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(54) **Titre : AMELIORATIONS CONCERNANT DES POCHES JETABLES DANS LES TOILETTES DESTINEES A LA COLLECTE D'ECHANTILLONS CORPORELS, DISPOSITIFS POCHE DANS POCHE UTILISANT LESDITES POCHES ET PROCEDES ASSOCIE**

(54) **Title: IMPROVEMENTS IN FLUSHABLE BODY WASTE COLLECTION POUCHES, POUCH-IN-POUCH APPLIANCES USING THE SAME, AND METHODS PERTAINING THERETO**

(57) **Abrégé/Abstract:**
A flushable biodegradable pouch having water-dispersible fibers along at least a portion of the outer surface of the pouch's cover layer provided with a water-soluble hydrophilic coating. The pouch's cover layer is water-disintegratable, and the water-soluble hydrophilic coating is a lubricating agent capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water. As such, the hydrophilic coating serves as a rewettable, redesolving-lubricating agent.

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(54) Title: IMPROVEMENTS IN FLUSHABLE BODY WASTE COLLECTION POUCHES, POUCH-IN-POUCH APPLIANCES USING THE SAME, AND METHODS PERTAINING THERETO

(57) Abstract: A flushable biodegradable pouch having water-dispersible fibers along at least a portion of the outer surface of the pouch's cover layer provided with a water-soluble hydrophilic coating. The pouch's cover layer is water-disintegratable, and the water-soluble hydrophilic coating is a lubricating agent capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water. As such, the hydrophilic coating serves as a rewettable, redesolving-lubricating agent.

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IMPROVEMENTS IN FLUSHABLE BODY WASTE COLLECTION POUCHES, POUCH-IN-POUCH APPLIANCES USING THE SAME, AND METHODS PERTAINING THERETO

BACKGROUND AND SUMMARY

[0001] Giori Published Patent Application US 2005/0084634 (also published as WO 2005/041827) discloses a biodegradable and toilet-flushable body waste collection pouch, and an appliance and method in which such a pouch constitutes the inner pouch of a peelably separable pouch-in-pouch system. The walls of the inner pouch are composed of an ultra-thin, heat-sealable film impermeable to body wastes comprising a plasticized biodegradable polyester or copolyester externally covered by a soft and water-disintegratable cover layer of biodegradable and water-dispersible fibers. The cover layer and film are weakly bonded together in such a way as to avoid pinholes in the film that might otherwise be caused by the fibers. When used as the inner pouch of a pouch-in-pouch system, the film of the outer pouch is selected to have a melting temperature higher than that of the inner pouch film, with the result that a peripheral heat seal joining the walls of the two pouches together will allow the walls of the outer pouch to be peeled away without delaminating the film and cover layers of the inner pouch.

[0002] Pedersen et al Published Patent Application US 2005/0113770 (also published as WO 2005/041828) discloses an ostomy appliance having a face plate assembly and inner and outer pouches joined thereto. The outer pouch is provided with one or more peripherally-extending sealing seams that allow the walls of the outer pouch to be separated by peeling forces applied in directions transverse to such seam or seams. In preferred embodiments, the sealing seams also peelably join the peripheral edges of the outer pouch to those of the inner pouch. A method of disposing of the pouch assembly of such an ostomy appliance is also disclosed.

There is provided a biodegradable body waste collection pouch suitable for flush toilet disposability; said pouch having a pair of walls secured together along their peripheral edges to define a waste-receiving chamber therebetween; one of said side walls having a waste-receiving opening therethrough communicating with said chamber; and external attachment means provided about said opening for attachment of said pouch to a wearer; said walls of said pouch being cut from a laminate comprising (a) a layer of thin heat-sealable film impermeable to liquid and solid body wastes and of a composition comprising a biodegradable aliphatic polyester, or a biodegradable aliphatic-aromatic copolyester, or blends thereof, plasticized by one or more biodegradable plasticizers and (b) a water-disintegratable biodegradable cover layer of water-dispersible fibers having one of its surfaces uninterruptedly bonded thereto; said water-dispersible fibers along at least a portion of the outer surface of said pouch being coated with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water. In this instance, the hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone lubricating agents.

The hydrophilic lubricating agent may be dry but, when the pouch is immersed in water in a flush toilet for a period less than 60 seconds, becomes hydrated and slippery, so as to promote flushability of the pouch and facilitate its passage through a sanitary sewer system.

The thickness of the film may be no greater than about 40 microns, in this instance. The layers of the laminate may be weakly bonded together and may be separated from each other with each layer remaining intact by the application of 180-degree peeling forces in the range of about 2 to 10 g/in.

The composition may comprise a blend of about 70% to 95% by weight of said biodegradable aliphatic polyester or aliphatic-aromatic copolyester, and about 5% to 30% by weight of one or more of said biodegradable plasticizer.

The aliphatic polyester or the aliphatic component of the copolyester may comprise a polymer formed by ring-opening polymerization of a lactone.

The aliphatic-aromatic copolymer may comprise a condensation product of a glycol with a combination of an aliphatic diacid and an aromatic diacid, wherein the aromatic diacid is less than 20% by mole.

The film of a biodegradable aliphatic polyester or copolyester may be a monolayer.

The fibers of the water-disintegratable cover layer may be cellulosic, in which case the cover layer may comprise tissue paper formed of 100% cellulosic fibers.

The cover layer may be heat-bonded to said film.

There is provided a method of promoting the flushability of a waste collection pouch in a flush toilet, comprising the steps of providing a pouch with a pair of walls secured together along their peripheral edges to define a waste-receiving chamber therebetween; one of said walls having a waste-receiving opening therethrough communicating with said chamber; said walls being formed from a laminate comprising (a) a layer of thin heat-sealable film impermeable to liquid and solid body wastes and of a composition comprising a biodegradable aliphatic polyester, or a biodegradable aliphatic-aromatic copolyester, or blends thereof, plasticized by one or more biodegradable plasticizers, and (b) a water-disintegratable biodegradable cover layer of water-dispersible fibers having one of its surfaces uninterruptedly bonded thereto, comprising the step of coating said water-dispersible fibers along at least a portion of the outer surface of said laminate, either before or after assembly of said pouch, with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when the outer surfaces of said pouch are exposed to water and, upon subsequent drying, again become water-soluble upon re-exposure to water, said step of coating said water-dispersible fibers with said hydrophilic lubricating agent comprising applying a water-based hydrophilic solution to said water-dispersible fibers, said water-based hydrophilic solution comprising said hydrophilic lubricating agent; wherein the hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone gelling agents.

In this case, the hydrophilic lubricating agent may be in the form of a dry coating but, when said pouch is exposed to water in a flush toilet for a period less than 60 seconds, becomes hydrated and slippery, so as to promote flushability of the pouch and facilitate its passage through a sanitary sewer system.

The step of coating said fibers along at least a portion of said outer surface with said water-soluble hydrophilic lubricating agent may occur immediately prior to discarding said pouch and its contents into a flush toilet.

The water-soluble lubricating agent may be applied to said pouch in liquid form, such as by spraying.

There is provided herein a pouch-in-pouch body waste collection appliance comprising an outer pouch formed of liquid, gas and odor impermeable heat-sealable polymeric film having proximal and distal side walls defining a chamber; a toilet-disposable inner pouch having proximal and distal side walls and being disposed in said chamber; said proximal walls of said inner and outer pouches having aligned body waste receiving openings therethrough; and attachment means for attaching said proximal walls of said inner and outer pouches in areas surrounding said openings to skin surfaces of a patient about a body waste discharge orifice; said disposable inner pouch having walls formed from sheet material comprising (a) a layer of thin heat-sealable film impermeable to body wastes of a composition comprising a biodegradable aliphatic polyester, or a biodegradable aliphatic-aromatic copolyester, or blends thereof, plasticized by one or more biodegradable plasticizers and (b) a water-disintegratable, porous, biodegradable cover layer of water-dispersible fibers bonded thereto; said heat-sealable film of said inner pouch having a melting temperature lower than that of the heat-sealable film of said outer pouch; said walls of said outer and inner pouches having peripheral edge portions heat-sealed together with the peripheral edge portions of said cover layer being bonded more securely to the film material of said inner pouch than to the film material of said outer pouch; said water-dispersible fibers along at least a portion of the outer surface of the walls of said inner pouch being coated with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water; wherein the hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and

their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone gelling agents.

In this case, the hydrophilic lubricating agent may be in the form of a dry coating on fibers of said cover layer but, when said inner pouch is immersed in water in a flush toilet for a period less than 60 seconds, becomes hydrated and slippery, so as to promote flushability of said inner pouch and facilitate its passage though a sanitary sewer system.

There is provided a method of making a pouch-in-pouch body waste collection appliance having an outer pouch formed of odor-impermeable thermoplastic film with proximal and distal walls defining a chamber and a toilet-disposable inner pouch having proximal and distal walls and being disposed in said chamber; said proximal walls of said inner and outer pouches having aligned body waste receiving openings therein; said walls of said inner pouch being formed of a laminate comprising (a) a layer of thin heat-sealable thermoplastic film, and (b) a porous water-disintegratable cover layer of water-dispersible fibers attached to exterior surfaces of said inner pouch film, said cover layer having at least some of said water-dispersible fibers along the exterior surface of said inner pouch coated with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water; wherein said method comprises the steps of selecting a material for the film of an inner pouch having a melting temperature substantially lower than that of the material of said outer pouch; coating said water-dispersible fibers along at least a portion of the outer surface of said laminate, either before or after assembly of said pouch, with a water-soluble hydrophilic lubricating agent, said step of coating said water-dispersible fibers with said hydrophilic lubricating agent comprising applying a water-based hydrophilic solution to said water-dispersible fibers, said water-based hydrophilic solution comprising said hydrophilic lubricating agent; and joining together peripheral portions of said walls of said inner and outer pouches, and portions of said proximal walls of said inner and outer pouches surrounding said body waste receiving openings, by simultaneously applying pressure and heat to said portions so that said proximal and distal walls of said inner pouch are welded together and, simultaneously, said film material of said inner pouch melts and invades the pores of said fibrous cover layer to a greater extent than said film material of said outer pouch, where, upon the subsequent application of peeling forces, said walls of said outer pouch may be

peeled away from said inner pouch without causing separation of said cover and film layers of said inner pouch; wherein the hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone gelling agents.

The fibers along the peripheral portion of said inner pouch joined to said peripheral portion of said outer pouch may be coated with said water-soluble hydrophilic lubricating agent. Further, the fibers along the peripheral portion of said inner pouch joined to said peripheral portion of said outer pouch may not be coated by said water-soluble hydrophilic lubricating agent.

The film material of said inner pouch may have a melting temperature at least 10.degree. C. below the melting temperature of said outer pouch film.

The fibers of said cover layer may be cellulosic.

The cover layer may comprise tissue paper of 100% cellulosic fibers.

The cover layer and said thermoplastic film of said inner pouch, throughout the areas between said peripheral portions and said portions surrounding said openings, may be weakly bonded together and may be separated from each other with each layer remaining intact by the application of 180-degree peeling forces in the range of about 2 to 10 g/in.

The film of said inner pouch may have a thickness no greater than about 40 microns.

There is provided an ostomy appliance for receiving discharge from a human stoma and comprising attachment means for attaching the appliance to the peristomal skin surface of a user of the appliance, and an ostomy assembly comprising: an inner pouch attached to said attachment means and having a first aperture for receiving the stoma of said user, said inner pouch being defined by a flexible body side or proximal inner pouch wall and a flexible distal inner pouch wall, and one or more peripherally extending inner pouch sealing seams, an outer pouch enclosing said inner pouch, attached to said attachment means and having a second aperture for receiving said stoma and being aligned with said first aperture, said outer pouch being defined by a flexible bodyside or proximal outer pouch wall and a flexible distal outer pouch wall, and one or more peripherally extending outer pouch sealing seams, said one or more outer pouch sealing seams being manually peelable such that the attachment forces provided by said one or more peelable outer pouch sealing seams may be manually eliminated by manually pulling said distal outer pouch wall in a direction transverse

to said one or more peelable outer pouch sealing seams, said inner pouch walls being made of a plastic film laminated to a web of a non-woven fibrous material, said web facing outwards relative to the interior of said pouch and having an externally exposed coating of a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said web being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble and slippery upon re-exposure to water; wherein said hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; gums; gelatin; pectin; polyethylene glycol; polyethylene oxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone gelling agents.

Optionally, at least one of said non-woven material and said plastic film may be biodegradable. Further, the inner pouch walls may be impermeable to liquid and gas and permeable to odors, and said outer pouch walls are impermeable to liquid, gas and odors. In this case, the one or more outer pouch peeling seams may comprise a peeling action initiation zone, where said one or more outer pouch sealing seams comprises a peak-like extent tapering in the direction opposite a predetermined peeling direction.

The one or more outer pouch peeling seams maycomprise a peeling action ending zone, where said one or more outer pouch sealing seams comprises a peak-like extent tapering in a predetermined peeling direction.

The proximal outer pouch wall may be attached to said attachment means by a heat sealed sealing seam.

The hydrophilic lubricating agent may be dry but, when said inner pouch is immersed in water in a flush toilet for a period less than 60 seconds, becomes hydrated and slippery, so as to promote flushability of the inner pouch and facilitate its passage though a sanitary sewer system.

There is provided a pouch-in-pouch body waste collection appliance comprising an outer pouch formed of liquid, gas and odor impermeable heat-sealable polymeric film having proximal and distal side walls defining a chamber; a toilet-disposable inner pouch having proximal and distal side walls and being disposed in said chamber; said proximal walls of said inner and outer pouches having aligned body waste receiving openings therethrough; and attachment means for attaching said proximal walls of said inner and outer pouches in areas surrounding said openings to skin surfaces of a patient about a body waste discharge

orifice; said disposable inner pouch having walls formed from sheet material comprising (a) a layer of thin heat-sealable polymeric film impermeable to body wastes and (b) a water-disintegratable, porous, biodegradable cover layer of water-dispersible fibers bonded thereto; said water-dispersible fibers along at least outer surface portions of the walls of said inner pouch being coated with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water; wherein said hydrophilic agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone lubricating agents.

There is provided a method for enhancing the toilet flushability of an article comprised of a thin polymeric film covered by a water-disintegratable fibrous cover layer bonded to the outer surface thereof, comprising the step of modifying said cover layer by coating at least some of said water-disintegratable fibers along the outer surface of said article with a hydrophilic agent, said hydrophilic agent coated on said water-disintegratable fibers becoming lubricious upon hydration and, upon subsequent drying, again becoming water-soluble upon re-exposure to water; said step of coating said water-disintegratable fibers with said hydrophilic agent comprising applying a water-based hydrophilic solution to said water-disintegratable fibers, said water-based hydrophilic solution comprising said hydrophilic agent; wherein said hydrophilic agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose; and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone lubricating agents.

The polymeric film may be heat-sealable and impermeable to liquid and solid body wastes. Optionally, the film comprises a biodegradable aliphatic polyester, or a biodegradable aliphatic-aromatic co-polyester, or blends thereof, plasticized by one or more biodegradable plasticizers.

The thickness of said film may be no greater than about 40 microns.

The cover layer may be a nonwoven material formed of water-dispersible fibers. Optionally, the fibers of said water-disintegrable cover layer are cellulosic. Further, the cover layer may comprise tissue paper formed of 100% cellulosic fibers.

The fibers coated by said hydrophilic agent may be located along the outer surface of said fibrous layer cover.

In the collection pouch, and method described above, the laminate may further comprise one or more thickeners, preservatives odor neutralizers/deodorants, and solubilization enhancers. Further, in the collection appliance or ostomy appliance described above, the inner pouch walls may further comprise one or more thickeners, preservatives, odor neutralizers, deodorants, and solubilization enhancers.

The thin polymeric film covered by a water-disintegratable fibrous cover layer bonded to the outer surface thereof further may comprise one or more thickeners, preservatives odor neutralizers/deodorants, and solubilization enhancers.

In the collection appliance described above, the inner pouch walls may optionally further comprise one or more thickeners, preservatives, odor neutralizers, deodorants, and solubilization enhancers.

[0004] It has now been found that the flushability of a biodegradable pouch as disclosed in these published applications, and the passage of such a pouch through a sewer system, are greatly enhanced if the water-dispersible fibers along at least a portion of the outer surface of the pouch's cover layer (which is preferably formed of a nonwoven material, particularly a water-disintegratable paper such as cellulosic toilet tissue) are provided with a hydrophilic coating. The coating does not impair the peelability of the seals of a pouch-in-pouch system or interfere with the water dispersibility of the fibers, and is found to be advantageous because it reduces the friction between the outer surface of the pouch and the walls of a flush toilet and passages of a sanitary sewer system. While the coating would normally be applied and dried during production of such a pouch or pouch assembly, or during the tissue paper-film manufacture, it is contemplated that alternatively such a coating might be applied by a user, as by spraying, just prior to discarding the pouch and its contents into a flush toilet.

[0005] When applied in production, the coating in the form of a water-based hydrophilic solution is sprayed, rolled, or otherwise applied to the surface of the pouch's tissue cover layer. It is then dried by any suitable means, as in a convection oven. When the pouch is later discarded into the water of a flush toilet, the coating absorbs water and reactivates a hydrophilic film that makes the surface of the pouch slippery, significantly reducing the friction between the pouch and the walls of the toilet and sewer passages. This reduced surface friction has a positive impact on the flush performance of the pouch.

[0006] The biodegradable coating contains one or more lubricating agents. One preferred gelling agent is hydroxyethylcellulose, available under the commercial name "Natrosol"* from Aqualon, but other lubricating agents considered suitable are hydroxypropylcellulose, carboxymethylcellulose and their salts, guar gums, gelatin, pectin, polyethylene glycol, polyethyleneoxide, polyacrylamides, acrylic acid polymers and their salts, and water-soluble silicone gelling agents. Of particular importance is that such a lubricating agent, after drying following initial exposure to water, must be capable of again becoming water soluble and slippery when re-exposed to water. Thus,

* Trade-mark

it has been found that polyvinyl alcohol is unsuitable as a gelling agent for use in this invention because although it becomes slippery upon initial hydration, once it has dried it is no longer water-soluble. A lubricating agent for use in this invention must be capable of rewetting/redesolving to avoid the risk that the drying of the coating might cause a pouch to stick to the wall of a sewer pipe and not readily release when water is again flushed through the pipe.

[0007] In addition to a lubricating agent or agents, the coating material may include preservatives, surfactants, thickeners, pH buffers, slip agents, odor neutralizers, deodorants and other additives. Examples of thickeners include, but are not limited to, carbomers, gums, poloxamers, gelatin, pectin and nonionic, zwitterionic and ionic gel formers.

[0008] By way of example, a coating solution of 2% hydroxyethylcellulose (Natrosol)* and 0.3% Phenonip* (a commercial mixture of preservatives containing phenoxyethanol, methylparaben, ethylparaben, propylparaben butylparaben and isobutylparaben) may be applied to the paper tissue layer (25g Shawano cellulosic tissue code 3040 from Shawano Specialty Papers) of a waste collection pouch as disclosed in the aforementioned published applications. The coating is then dried by placing the pouch in a convection oven at 75°C for approximately one hour. Drying may also be achieved by using infrared lamps, heating elements or other sources of heat, and may be boosted by negative pressure and air circulation.

[0009] The desired load of coating may be achieved in single or multiple applications.

[0010] It has been found that an inner pouch of the type disclosed the aforementioned published applications, formed of an ultra thin biodegradable film with a tissue covering layer but without the hydrophilic coating described herein, may be safely flushed through a toilet with a pouch load of up to about 110 g, whereas if the tissue layer of a similar pouch is provided with the hydrophilic coating of this invention, the pouch load may be safely and effectively increased to 150 g.

* Trade-mark

CLAIMS:

1. A biodegradable body waste collection pouch suitable for flush toilet disposability; said pouch having a pair of walls secured together along their peripheral edges to define a waste-receiving chamber therebetween; one of said side walls having a waste-receiving opening therethrough communicating with said chamber; and external attachment means provided about said opening for attachment of said pouch to a wearer; said walls of said pouch being cut from a laminate comprising (a) a layer of thin heat-sealable film impermeable to liquid and solid body wastes and of a composition comprising a biodegradable aliphatic polyester, or a biodegradable aliphatic-aromatic copolyester, or blends thereof, plasticized by one or more biodegradable plasticizers and (b) a water-disintegratable biodegradable cover layer of water-dispersible fibers having one of its surfaces uninterruptedly bonded thereto; said water-dispersible fibers along at least a portion of the outer surface of said pouch being coated with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water;

wherein said hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone lubricating agents.

2. The collection pouch of claim 1 in which said hydrophilic lubricating agent is dry but, when said pouch is immersed in water in a flush toilet for a period less than 60 seconds, becomes hydrated and slippery, so as to promote flushability of the pouch and facilitate its passage through a sanitary sewer system.

3. The collection pouch of claim 1 or 2 in which the thickness of said film is no greater than about 40 microns.

4. The collection pouch of any one of claims 1 to 3 in which said layers of said laminate are weakly bonded together and may be separated from each other with each layer

remaining intact by the application of 180-degree peeling forces in the range of about 2 to 10 g/in.

5. The collection pouch of any one of claims 1 to 4 in which said composition comprises a blend of about 70% to 95% by weight of said biodegradable aliphatic polyester or aliphatic-aromatic copolyester, and about 5% to 30% by weight of one or more of said biodegradable plasticizer.

6. The collection pouch of any one of claims 1 to 5 in which said aliphatic polyester or the aliphatic component of said copolyester comprises a polymer formed by ring-opening polymerization of a lactone.

7. The collection pouch of any one of claims 1 to 6 in which said aliphatic-aromatic copolymer comprises a condensation product of a glycol with a combination of an aliphatic diacid and an aromatic diacid, wherein the aromatic diacid is less than 20% by mole.

8. The collection pouch any one of claims 1 to 7 in which said film of a biodegradable aliphatic polyester or copolyester is a monolayer.

9. The collection pouch of any one of claims 1 to 8 in which said fibers of said water-disintegratable cover layer are cellulosic.

10. The collection pouch of claim 9 in which said cover layer comprises tissue paper formed of 100% cellulosic fibers.

11. The collection pouch of any one of claims 1 to 10 in which said cover layer is heat-bonded to said film.

12. A method of promoting the flushability of a waste collection pouch in a flush toilet, comprising the steps of providing a pouch with a pair of walls secured together along their peripheral edges to define a waste-receiving chamber therebetween; one of said walls having a waste-receiving opening therethrough communicating with said chamber; said walls

being formed from a laminate comprising (a) a layer of thin heat-sealable film impermeable to liquid and solid body wastes and of a composition comprising a biodegradable aliphatic polyester, or a biodegradable aliphatic-aromatic copolyester, or blends thereof, plasticized by one or more biodegradable plasticizers, and (b) a water-disintegratable biodegradable cover layer of water-dispersible fibers having one of its surfaces uninterruptedly bonded thereto, comprising the step of coating said water-dispersible fibers along at least a portion of the outer surface of said laminate, either before or after assembly of said pouch, with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when the outer surfaces of said pouch are exposed to water and, upon subsequent drying, again become water-soluble upon re-exposure to water, said step of coating said water-dispersible fibers with said hydrophilic lubricating agent comprising applying a water-based hydrophilic solution to said water-dispersible fibers, said water-based hydrophilic solution comprising said hydrophilic lubricating agent;

wherein said hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone gelling agents.

13. The method of claim 12 in which said hydrophilic lubricating agent is in the form of a dry coating but, when said pouch is exposed to water in a flush toilet for a period less than 60 seconds, becomes hydrated and slippery, so as to promote flushability of the pouch and facilitate its passage through a sanitary sewer system.

14. The method of claim 12 in which said step of coating said fibers along at least a portion of said outer surface with said water-soluble hydrophilic lubricating agent occurs immediately prior to discarding said pouch and its contents into a flush toilet.

15. The method of claim 14 in which said water-soluble lubricating agent is applied to said pouch in liquid form.

16. A pouch-in-pouch body waste collection appliance comprising an outer pouch formed of liquid, gas and odor impermeable heat-sealable polymeric film having proximal and distal side walls defining a chamber; a toilet-disposable inner pouch having proximal and distal side walls and being disposed in said chamber; said proximal walls of said inner and outer pouches having aligned body waste receiving openings therethrough; and attachment means for attaching said proximal walls of said inner and outer pouches in areas surrounding said openings to skin surfaces of a patient about a body waste discharge orifice; said disposable inner pouch having walls formed from sheet material comprising (a) a layer of thin heat-sealable film impermeable to body wastes of a composition comprising a biodegradable aliphatic polyester, or a biodegradable aliphatic-aromatic copolyester, or blends thereof, plasticized by one or more biodegradable plasticizers and (b) a water-disintegratable, porous, biodegradable cover layer of water-dispersible fibers bonded thereto; said heat-sealable film of said inner pouch having a melting temperature lower than that of the heat-sealable film of said outer pouch; said walls of said outer and inner pouches having peripheral edge portions heat-sealed together with the peripheral edge portions of said cover layer being bonded more securely to the film material of said inner pouch than to the film material of said outer pouch; said water-dispersible fibers along at least a portion of the outer surface of the walls of said inner pouch being coated with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water;

wherein said hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone gelling agents.

17. The collection appliance of claim 16 in which said hydrophilic lubricating agent is in the form of a dry coating on fibers of said cover layer but, when said inner pouch is immersed in water in a flush toilet for a period less than 60 seconds, becomes hydrated and slippery, so as to promote flushability of said inner pouch and facilitate its passage though a sanitary sewer system.

18. A method of making a pouch-in-pouch body waste collection appliance having an outer pouch formed of odor-impermeable thermoplastic film with proximal and distal walls defining a chamber and a toilet-disposable inner pouch having proximal and distal walls and being disposed in said chamber; said proximal walls of said inner and outer pouches having aligned body waste receiving openings therein; said walls of said inner pouch being formed of a laminate comprising (a) a layer of thin heat-sealable thermoplastic film, and (b) a porous water-disintegratable cover layer of water-dispersible fibers attached to exterior surfaces of said inner pouch film, said cover layer having at least some of said water-dispersible fibers along the exterior surface of said inner pouch coated with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water; wherein said method comprises the steps of selecting a material for the film of an inner pouch having a melting temperature substantially lower than that of the material of said outer pouch; coating said water-dispersible fibers along at least a portion of the outer surface of said laminate, either before or after assembly of said pouch, with a water-soluble hydrophilic lubricating agent, said step of coating said water-dispersible fibers with said hydrophilic lubricating agent comprising applying a water-based hydrophilic solution to said water-dispersible fibers, said water-based hydrophilic solution comprising said hydrophilic lubricating agent; and joining together peripheral portions of said walls of said inner and outer pouches, and portions of said proximal walls of said inner and outer pouches surrounding said body waste receiving openings, by simultaneously applying pressure and heat to said portions so that said proximal and distal walls of said inner pouch are welded together and, simultaneously, said film material of said inner pouch melts and invades the pores of said fibrous cover layer to a greater extent than said film material of said outer pouch, where, upon the subsequent application of peeling forces, said walls of said outer pouch may be peeled away from said inner pouch without causing separation of said cover and film layers of said inner pouch;

wherein said hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone gelling agents.

19. The method of claim 18 in which said fibers along the peripheral portion of said inner pouch joined to said peripheral portion of said outer pouch are coated with said water-soluble hydrophilic lubricating agent.

20. The method of claim 18 in which said fibers along the peripheral portion of said inner pouch joined to said peripheral portion of said outer pouch are not coated by said water-soluble hydrophilic lubricating agent.

21. The method of any one of claims 18 to 20 in which said film material of said inner pouch has a melting temperature at least 10 ºC below the melting temperature of said outer pouch film.

22. The method of any one of claims 18 to 21 in which said fibers of said cover layer are cellulosic.

23. The method of claim 22 in which said cover layer comprises tissue paper of 100% cellulosic fibers.

24. The method of claim 18 in which said cover layer and said thermoplastic film of said inner pouch, throughout the areas between said peripheral portions and said portions surrounding said openings, are weakly bonded together and may be separated from each other with each layer remaining intact by the application of 180-degree peeling forces in the range of about 2 to 10 g/in.

25. The method of claim 18 in which said film of said inner pouch has a thickness no greater than about 40 microns.

26. An ostomy appliance for receiving discharge from a human stoma and comprising attachment means for attaching the appliance to the peristomal skin surface of a user of the appliance, and an ostomy assembly comprising: an inner pouch attached to said attachment means and having a first aperture for receiving the stoma of said user, said inner pouch

being defined by a flexible body side or proximal inner pouch wall and a flexible distal inner pouch wall, and one or more peripherally extending inner pouch sealing seams, an outer pouch enclosing said inner pouch, attached to said attachment means and having a second aperture for receiving said stoma and being aligned with said first aperture, said outer pouch being defined by a flexible bodyside or proximal outer pouch wall and a flexible distal outer pouch wall, and one or more peripherally extending outer pouch sealing seams, said one or more outer pouch sealing seams being manually peelable such that the attachment forces provided by said one or more peelable outer pouch sealing seams may be manually eliminated by manually pulling said distal outer pouch wall in a direction transverse to said one or more peelable outer pouch sealing seams, said inner pouch walls being made of a plastic film laminated to a web of a non-woven fibrous material, said web facing outwards relative to the interior of said pouch and having an externally exposed coating of a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said web being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble and slippery upon re-exposure to water;

wherein said hydrophilic lubricating agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; gums; gelatin; pectin; polyethylene glycol; polyethylene oxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone gelling agents.

27. The ostomy appliance of claim 26 wherein at least one of said non-woven material and said plastic film is biodegradable.

28. The ostomy appliance of claim 26 or 27 wherein said inner pouch walls are impermeable to liquid and gas and permeable to odors, and said outer pouch walls are impermeable to liquid, gas and odors.

29. The ostomy appliance of claim 28 wherein said one or more outer pouch peeling seams comprises a peeling action initiation zone, where said one or more outer pouch sealing seams comprises a peak-like extent tapering in the direction opposite a predetermined peeling direction.

30. The ostomy appliance of any one of claims 24 to 29 wherein said one or more outer pouch peeling seams comprises a peeling action ending zone, where said one or more outer pouch sealing seams comprises a peak-like extent tapering in a predetermined peeling direction.

31. The ostomy appliance according to claim 30 wherein said proximal outer pouch wall is attached to said attachment means by a heat sealed sealing seam.

32. The ostomy appliance according to any one of claims 26 to 31 wherein said hydrophilic lubricating agent is dry but, when said inner pouch is immersed in water in a flush toilet for a period less than 60 seconds, becomes hydrated and slippery, so as to promote flushability of the inner pouch and facilitate its passage though a sanitary sewer system.

33. A pouch-in-pouch body waste collection appliance comprising an outer pouch formed of liquid, gas and odor impermeable heat-sealable polymeric film having proximal and distal side walls defining a chamber; a toilet-disposable inner pouch having proximal and distal side walls and being disposed in said chamber; said proximal walls of said inner and outer pouches having aligned body waste receiving openings therethrough; and attachment means for attaching said proximal walls of said inner and outer pouches in areas surrounding said openings to skin surfaces of a patient about a body waste discharge orifice; said disposable inner pouch having walls formed from sheet material comprising (a) a layer of thin heat-sealable polymeric film impermeable to body wastes and (b) a water-disintegratable, porous, biodegradable cover layer of water-dispersible fibers bonded thereto; said water-dispersible fibers along at least outer surface portions of the walls of said inner pouch being coated with a water-soluble hydrophilic lubricating agent, said hydrophilic lubricating agent coated on said water-dispersible fibers being capable of becoming slippery when exposed to water and, upon subsequent drying, again becoming water-soluble upon re-exposure to water;

wherein said hydrophilic agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose, and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone lubricating agents.

34. A method for enhancing the toilet flushability of an article comprised of a thin polymeric film covered by a water-disintegratable fibrous cover layer bonded to the outer surface thereof, comprising the step of modifying said cover layer by coating at least some of said water-disintegratable fibers along the outer surface of said article with a hydrophilic agent, said hydrophilic agent coated on said water-disintegratable fibers becoming lubricious upon hydration and, upon subsequent drying, again becoming water-soluble upon re-exposure to water; said step of coating said water-disintegratable fibers with said hydrophilic agent comprising applying a water-based hydrophilic solution to said water-disintegratable fibers, said water-based hydrophilic solution comprising said hydrophilic agent;

wherein said hydrophilic agent is selected from the group consisting of hydroxyethylcellulose, hydroxypropylcellulose, carboxymethylcellulose; and their salts; polyethylene glycol; gums; gelatin; pectin; polyethyleneoxide; polyacrylamides; acrylic acid copolymers and their salts; and water-soluble silicone lubricating agents.

35. The method of claim 34 in which said polymeric film is heat-sealable and impermeable to liquid and solid body wastes.

36. The method of claim of 35 in which said film comprises a biodegradable aliphatic polyester, or a biodegradable aliphatic-aromatic co-polyester, or blends thereof, plasticized by one or more biodegradable plasticizers.

37. The method of any one of claims 34 to 36 in which thickness of said film is no greater than about 40 microns.

38. The method of any one of claims 34 to 37 in which said cover layer is a nonwoven material formed of water-dispersible fibers.

39. The method of claim 38 in which said fibers of said water-disintegrable cover layer are cellulosic.

40. The method of claim 39 in which said cover layer comprises tissue paper formed of 100% cellulosic fibers.

41. The method of claim 34 in which said fibers coated by said hydrophilic agent are located along the outer surface of said fibrous layer cover.

42. The collection pouch of claim 1, wherein the laminate further comprises one or more thickeners, preservatives, odor neutralizers, deodorants, and solubilization enhancers.

43. The method of claim 13, wherein the laminate further comprises one or more thickeners, preservatives, odor neutralizers, deodorants, and solubilization enhancers.

44. The collection appliance of claim 16, wherein the inner pouch walls further comprise one or more thickeners, preservatives, odor neutralizers, deodorants, and solubilization enhancers.

45. The ostomy appliance of claim 31, wherein the inner pouch walls further comprise one or more thickeners, preservatives, odor neutralizers, deodorants, and solubilization enhancers.

46. The method of claim 34, wherein the thin polymeric film covered by a water-disintegratable fibrous cover layer bonded to the outer surface thereof further comprises one or more thickeners, preservatives, odor neutralizers, deodorants, and solubilization enhancers.

47. The collection appliance of claim 16, wherein the inner pouch walls further comprise one or more thickeners, preservatives, odor neutralizers, deodorants, and solubilization enhancers.

48. The method of claim 15 in which said water-soluble lubricating agent is applied to said pouch by spraying.