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(54) **SHOE COVER**

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(57) **ABSTRACT**

A protective cover, and a method for producing the protective cover, for footwear. The protective cover includes a unitary body including a toe portion, a vamp portion, a quarter portion, a heel portion, and a throat portion. The body is formed from a multi-layer film including an outer layer that includes a first frictional property, an intermediate layer that is compliant, and an inner layer that includes a second frictional property, wherein each layer is water-resistant and the first frictional property is greater than the frictional anti-slip property.

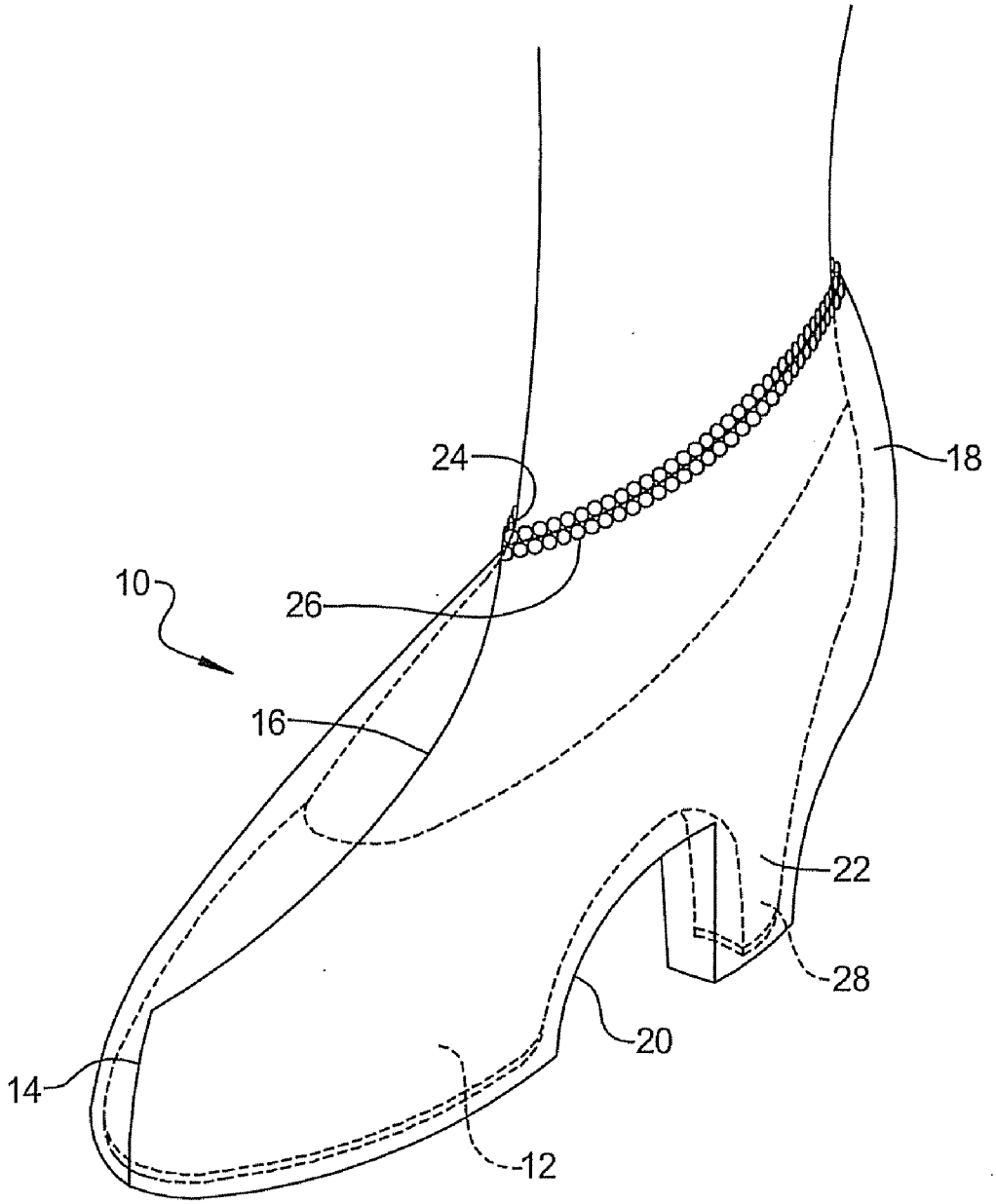
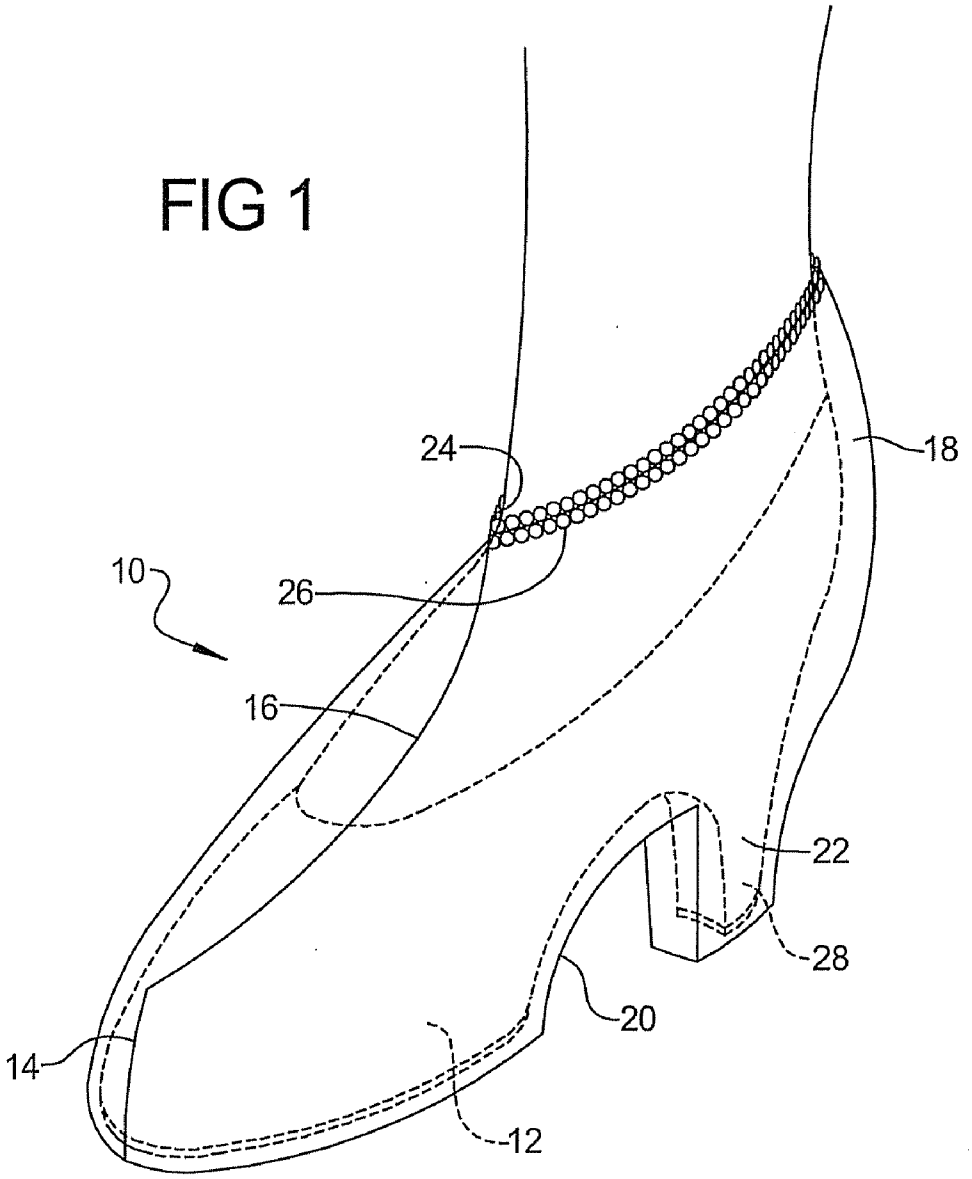


FIG 1



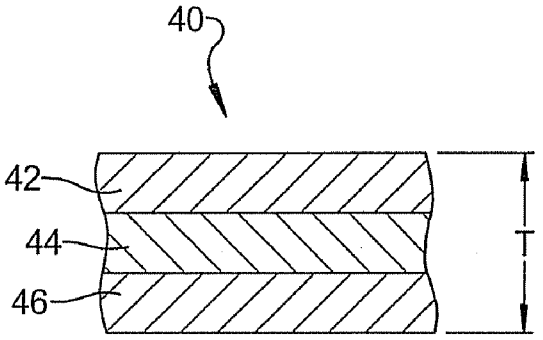
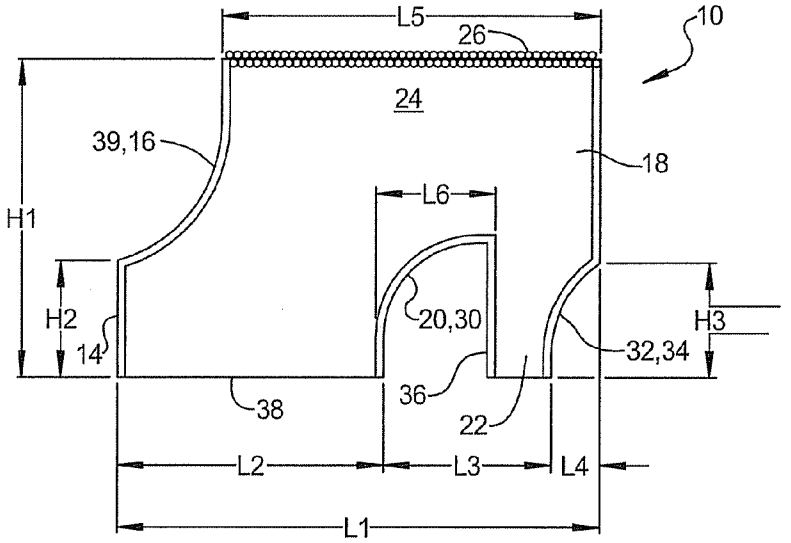


FIG 3

FIG 2


L5
26
10
24
39,16
18
L6
H1
H2
14
20,30
H3
32,34
38
36
22
L2
L3
L4
L1

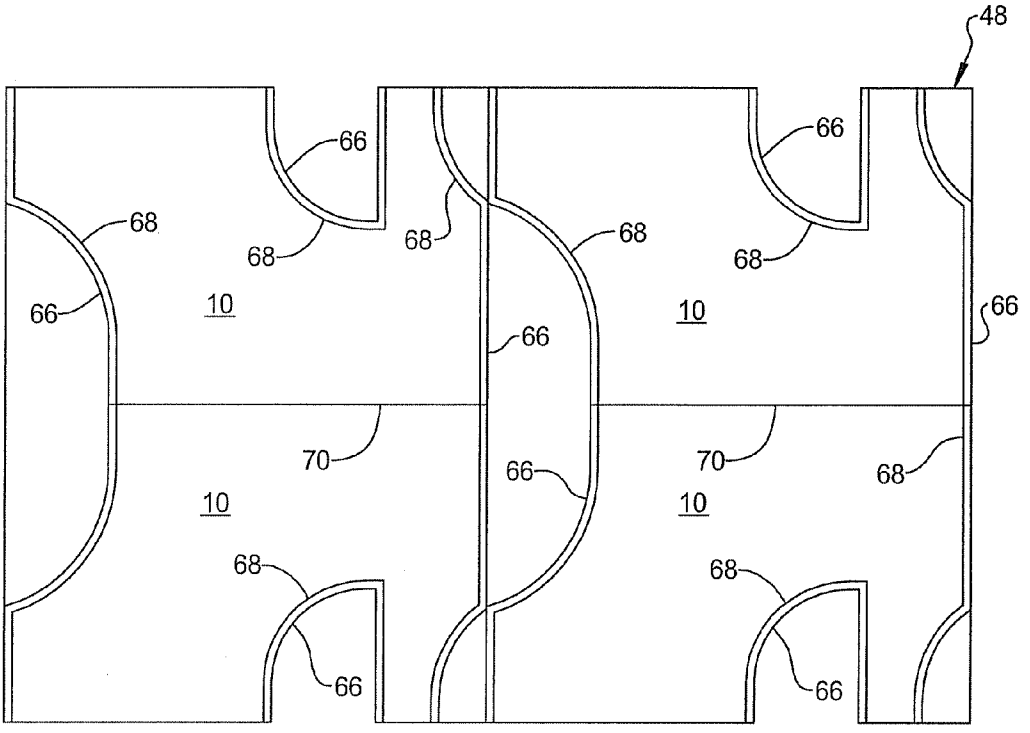

48
66
68
10
70

FIG 4

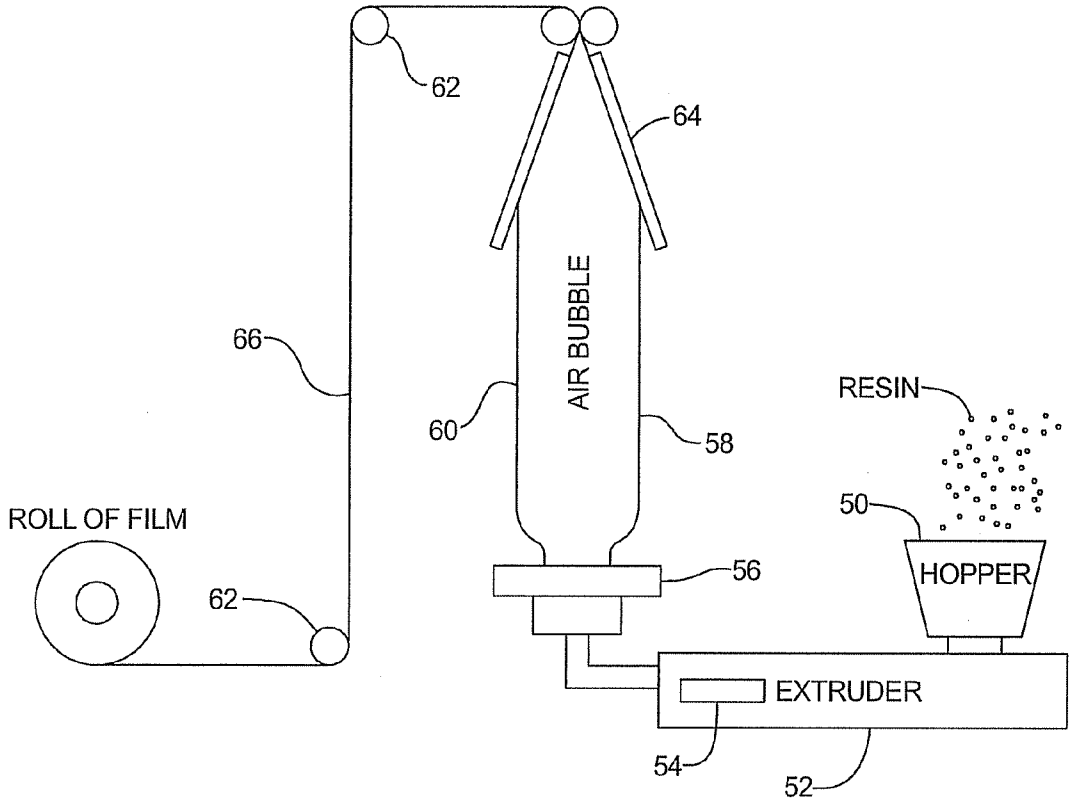

62
64
AIR BUBBLE
66
60
58
RESIN
50
ROLL OF FILM
62
56
HOPPER
EXTRUDER
54
52

FIG 5

SHOE COVER

FIELD

[0001] The present disclosure relates to a protective cover for footwear.

BACKGROUND

[0002] This section provides background information related to the present disclosure which is not necessarily prior art.

[0003] The cost of footwear has always been relatively high and continues to rise. As such, wearers do not wish to damage their shoes and ruin them prematurely. This is particularly true where dirt, rain, snow, ice, or other materials or compounds can contact and damage the uppers and outer soles of the shoes. Further, if shoes get wet, the wearer's feet may become uncomfortably damp throughout the day, which may cause the wearer to feel cold. Accordingly, shoe covers were developed to protect shoes in adverse weather conditions. Many of these shoe covers, however, are costly and/or unwieldy to use.

[0004] Consumers of footwear today opt to invest in particular shoes not only for comfort features but with an eye towards fashion. The trend of foot apparel in the marketplace is towards style, design, brand name, and expense. Footwear is representative of an individual's particular taste and view towards fashion. Accordingly, today's consumers are opting to invest in costly footwear. There exists a continued need, therefore, to provide a low cost, easy to use means of protecting and preserving the appearance and comfort of the shoes of the wearer's choice.

SUMMARY

[0005] This section provides a general summary of the disclosure, and is not a comprehensive disclosure of its full scope or all of its features.

[0006] The present disclosure provides a protective cover, and a method for producing the protective cover, for footwear. The protective cover includes a unitary body including a toe portion, a vamp portion, a quarter portion, a heel portion, and a throat portion. The body is formed from a multi-layer film including an outer layer that includes a first frictional property, an intermediate layer that is compliant, and an inner layer that includes a second frictional property, wherein each layer is water-resistant, the first frictional property is greater than the second frictional property, and the intermediate layer includes recycled plastic.

[0007] Further areas of applicability will become apparent from the description provided herein. The description and specific examples in this summary are intended for purposes of illustration only and are not intended to limit the scope of the present disclosure.

DRAWINGS

[0008] The drawings described herein are for illustrative purposes only of selected embodiments and not all possible implementations, and are not intended to limit the scope of the present disclosure.

[0009] FIG. **1** is a perspective view of a protective shoe cover during use in accordance with a principle of the present invention;

[0010] FIG. **2** is a side view of a protective shoe cover of the present invention;

[0011] FIG. **3** illustrates a cross-sectional view of a multilayer film that may be used according to a principle of the present invention;

[0012] FIG. **4** illustrates blank from which a plurality of protective shoe covers according to a principle of the present invention are manufactured; and

[0013] FIG. **5** illustrates a manufacturing process that may be used to form a multilayer film.

[0014] Corresponding reference numerals indicate corresponding parts throughout the several views of the drawings.

DETAILED DESCRIPTION

[0015] Example embodiments will now be described more fully with reference to the accompanying drawings.

[0016] Referring to FIGS. **1** and **2**, a protective cover **10** for ladies' footwear will be described. FIG. **1** illustrates protective cover **10** during use thereof, and FIG. **2** illustrates protective cover **10** during non-use. Protective cover **10** may be formed of a sheet material that lays flat when in non-use (i.e., protective cover **10** during non-use has substantially no depth), which enables protective cover **10** to be lightweight, easily folded, and stowed. Protective cover **10** has dimensions (described below), however, such that protective cover **10** is able to expand similar to a plastic bag and receive a ladies' shoe **12**.

[0017] Similar to a ladies' shoe **12**, a protective cover includes a toe portion **14**, a vamp portion **16**, a quarter portion **18**, a shank portion **20**, a heel portion **22** and a throat portion **24**. Throat portion **24** provides access into protective cover **10** and is shown in FIG. **2** in its fully expanded form. To ensure that protective cover **10** remains snugly over a shoe **12**, throat portion **24** may include a retention mechanism **26**. As shown in FIG. **1**, retention mechanism **26** pulls throat portion **24** snugly against a shin of the wearer to retain protective cover **10** snugly over shoe **12**.

[0018] Protective cover **10** is particularly adapted for ladies' shoe **12**, and more particularly adapted for a ladies' high-heel shoe or pump. In this regard, shank portion **20** and heel portion **22** each include a length sufficient to accommodate the entire length of a heel **28** of shoe **12**, which may range between 1 and 5 inches in length. To accommodate various contours and shapes of different ladies' shoes **12**, shank portion **20** may include a radius of curvature **30**, while heel portion **22** may include a radius of curvature **32** at a posterior portion **34** thereof. Anterior portion **36** of heel portion **22** may be substantially linear along an entire length thereof where it meets shank portion **20**. Vamp portion **16** may also include a radius of curvature **39** between throat portion **24** and toe portion **14**.

[0019] To accommodate most ladies' shoes **12**, protective cover **10** may include an overall length L**1** from toe portion **14** to quarter portion **18** that ranges between 12 and 16 inches. Preferably, length L**1** from toe portion **14** to quarter portion **18** is about 14 inches. A height H**1** of protective cover **10** from a bottom edge **38** to throat portion **24** may range between 8 and 14 inches, and preferably height H**1** is about 9 inches. A length L**2** of bottom edge **38** may range between 6 and 8 inches in length, and preferably length L**2** is about 7.75 inches. A height H**2** of toe portion **14** may range between 2 and 4 inches, and preferably is about 3 inches. A length L**3** between shank portion **20** and quarter portion **18** may range between 5 and 7 inches, and preferably length L**3** is about 6.25 inches. A height H**3** of posterior portion **34** may range between 3 and 4 inches, and preferably height H**3** is about

3.25 inches. A length L**4** of posterior portion **34** may range between 1 and 2 inches, and preferably length L**4** is about 1.375 inches. A length L**5** of throat portion **24** may range between 10 and 12 inches, and preferably length L**5** is about 11 inches. It should be noted, however, that due to retention mechanism **26**, throat portion **24** will have a length less than L**5** during use of protective cover **10** as retention portion **26** will gather throat portion around the wearer's ankle. Lastly, a length L**6** of shank portion may range between 2 and 4 inches, and preferably length L**6** is about 3 inches. Protective covers **10** having the above-noted lengths and heights in the listed ranges are suitable for accommodating most sizes of ladies' shoes **12**. It should be appreciated, however, that for smaller or larger ladies' shoes **12** the range of dimensions will vary accordingly.

[0020] It should be understood that although protective cover **10** is described throughout the specification as being directed to a ladies' shoe **12**, the present disclosure should not be limited thereto. More particularly, protective cover **10** may be adopted for use over men's and children's footwear as well. To accommodate most men's and children's footwear, heel portion **22** may have a height H**3** of about 0.5 inches. Moreover, L**1** may be between about 9 to 16 inches, L**2** may be between about 5 to 8 inches, L**3** may be between about 4 to 8 inches, L**5** may be between about 5 to 12 inches, and L**6** may be between about 1 to 4 inches. H**2** may be about the same as for ladies' shoe **12**, while H**1** may be between about 6 and 10 inches.

[0021] Protective cover **10** is preferably formed from a material that is water- and weather-resistant. In particular, protective cover **10** may be formed from a polymeric or plastic material. Forming protective cover **10** from polymeric or plastic materials enables protective cover **10** to be worn over ladies' shoe **12** during inclement weather to protect a ladies' shoe from damage from water, ice, snow, mud and any other debris that may damage shoe **12**. Although not required by the present disclosure, the polymeric or plastic material may be a clear and colorless material that enables the design of shoe **12** to be viewed during use of protective cover **10**. It should be understood, however, that protective cover **10** may be an opaque or colored material without departing from the spirit and scope of the present disclosure. As a material that is water- and weather-resistant, linear low-density polyethylene may be used. Other polymeric or plastic materials that are water- and weather-resistant include polypropylene, and polyvinylchloride. Any other material, however, that meets the water- and weather-resistant criteria herein may also be used.

[0022] Forming protective cover **10** from a polymeric or plastic material such as polyethylene enables protective cover **10** to be light-weight and easily foldable, which enables protective cover **10** to be easily storable. Accordingly, protective cover **10** may be kept in a purse, wallet, glove compartment, or storage receptacle within an automobile that enables a wearer to use protective cover **10**, as needed.

[0023] Referring to FIG. **3**, protective cover **10** may be formed from a multi-layer film **40** that includes an outer layer **42** that may include a frictional property (i.e., comprises an anti-slip resistant property), an intermediate layer **44** that is compliant, and an inner layer **46** (i.e., a layer that contacts the shoe) that includes another frictional property that may be substantially less in magnitude than outer layer **42** to enable the wearer to easily slide protective cover **10** over shoe **12**. Multi-layer film **40** preferably comprises a total thickness T that ranges between 1.0 and 4.0 mils. Preferably, total thickness T of protective film **40** is about 2.0 mils.

[0024] Outer layer **42** includes an anti-slip resistant property because outer layer **42** will be exposed to environments that may include water, ice, snow, and other debris when protective cover **10** is in use. Outer layer **42**, therefore, should provide sufficient frictional resistance during use to prevent, or at least substantially minimize, the wearer from slipping on the walking surface in the above-noted conditions. Further, if protective cover **10** is used indoors, outer layer **42** should provide sufficient frictional resistance to prevent, or at least substantially minimize, the wearer from slipping on surfaces such as carpet and smooth surfaces like tiled or wood floors. Although inner layer **46** may have a frictional property of substantially lesser magnitude than outer layer **42** to allow the wearer to easily place protective cover **10** over shoe **12**, it should be appreciated that the frictional property of inner layer **46** is sufficient to prevent protective cover **10** from slipping off shoe **12** during use thereof.

[0025] Intermediate layer **44** may be a compliant layer. That is, intermediate layer **44** resists stretching and tearing, to increase the durability of protective cover **10**. To make intermediate layer **44** compliant, intermediate layer **44** may include between 15-40% PCR (post consumer recycled plastic), and preferably intermediate layer includes about 25% PCR. Although intermediate **44** is described as including environmentally conscious use of PCR, it should be understood that both outer layer **42** and inner layer **46** may also include PCR, without departing from the spirit and scope of the present disclosure. Using PCR in multi-layer film **40** decreases the cost of material used in manufacturing protective cover **10**, and provides the wearer with a protective cover that is environmentally conscious.

[0026] Each layer of multilayer film **40** may be formed of the same material (such as polyethylene) or different materials. For example, outer layer **42** may be formed of polyethylene, intermediate layer **44** may be formed of polyvinylchloride, and inner layer **46** may be formed of polypropylene. Regardless, any combination of materials for each layer is contemplated so long as outer layer **42** includes frictional properties that are anti-slip, inner layer **46** includes frictional properties that enable the wearer to easily slip protective cover **10** over shoe **12**, and intermediate layer is compliant.

[0027] If each layer of multilayer film **40** is formed of the same material (such as polyethylene), the frictional properties of both the outer layer **42** and inner layer **46** and the compliant property of intermediate layer **44** may be adjusted by modifying the molecular weight of the selected material of each layer. For example, to provide outer layer **42** with an anti-slip property, outer layer **42** may be formed of a form of the material having a lower molecular weight and density than inner layer **46**. Moreover, as stated above, intermediate layer **44** may comprise a form of the material including an environmentally conscious PCR content ranging between 15 and 40%, which increases the compliant property of the intermediate layer **44**. Adding PCR to the outer layer **42** and inner layer **46** may also adjust the molecular weight of these layers to adjust their respective frictional properties.

[0028] Layers of multi-layer film **40** may also include materials such as ultraviolet (UV) inhibitors, anti-blocking materials, plasticizers, and the like. UV-inhibitors assist in preventing UV radiation from penetrating protective cover **10**, which decreases the likelihood of shoe **12** fading during use of protective cover **10**. UV inhibitors also protect the

material that forms protective cover **10** from UV radiation, which can weaken the polymer or plastic's strength and, if colored, fade its color. Anti-blocking materials assist in preventing protective covers **10** from sticking together during packaging of protective covers **10**. Plasticizers may be used to assist in manufacturing of protective cover **10**.

[0029] Although protective cover **10** is described above as being formed of multi-layer film **40**, the present disclosure should not be limited thereto. In this regard, protective cover **10** may be formed of a single layer film, a dual layer film, or any other number of films, as desired so long as protective cover **10** is suitable for remaining weather-resistant. Further, if protective cover **10** is formed of a single layer or double layer film, protective cover **10** may retain the above-noted anti-slip properties by making an outer surface more slip-resistant relative to an inner surface by, for example, using various polymeric or plastic additives in the film, or by providing various additives to the outer and inner surfaces, respectively, by spraying, coating, or the like.

[0030] Now referring to FIGS. **4** and **5**, a method for manufacturing protective cover **10** will be described. As shown in FIG. **4**, a plurality of protective covers **10** may be formed from a blank **48** of multi-layer film **40**. Blank **48** may be formed by blown-film extrusion, also known as a tubular film process. To produce blank **48** of multi-layer film **40**, the polymeric or plastic material (such as polyethylene) arrives at the manufacturing facility in pellet (resin) form. The machine operator pours the resin into a hopper **50**, which feeds the resin into an extruder **52**. Heating elements **54** and turning of the extruder screw (not shown) melts the resin into a molten form and forces it through extruder **52**.

[0031] If protective cover **10** is to be formed from a single-layer film (not shown), extruder **52** may be provided with a circular die **56** located downstream from extruder **52** so that as the molten resin flows evenly and over circular die **56**, the sheet material will emerge as a tube **60**. The tube **60** is then fed through a pulley system **62** that pulls tube **60**. As pulley system **62** is pulling tube **60**, the machine operator inserts an air gun (not shown) into tube **60** to blow air into sheet **58**, which increases a diameter of tube **60** as it is pulled by pulley system **62**. Once tube **60** reaches the desired diameter, tube **60** is fed through a guide **64**, which forces tube **62** into a layflat form **66**. Subsequently, tube **60** in layflat form **66** is rolled until protective covers **10** are to be formed therefrom in a die-cutting and sealing process.

[0032] To form multi-layer film **40**, three extruders **52** are used that each extrude material for outer layer **42**, intermediate layer **44**, and inner layer **46**, respectively. This enables, as stated above, each layer to be separately formed to have different properties (e.g., anti-slip, compliant, UV-resistant, etc). As sheets **58** emerge from extruders **52**, sheets **58** are simultaneously fed through circular die **56**, which is located downstream from extruders **52** and fuses each layer together to form multilayer film **40** in the shape of tube **60**. Tube **60** is then fed through pulley system **62** that pulls tube **60**. As pulley system **62** is pulling tube **60**, the machine operator inserts the air gun (not shown) into tube **60** to insert air therein, which increases the diameter of tube **60** as it is pulled by pulley system **62**. Once tube **60** reaches the desired diameter, tube **60** is fed through a guide **64**, which forces tube **60** into a layflat form **66**. Subsequently, tube **60** in layflat form **66** is rolled until protective covers **10** are to be formed therefrom in a die-cutting and sealing process.

[0033] FIG. **4** illustrates the outline **66** of protective covers **10** to be die cut and sealed during the die-cutting and sealing process. Lines **68** represent portions of multilayer film **40** that are sealed to enclose and complete formation protective cover **10**. To cut and seal protective cover **10** along lines **66** and **68**, a heat sealing process may be used. In this regard, a heated die (not shown) having a shape that corresponds to outline **66** of protective cover **10** is pressed against blank **48** for a predetermined dwell time, which seals portions of multilayer film **40** along lines **68** and cuts protective covers **10** from blank **48** along lines **66**. Alternatively, lines **68** may be sealed sonically, vibrationally, by laser, or any other process known to one skilled in the art. Line **70** represents a separation line of adjacent protective covers that may be perforated by the heated die. When line **70** is cut, throat portion **24** is formed.

[0034] After protective covers **10** are formed as set forth above, retention mechanism **26** may be incorporated into throat portion **24**. As illustrated in FIGS. **1** and **2**, retention mechanism may be an elastic band. Retention mechanism **26**, however, should not be limited thereto. In this regard, after cutting along line **70**, throat portion **24** may be slightly folded and sealed to provide a sleeve that may accommodate a lace or drawstring that may act as retention mechanism **26**. Retention mechanism **26** may also comprise VELCRO® or a buckle such as a hook-eye. Regardless, when protective cover **10** is provided with retention mechanism **26**, dimension of throat portion **24** pulls throat portion **24** to a dimension less than a length L**5** of throat portion **24** illustrated in FIG. **2**, but may enable throat portion **24** to fully expand to length L**5** in order to enable a wearer to place her foot and shoe **12** into protective cover **10**. It should be understood, however, that retention mechanism **26** provides a manner in which to secure protective cover **10** to a wearer's foot or shoe and prevent protective cover **10** from sliding off the wearer's foot during use thereof, and prevents weather (i.e., rain, snow, ice, debris, etc.) from entering protective cover **10** during use thereof.

[0035] As described above, protective cover **10** provides an inexpensive, lightweight, and foldable device for protecting ladies' footwear. Protective cover **10**, therefore, may be easily stowed and used, as weather conditions require. As protective cover **10** may be formed from a polymeric or plastic film, protective cover **10** enables the design of shoe **12** to be viewed during use thereof. Moreover, as protective cover **10** may be formed from multi-layer film **40**, protective cover **10** may be provided with a plurality of different properties, including anti-slip, weather-resistant, anti-UV, etc., without limitation. Further, the use of recycled plastic provides an environmentally conscious protective cover **10**. Due to retention mechanism **26**, protective cover **10** is also adapted to remain snugly over shoe **12** during use thereof, while expandable to easily place protective cover **10** over shoe **12**.

[0036] The foregoing description of the embodiments has been provided for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention. Individual elements or features of a particular embodiment are generally not limited to that particular embodiment but, where applicable, are interchangeable and can be used in a selected embodiment, even if not specifically shown or described. The same may also be varied in many ways. Such variations are not to be regarded as a departure from the invention, and all such modifications are intended to be included within the scope of the invention.

What is claimed is:

1. A protective cover for footwear, comprising a unitary body including a toe portion, a vamp portion, a quarter portion, a heel portion, and a throat portion, said body formed from a film including an outer surface that includes a first frictional property and an inner surface that includes a second frictional property, wherein said film is water-resistant and said first frictional property is greater than said second frictional property.

2. The protective cover of claim **1**, wherein said film is a multi-layer film including an outer layer, an intermediate layer, and an inner layer.

3. The protective cover of claim **2**, wherein said outer layer includes said first frictional property, said intermediate layer includes a compliant property, and said inner layer includes said second frictional property.

4. The protective cover of claim **2**, wherein at least one layer of said multi-layer film is formed of a material including about 25% recycled material.

5. The protective cover of claim **2**, wherein said intermediate layer resists stretching and tearing.

6. The protective cover of claim **1**, wherein said throat portion includes a retention mechanism.

7. The protective cover of claim **6**, wherein said retention comprises an elastic band.

8. The protective cover of claim **6**, wherein said retention mechanism is one of an elastic band, a pull tie, a VELCRO® strap, and a buckle.

9. The protective cover of claim **1**, wherein said heel portion is sized to accommodate a heel of a ladies' high-heel shoe.

10. The protective cover of claim **1**, wherein said heel portion is sized to accommodate said heel having a length that ranges between 0.5 inch to 5 inches.

11. The protective cover of claim **1**, wherein said film is formed of polyethylene.

12. The protective cover of claim **2**, wherein said outer layer is formed of polyethylene having a lower density than polyethylene that forms said inner layer.

13. The protective cover of claim **2**, wherein said intermediate layer includes recycled polyethylene.

14. The protective cover of claim **1**, wherein said film includes an ultraviolet inhibitor.

15. A method for manufacturing a protective cover for footwear, comprising:

producing a multi-layer film including an outer layer that includes a first frictional property, an intermediate layer that is compliant, and an inner layer that includes a second frictional property, wherein each layer is water-resistant and said first frictional property is greater than said second frictional property;

forming said multi-layer film into a tube;

sealing an outline of the protective cover and after said outline is sealed, cutting the protective covers from said tube.

16. The method of claim **15**, further comprising providing the protective cover with a retention mechanism.

17. The method of claim **16**, wherein said retention mechanism is one of an elastic band, a pull tie, a VELCRO® strap, and a buckle.

18. The method of claim **15**, wherein said outline of the protective cover is adapted to accommodate a shoe including a heel having a length that ranges between 0.5 inch to 5 inches.

19. The method of claim **15**, wherein said outer layer is formed of a material having a lower density than said inner layer.

* * * * *