdf	1255963 ff09e34652b1edc41ba7544f0efa20b532eeaf20	no	8
Warnings:					
Information:					
2		861133_00068_Application.pdf	246272 b4dc01b8ba8d4d40bd81be1f5501d49b6324bd75	yes	32

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	26
	Claims	27	31
	Abstract	32	32

Warnings:					
Information:					
3	Drawings-only black and white line drawings	861133_00068_Drawings.pdf	790154 774fd6eda24be2a1eea38d12d80d6eb87940e382	no	5
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	36982 246816cf72fbbff147ae45238c19e2d275093ad7	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2329371		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/01 (06-12)
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 16/238,998

filed on January 3, 2019.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Steven Yializis Date (Optional): _____

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/01 (06-12)
Approved for use through 11/30/2020. OMB 0651-0032
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LEGAL NAME OF INVENTOR

Inventor: Luke Rogers Date (Optional): 1/9/19

Signature: [signature]

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	34836646
Application Number:	16238998
International Application Number:	
Confirmation Number:	5903
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Customer Number:	34282
Filer:	Yakov S. Sidorin/Leslie Lowery
Filer Authorized By:	Yakov S. Sidorin
Attorney Docket Number:	861133.00068
Receipt Date:	11-JAN-2019
Filing Date:	
Time Stamp:	17:30:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	861133_00068_Declarations.pdf	914192 71935d6ac0e0a452bd4144d141f516d1a92eb8d4	no	2

Warnings:

Information:	
Total Files Size (in bytes):	914192

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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New International Application Filed with the USPTO as a Receiving Office

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/238,998	01/03/2019	1782	865	861133.00068	16	5

CONFIRMATION NO. 5903

FILING RECEIPT

34282
QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1700
TUCSON, AZ 85701-1621

OC000000105445946

Date Mailed: 01/31/2019

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Steven Yializis, Tucson, AZ;
Luke Rogers, Tucson, AZ;

Applicant(s)

SIGMA TECHNOLOGIES INT'L., LLC, Tucson, AZ

Power of Attorney: None

Domestic Priority data as claimed by applicant

This appln claims benefit of 62/614,568 01/08/2018

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 01/29/2019

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/238,998**

Projected Publication Date: 07/11/2019

Non-Publication Request: No

Early Publication Request: No
** SMALL ENTITY **
Title

RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

Preliminary Class

428

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/238,998

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	16 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	5 minus 3 =	* 2	x 230 =	460			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1245		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/238,998	01/03/2019	Steven Yializis	861133.00068

CONFIRMATION NO. 5903

34282
QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1700
TUCSON, AZ 85701-1621

FORMALITIES LETTER

OC00000105445947

Date Mailed: 01/31/2019

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing.

Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- Additional claim fees of $ **460** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **460** for **2** independent claims over 3.
- $(**0**) previous unapplied payment amount.
- $ **460** TOTAL FEE BALANCE DUE.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/haberehe/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	SIGMA TECHNOLOGIES INT'L., LLC
Application No.:	16/238,998
Filing Date:	December 27, 2018
Conf.:	5903
Art Unit:	1782
Title:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

RESPONSE TO NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

In response to the Notice to File Missing Parts of Non-provisional Application mailed January 31, 2019, Applicant herewith submits a Fee Transmittal and authorization to charge Deposit Account No. 17-0055 in the amount of $460.00.

If any additional fees are deemed due, please charge them to Deposit Account No. 17-0055.

Date: January 31, 2019

Respectfully submitted,

/Yakov Sidorin, 63507/
Yakov Sidorin, Ph.D.
Registration No. 63,507
Attorney for Applicant

Quarles & Brady LLP
One South Church Avenue
Tucson, Arizona 85701
Tel: (520) 770-8753
Fax: (520) 770-2253

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/238,998	01/03/2019	Steven Yializis	861133.00068

CONFIRMATION NO. 5903

34282
QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1700
TUCSON, AZ 85701-1621

FORMALITIES LETTER

OC00000105445947

Date Mailed: 01/31/2019

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

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/haberehe/

PTO/SB/17 (01-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

FEE TRANSMITTAL

Complete if known	
Application Number	16/238,998
Filing Date	January 3, 2019
First Named Inventor	Steven Yializis
Examiner Name	
Art Unit	1782
Practitioner Docket No.	861133.00068

☒ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

TOTAL AMOUNT OF PAYMENT ($) 460.00

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: 170055 Deposit Account Name: 170055

For the above-identified deposit account, the Director is hereby authorized to (check all that apply):

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayment of fee(s)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES (U = undiscounted fee; S = small entity fee; M = micro entity fee)

	FILING FEES			SEARCH FEES			EXAMINATION FEES			
Application Type	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**U ($)**	**S ($)**	**M ($)**	**Fees Paid ($)**
Utility	300	150*	75	660	330	165	760	380	190	
Design	200	100	50	160	80	40	600	300	150	
Plant	200	100	50	420	210	105	620	310	155	
Reissue	300	150	75	660	330	165	2,200	1,100	550	
Provisional	280	140	70	0	0	0	0	0	0	

* The $150 small entity status filing fee for a utility application is further reduced to $75 for a small entity status applicant who files the application via EFS-Web.

2. EXCESS CLAIM FEES

Fee Description	**Undiscounted Fee ($)**	**Small Entity Fee ($)**	**Micro Entity Fee ($)**
Each claim over 20 (including Reissues)	100	50	25
Each independent claim over 3 (including Reissues)	460	230	115
Multiple dependent claims	820	410	205

Total Claims		**Extra Claims**	**Fee ($)**		**Fee Paid ($)**
16	-20 or HP =	0 x	0	=	

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims		**Extra Claims**	**Fee ($)**		**Fee Paid ($)**
5	-3 or HP =	2 x	230	=	460.00

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	**Fee Paid ($)**

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $400 ($200 for small entity) ($100 for micro entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		**Extra Sheets**		**Number of each additional 50 or fraction thereof**	**Fee ($)**		**Fee Paid ($)**
_____	- 100 =	_____	/ 50 =	_____ (round **up** to a whole number)	_____	=	_____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English specification, $130 fee (no small or micro entity discount)	
Non-electronic filing fee under 37 CFR 1.16(t) for a utility application, $400 fee ($200 small or micro entity)	
Other (e.g., late filing surcharge): _____	

SUBMITTED BY

Signature	/Yakov S. Sidorin/	Registration No. (Attorney/Agent) 63507	Telephone 520-770-8753
Name (Print/Type)	Yakov S. Sidorin		Date January 31, 2019

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	35025134
Application Number:	16238998
International Application Number:	
Confirmation Number:	5903
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Customer Number:	34282
Filer:	Yakov S. Sidorin/Leslie Lowery
Filer Authorized By:	Yakov S. Sidorin
Attorney Docket Number:	861133.00068
Receipt Date:	31-JAN-2019
Filing Date:	03-JAN-2019
Time Stamp:	17:22:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	861133_00068_Response_to_NTFMP.pdf	138473 30d444138a6771162cc5b6c0c999456eb0f98397	no	3

Warnings:

Information:					
2	Transmittal Letter	861133_00068_Fee_Transmittal.pdf	134087 9e52d3638e08f210426b264f732e7c9bfecefd19	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	272560	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Patent Application Fee Transmittal

Application Number:	16238998
Filing Date:	03-Jan-2019
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Filer:	Yakov S. Sidorin/Leslie Lowery
Attorney Docket Number:	861133.00068

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
INDEPENDENT CLAIMS IN EXCESS OF 3	2201	2	230	460
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**460**

Electronic Acknowledgement Receipt

EFS ID:	35025167
Application Number:	16238998
International Application Number:	
Confirmation Number:	5903
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Customer Number:	34282
Filer:	Yakov S. Sidorin/Leslie Lowery
Filer Authorized By:	Yakov S. Sidorin
Attorney Docket Number:	861133.00068
Receipt Date:	31-JAN-2019
Filing Date:	03-JAN-2019
Time Stamp:	17:24:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$460
RAM confirmation Number	020119INTEFSW00004761170055
Deposit Account	170055
Authorized User	Leslie Lowery

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	30709 a1cd8bbe0dc8d72fb9d60eecf63969b467c98f3f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	30709		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/238,998	01/03/2019	1782	1325	861133.00068	16	5

CONFIRMATION NO. 5903

UPDATED FILING RECEIPT

34282
QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1700
TUCSON, AZ 85701-1621

OC000000105569983

Date Mailed: 02/04/2019

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Steven Yializis, Tucson, AZ;
Luke Rogers, Tucson, AZ;

Applicant(s)

SIGMA TECHNOLOGIES INT'L., LLC, Tucson, AZ

Power of Attorney: None

Domestic Priority data as claimed by applicant

This appln claims benefit of 62/614,568 01/08/2018

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 01/29/2019

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/238,998**

Projected Publication Date: 07/11/2019

Non-Publication Request: No

Early Publication Request: No
** SMALL ENTITY **
Title

RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

Preliminary Class

428

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/238,998

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	16 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	5 minus 3 =	* 2	x 230 =	460			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1245		TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/238,998	01/03/2019	Steven Yializis	861133.00068

CONFIRMATION NO. 5903

34282
QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1700
TUCSON, AZ 85701-1621

PUBLICATION NOTICE

OC000000109560907

Title:RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

Publication No.US-2019-0210324-A1
Publication Date:07/11/2019

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/238,998	01/03/2019	Steven Yializis	861133.00068	5903

34282 7590 06/25/2020

QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1700
TUCSON, AZ 85701-1621

EXAMINER
JALLOW, EYAMINDAE CHOSSAN

ART UNIT	PAPER NUMBER
3731	

NOTIFICATION DATE	DELIVERY MODE
06/25/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pat-dept@quarles.com

Office Action Summary	Application No. 16/238,998	Applicant(s) Yializis et al.	
	Examiner EYAMINDAE C JALLOW	Art Unit 3731	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 03 January 2019.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-16 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-16 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 03 January 2019 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 1-16** are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

Claims 1, 8, 10, 15 and 16 contain the trademark/trade name Waring. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade

name. In the present case, the trademark/trade name is used to identify/describe a blender and, accordingly, the identification/description is indefinite.

Claim 1 recites "…at about 125 (± 10) degrees F…" This language claims a range within a range, therefore, deeming the limitation indefinite.

Claims 1, 8, 10, 15 and 16 recite "…a 0.01 inch screen…" This phrase is deemed indefinite because it does not clearly point out what aspect of the screen is 0.01 inches.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-16** are rejected under 35 U.S.C. 103 as being unpatentable over Tilton (US 2014/0272163) in view of Shimizu et al. (US 2017/0129216; "Shimizu") and Wadsworth et al. (US 2011/0020570; "Wadsworth").

Regarding claim 1, Tilton discloses a recyclable packaging (**20**) comprising:

a paper layer with first and second surfaces (**para. [0120]**);

a polymer layer (**32**) with third and fourth surfaces, wherein the third surface is affixed to the second surface (**para. [0110]; Fig. 2**);

an intermediate coating (**28**) applied to the fourth surface (**para. [0110]; Fig. 2**);

an aluminum layer (**22; para. [0094]-[0095]**) carried by the intermediate coating (**para. [0095]; Fig. 2**).

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material resulting from the packaging being subjected to a treatment that includes

a) blending in a Waring Blender (**para. [0125]**);

b) disintegrating into water with a British Disintegrator at about 125 (± 10) degrees F at 3000 rpm (**para. [0125] discloses 52 degrees C, which is 125.6 degrees F ~ 125 F**);

c) separating in a 0.01 inch screen with a 1 inch water head for 20 minutes (**para. [0125]**).

Tilton fails to disclose wherein the aluminum layer has a first thickness of 200 nanometers or less.

However, Shimizu teaches an aluminum layer (**Z1**) has a first thickness of 200 nanometers or less (**para. [0390]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by having provided the thickness, as taught by Shimizu, in order to protect against oxygen and moisture transmission (**para. [0440]**).

Tilton in view of Shimizu fail to disclose the aluminum layer causes an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10.

However, Wadsworth teaches the aluminum layer causes an outer surface of the packaging (**10**) to have emissivity that is equal to or smaller than a first value of 0.10 (**para. [0015]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton in view of Wadsworth by having provided the aluminum layer's emissivity, as taught by Wadsworth, in order to provide low emissivity and protect the contents within the package (**para. [0026]**).

Tilton in view of Shimizu and Wadsworth fail to disclose drying in an oven for 4 hours at 221 degrees F.

However, Gregory teaches drying in an oven (**an oven is defined as: a thermally insulated chamber used for heating, baking or drying**) for 4 hours at 221 degrees F (**col. 12 ll. 8-11 discloses the drying occurring at 112 degrees C = 233.6 degrees F**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the recyclable packaging of Tilton in view of Wadsworth and Shimizu by having provided the drying, as taught by Gregory, in order to produce a dried material ready to be reused.

Gregory discloses the claimed invention except for the drying occurring at 221 degrees F. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry at 221 degrees F, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Additionally, pg. 6 para. [0018] discloses selecting this temperature to remove water from specimens of the resulting material. Applying the temperature of Gregory to the specimens of the instant application would result in further drying, due to the higher temperature. Furthermore, the reasoning for selecting 221

degrees F is disclosed in pg. 18 para. [0041] of the specification of the instant application. During the repulping process, this temperature is needed to melt wax present on the laminate. If 233.6 degrees F is selected, the wax would still be melted of the paper.

Gregory discloses the claimed invention except for drying for 4 hours. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry for 4 hours, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Additionally, both Gregory and the instant application want to dry the resulting material to be repulped/recycled. The selection of 4 hours would be obvious to one having ordinary skill in the art.

Regarding claim 2, Tilton discloses wherein the aluminum layer (**22; para. [0094]-[0095**) is disposed directly on the intermediate coating (**28; para. [0095]; Fig. 2**).

Regarding claim 3, Tilton in view of Wadsworth disclose wherein the intermediate coating (**28**) includes a material selected from polymer and oligomer (**para. [0110]**).

Tilton in view of Wadsworth fail to disclose the intermediate coating has a thickness between 10 nm and 2000 nm.

However, Shimizu discloses an intermediate coating (**L**) has a thickness between 10 nm and 2000 nm (**para. [0208]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the intermediate coating of Tilton in view of Wadsworth by having provided the thickness, as taught by Shimizu, in

order to further enhance the resulting adhesion between the aluminum and polymer layer (**para. [0208]**).

Regarding claim 4, Tilton discloses the aluminum layer (**22; para. [0094]-[0095]**).

Tilton fails to disclose further comprising: a protective coating over the aluminum layer, wherein the protective coating has a second thickness of 1 micron or less, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value after the aluminum layer has been coated with the protective coating and ii) to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating (**S**) does not impede oxidization of the aluminum layer caused by the treatment

However, Shimizu teaches a protective coating (**S**) over the aluminum layer (**Z1; [para. [0157]**), wherein the protective coating has a second thickness, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value (**para. [0012], [0390]**) after the aluminum layer (**Z1**) has been coated with the protective coating (**S**) and ii) to prevent oxidation of the aluminum layer (**Z1**) during normal use of the packaging (**para. [0012]**), while the protective coating (**S**) does not impede oxidization of the aluminum layer caused by the treatment (**based on the values and processes combination of references , the resulting impedance would be that of the instant application**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by

having provided the protective coating layer, as taught by Shimizu, in order to preserve the aluminum layer on the laminate.

Shimizu discloses the claimed invention except for a second thickness of 1 micron or less. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to provide a thickness of 1 micron or less, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 5, Tilton discloses the recyclable packaging (**20**).

Tilton fails to wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

However, Shimizu teaches the protective coating (**S**) includes a material selected from: wax, polymer (**para. [0145]**), and lacquer.

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton by having provided the coating layer, as taught by Shimizu, in order to preserve the aluminum layer on the laminate.

Regarding claim 6, Tilton discloses wherein the polymer layer (**32**) includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene (**para. [0110] discloses a polymer-containing resin which include polyurethane and polystyrene**).

Regarding claim 7, Tilton discloses wherein the polymer layer (**32**) is a material selected from: film (**para. [0093]**) and fabric.

Regarding claim 8, Tilton discloses a method for manufacturing a recyclable packaging (**20**), the method comprising:

attaching a polymer layer (**32**) to a paper layer (**para. [0120]**), wherein an inner surface of the polymer layer (**32**) is affixed to a first surface of the paper layer (**para. [0110], [0120]; Fig. 2**);

depositing an aluminum layer (**22; para. [0094]-[0095]**) on the polymer layer (**32; via an intermediate layer (28); para. [0095]; Fig. 2**).

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material resulting from the packaging being subjected to a treatment that includes:

a) blending in a Waring Blender (**para. [0125]**);

b) disintegrating into water with a British Disintegrator at about 125 (± 10) degrees F at 3000 rpm (**para. [0125] discloses 52 degrees C, which is 125.6 degrees F ~ 125 F**);

c) separating in a 0.01 inch screen with a 1 inch water head for 20 minutes (**para. [0125]**).

Tilton fails to disclose wherein the aluminum layer has a first thickness of 200 nanometers or less.

However, Shimizu teaches an aluminum layer (**Z1**) has a first thickness of 200 nanometers or less (**para. [0390]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by having provided the thickness, as taught by Shimizu, in order to protect against oxygen and moisture transmission (**para. [0440]**).

Tilton in view of Shimizu fail to disclose the aluminum layer causes an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10.

However, Wadsworth teaches the aluminum layer causes an outer surface of the packaging (**10**) to have emissivity that is equal to or smaller than a first value of 0.10 (**para. [0015]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton in view of Wadsworth by having provided the aluminum layer's emissivity, as taught by Wadsworth, in order to provide low emissivity and protect the contents within the package (**para. [0026]**).

Tilton in view of Shimizu and Wadsworth fail to disclose drying in an oven for 4 hours at 221 degrees F.

However, Gregory teaches drying in an oven (**an oven is defined as: a thermally insulated chamber used for heating, baking or drying**) for 4 hours at 221 degrees F (**col. 12 ll. 8-11 discloses the drying occurring at 112 degrees C = 233.6 degrees F**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the recyclable packaging of Tilton in view of Wadsworth and Shimizu by having provided the drying, as taught by Gregory, in order to produce a dried material ready to be reused.

Gregory discloses the claimed invention except for the drying occurring at 221 degrees F. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry at 221 degrees F, since it has been

held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Additionally, pg. 6 para. [0018] discloses selecting this temperature to remove water from specimens of the resulting material. Applying the temperature of Gregory to the specimens of the instant application would result in further drying, due to the higher temperature. Furthermore, the reasoning for selecting 221 degrees F is disclosed in pg. 18 para. [0041] of the specification of the instant application. During the repulping process, this temperature is needed to melt wax present on the laminate. If 233.6 degrees F is selected, the wax would still be melted of the paper.

Gregory discloses the claimed invention except for drying for 4 hours. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry for 4 hours, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Additionally, both Gregory and the instant application want to dry the resulting material to be repulped/recycled. The selection of 4 hours would be obvious to one having ordinary skill in the art.

Regarding claim 9, Tilton discloses the aluminum layer (**22; para. [0094]-[0095]**).

Tilton fails to disclose further comprising: a protective coating over the aluminum layer, wherein the protective coating has a second thickness of 1 micron or less, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value after the aluminum layer has been coated with the protective coating and ii) to prevent oxidation of the

aluminum layer during normal use of the packaging, while the protective coating (**S**) does not impede oxidization of the aluminum layer caused by the treatment

However, Shimizu teaches a protective coating (**S**) over the aluminum layer (**Z1; [para. [0157]**), wherein the protective coating has a second thickness, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value (**para. [0012], [0390]**) after the aluminum layer (**Z1**) has been coated with the protective coating (**S**) and ii) to prevent oxidation of the aluminum layer (**Z1**) during normal use of the packaging (**para. [0012]**), while the protective coating (**S**) does not impede oxidization of the aluminum layer caused by the treatment (**based on the values and processes combination of references , the resulting impedance would be that of the instant application**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by having provided the protective coating layer, as taught by Shimizu, in order to preserve the aluminum layer on the laminate.

Shimizu discloses the claimed invention except for a second thickness of 1 micron or less. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to provide a thickness of 1 micron or less, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 10, Tilton discloses a recyclable packaging (**20**) comprising:

a paper layer with first and second surfaces (**para. [0120]**);

a polymer layer (**32**) with third and fourth surfaces, wherein the third surface is affixed to the second surface (**para. [0110]; Fig. 2**);

an aluminum layer (**22; para. [0094]-[0095]**) carried by the intermediate coating (**para. [0095]; Fig. 2**).

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material resulting from the packaging being subjected to a treatment that includes

a) blending in a Waring Blender (**para. [0125]**);

b) disintegrating into water with a British Disintegrator at about 125 (± 10) degrees F at 3000 rpm (**para. [0125] discloses 52 degrees C, which is 125.6 degrees F ~ 125 F**);

c) separating in a 0.01 inch screen with a 1 inch water head for 20 minutes (**para. [0125]**).

Tilton fails to disclose wherein the aluminum layer has a first thickness of 200 nanometers or less.

However, Shimizu teaches an aluminum layer (**Z1**) has a first thickness of 200 nanometers or less (**para. [0390]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by having provided the thickness, as taught by Shimizu, in order to protect against oxygen and moisture transmission (**para. [0440]**).

Tilton in view of Shimizu fail to disclose the aluminum layer causes an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10.

However, Wadsworth teaches the aluminum layer causes an outer surface of the packaging (**10**) to have emissivity that is equal to or smaller than a first value of 0.10 (**para. [0015]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton in view of Wadsworth by having provided the aluminum layer's emissivity, as taught by Wadsworth, in order to provide low emissivity and protect the contents within the package (**para. [0026]**).

Tilton in view of Shimizu and Wadsworth fail to disclose drying in an oven for 4 hours at 221 degrees F.

However, Gregory teaches drying in an oven (**an oven is defined as: a thermally insulated chamber used for heating, baking or drying**) for 4 hours at 221 degrees F (**col. 12 ll. 8-11 discloses the drying occurring at 112 degrees C = 233.6 degrees F**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the recyclable packaging of Tilton in view of Wadsworth and Shimizu by having provided the drying, as taught by Gregory, in order to produce a dried material ready to be reused.

Gregory discloses the claimed invention except for the drying occurring at 221 degrees F. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry at 221 degrees F, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Additionally, pg. 6 para. [0018] discloses selecting this temperature to remove

water from specimens of the resulting material. Applying the temperature of Gregory to the specimens of the instant application would result in further drying, due to the higher temperature. Furthermore, the reasoning for selecting 221 degrees F is disclosed in pg. 18 para. [0041] of the specification of the instant application. During the repulping process, this temperature is needed to melt wax present on the laminate. If 233.6 degrees F is selected, the wax would still be melted of the paper.

Gregory discloses the claimed invention except for drying for 4 hours. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry for 4 hours, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Additionally, both Gregory and the instant application want to dry the resulting material to be repulped/recycled. The selection of 4 hours would be obvious to one having ordinary skill in the art.

Regarding claim 11, Tilton discloses the aluminum layer (**22; para. [0094]-[0095]**).

Tilton fails to disclose further comprising a protective coating over the aluminum layer, wherein the protective coating has a second thickness of 1 micron or less, wherein the second thickness is defined to maintain the emissivity of the outer surface after the aluminum layer has been coated with the protective coating and to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating does not impede oxidization of the aluminum layer caused by the treatment.

However, Shimizu teaches a protective coating (**S**) over the aluminum layer (**Z1; [para. [0157]**), wherein the protective coating has a second thickness, wherein the second thickness is defined to maintain the emissivity of the outer surface after the aluminum layer has been coated with the protective coating (**para. [0012], [0390]**) and to prevent oxidation of the aluminum layer (**Z1**) during normal use of the packaging (**para. [0012]**), while the protective coating (**S**) does not impede oxidization of the aluminum layer caused by the treatment (**based on the values and processes combination of references , the resulting impedance would be that of the instant application**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by having provided the protective coating layer, as taught by Shimizu, in order to preserve the aluminum layer on the laminate.

Shimizu discloses the claimed invention except for a second thickness of 1 micron or less. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to provide a thickness of 1 micron or less, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 12, Tilton discloses the recyclable packaging (**20**).

Tilton fails to wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

However, Shimizu teaches the protective coating (**S**) includes a material selected from: wax, polymer (**para. [0145]**), and lacquer.

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton by having provided the coating layer, as taught by Shimizu, in order to preserve the aluminum layer on the laminate.

Regarding claim 13, Tilton discloses wherein the polymer layer (**32**) includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene (**para. [0110] discloses a polymer-containing resin which include polyurethane and polystyrene**).

Regarding claim 14, Tilton discloses wherein the polymer layer (**32**) is a material selected from: film (**para. [0093]**) and fabric.

Regarding claim 15, Tilton discloses a method for thermally insulating a good within a recyclable packaging (**20; para. [0003]**), the method comprising:

placing a reflective insulation material in a pre-defined proximity with a good, the pre-defined proximity being suitably chosen to provide adequate thermal insulation to the good (**para. [0075]**), wherein said reflective insulation material comprises the recyclable packaging (**20**) that includes:

a paper layer with first and second surfaces (**para. [0120]**);

a polymer layer (**32**) with third and fourth surfaces, wherein the third surface is affixed to the second surface (**para. [0110]; Fig. 2**);

an aluminum layer (**22; para. [0094]-[0095]**) carried by the intermediate coating (**para. [0095]; Fig. 2**).

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material resulting from the packaging being subjected to a treatment that includes

a) blending in a Waring Blender (**para. [0125]**);

b) disintegrating into water with a British Disintegrator at about 125 (± 10) degrees F at 3000 rpm (**para. [0125] discloses 52 degrees C, which is 125.6 degrees F ~ 125 F**);

c) separating in a 0.01 inch screen with a 1 inch water head for 20 minutes (**para. [0125]**).

Tilton fails to disclose wherein the aluminum layer has a first thickness of 200 nanometers or less.

However, Shimizu teaches an aluminum layer (**Z1**) has a first thickness of 200 nanometers or less (**para. [0390]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by having provided the thickness, as taught by Shimizu, in order to protect against oxygen and moisture transmission (**para. [0440]**).

Tilton in view of Shimizu fail to disclose the aluminum layer causes an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10.

However, Wadsworth teaches the aluminum layer causes an outer surface of the packaging (**10**) to have emissivity that is equal to or smaller than a first value of 0.10 (**para. [0015]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton in view of Wadsworth by having provided the aluminum layer's emissivity, as taught by Wadsworth, in order to provide low emissivity and protect the contents within the package (**para. [0026]**).

Tilton in view of Shimizu and Wadsworth fail to disclose drying in an oven for 4 hours at 221 degrees F.

However, Gregory teaches drying in an oven (**an oven is defined as: a thermally insulated chamber used for heating, baking or drying**) for 4 hours at 221 degrees F (**col. 12 ll. 8-11 discloses the drying occurring at 112 degrees C = 233.6 degrees F**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the recyclable packaging of Tilton in view of Wadsworth and Shimizu by having provided the drying, as taught by Gregory, in order to produce a dried material ready to be reused.

Gregory discloses the claimed invention except for the drying occurring at 221 degrees F. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry at 221 degrees F, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Additionally, pg. 6 para. [0018] discloses selecting this temperature to remove water from specimens of the resulting material. Applying the temperature of Gregory to the specimens of the instant application would result in further drying, due to the higher temperature. Furthermore, the reasoning for selecting 221

degrees F is disclosed in pg. 18 para. [0041] of the specification of the instant application. During the repulping process, this temperature is needed to melt wax present on the laminate. If 233.6 degrees F is selected, the wax would still be melted of the paper.

Gregory discloses the claimed invention except for drying for 4 hours. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry for 4 hours, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Additionally, both Gregory and the instant application want to dry the resulting material to be repulped/recycled. The selection of 4 hours would be obvious to one having ordinary skill in the art.

Regarding claim 16, Tilton discloses a method for thermally insulating a good within a recyclable packaging (**20; para. [0003]**), the method comprising:

placing a reflective insulation material in a pre-defined proximity with a good, the pre-defined proximity being suitably chosen to provide adequate thermal insulation to the good (**para. [0075]**), wherein said reflective insulation material comprises the recyclable packaging (**20**) that includes:

a paper layer with first and second surfaces (**para. [0120]**);

a polymer layer (**32**) with third and fourth surfaces, wherein the third surface is affixed to the second surface (**para. [0110]; Fig. 2**);

an intermediate coating (**28**) applied to the fourth surface (**para. [0110]; Fig. 2**);

an aluminum layer (**22; para. [0094]-[0095]**) carried by the intermediate coating (**para. [0095]; Fig. 2**).

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material resulting from the packaging being subjected to a treatment that includes

a) blending in a Waring Blender (**para. [0125]**);

b) disintegrating into water with a British Disintegrator at about 125 (± 10) degrees F at 3000 rpm (**para. [0125] discloses 52 degrees C, which is 125.6 degrees F ~ 125 F**);

c) separating in a 0.01 inch screen with a 1 inch water head for 20 minutes (**para. [0125]**).

Tilton fails to disclose wherein the aluminum layer has a first thickness of 200 nanometers or less.

However, Shimizu teaches an aluminum layer (**Z1**) has a first thickness of 200 nanometers or less (**para. [0390]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by having provided the thickness, as taught by Shimizu, in order to protect against oxygen and moisture transmission (**para. [0440]**).

Tilton in view of Shimizu fail to disclose the aluminum layer causes an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10.

However, Wadsworth teaches the aluminum layer causes an outer surface of the packaging (**10**) to have emissivity that is equal to or smaller than a first value of 0.10 (**para. [0015]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton in view of Wadsworth by having provided the aluminum layer's emissivity, as taught by Wadsworth, in order to provide low emissivity and protect the contents within the package (**para. [0026]**).

Tilton in view of Shimizu and Wadsworth fail to disclose drying in an oven for 4 hours at 221 degrees F.

However, Gregory teaches drying in an oven (**an oven is defined as: a thermally insulated chamber used for heating, baking or drying**) for 4 hours at 221 degrees F (**col. 12 ll. 8-11 discloses the drying occurring at 112 degrees C = 233.6 degrees F**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the recyclable packaging of Tilton in view of Wadsworth and Shimizu by having provided the drying, as taught by Gregory, in order to produce a dried material ready to be reused.

Gregory discloses the claimed invention except for the drying occurring at 221 degrees F. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry at 221 degrees F, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Additionally, pg. 6 para. [0018] discloses selecting this temperature to remove water from specimens of the resulting material. Applying the temperature of Gregory to the specimens of the instant application would result in further drying, due to the higher temperature. Furthermore, the reasoning for selecting 221

degrees F is disclosed in pg. 18 para. [0041] of the specification of the instant application. During the repulping process, this temperature is needed to melt wax present on the laminate. If 233.6 degrees F is selected, the wax would still be melted of the paper.

Gregory discloses the claimed invention except for drying for 4 hours. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to dry for 4 hours, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Additionally, both Gregory and the instant application want to dry the resulting material to be repulped/recycled. The selection of 4 hours would be obvious to one having ordinary skill in the art.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EYAMINDAE JALLOW whose telephone number is (571)270-1927. The examiner can normally be reached on Monday-Thursday from 7:30am-5:00pm and alternating Fridays from 7:30am-4:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANNA KINSAUL, can be reached on (571)270-1926. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR

only. For more information about the PAIR system, see

http://portal.uspto.gov/external/portal. Should you have questions on access to the

Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197

(toll-free).

/EYAMINDAE C JALLOW/
Examiner, Art Unit 3731
/ANDREW M TECCO/
Primary Examiner, Art Unit 3731

Notice of References Cited	Application/Control No. 16/238,998	Applicant(s)/Patent Under Reexamination Yializis et al.	
	Examiner EYAMINDAE C JALLOW	Art Unit 3731	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20170129216-A1	05-2017	SHIMIZU; Yuji	B32B15/08	1/1
*	B	US-20140272163-A1	09-2014	Tilton; Christopher R.	B27N3/04	427/427.4
*	C	US-4952278-A	08-1990	Gregory; Paul E.	D21H11/18	162/141
*	D	US-20110020570-A1	01-2011	Wadsworth; Robert L.	B65D5/0236	428/34.2
*	E	US-20170266935-A1	09-2017	Chen; Mai	B32B27/10	1/1
*	F	US-20170188751-A1	07-2017	Resurreccion, JR.; Fermin P.	B32B27/288	1/1
*	G	US-20160343275-A1	11-2016	Huffer; Scott William	B32B3/20	1/1
*	H	US-20180022073-A1	01-2018	SASAKI; Ryoichi	B32B27/36	428/35.7
*	I	US-20170320305-A1	11-2017	McMillan; Lyndsey A.	B32B27/10	1/1
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	Art Unit
	EYAMINDAE C JALLOW	3731

CPC - Searched*		
Symbol	Date	Examiner
B65D 1/0215	06/16/2020	Eyamindae Jallow
B32B 2439/00	06/16/2020	Eyamindae Jallow

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
53	473	06/16/2020	Eyamindae Jallow
53	+	06/16/2020	Eyamindae Jallow

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Classification search, inventor search (PALM), forward/backward citation, text search	06/16/2020	Eyamindae Jallow

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	**Art Unit**
	EYAMINDAE C JALLOW	3731

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	2,261	53/473.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 10:21
S2	2	"20190270862"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 10:26
S3	23	"3222657"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 11:26
S4	2	"6846538".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 11:29
S5	6	53/$.ccls. and laminate and (paper near3 polymer near3 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 11:37
S6	2,891	53/$.ccls. and laminate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 11:40

S7	393	53/$.ccls. and laminate and insulat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 12:02
S8	10	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$).did. or (US-6846538-$).did. or (EP-3222657-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2020/06/16 12:23
S9	85	paper and aluminum and plastic and (B65D1/0215).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 12:24
S10	28	("2004/0241454").URPN.	USPAT	OR	OFF	2020/06/16 12:29
S11	11	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$).did. or (US-6846538-$).did. or (EP-3222657-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2020/06/16 12:43
S12	0	"waring adj blender" and "british adj disintegrator"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 12:44
S13	0	"waring adj blender" and "disintegrator"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 12:44
S14	0	"waring adj blender"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 12:44

S15	24	(waring adj blender) and (british adj disintegrator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 12:45
S16	13	(waring adj blender) and (british adj disintegrator) and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 12:46
S17	24	(waring adj blender) and (british adj disintegrator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 15:45
S18	3	("2014/0272163").URPN.	USPAT	OR	OFF	2020/06/16 15:51
S19	19	53/$.ccls. and composite and (paper near3 plastic near3 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 15:51
S20	21	53/$.ccls. and emissivity	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 16:08
S21	1	"16238998"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/16 16:55
S22	94	("4481076" | "4483743" | "4627743" | "4761203").PN. OR ("4952278").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2020/06/16 22:03
S24	20	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$	US-PGPUB; USPAT; FPRS	OR	OFF	2020/06/17 09:59

		or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$ or US-20200071056-$ or US-20050011623-$ or US-20140272163-$ or US-20160178264-$).did. or (US-6846538-$ or US-4952278-$ or US-6309510-$ or US-6402887-$ or US-5292391-$ or US-5452565-$).did. or (EP-3222657-$).did.				
S25	6,143	(B65D1/0215).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/17 10:00
S26	362	(B65D1/0215).CPC. and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/17 10:07
S27	92	(B65D1/0215).CPC. and aluminum and paper	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/17 10:22
S28	82	("4064296" | "4701360" | "4894267").PN. OR ("4977004").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2020/06/17 10:33
S29	28	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$ or US-20200071056-$ or US-20050011623-$ or US-20140272163-$ or US-20160178264-$ or US-20140205786-$ or US-20190112091-$ or US-20160243746-$).did. or (US-6846538-$ or US-4952278-$ or US-6309510-$ or US-6402887-$ or US-5292391-$ or US-5452565-$ or US-4977004-$ or US-8815360-$ or US-6964797-$ or US-6383582-$).did. or (EP-3222657-$ or WO-2015171193-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2020/06/17 10:52

S30	18,336	(B32B2439/00).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/17 10:54
S31	1,920	(B32B2439/00).CPC. and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/17 10:55
S32	792	(B32B2439/00).CPC. and aluminum and paper	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/17 10:58
S33	0	("2017/0320305").URPN.	USPAT	OR	OFF	2020/06/17 11:34
S34	0	("2017/0188751").URPN.	USPAT	OR	OFF	2020/06/17 11:40
S35	2	("2015/0284141").URPN.	USPAT	OR	OFF	2020/06/17 12:11
S36	209	(B32B2439/00).CPC. and aluminum and paper and insulat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/17 12:21
S37	8	(B32B2439/00).CPC. and aluminum and paper and emissivity	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/17 12:35
S38	0	("2011/0020570").URPN.	USPAT	OR	OFF	2020/06/17 12:40
S39	1	"20050001124"	US-PGPUB; USPAT	OR	OFF	2020/06/17 16:19
S40	2	"20090001124"	US-PGPUB; USPAT	OR	OFF	2020/06/17 16:20

S41	4,547	(B32B2439/00).CPC. and thickness	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/18 10:02
S42	237	(B32B2439/00).CPC. and (thickness near5 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/06/18 10:06

EAST Search History (Interference)

<This search history is empty>

6/18/2020 8:20:00 PM
C:\Users\ejallow\Documents\EAST\Workspaces\Recyclable Paper Containing.wsp

Bibliographic Data

Application No: 16/238,998

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /EYAMINDAE C JALLOW/ [ ]

Examiner's Signature | Initials

Title: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
01/03/2019	053	3731	861133.00068
RULE			

APPLICANTS

SIGMA TECHNOLOGIES INT'L., LLC, Tucson, AZ, UNITED STATES

INVENTORS

Steven Yializis Tucson, AZ, UNITED STATES

Luke Rogers Tucson, AZ, UNITED STATES

CONTINUING DATA

This application has PRO of 62614568 01/08/2018

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

01/29/2019

**** SMALL ENTITY ****

STATE OR COUNTRY

UNITED STATES

ADDRESS

QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1700
TUCSON, AZ 85701-1621
UNITED STATES

FILING FEE RECEIVED

$865

Electronic Patent Application Fee Transmittal

Application Number:	16238998
Filing Date:	03-Jan-2019
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Filer:	Yakov S. Sidorin/tracey baxter
Attorney Docket Number:	861133.00068

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	2253	1	740	740
Miscellaneous:				
			Total in USD ($)	**740**

Electronic Acknowledgement Receipt

EFS ID:	41463575
Application Number:	16238998
International Application Number:	
Confirmation Number:	5903
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Customer Number:	34282
Filer:	Yakov S. Sidorin/tracey baxter
Filer Authorized By:	Yakov S. Sidorin
Attorney Docket Number:	861133.00068
Receipt Date:	22-DEC-2020
Filing Date:	03-JAN-2019
Time Stamp:	13:53:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$740
RAM confirmation Number	E2020BLD54338553
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	000068rnfoa.pdf	325077 e569bde1977070060376890dc58b018f0ee9ad42	no	19
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31155 9d730839ef0a59f733b4e7f7fe4177a309494f1b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	356232		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Sigma Technologies Int'l., LLC	Docket No.:	861133.00068
Appl. No:	16/238,998	Art Unit:	3731
Filed :	January 03, 2019	Conf. No.	5903
Examiner:	Jallow, Eyamindae Chossan		

Invention: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

Date: December 22, 2020

VIA USPTO ELECTRONIC FILING SYSTEM

Mail Stop AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE *A*

To Non-final Office Action dated June 25, 2020

Dear Sir:

In response to the Office Action of June 25, 2020, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 9 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) **A recyclable packaging** comprising:

a stack including

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface; and

an intermediate coating layer applied to the fourth surface;

an aluminum layer carried by the intermediate coating layer, wherein the aluminum layer has a first thickness of 200 nanometers or less;

wherein said stack has emissivity that is equal to or smaller than a first value of 0.10 as perceived through an outer surface thereof

~~and wherein the aluminum layer causes an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10~~; and

wherein, when said packaging is subjected treatment that includes ~~said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material resulting from the packaging being subjected to a treatment that includes~~

a) blending the packaging in a blender ~~Waring Blender~~;

b) disintegrating into water with a British Disintegrator ~~at about 125 (± 10)~~ at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm;

c) separating in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes; and

d) drying in an oven for 4 hours at 221 degrees F

to form a recyclable material, said aluminum layer becomes fully oxidized with no visible aluminum present in said recyclable material.

2. (currently amended) The recyclable packaging of claim 1, wherein the aluminum layer is disposed directly on the intermediate coating.

3. (currently amended) The recyclable packaging of claim 1, wherein the intermediate coating has [[a]] the intermediate coating thickness between 10 nm and 2000 nm and includes a material selected from polymer and oligomer.

4. (currently amended) The recyclable packaging of claim 1, further comprising:

a protective coating layer disposed over the aluminum layer, wherein the protective coating layer has a second thickness of 1 micron or less, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value after the aluminum layer has been coated with the protective coating and ii) to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating does not impede oxidization of the aluminum layer as a result of the treatment.

5. (original) The recyclable packaging of claim 4, wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

6. (original) The recyclable packaging of claim 1, wherein the polymer layer includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene.

7. (original) The recyclable packaging of claim 1, wherein the polymer layer is a material selected from: film and fabric.

8. (currently amended) **A method for manufacturing a recyclable packaging**, the method comprising:

forming a packaging layer stack by:

attaching a polymer layer to a paper layer, wherein an inner surface of the polymer layer is affixed to a first surface of the paper layer;

depositing an aluminum layer on the polymer layer, wherein the aluminum layer has a first thickness of 200 nanometers or less, and wherein the aluminum layer causes ~~an outer surface of the polymer layer~~ said packaging layer stack to have emissivity that is equal to or smaller than a first value of 0.10; and

wherein said aluminum layer is configured to acquire optical density (OD) of less than 0.09 ~~becomes fully oxidized with no visible aluminum~~ when the packaging layer stack is exposed to a treatment that includes:

a) blending the packaging stack in a blender ~~Waring Blender~~;

b) disintegrating into water with a British Disintegrator at ~~at about 125 (± 10)~~ at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm,

c) separating an output from step b) in a 0.01 aperture inch screen with a 1 inch water head for 20 minutes, and

d) drying in an oven for 4 hours at 221 degrees F.

9. (currently amended) The method of manufacturing a recyclable packaging of claim 8, further comprising:

applying a protective coating over the aluminum layer to form a coated packaging layer stack, wherein the protective coating has a second thickness of 1 micron or less, and wherein the second thickness is defined

a) to maintain the emissivity of the ~~outer surface~~ packaging layer stack at the first value after the aluminum layer has been coated with the protective coating and

b) to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating does not impede oxidization of the aluminum layer as a result of the treatment.

10. (currently amended) **A recyclable packaging** comprising:

a stack including

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an aluminum layer deposited on the fourth surface, wherein the aluminum layer has a first thickness of 200 nanometers or less and wherein the aluminum layer causes an emissivity of an outer surface of the packaging to be equal to or smaller than a first value of 0.10; and

wherein said aluminum layer acquires an optical density (OD) of less than 0.09 ~~becomes fully oxidized~~ with no visible aluminum present in a recyclable material that results from the packaging being subjected to a treatment that includes

a) blending the packaging in a blender ~~Waring Blender~~ to form a first material;

b) disintegrating the first material into water with a British Disintegrator ~~at about 125 (± 10)~~ at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

11. (currently amended) The recyclable packaging of claim 10, further comprising:

a protective coating, over the aluminum layer,

wherein the protective coating has a second thickness of 1 micron or less,

wherein the second thickness is defined to maintain the first value of the emissivity of the ~~outer surface~~ recyclable packaging after the aluminum layer has been coated with the protective coating and to prevent oxidation of the aluminum layer during normal use of the packaging,

while the protective coating does not impede oxidization of the aluminum layer caused by the treatment.

12. (original) The recyclable packaging of claim 11, wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

13. (original) The recyclable packaging of claim 10, wherein the polymer layer includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene.

14. (original) The recyclable packaging of claim 10, wherein the polymer layer includes a material selected from: film and fabric.

15. (currently amended) **A method for thermally insulating a good within a recyclable packaging**, the method comprising:

placing a reflective insulation material in a pre-defined proximity with a good, the pre-defined proximity being suitably chosen to provide adequate thermal insulation to the good, wherein said reflective insulation material comprises the recyclable packaging that includes:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an aluminum layer deposited on the fourth surface, wherein the aluminum layer has a first thickness of 200 nanometers or less and wherein the aluminum layer causes an emissivity of ~~an outer surface of~~ the recyclable packaging to be equal to or smaller than a first value of 0.10; and

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material that results from the packaging being subjected to a treatment that includes

a) blending the packaging in a blender ~~Waring Blender~~ to form a first material;

b) disintegrating the first material into water with a British Disintegrator ~~at about 125 (± 10)~~ at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

16. (currently amended) **A method for thermally insulating a good within a recyclable packaging**, the method comprising:

placing a reflective insulation material at a pre-defined proximity distance from the good, said pre-defined proximity distance chosen to provide adequate thermal insulation to the good, wherein said reflective insulation material comprises the recyclable packaging that includes:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an intermediate coating layer applied to the fourth surface;

an aluminum layer carried by the intermediate coating, wherein the aluminum layer has a first thickness of no more than 200 nanometers to cause ~~an outer surface of~~ the packaging to have emissivity that is equal to or smaller than a first value of 0.10; and

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material as a result of subjecting the recyclable packaging to a treatment that includes

a) blending the packaging in a blender ~~Waring Blender~~ to form a first material;

b) disintegrating the first material into water with a British Disintegrator ~~at about 125 (± 10)~~ at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

REMARKS

1. Claims 1-16 are pending, of which
- claims 1, 8, 10, 15, 16 stand rejected under 35 USC 112(2) pre-AIA based on assertion of indefiniteness;
- claims 1-16 stand rejected under 35 USC 103 based on assertion of being obvious in light of the combination of Tilton (UUS 2014/0272163) with Shimizu (US 2017/0129216) and Wadsworth (US 2011/0020570) and Gregory (US 2,952,278);

2. With entry of this response, claims 1-16 will be pending. The Applicant respectfully requests reconsideration of the claims in view of the above amendments and the following remarks.

The Applicant respectfully asks the Examiner to please telephone the undersigned, Yakov Sidorin, to discuss any questions that may remain open to advance the application towards allowance - and sincerely appreciates the willingness of the Examiner to do so.

3. Claims 1-4, 8-11, 15, 16 have been amended to correct typographical errors, antecedent bases, and to more precisely claim the invention. No claims have been canceled, and no new claims have been added. No new mater has been introduced. The Applicant believes that with these amendments the rejections based on **section 112** have been obviated.

4. The Applicant respectfully argues that **rejection of claim 1 has been made in error at least because the combination of cited references does not teach, disclose, or suggest the invention as claimed.**

(4A) Firstly, the Office action is incomplete as to all actions and does not even mention the feature of claim 1 as reciting *"said aluminum layer becomes fully oxidized with no*

visible aluminum present in said recyclable material" - let alone analyze and prove the corresponding teaching by the combination of cited art.

Since law requires that the Office Action provide evidence of teaching of each and every element of the claim, the rejection of claim 1 was made in error and must be withdrawn.

Alternatively or in addition:

(4B) Secondly, the Applicant respectfully asserts that **the Office erred in interpreting the teachings of Tilton, and that the teachings of the Tilton reference simply do not amount (do not sum up to) the combination of the features of claim 1.**

Indeed:

(4B.1) While paragraph [0120] of Tilton discusses the "paper layer" in general terms, the only layer of the Tilton structure that can even distantly be interpreted as the "*paper layer*" is the layer 32, which - according to Tilton - is a "*fiber-containing layer*":

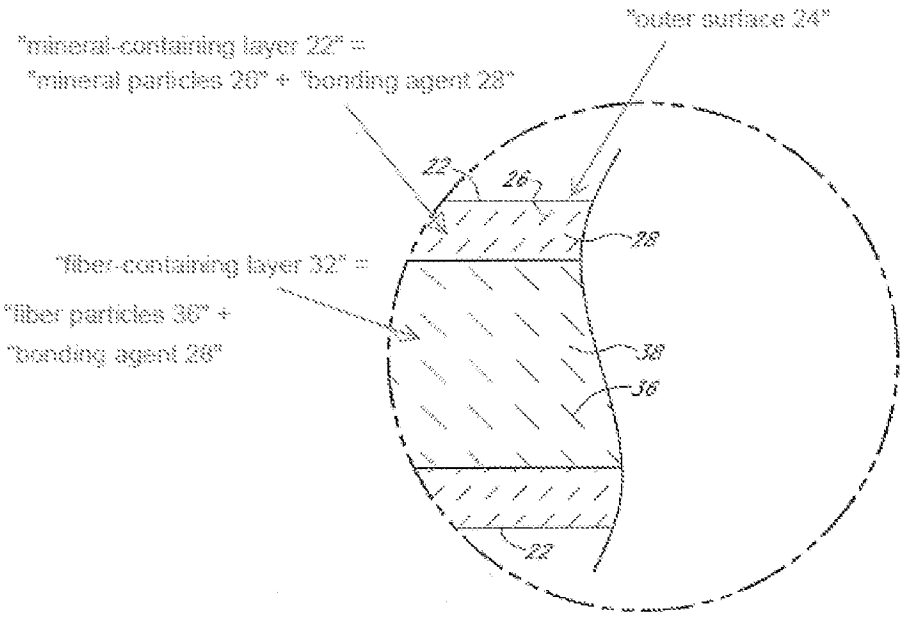

FIG. 1A

Therefore - based on this description of Tilton and in light of the well-recognized concept of claim differentiation - the layer 32 simply cannot be interpreted as a *"polymer layer"* of claim 1 - contrary to the interpretation provided by the USPTY on page 3 of the Office Action.

(4B.2) The only layer of the Tilton structure (see marked-up Fig 1A above) that can possibly be interpreted as a "*polymer layer*" is the layer 22 (which, according to Tilton, contains "*mineral particles 36*" defining this polymer-nature of this layer).

Therefore - based on this description of Tilton and in light of the well-recognized concept of claim differentiation - the layer 22 simply cannot be interpreted as an *"aluminum layer"* of claim 1 - contrary to the interpretation provided by the USPTY on page 3 of the Office Action.

(4B.3) In the next logical step, the Applicant respectfully refers to the recitation of claim 1, according to which the "stack" is formed by - in that order(!) - paper layer,

polymer layer affixed to the paper layer, the intermediate coating layer *on top of* the polymer layer, and only then an aluminum layer carried by the intermediate coating layer.

In other words, the "aluminum layer" as claimed is separated from the "paper layer" by *at least* the "polymer layer (and, in fact, by both the polymer layer and the intermediate coating layer).

And this is where the interpretation of Tilton by the Office take another wrong turn: if the presence of the claimed "aluminum layer" is derived from paragraph [0095] of Tilton (according to the assertion made by the Office on page 3 of the Office Action), then the person of skill in the art simply has to conclude - from the express recitation in paragraph [0095] - that such "aluminum layer" is disposed immediately onto the polymer layer ("mineral containing layer 22"):

> **[0095]** Regarding the mineral-containing composite layer, upon substantially and continuously bonding to the fiber-containing using extrusion coating or extrusion lamination techniques, the layer of which can then be used to form a laminated structure of which the mineral-containing layer can be used as a peel coat onto a desired backing material. The best peel seal, for example, to the mineral-containing layer of the composite, may be selected from poly-4-methyl pentene, nylon, high-density polyethylene (HDPE), aluminum foil, polycarbonate polystyrene, polyurethane, polyvinyl chloride, polyester, polyacrylonitrile, polypropylene (PP), and paper.

In reference to the marked-up version of FIG. 1A of Tilton (as well as Fig. 2 of Tilton, not reproduced here), it means that the "aluminum layer" is disposed directly onto the "outer surface 24" of the "polymer layer 22".

Therefore, Tilton does not teach anything between the aluminum layer and the polymer layer - therefore, Tilton simply *cannot* teach the "intermediate coating layer" as recited in

claim 1. (And, in fact, there is *no express recitation* of any "intermediate coating layer" in the structure of Tilton that would satisfy the requirements of claim 1)

(4B.4) At the same time, the Office has not made an assertion that Tilton *teaching by inherency*. Should the Office decide to make the prima facie of teaching by inherency, the Applicant respectfully asks that the Office provides evidence that the required feature of *'intermediate coating layer"* as recited in claim 1 necessarily follows from the disclosure(s) of he cited references, as is required by well-settled law:

a subject matter is only inherent when the prior art makes it clear that the subject matter "necessarily flows from the teachings of the prior art." *See* MPEP §2112(IV) (emphasis in original), citing *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) ("In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art").

The mere fact that "a certain result or characteristic may occur or be present in the prior art is not sufficient to establish inherency of that result or characteristic. *Id.* (emphasis original), citing *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

Given the absence of evidence of either explicit or inherent teachings of the above-identified feature of claim 1, and the fact that the remaining cited references do not cure this deficiency of Tilton. the Applicant respectfully submits that a *prima facie* case of obviousness has not been established: the rejection of claim 1 was made in error and must be withdrawn at least for this reason.

Alternatively or in addition:

(4C) Claim 1 remains patentable over the art of record at least because the combination of (Tilton + Wadsworth) does not teach the identified feature of claim 1.

Contrary to the assertion made by the Office on page 4 of the Office Action, Wadsworth does not teach "the aluminum layer that causes an outer surface of the packaging to have emissivity that is equal to or smaller than ta first value of 0.10." Instead, all Wadsworth is teaching is that the aluminum layer *itself* has that value of emissivity: a skilled artisan will immediately recognize the difference from carefully reading the referred-to by the Office paragraph [0015] of Wadsworth:

[0015] FIG. **2** shows a surface **22** of the sheet material **20** that, when converted to form the box **10** of FIG. **1**, defines the interior-facing surfaces surrounding the interior volume **12** of the box **10**. As evident from FIG. **2**, the sheet material **20** has been cut, such as with a die, to define the panels of the box **10** in FIG. **1**. In particular, the sheet material **20** comprises the four side panels **14**A-D, four bottom flaps **16**A-D that form the bottom **16** of the box **10**, and the four top flaps **18**A-D that define the closing flaps of the box **10**. An additional flap, referred to as a stitch tab **24**, extends from the side panel **14**D which, as evident from FIG. **1**, enables the panel **14**D to be glued or otherwise attached to the side panel **14**A for closing the sides of the box **10**. The surface **22** of the sheet material **20** seen in FIG. **2** is preferably reflective, such that thermal radiation emitted by the contents of the box **10** is reflected back into the interior volume **12** and its contents. For this purpose, the surface **22** of the sheet material **20** is defined by a reflective film material that exhibits low emissivity (preferably 0.05 or less). The film material is also preferably protected with a coating capable of inhibiting corrosion to maintain the high reflectance of the film material.

[0016] The sheet material **20** is manufactured and config-

The emissivity of a "reflective material" and the emissivity of a "stack" of materials including such "reflective material" are not the same things at all: according to a well-known technical definition of the term "emissivity", the first one is the measure of the ability of the "reflective material" to emit infrared energy, while the second is the measure of the ability of the whole "stack" to emit infrared energy (see, for example www.flukeprocessinstruments.com/en-us/service-and-support/knowledge-center/infrared-technology/what-is-emissivity
or en.wikipedia.org/wiki/Emissivity), and the skilled person cannot possibly confuse one with another.

(

In fact, the Office seems to recognize this as well - based on the statement at the beginning of page 5 amounting to acknowledgement that it is the aluminum layer that possesses the stated emissivity - not the packaging stack:

Application/Control Number: 16/238,998 Page 5
Art Unit: 3731

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton in view of Wadsworth by having provided the aluminum layer's emissivity, as taught by Wadsworth, in order to provide low emissivity and protect the contents within the package (**para. [0026]**).

)

The remaining references do not cure this deficiency of the vombination of (Tilton + Wadsworth). Claim 1 and all claims dependent therefrom directly or indirectly were rejected in error.

Alternatively or in addition,

5. Claim 2 was rejected in error.

Indeed, since Tilton does not teach the "intermediate coating" (between the "polymer layer" and the "aluminum layer"), the Tilton simply cannot teach *"wherein the aluminum layer is disposed directly on the intermediate coating."*

Alternatively or in addition,

6. The Applicant respectfully asserts that **Claim 4 remains patentable over the art of record** any of the following reasons:

(6A) Contrary to the assertion made by the Office on page 7 of the Office Action, nothing in the referred to paragraphs [012], [0390] of Shimizu allows the skilled artisan to conclude that the "protective coating" of Shimizu is that recited in claim 4, and that

> However, Shimizu teaches a protective coating (**S**) over the aluminum layer (**Z1; [para. [0157]**), wherein the protective coating has a second thickness, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value (**para. [0012], [0390]**) after the aluminum layer (**Z1**) has been coated with the protective coating (**S**) and ii) to

The Applicant is at a loss attempting to find the required *express teaching* in Shimizu - and reproduced these paragraphs of Shimizu for the convenience of the Office below, asking the Office to identify - with particularity, as required by 37 CFR 1.104 - the source of teaching of the above recitation of claim 4 in Shimizu:

[0012] An object of the present invention is to provide: a novel multilayer structure capable of maintaining high performance even after being exposed to physical stresses or after undergoing retorting; a packaging material including the multilayer structure; and a method for producing the multilayer structure. Another object of the present invention is to provide: a packaging material that is capable of maintaining the gas barrier properties at a high level even when exposed to physical stresses and that is resistant to appearance defects even at high temperature and high humidity; and a product including the packaging material. Still another object of the present invention is to provide an electronic device that is capable of maintaining the gas barrier properties at a high level even when exposed to physical stresses and that undergoes less decrease in interlayer adhesion and is thus resistant to appearance defects even at high temperature and high humidity.

[0390] A multilayer structure (**14-1**) of Example 1-14 and a multilayer structure (**15-1**) of Example 1-15 were fabricated in the same manner as in the fabrication of the multilayer structure (**1-1**) of Example 1-1, except for using a deposited layer formed by vacuum deposition instead of the layer (Z1). In Example 1-14, the deposited layer used was the layer (Z2) of aluminum with a thickness of 0.03 μm. In Example 1-15, the deposited layer used was the layer (Z3) of aluminum oxide with a thickness of 0.03 μm. In addition, multilayer structures (**14-2**) and (**15-2**) were obtained in the same manner as in the fabrication of the multilayer structure (**1-2**) of Example 1-1, except for substituting the multilayer structures (**14-1**) and (**15-1**) for the multilayer structure (**1-1**).

As of record, the argument of "*teaching by inherency*" has not been made by the USPTO. At least for this reason, claim 4 remains patentable over the art of record.

(6B) Now, since the absence of the teaching (by Zhimizu) of protective coating as recited in claim 1 with respect to the feature of "maintaining the emissivity … at the first value…" has been established, the logic of the Office asserting that this coating (S) of

Shimizu *"is configured ... [to] not impede oxidization of the aluminum layer cause by the treatment..."* simply does not hold:

> However, Shimizu teaches a protective coating (**S**) over the aluminum layer (**Z1; [para. [0157]**), wherein the protective coating has a second thickness, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value (**para. [0012], [0390]**) after the aluminum layer (**Z1**) has been coated with the protective coating (**S**) and ii) to prevent oxidation of the aluminum layer (**Z1**) during normal use of the packaging (**para. [0012]**), while the protective coating (**S**) does not impede oxidization of the aluminum layer caused by the treatment (**based on the values and processes combination of references , the resulting impedance would be that of the instant application**).

How can it possibly be that the "resulting impedance" of the coating (S) of Shimizu "would be that of the instant application" if the coating (S) of Shimizu is not the same as that of the instant application? - This argument is simply no available now.

Accordingly, the feature "… does not impede oxidization of the aluminum layer caused by the treatment…" is not taught by the combination of (Tilton + Wadsworth + Shimizu) either.

7. The Applicant respectfully submits that the same arguments made above in support of patentability of claim 1 equally apply to **claims 15, 16.** At least for the same reasons claims 15, 16 remains patentable over the art of record.

8. The Applicant also respectfully submits that the same arguments made above in support of patentability of claim 1 are now also made in reference to **claims 8, 10**. At least for the same reasons claims 8, 10 remains patentable over the art of record.

Moreover, however: the art of record is silent with respect to the feature of optical density of less than 0.09" recited in claims 8, 10 as amended. At least for this reason claims 8, 10 and claims dependent therefrom directly or indirectly remain patentable over the art of record.

9. All pending claims are believed to be in a form suitable for allowance, which is respectfully solicited.

10. Applicant petitions for a three-month extension of time. In the event that a further extension is needed, this conditional petition of extension is hereby submitted. Applicant requests that deposit account number 17-0055 be charged for any fees that may be required for the timely consideration of this application.

Date: December 22, 2020

Respectfully submitted,

/Yakov Sidorin, 63507/

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/238,998	Filing Date 01/03/2019	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	12/22/2020	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 16	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 5	Minus	*** 5	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/DENISE HOPKINS/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/238,998	01/03/2019	Steven Yializis	861133.00068	5903

34282 7590 03/29/2021

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EXAMINER	
JALLOW, EYAMINDAE CHOSSAN	

ART UNIT	PAPER NUMBER
3731	

NOTIFICATION DATE	DELIVERY MODE
03/29/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pat-dept@quarles.com

Office Action Summary	Application No. 16/238,998	Applicant(s) Yializis et al.	
	Examiner EYAMINDAE C JALLOW	Art Unit 3731	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on December 22nd 2020.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-16 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☑ Claim(s) 8-16 is/are allowed.

7) ☑ Claim(s) 1-7 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on January 3rd 2019 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

2. This action is in response to applicant's amendment received on December 22nd 2020.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-16** are rejected under 35 U.S.C. 103 as being unpatentable over Tilton (US 2014/0272163) in view of Shimizu et al. (US 2017/0129216; "Shimizu"), Wadsworth et al. (US 2011/0020570; "Wadsworth") and Gregory (US 4,952,278).

Regarding claim 1, Tilton discloses a recyclable packaging (**20**) comprising: a stack (**the paper, polymer, intermediate and aluminum layers form a stack, which is defined as being arranged in a pile**) including

a paper layer (**32**) with first and second surfaces (**para. [0120]**);

a polymer layer (**28**) with third and fourth surfaces, wherein the third surface is affixed to the second surface (**para. [0110]; Fig. 1**); and

an intermediate coating layer (**28**) applied to the fourth surface (**para. [0110]; Fig. 2**);

an aluminum layer (**22; para. [0094]-[0095]**) carried by the intermediate coating layer (**para. [0095]; Fig. 1**).

wherein said packaging (**20**) is subjected to treatment that includes

a) blending the packaging in a blender (**para. [0125]**);

b) disintegrating into water with a British Disintegrator at about a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm (**para. [0125] discloses 52 degrees C, which is 125.6 degrees F ~ 125 F**);

c) separating in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes (**para. [0125]**).

to form a recyclable material, said aluminum layer becomes fully oxidizes with no visible aluminum present in said recyclable material (**para. [0080]-[0081], [0125]**).

Tilton fails to disclose wherein the aluminum layer has a first thickness of 200 nanometers or less.

However, Shimizu teaches an aluminum layer (**Z1**) has a first thickness of 200 nanometers or less (**para. [0390]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by having provided the thickness, as taught by Shimizu, in order to protect against oxygen and moisture transmission (**para. [0440]**).

Tilton in view of Shimizu fail to disclose wherein said stack has emissivity that is equal to or smaller than a first value of 0.10 as perceived through an outer surface thereof.

However, Wadsworth teaches said packaging (**10**) has emissivity that is equal to or smaller than a first value of 0.10 as perceived through an outer surface thereof (**para. [0015]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton in view of Wadsworth by having provided the aluminum layer's emissivity, as taught by Wadsworth, in order to provide low emissivity and protect the contents within the package (**para. [0026]**).

Tilton in view of Shimizu and Wadsworth fail to disclose drying in an oven for 4 hours at 221 degrees F.

However, Gregory teaches drying in an oven (**an oven is defined as: a thermally insulated chamber used for heating, baking or drying**) for 4 hours at 221 degrees F (**col. 12 ll. 8-11 discloses the drying occurring at 112 degrees C = 233.6 degrees F**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the recyclable packaging of Tilton in view of Wadsworth and Shimizu by having provided the drying, as taught by Gregory, in order to produce a dried material ready to be reused.

Regarding claim 2, Tilton discloses wherein the aluminum layer (**22; para. [0094]-[0095**) is disposed directly on the intermediate coating (**28; para. [0095]; Fig. 2**).

Regarding claim 3, Tilton in view of Wadsworth disclose wherein the intermediate coating (**28**) includes a material selected from polymer and oligomer (**para. [0110]**).

Tilton in view of Wadsworth fail to disclose the intermediate coating has the intermediate coating thickness between 10 nm and 2000 nm.

However, Shimizu discloses an intermediate coating (**L**) has the intermediate coating thickness between 10 nm and 2000 nm (**para. [0208]**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the intermediate coating of Tilton in view of Wadsworth by having provided the intermediate coating thickness, as taught by Shimizu, in order to further enhance the resulting adhesion between the aluminum and polymer layer (**para. [0208]**).

Regarding claim 4, Tilton discloses the aluminum layer (**22; para. [0094]-[0095]**).

Tilton fails to disclose further comprising: a protective coating layer disposed over the aluminum layer, wherein the protective coating layer has a second thickness of 1 micron or less, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value after the aluminum layer has been coated with the protective coating and ii) to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating (**S**) does not impede oxidization of the aluminum layer caused by the treatment

However, Shimizu teaches a protective coating (**S**) over the aluminum layer (**Z1; [para. [0157]**), wherein the protective coating has a second thickness, and

wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value (**para. [0012], [0390]**) after the aluminum layer (**Z1**) has been coated with the protective coating (**S**) and ii) to prevent oxidation of the aluminum layer (**Z1**) during normal use of the packaging (**para. [0012]**), while the protective coating (**S**) does not impede oxidization of the aluminum layer caused by the treatment (**based on the values and processes combination of references , the resulting impedance would be that of the instant application**).

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the aluminum layer of Tilton by having provided the protective coating layer, as taught by Shimizu, in order to preserve the aluminum layer on the laminate.

Shimizu discloses the claimed invention except for a second thickness of 1 micron or less. However, it would have been obvious to one having ordinary skill in the art at the time the invention was filed to provide a thickness of 1 micron or less, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 5, Tilton discloses the recyclable packaging (**20**).

Tilton fails to wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

However, Shimizu teaches the protective coating (**S**) includes a material selected from: wax, polymer (**para. [0145]**), and lacquer.

It would have been obvious to one having ordinary skill in the art, at the time applicant's invention was filed, to have modified the packaging of Tilton by having

provided the coating layer, as taught by Shimizu, in order to preserve the aluminum layer on the laminate.

Regarding claim 6, Tilton discloses wherein the polymer layer (**32**) includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene (**para. [0110] discloses a polymer-containing resin which include polyurethane and polystyrene**).

Regarding claim 7, Tilton discloses wherein the polymer layer (**32**) is a material selected from: film (**para. [0093]**) and fabric.

Allowable Subject Matter

5. **Claims 8, 10, 15 and 16** are allowed.

Regarding claims 8 and 10, the most relevant prior art is Tilton.

The cited prior art fails to disclose or make obvious said aluminum layer acquiring and optical density of less than 0.09.

Regarding claims 15 and 16, the most relevant prior art is Tilton.

The cited prior art fails to disclose or make obvious the packaging having an emissivity that is equal to or smaller than a first value of 0.10.

6. **Claims 4 and 5** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 4, the most relevant prior art is Tilton and Shimizu.

The combination of Tilton and Shimizu do not disclose maintaining the emissivity at the claimed value.

Response to Arguments

7. Applicant's arguments filed December 22nd 2020 have been fully considered but they are not persuasive.

Applicant's representative (AR) argues the office action does not mention the feature of claim 1 as reciting "said aluminum layer becomes fully oxidized with no visible aluminum present in said recyclable material." Examiner asserts that para. [0085] discloses .mineral layer particles are effectively removed after multiple cleaning processes.

AR argues the Office erred in interpreting the teachings of Tilton, and that the teachings of Tilton reference simply do not amount the combination of the features of claim 1. In response to applicant's argument that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, Tilton discloses the configuration of layers undergoing processing claimed in claim 1. The remaining references teach characteristics applied to the layers and packaging in order to influence the characteristics of the recycled package. It would be obvious to combine the references because the layers disclosed in Tilton are capable of being influenced in the manner taught by Shimizu, Wadsworth and Gregory.

AR argues regarding the configuration of the layers. The reference has been reinterpreted to use Fig. 1 to read on the layer limitations.

AR asks Office provides evidence that the "intermediate coating layer" as recited n claim 1 necessarily follows from the disclosure of the cited references. Examiner asserts that the configuration of the layers has been reinterpreted through the use of Fig. 1. Intermediate coating layer (**28**) reads on the limitations provided in the instant application.

AR argues that Wadsworth does not teach the aluminum layer that causes an outer surface of the packaging to have emissivity that is equal to or smaller than a first value of 0.10. Instead, all Wadsworth is teaching is that the aluminum layer itself has that value of emissivity. Examiner asserts that the aluminum layer in Tilton, which is the outer surface, it being modified by the emissivity of the aluminum of Wadsworth is located on the outer layer. The combination results in the outer surface having that specific emissivity.

AR argues that Tilton does not teach the aluminum layer is disposed directly on the intermediate coating. Examiner assert that the layer configurations have been reinterpreted to use Fig. 1.

Regarding arguments 6A and 6B, claim 4 has now been deemed allowable subject matter.

Regarding **claims 8 and 10**, the arguments were deemed persuasive. Refer to "allowable subject matter" section above.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EYAMINDAE JALLOW whose telephone number is (571)270-1927. The examiner can normally be reached on Monday-Thursday from 7:30am-5:00pm and alternating Fridays from 7:30am-4:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANNA KINSAUL, can be reached on (571)270-1926. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal. Should you have questions on access to the

Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/EYAMINDAE C JALLOW/
Examiner, Art Unit 3731
/ANDREW M TECCO/
Primary Examiner, Art Unit 3731

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	Art Unit
	EYAMINDAE C JALLOW	3731

CPC - Searched*		
Symbol	Date	Examiner
B65D 1/0215	06/16/2020	Eyamindae Jallow
B32B 2439/00	06/16/2020	Eyamindae Jallow

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
53	473	06/16/2020	Eyamindae Jallow
53	+ text	06/16/2020	Eyamindae Jallow

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Classification search, inventor search (PALM), forward/backward citation, text search	06/16/2020	Eyamindae Jallow
Updated search	03/23/2021	Eyamindae Jallow

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	Art Unit
	EYAMINDAE C JALLOW	3731

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	165,551	(optical adj density)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/24 09:01
S44	2,262	53/473.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S45	2	"20190270862"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S46	23	"3222657"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S47	2	"6846538".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S48	6	53/$.ccls. and laminate and (paper near3 polymer near3 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00

S49	2,891	53/$.ccls. and laminate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S50	393	53/$.ccls. and laminate and insulat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
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S52	94	paper and aluminum and plastic and (B65D1/0215).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S53	30	("2004/0241454").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S54	11	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$).did. or (US-6846538-$).did. or (EP-3222657-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2021/03/23 17:00
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S56	0	"waring adj blender" and "disintegrator"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00

S57	0	"waring adj blender"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S58	25	(waring adj blender) and (british adj disintegrator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S59	14	(waring adj blender) and (british adj disintegrator) and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S60	25	(waring adj blender) and (british adj disintegrator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S61	4	("2014/0272163").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S62	19	53/$.ccls. and composite and (paper near3 plastic near3 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S63	21	53/$.ccls. and emissivity	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S64	1	"16238998"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/03/23 17:00

			DERWENT; IBM_TDB			
S65	97	("4481076" | "4483743" | "4627743" | "4761203").PN. OR ("4952278").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/23 17:00
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S67	6,561	(B65D1/0215).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S68	382	(B65D1/0215).CPC. and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S69	101	(B65D1/0215).CPC. and aluminum and paper	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S70	82	("4064296" | "4701360" | "4894267").PN. OR ("4977004").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/23 17:00
S71	28	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$ or US-20200071056-$ or US-20050011623-$ or US-20140272163-$ or US-20160178264-$ or US-20140205786-$ or US-	US-PGPUB; USPAT; FPRS	OR	OFF	2021/03/23 17:00

		20190112091-$ or US-20160243746-$).did. or (US-6846538-$ or US-4952278-$ or US-6309510-$ or US-6402887-$ or US-5292391-$ or US-5452565-$ or US-4977004-$ or US-8815360-$ or US-6964797-$ or US-6383582-$).did. or (EP-3222657-$ or WO-2015171193-$).did.				
S72	19,317	(B32B2439/00).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S73	2,045	(B32B2439/00).CPC. and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S74	838	(B32B2439/00).CPC. and aluminum and paper	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S75	0	("2017/0320305").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S76	0	("2017/0188751").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S77	2	("2015/0284141").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S78	224	(B32B2439/00).CPC. and aluminum and paper and insulat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S79	8	(B32B2439/00).CPC. and aluminum and paper and emissivity	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00

S80	0	("2011/0020570").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S81	1	"20050001124"	US-PGPUB; USPAT	OR	OFF	2021/03/23 17:00
S82	2	"20090001124"	US-PGPUB; USPAT	OR	OFF	2021/03/23 17:00
S83	4,822	(B32B2439/00).CPC. and thickness	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S84	246	(B32B2439/00).CPC. and (thickness near5 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S85	2	"20120175170"	US-PGPUB; USPAT	OR	OFF	2021/03/23 17:00
S86	2	"20140272163"	US-PGPUB; USPAT	OR	OFF	2021/03/23 18:03
S87	1	"20170129216"	US-PGPUB; USPAT	OR	OFF	2021/03/23 18:05
S88	1	"20110020570"	US-PGPUB; USPAT	OR	OFF	2021/03/23 18:06

EAST Search History (Interference)

<This search history is empty>

3/24/2021 9:23:11 AM
C:\Users\ejallow\Documents\EAST\Workspaces\Recyclable Paper Containing.wsp

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/238,998	Filing Date 01/03/2019	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $230 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	04/05/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 15	Minus	** 20	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 5	Minus	*** 5	= 0		x $240 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/TAMARA D HARRELL/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Sigma Technologies Int'l., LLC	Docket No.:	861133.00068
Appl. No:	16/238,998	Art Unit:	3731
Filed :	January 03, 2019	Conf. No.	5903
Examiner:	Jallow, Eyamindae Chossan		

Invention: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

Date: April 05, 2021

VIA USPTO ELECTRONIC FILING SYSTEM

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE *B*

To Office Action dated March 29, 2021 and made Final

Dear Sir:

In response to the Final Office Action of March 29, 2021, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 8 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A recyclable packaging comprising:

a stack including

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface; [[and]]

an intermediate coating layer applied to the fourth surface;

an aluminum layer carried by the intermediate coating layer, wherein the aluminum layer has a first thickness of 200 nanometers or less;

wherein said stack has emissivity that is equal to or smaller than a first value of 0.10 as perceived through an outer surface thereof; and

wherein, when said packaging is subjected to treatment that includes

a) blending the packaging in a blender;

b) disintegrating into water with a British Disintegrator at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm;

c) separating in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes; and

d) drying in an oven for 4 hours at 221 degrees F

to form a recyclable material, said aluminum layer becomes fully oxidized with no visible aluminum present in said recyclable material.

and further comprising

a protective coating layer disposed over the aluminum layer, wherein the protective coating layer has a second thickness of 1 micron or less, and wherein the second thickness is configured i) to maintain the emissivity of the outer surface of the packaging at the first value after the aluminum layer has been coated with the protective coating and ii) to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating does not impede oxidation of the aluminum layer as a result of the treatment.

2. (previously presented) The recyclable packaging of claim 1, wherein the aluminum layer is disposed directly on the intermediate coating.

3. (previously presented) The recyclable packaging of claim 1, wherein the intermediate coating has the intermediate coating thickness between 10 nm and 2000 nm and includes a material selected from polymer and oligomer.

4. (cancelled)

5. (currently amended) The recyclable packaging of claim [[4]] 1, wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

6. (original) The recyclable packaging of claim 1, wherein the polymer layer includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene.

7. (original) The recyclable packaging of claim 1, wherein the polymer layer is a material selected from: film and fabric.

8. (previously presented) A method for manufacturing a recyclable packaging, the method comprising:

forming a packaging layer stack by:

attaching a polymer layer to a paper layer, wherein an inner surface of the polymer layer is affixed to a first surface of the paper layer;

depositing an aluminum layer on the polymer layer, wherein the aluminum layer has a first thickness of 200 nanometers or less, and wherein the aluminum layer causes said packaging layer stack to have emissivity that is equal to or smaller than a first value of 0.10; and

wherein said aluminum layer is configured to acquire optical density (OD) of less than 0.09 when the packaging layer stack is exposed to a treatment that includes:

a) blending the packaging stack in a blender;

b) disintegrating into water with a British Disintegrator at at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm,

c) separating an output from step b) in a 0.01 aperture inch screen with a 1 inch water head for 20 minutes, and

d) drying in an oven for 4 hours at 221 degrees F.

9. (currently amended) The method of manufacturing a recyclable packaging of claim 8, further comprising:

applying a protective coating over the aluminum layer to form a coated packaging layer stack, wherein the protective coating has a second thickness of 1 micron or less, and wherein the second thickness is defined

a) to maintain the emissivity of the packaging layer stack at the first value after the aluminum layer has been coated with the protective coating and

b) to prevent oxidation of the aluminum layer during normal use of the packaging, while the protective coating does not impede ~~oxidization~~ <u>oxidation</u> of the aluminum layer as a result of the treatment.

10. (currently amended) A recyclable packaging comprising:

a stack including

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an aluminum layer deposited on the fourth surface, wherein the aluminum layer has a first thickness of 200 nanometers or less and wherein the aluminum layer causes an emissivity of an outer surface of the packaging to be equal to or smaller than a first value of 0.10; and

wherein said aluminum layer acquires an optical density (OD) of less than 0.09 with no visible aluminum present in a recyclable material that results from the packaging being subjected to a treatment, the treatment including ~~that includes~~

a) blending the packaging in a blender to form a first material;

b) disintegrating the first material into water with a British Disintegrator at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

11. (currently amended) The recyclable packaging of claim 10, further comprising:

a protective coating[[,]] over the aluminum layer,

wherein the protective coating has a second thickness of 1 micron or less,

wherein the second thickness is defined to maintain the first value of the emissivity of the recyclable packaging after the aluminum layer has been coated with the protective coating and to prevent oxidation of the aluminum layer during normal use of the packaging,

while the protective coating does not impede ~~oxidization~~ oxidation of the aluminum layer ~~caused by~~ during the treatment.

12. (original) The recyclable packaging of claim 11, wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

13. (original) The recyclable packaging of claim 10, wherein the polymer layer includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene.

14. (original) The recyclable packaging of claim 10, wherein the polymer layer includes a material selected from: film and fabric.

15. (currently amended) A method for thermally insulating a good within a recyclable packaging, the method comprising:

placing a reflective insulation material in a pre-defined proximity with [[a]] the good, the pre-defined proximity being suitably chosen to provide adequate thermal insulation to the good, wherein said reflective insulation material comprises the recyclable packaging that includes:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an aluminum layer deposited on the fourth surface, wherein the aluminum layer has a first thickness of 200 nanometers or less and wherein the aluminum layer causes an emissivity of the recyclable packaging to be equal to or smaller than a first value of 0.10; and

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material that results from the packaging being subjected to a treatment that includes

a) blending the packaging in a blender to form a first material;

b) disintegrating the first material into water with a British Disintegrator at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

16. (currently amended) **A method for thermally insulating a good within a recyclable packaging**, the method comprising:

placing a reflective insulation material at a pre-defined proximity distance from the good, said pre-defined proximity distance chosen to provide adequate thermal insulation to the good, wherein said reflective insulation material comprises the recyclable packaging that includes:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an intermediate coating layer applied to the fourth surface;

an aluminum layer carried by the intermediate coating, wherein the aluminum layer has a first thickness of no more than 200 nanometers to cause the packaging to have emissivity that is equal to or smaller than a first value of 0.10; and

wherein said aluminum layer <u>is configured to acquire optical density (OD) of less than 0.09 and</u> becomes fully oxidized with no visible aluminum present in a recyclable material ~~as a result of subjecting~~ <u>when</u> the recyclable packaging <u>is subjected</u> to a treatment that includes

a) blending the packaging in a blender to form a first material;

b) disintegrating the first material into water with a British at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

REMARKS

1. Claims 1-16 are pending, of which
- claims 1-3, 6-7 stand rejected under 35 USC 103 based on assertion of being obvious in light of the combination of Tilton (UUS 2014/0272163) with Shimizu (US 2017/0129216) and Wadsworth (US 2011/0020570) and Gregory (US 2,952,278);

2. With entry of this response, claims 1-3, 5-16 will be pending. The Applicant respectfully requests reconsideration of the claims in view of the above amendments and the following remarks.

The Applicant respectfully asks the Examiner to please telephone the undersigned, Yakov Sidorin, to discuss any questions that may remain open to advance the application towards allowance - and sincerely appreciates the willingness of the Examiner to do so.

3. While the Applicant respectfully does not agree with the maintained rejection of claims 1-3, 6-7, the Applicant elects to not argue this point in the current application and, instead, amends the list of claims to put the application in condition for allowance. To this end,

- Claim 1 has been amended to include limitations of the allowable claim 4 and, as amended, now represents the allowable claim 4. Claim 4 has been cancelled. Claims 5 has been amended to correct the dependency.

- Several of the allowed claims have been amended to correct typographical errors and/or to ensure antecedent bases.

- No new matter has been added.

4. All pending claims are believed to be in a form suitable for allowance, which is respectfully solicited.

5. Applicant believes that no additional fees are required for timely consideration of this response. In the event that some fee has been overlooked, this conditional petition of

extension is hereby submitted. Applicant requests that deposit account number 17-0055 be charged for any fees that may be required for the timely consideration of this application.

Date: April 05, 2021

Respectfully submitted,

/Yakov Sidorin, 63507/

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Attorney for Applicant

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Electronic Acknowledgement Receipt

EFS ID:	42366345
Application Number:	16238998
International Application Number:	
Confirmation Number:	5903
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Customer Number:	34282
Filer:	Yakov S. Sidorin/Angela Schulz
Filer Authorized By:	Yakov S. Sidorin
Attorney Docket Number:	861133.00068
Receipt Date:	05-APR-2021
Filing Date:	03-JAN-2019
Time Stamp:	14:45:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		861133_00068_response.pdf	153345 86a0e75cceab30f3e14e21027a2a42266b8105d8	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	9
Warnings:			
Information:			
	Total Files Size (in bytes):	153345	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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NOTICE OF ALLOWANCE AND FEE(S) DUE

34282 7590 04/28/2021

QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1800
TUCSON, AZ 85701-1621

EXAMINER
JALLOW, EYAMINDAE CHOSSAN

ART UNIT	PAPER NUMBER
3731	

DATE MAILED: 04/28/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/238,998	01/03/2019	Steven Yializis	861133.00068	5903

TITLE OF INVENTION: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	07/28/2021

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

34282 7590 04/28/2021
QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1800
TUCSON, AZ 85701-1621

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/238,998	01/03/2019	Steven Yializis	861133.00068	5903

TITLE OF INVENTION: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	07/28/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
JALLOW, EYAMINDAE CHOSSAN	3731	053-473000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/238,998	01/03/2019	Steven Yializis	861133.00068	5903

34282 7590 04/28/2021

QUARLES & BRADY LLP (TUC)
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ONE SOUTH CHURCH AVENUE, SUITE 1800
TUCSON, AZ 85701-1621

EXAMINER	
JALLOW, EYAMINDAE CHOSSAN	
ART UNIT	**PAPER NUMBER**
3731	

DATE MAILED: 04/28/2021

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 16/238,998	Applicant(s) Yializis et al.	
	Examiner EYAMINDAE C JALLOW	Art Unit 3731	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to the claim amendments/after final submitted on April 5th 2021.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-3 and 5-16 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information , please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	/ANDREW M TECCO/ Primary Examiner, Art Unit 3731

ALLOWABILITY NOTICE

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Reasons for Allowance

2. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, the most relevant prior art is Tilton (US 2014/0272163) and Shimizu (US 2017/0129216).

The combination of Tilton and Shimizu do not disclose maintaining the emissivity at the claimed value.

Regarding claims 8 and 10, the most relevant prior art is Tilton (US 2014/0272163).

The cited prior art fails to disclose or make obvious said aluminum layer acquiring and optical density of less than 0.09.

Regarding claims 15 and 16, the most relevant prior art is Tilton (US 2014/0272163).

The cited prior art fails to disclose or make obvious the packaging having an emissivity that is equal to or smaller than a first value of 0.10.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EYAMINDAE JALLOW whose telephone number is (571)270-1927. The examiner can normally be reached on Monday-Thursday from 7:30am-5:00pm and alternating Fridays from 7:30am-4:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANNA KINSAUL, can be reached on (571)270-1926. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/EYAMINDAE C JALLOW/
Examiner, Art Unit 3731

/ANDREW M TECCO/
Primary Examiner, Art Unit 3731

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	Art Unit
	EYAMINDAE C JALLOW	3731

CPC						
Symbol					Type	Version
B32B	/	15	/	085	F	2013-01-01
B32B	/	29	/	06	I	2013-01-01
B32B	/	29	/	002	I	2013-01-01
B32B	/	27	/	10	I	2013-01-01
B32B	/	27	/	302	I	2013-01-01
B32B	/	5	/	02	I	2013-01-01
B32B	/	15	/	082	I	2013-01-01
B32B	/	15	/	09	I	2013-01-01
B32B	/	15	/	095	I	2013-01-01
B32B	/	15	/	20	I	2013-01-01
B32B	/	27	/	304	I	2013-01-01
B32B	/	27	/	32	I	2013-01-01
B32B	/	27	/	36	I	2013-01-01
B32B	/	27	/	40	I	2013-01-01
B32B	/	29	/	08	I	2013-01-01
B65D	/	65	/	403	I	2013-01-01
B65D	/	65	/	42	I	2013-01-01
B65D	/	81	/	38	I	2013-01-01
B32B	/	2307	/	30	A	2013-01-01
B32B	/	2255	/	10	A	2013-01-01
B32B	/	2255	/	205	A	2013-01-01
B32B	/	2255	/	28	A	2013-01-01
B32B	/	2307	/	732	A	2013-01-01
B32B	/	2255	/	06	A	2013-01-01
B32B	/	2255	/	26	A	2013-01-01
B32B	/	2262	/	0238	A	2013-01-01
B32B	/	2262	/	0253	A	2013-01-01
B32B	/	2262	/	0284	A	2013-01-01
B32B	/	2262	/	0292	A	2013-01-01
B32B	/	2439	/	00	A	2013-01-01

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	15 April 2021	Total Claims Allowed:	
(Assistant Examiner)	(Date)	15	
/ANDREW M TECCO/ Primary Examiner, Art Unit 3731	22 April 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	6

U.S. Patent and Trademark Office — Part of Paper No.: 20210415

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	**Art Unit**
	EYAMINDAE C JALLOW	3731

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	15 April 2021	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	15	
/ANDREW M TECCO/ Primary Examiner, Art Unit 3731	22 April 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	6

U.S. Patent and Trademark Office — Part of Paper No.: 20210415

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	Art Unit
	EYAMINDAE C JALLOW	3731

INTERNATIONAL CLASSIFICATION					
CLAIMED					
B32B	/	29	/	00	

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	15 April 2021	Total Claims Allowed:	
(Assistant Examiner)	(Date)	15	
/ANDREW M TECCO/ Primary Examiner, Art Unit 3731	22 April 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	6

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	Art Unit
	EYAMINDAE C JALLOW	3731

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	9	10												
2	2	10	11												
3	3	11	12												
	4	12	13												
4	5	13	14												
5	6	14	15												
6	7	15	16												
7	8														
8	9														

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	15 April 2021	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	15	
/ANDREW M TECCO/ Primary Examiner, Art Unit 3731	22 April 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	6

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	Art Unit
	EYAMINDAE C JALLOW	3731

CPC - Searched*		
Symbol	Date	Examiner
B65D 1/0215	06/16/2020	Eyamindae Jallow
B32B 2439/00	06/16/2020	Eyamindae Jallow

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
53	473	06/16/2020	Eyamindae Jallow
53	+ text	06/16/2020	Eyamindae Jallow

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Classification search, inventor search (PALM), forward/backward citation, text search	06/16/2020	Eyamindae Jallow
Updated search	03/23/2021	Eyamindae Jallow
Updated search	04/15/2021	Eyamindae Jallow
Interference search	04/15/2021	Eyamindae Jallow

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/238,998	Yializis et al.
	Examiner	Art Unit
	EYAMINDAE C JALLOW	3731

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
See EAST printout	See EAST printout	04/15/2021	Eyamindae Jallow

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S44	2,262	53/473.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S45	2	"20190270862"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S46	23	"3222657"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S47	2	"6846538".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S48	6	53/$.ccls. and laminate and (paper near3 polymer near3 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S49	2,891	53/$.ccls. and laminate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00

S50	393	53/$.ccls. and laminate and insulat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S51	10	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$).did. or (US-6846538-$).did. or (EP-3222657-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2021/03/23 17:00
S52	94	paper and aluminum and plastic and (B65D1/0215).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S53	30	("2004/0241454").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S54	11	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$).did. or (US-6846538-$).did. or (EP-3222657-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2021/03/23 17:00
S55	0	"waring adj blender" and "british adj disintegrator"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S56	0	"waring adj blender" and "disintegrator"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S57	0	"waring adj blender"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/03/23 17:00

			DERWENT; IBM_TDB			
S58	25	(waring adj blender) and (british adj disintegrator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S59	14	(waring adj blender) and (british adj disintegrator) and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S60	25	(waring adj blender) and (british adj disintegrator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S61	4	("2014/0272163").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S62	19	53/$.ccls. and composite and (paper near3 plastic near3 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S63	21	53/$.ccls. and emissivity	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S64	1	"16238998"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S65	97	("4481076" | "4483743" | "4627743" | "4761203").PN. OR ("4952278").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/23 17:00

S66	20	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$ or US-20200071056-$ or US-20050011623-$ or US-20140272163-$ or US-20160178264-$).did. or (US-6846538-$ or US-4952278-$ or US-6309510-$ or US-6402887-$ or US-5292391-$ or US-5452565-$).did. or (EP-3222657-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2021/03/23 17:00
S67	6,561	(B65D1/0215).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S68	382	(B65D1/0215).CPC. and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S69	101	(B65D1/0215).CPC. and aluminum and paper	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S70	82	("4064296" | "4701360" | "4894267").PN. OR ("4977004").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/03/23 17:00
S71	28	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$ or US-20200071056-$ or US-20050011623-$ or US-20140272163-$ or US-20160178264-$ or US-20140205786-$ or US-20190112091-$ or US-20160243746-$).did. or (US-6846538-$ or US-4952278-$ or US-6309510-$ or US-6402887-$ or US-5292391-$ or US-5452565-$ or US-4977004-$ or US-	US-PGPUB; USPAT; FPRS	OR	OFF	2021/03/23 17:00

		8815360-$ or US-6964797-$ or US-6383582-$).did. or (EP-3222657-$ or WO-2015171193-$).did.				
S72	19,317	(B32B2439/00).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S73	2,045	(B32B2439/00).CPC. and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S74	838	(B32B2439/00).CPC. and aluminum and paper	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S75	0	("2017/0320305").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S76	0	("2017/0188751").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S77	2	("2015/0284141").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S78	224	(B32B2439/00).CPC. and aluminum and paper and insulat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S79	8	(B32B2439/00).CPC. and aluminum and paper and emissivity	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S80	0	("2011/0020570").URPN.	USPAT	OR	OFF	2021/03/23 17:00
S81	1	"20050001124"	US-PGPUB; USPAT	OR	OFF	2021/03/23 17:00

S82	2	"20090001124"	US-PGPUB; USPAT	OR	OFF	2021/03/23 17:00
S83	4,822	(B32B2439/00).CPC. and thickness	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S84	246	(B32B2439/00).CPC. and (thickness near5 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/23 17:00
S85	2	"20120175170"	US-PGPUB; USPAT	OR	OFF	2021/03/23 17:00
S86	2	"20140272163"	US-PGPUB; USPAT	OR	OFF	2021/03/23 18:03
S87	1	"20170129216"	US-PGPUB; USPAT	OR	OFF	2021/03/23 18:05
S88	1	"20110020570"	US-PGPUB; USPAT	OR	OFF	2021/03/23 18:06
S89	165,551	(optical adj density)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/03/24 09:01
S90	2,263	53/473.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S91	2	"20190270862"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S92	23	"3222657"	US-PGPUB; USPAT; USOCR;	OR	OFF	2021/04/15 09:30

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S93	3	"6846538".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S94	6	53/$.ccls. and laminate and (paper near3 polymer near3 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S95	2,891	53/$.ccls. and laminate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S96	393	53/$.ccls. and laminate and insulat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S97	10	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$).did. or (US-6846538-$).did. or (EP-3222657-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2021/04/15 09:30
S98	95	paper and aluminum and plastic and (B65D1/0215).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S99	30	("2004/0241454").URPN.	USPAT	OR	OFF	2021/04/15 09:30

S100	11	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$).did. or (US-6846538-$).did. or (EP-3222657-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2021/04/15 09:30
S101	0	"waring adj blender" and "british adj disintegrator"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S102	0	"waring adj blender" and "disintegrator"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S103	0	"waring adj blender"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S104	25	(waring adj blender) and (british adj disintegrator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S105	14	(waring adj blender) and (british adj disintegrator) and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S106	25	(waring adj blender) and (british adj disintegrator)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30

S107	4	("2014/0272163").URPN.	USPAT	OR	OFF	2021/04/15 09:30
S108	19	53/$.ccls. and composite and (paper near3 plastic near3 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S109	21	53/$.ccls. and emissivity	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S110	1	"16238998"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S111	98	("4481076" | "4483743" | "4627743" | "4761203").PN. OR ("4952278").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/04/15 09:30
S112	20	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$ or US-20200071056-$ or US-20050011623-$ or US-20140272163-$ or US-20160178264-$).did. or (US-6846538-$ or US-4952278-$ or US-6309510-$ or US-6402887-$ or US-5292391-$ or US-5452565-$).did. or (EP-3222657-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2021/04/15 09:30
S113	6,577	(B65D1/0215).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S114	383	(B65D1/0215).CPC. and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	OFF	2021/04/15 09:30

			JPO; DERWENT; IBM_TDB			
S115	102	(B65D1/0215).CPC. and aluminum and paper	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S116	82	("4064296" | "4701360" | "4894267").PN. OR ("4977004").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2021/04/15 09:30
S117	28	(US-20190270862-$ or US-20160107814-$ or US-20160059973-$ or US-20160023830-$ or US-20160023810-$ or US-20150321822-$ or US-20150150716-$ or US-20040241454-$ or US-20200071056-$ or US-20050011623-$ or US-20140272163-$ or US-20160178264-$ or US-20140205786-$ or US-20190112091-$ or US-20160243746-$).did. or (US-6846538-$ or US-4952278-$ or US-6309510-$ or US-6402887-$ or US-5292391-$ or US-5452565-$ or US-4977004-$ or US-8815360-$ or US-6964797-$ or US-6383582-$).did. or (EP-3222657-$ or WO-2015171193-$).did.	US-PGPUB; USPAT; FPRS	OR	OFF	2021/04/15 09:30
S118	19,428	(B32B2439/00).CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S119	2,055	(B32B2439/00).CPC. and aluminum	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S120	841	(B32B2439/00).CPC. and aluminum and paper	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2021/04/15 09:30

			DERWENT; IBM_TDB			
S121	0	("2017/0320305").URPN.	USPAT	OR	OFF	2021/04/15 09:30
S122	0	("2017/0188751").URPN.	USPAT	OR	OFF	2021/04/15 09:30
S123	3	("2015/0284141").URPN.	USPAT	OR	OFF	2021/04/15 09:30
S124	225	(B32B2439/00).CPC. and aluminum and paper and insulat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S125	8	(B32B2439/00).CPC. and aluminum and paper and emissivity	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S126	0	("2011/0020570").URPN.	USPAT	OR	OFF	2021/04/15 09:30
S127	1	"20050001124"	US-PGPUB; USPAT	OR	OFF	2021/04/15 09:30
S128	2	"20090001124"	US-PGPUB; USPAT	OR	OFF	2021/04/15 09:30
S129	4,845	(B32B2439/00).CPC. and thickness	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S130	246	(B32B2439/00).CPC. and (thickness near5 aluminum)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30
S131	2	"20120175170"	US-PGPUB; USPAT	OR	OFF	2021/04/15 09:30
S132	2	"20140272163"	US-PGPUB; USPAT	OR	OFF	2021/04/15 09:30

S133	1	"20170129216"	US-PGPUB; USPAT	OR	OFF	2021/04/15 09:30
S134	1	"20110020570"	US-PGPUB; USPAT	OR	OFF	2021/04/15 09:30
S135	165,961	(optical adj density)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/04/15 09:30

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	12	((aluminum adj layer) and (emissivity)).clm.	US-PGPUB; USPAT	OR	OFF	2021/04/15 18:07

4/15/2021 6:10:52 PM
C:\Users\ejallow\Documents\EAST\Workspaces\Recyclable Paper Containing.wsp

Bibliographic Data

Application No: 16/238,998

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /EYAMINDAE C JALLOW/ Examiner's Signature | Initials

Title: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
01/03/2019	053	3731	861133.00068
RULE			

APPLICANTS

SIGMA TECHNOLOGIES INT'L., LLC, Tucson, AZ, UNITED STATES

INVENTORS

Steven Yializis, Tucson, AZ, UNITED STATES

Luke Rogers, Tucson, AZ, UNITED STATES

CONTINUING DATA

This application has PRO of 62614568 01/08/2018

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

01/29/2019

**** SMALL ENTITY ****

STATE OR COUNTRY

UNITED STATES

ADDRESS

QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1800
TUCSON, AZ 85701-1621
UNITED STATES

FILING FEE RECEIVED

$865

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Sigma Technologies Int'l., LLC	Docket No.:	861133.00068
Appl. No:	16/238,998	Art Unit:	3731
Filed :	January 03, 2019	Conf. No.	5903
Examiner:	Jallow, Eyamindae Chossan		

Invention: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

Date: April 05, 2021

VIA USPTO ELECTRONIC FILING SYSTEM

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE *B*

To Office Action dated March 29, 2021 and made Final

Dear Sir:

In response to the Final Office Action of March 29, 2021, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 8 of this paper.

Electronic Acknowledgement Receipt

EFS ID:	42636647
Application Number:	16238998
International Application Number:	
Confirmation Number:	5903
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Customer Number:	34282
Filer:	Yakov S. Sidorin/tracey baxter
Filer Authorized By:	Yakov S. Sidorin
Attorney Docket Number:	861133.00068
Receipt Date:	04-MAY-2021
Filing Date:	03-JAN-2019
Time Stamp:	17:41:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment after Notice of Allowance (Rule 312)	00068_amend_312.pdf	112993 490373786191fa84034422e6effcd212ecb17665	no	9

Warnings:

Information:	
Total Files Size (in bytes):	112993

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Sigma Technologies Int'l., LLC	Docket No.:	861133.00068
Appl. No:	16/238,998	Art Unit:	3731
Filed :	January 03, 2019	Conf. No.	5903
Examiner:	Jallow, Eyamindae Chossan		

Invention: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

Date: May 05, 2021

VIA USPTO ELECTRONIC FILING SYSTEM

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AFTER NOTICE OF ALLOWANCE

UNDER 37 C.F.R. Sec. 1.312

Dear Sir:

In response to the Notice of Allowance dated April 28, 2021, please amend the above-identified application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 9.

AMENDMENTS TO THE CLAIMS

The following list of claims replaces all prior versions, and listings, of claims in the application:

1. (currently amended) A recyclable packaging comprising:

a stack including

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an intermediate coating layer applied to the fourth surface;

an aluminum layer carried by the intermediate coating layer, wherein the aluminum layer has a first thickness of 200 nanometers or less;

wherein said stack has emissivity that is equal to or smaller than a first value of 0.10 as perceived through an outer surface ~~thereof~~ of the aluminum layer; and

wherein, when said packaging is subjected to treatment that includes

a) blending the packaging in a blender;

b) disintegrating into water with a British Disintegrator at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm;

c) separating in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes; and

d) drying in an oven for 4 hours at 221 degrees F

to form a recyclable material, said aluminum layer becomes fully oxidized with no visible aluminum present in said recyclable material,

and further comprising

a protective coating layer disposed over the aluminum layer, wherein the protective coating layer has a second thickness of 1 micron or less, and wherein the second thickness is configured i) to maintain the emissivity ~~of the outer surface of the packaging~~ at the first value after the aluminum layer has been coated with the protective coating and ii) to prevent oxidation of the aluminum layer during normal use of the packaging, while ~~the protective coating does not impede~~ not impeding oxidation of the aluminum layer as a result of the treatment.

2. (previously presented) The recyclable packaging of claim 1, wherein the aluminum layer is disposed directly on the intermediate coating.

3. (previously presented) The recyclable packaging of claim 1, wherein the intermediate coating has the intermediate coating thickness between 10 nm and 2000 nm and includes a material selected from polymer and oligomer.

4. (cancelled)

5. (previously presented) The recyclable packaging of claim 1, wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

6. (original) The recyclable packaging of claim 1, wherein the polymer layer includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene.

7. (original) The recyclable packaging of claim 1, wherein the polymer layer is a material selected from: film and fabric.

8. (currently amended) A method for manufacturing a recyclable packaging, the method comprising:

forming a packaging layer stack by:

attaching a polymer layer to a paper layer, wherein an inner surface of the polymer layer is affixed to a first surface of the paper layer;

depositing an aluminum layer on the polymer layer, wherein the aluminum layer has a first thickness of 200 nanometers or less, and wherein the aluminum layer causes said packaging layer stack to have emissivity that is equal to or smaller than a first value of 0.10; and

wherein said aluminum layer is configured to acquire optical density (OD) of less than 0.09 when the packaging layer stack is exposed to a treatment that includes:

a) blending the packaging stack in a blender;

b) disintegrating into water with a British Disintegrator [[at]] at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm,

c) separating an output from step b) in a 0.01 aperture inch screen with a 1 inch water head for 20 minutes, and

d) drying in an oven for 4 hours at 221 degrees F.

9. (currently amended) The method of manufacturing a recyclable packaging of claim 8, further comprising:

applying a protective coating over the aluminum layer to form a coated packaging layer stack, wherein the protective coating has a second thickness of 1 micron or less, and wherein the second thickness is defined

a) to maintain the emissivity of the packaging layer stack at the first value after the aluminum layer has been coated with the protective coating and

b) to prevent oxidation of the aluminum layer during normal use of the recyclable packaging, while the protective coating does not impede oxidation of the aluminum layer ~~as a result of~~ during the treatment.

10. (currently amended) A recyclable packaging comprising:

a stack including

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an aluminum layer deposited on the fourth surface, wherein the aluminum layer has a first thickness of 200 nanometers or less and wherein the aluminum layer causes an emissivity of an outer surface of the recyclable packaging to be equal to or smaller than a first value of 0.10; and

wherein said aluminum layer acquires an optical density (OD) of less than 0.09 with no visible aluminum present in a recyclable material that results from the recyclable packaging being subjected to a treatment, the treatment including

a) blending the packaging in a blender to form a first material;

b) disintegrating the first material into water with a British Disintegrator at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

11. (currently amended) The recyclable packaging of claim 10, further comprising:

a protective coating over the aluminum layer,

wherein the protective coating has a second thickness of 1 micron or less,

wherein the second thickness is defined to maintain the first value of the emissivity of the recyclable packaging after the aluminum layer has been coated with the

protective coating and to prevent oxidation of the aluminum layer during normal use of the packaging,

~~while~~ wherein the protective coating does not impede oxidation of the aluminum layer during the treatment.

12. (original) The recyclable packaging of claim 11, wherein the protective coating includes a material selected from: wax, polymer, and lacquer.

13. (original) The recyclable packaging of claim 10, wherein the polymer layer includes a material selected from: low density polyethylene, high density polyethylene, polyethylene terephthalate, polypropylene, polyvinyl chloride, polyurethane, and polystyrene.

14. (original) The recyclable packaging of claim 10, wherein the polymer layer includes a material selected from: film and fabric.

15. (currently amended) A method for thermally insulating a good within a recyclable packaging, the method comprising:

placing a reflective insulation material in a pre-defined proximity with the good, the pre-defined proximity being suitably chosen to provide adequate thermal insulation to the good, wherein said reflective insulation material comprises the recyclable packaging that includes:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an aluminum layer deposited on the fourth surface, wherein the aluminum layer has a first thickness of 200 nanometers or less and wherein the aluminum layer causes an emissivity of the recyclable packaging to be equal to or smaller than a first value of 0.10; and

wherein said aluminum layer becomes fully oxidized with no visible aluminum present in a recyclable material that results from the recyclable packaging being subjected to a treatment that includes

a) blending the packaging in a blender to form a first material;

b) disintegrating the first material into water with a British Disintegrator at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

16. (currently amended) A method for thermally insulating a good within a recyclable packaging, the method comprising:

placing a reflective insulation material at a pre-defined proximity distance from the good, said pre-defined proximity distance chosen to provide adequate thermal insulation to the good, wherein said reflective insulation material comprises the recyclable packaging that includes:

a paper layer with first and second surfaces;

a polymer layer with third and fourth surfaces, wherein the third surface is affixed to the second surface;

an intermediate coating layer applied to the fourth surface;

an aluminum layer carried by the intermediate coating, wherein the aluminum layer has a first thickness of no more than 200 nanometers to cause the recyclable packaging to have emissivity that is equal to or smaller than a first value of 0.10; and

wherein said aluminum layer is configured to acquire optical density (OD) of less than 0.09 and ~~becomes~~ become fully oxidized with no visible aluminum

present in a recyclable material when the recyclable packaging is subjected to a treatment that includes

a) blending the packaging in a blender to form a first material;

b) disintegrating the first material into water with a British at a temperature within a range from about 115 degrees F to about 135 degrees F at 3000 rpm to form a second material;

c) separating the second material in a 0.01 inch aperture screen with a 1 inch water head for 20 minutes to form a fourth material; and

d) drying the fourth material in an oven for 4 hours at 221 degrees F.

REMARKS

(1) With this amendment, the identified allowed claims have been amended to correct typographical and/or grammatical errors, correct indefiniteness issues, and to ensure the antecedent bases are satisfied.

No new matter has been added. The amendments are believed to be in compliance with requirements specified in 37 C.F.R. Sec. 1.121 and with MPEP 714.16 as to require no substantial amount of additional work on the part of the Office.

(w) The Examiner is respectfully invited to contact the undersigned, Yakov Sidorin, with any questions.

No fee is believed due with this amendment. However, if any such fee is deemed due, Applicant hereby authorizes the Director to charge the fee to Deposit Account No. 17-0055.

Date: May 05, 2021

Respectfully submitted,

/Yakov Sidorin, #63,507/
Yakov Sidorin, Ph.D.
Registration No. 63,507
Quarles & Brady LLP
One South Church Avenue, Suite 1800
Tucson, Arizona 85701
Tel: (520) 770-8753
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Attorney for Applicant

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/238,998	01/03/2019	Steven Yializis	861133.00068	5903

34282 7590 05/18/2021

QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1800
TUCSON, AZ 85701-1621

EXAMINER	
JALLOW, EYAMINDAE CHOSSAN	

ART UNIT	PAPER NUMBER
3731	

NOTIFICATION DATE	DELIVERY MODE
05/18/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pat-dept@quarles.com

Response to Rule 312 Communication	Application No.	Applicant(s)	
	16/238,998	Yializis et al.	
	Examiner	Art Unit	AIA (FITF) Status
	EYAMINDAE C JALLOW	3731	Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ The amendment filed on 04 May 2021 under 37 CFR 1.312 has been considered, and has been:

a) ☑ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

/EYAMINDAE C JALLOW/ Examiner, Art Unit 3731	/ANDREW M TECCO/ Primary Examiner, Art Unit 3731

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Sigma Technologies Int'l., LLC	Docket No.:	861133.00068
Appl. No:	16/238,998	Art Unit:	3731
Filed :	January 03, 2019	Conf. No.	5903
Examiner:	Jallow, Eyamindae Chossan		

Invention: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

Date: May 05, 2021

VIA USPTO ELECTRONIC FILING SYSTEM

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AFTER NOTICE OF ALLOWANCE

UNDER 37 C.F.R. Sec. 1.312

Dear Sir:

In response to the Notice of Allowance dated April 28, 2021, please amend the above-identified application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 9.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
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Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

34282 7590 04/28/2021
QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1800
TUCSON, AZ 85701-1621

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/238,998	01/03/2019	Steven Yializis	861133.00068	5903

TITLE OF INVENTION: RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	07/28/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
JALLOW, EYAMINDAE CHOSSAN	3731	053-473000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Yakov Sidorin
2 Quarles & Brady LLP
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: SIGMA TECHNOLOGIES INT'L, LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): TUCSON, AZ USA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 17-0055

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /YAKOV SIDORIN/ Date 2021-06-21

Typed or printed name YAKOV SIDORIN Registration No. 63,507

Electronic Patent Application Fee Transmittal

Application Number:	16238998
Filing Date:	03-Jan-2019
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Filer:	Yakov S. Sidorin/tracey baxter
Attorney Docket Number:	861133.00068

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	600	600

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**600**

Electronic Acknowledgement Receipt

EFS ID:	43036336
Application Number:	16238998
International Application Number:	
Confirmation Number:	5903
Title of Invention:	RECYCLABLE PAPER-CONTAINING PACKAGING WITH RADIANT BARRIER INSULATION
First Named Inventor/Applicant Name:	Steven Yializis
Customer Number:	34282
Filer:	Yakov S. Sidorin
Filer Authorized By:	
Attorney Docket Number:	861133.00068
Receipt Date:	21-JUN-2021
Filing Date:	03-JAN-2019
Time Stamp:	11:24:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$600
RAM confirmation Number	E20216KB24590247
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	00068_fee_trans.pdf	358731 5b5998ffec67299ce29b9eeae0aa9c2e3610c59a	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30616 92ea82f89ffa0c99176a6b073655a2eac5e77904	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	389347		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/238,998	07/27/2021	11072148	861133.00068	5903

34282 7590 07/07/2021

QUARLES & BRADY LLP (TUC)
Attn: IP Docket
ONE SOUTH CHURCH AVENUE, SUITE 1800
TUCSON, AZ 85701-1621

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 11 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

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Luke Rogers, Tucson, AZ;

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