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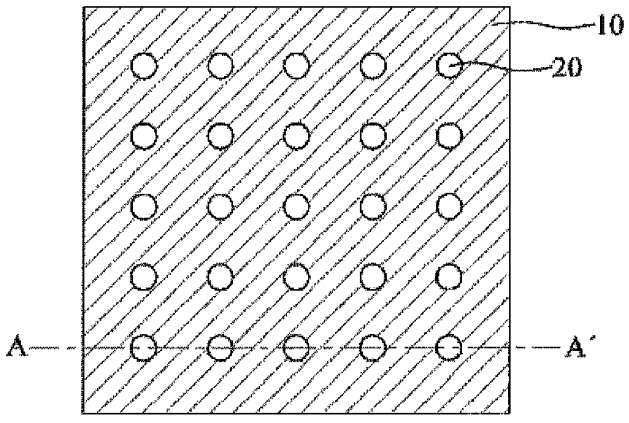
(54) **ARTIFICIAL LEATHER**

(57) Disclosed is an artificial leather that can exhibit a level of flame retardancy required in the art, is free of deterioration in soft texture of ultrafine fibers and has greatly improved air-permeability by partially coating a flame retardant composition on a preliminary artificial leather. The artificial leather includes a preliminary artificial leather comprising a non-woven fabric made of ultrafine fibers and an elastic polymer resin impregnated in the non-woven fabric, and a flame retardant composition layer formed on the preliminary artificial leather by partially coating a flame retardant composition thereon at an area ratio of 60 to 90%, with respect to the total area of the preliminary artificial leather.

FIG. 1



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Description

[Technical Field]

[0001] The present invention relates to an artificial leather. More specifically, the present invention relates to an artificial leather comprising a flame retardant composition layer

[Background Art]

[0002] An artificial leather is produced by impregnating a polymer elastomer in a non-woven fabric comprising three-dimensionally entangled ultrafine fibers, which is widely utilized in a variety of applications such as shoes, clothing, gloves, miscellaneous goods, furniture and automobile interior materials due to natural leather-like soft texture and unique appearance.

[0003] Such artificial leather requires improved high functionality in terms of flexibility, surface quality properties, abrasion resistance, light resistance, elongation and the like according to applications and often requires a variety of properties.

[0004] For example, when the artificial leather is used for a surface material adhered to an automobile sheet among the automobile interior materials, there is difficulty in that it satisfies surface quality properties, specifically, superior appearance, air-permeability and texture properties, as well as flame retardancy regulated by the Law among physical properties of automobile in accordance with increased expectation of consumers.

[0005] That is, in order to impart flame retardancy required in the art to artificial leathers, a great amount of flame retardant is inevitably used. When an artificial leather is treated with a great amount of flame retardant, the artificial leather disadvantageously becomes hard in texture and exhibits deteriorated air-permeability.

[Disclosure]

[Technical Problem]

[0006] Therefore, the present invention is directed to an artificial leather capable of preventing problems caused by these limitations and drawbacks of the related art.

[0007] That is, it is one object of the present invention to provide an artificial leather that can exhibit a level of flame retardancy required in the art, is free of deterioration in soft texture of ultrafine fibers and has greatly improved air-permeability by partially coating a flame retardant composition on a preliminary artificial leather.

[Technical Solution]

[0008] In accordance with one aspect of the present invention, provided is an artificial leather comprising: a preliminary artificial leather comprising a non-woven fabric made of ultrafine fibers and an elastic polymer resin impregnated in the non-woven fabric; and a flame retardant composition layer formed on the preliminary artificial leather by partially coating a flame retardant composition thereon at an area ratio of 60 to 90%, with respect to the total area of the preliminary artificial leather.

[Advantageous Effects]

[0009] The present invention has the following effects.

[0010] First, the artificial leather according to the present invention comprises a flame retardant composition layer that is partially coated at an optimal shape and content, thus advantageously exhibiting a level of flame retardancy required in the art and improving economical efficiency.

[0011] Second, the artificial leather according to the present invention can exhibit superior texture and air-permeability due to partial coating of the flame retardant composition layer.

[0012] Such an artificial leather may be used for automobile sheets or the like, requiring superior flame retardancy, appearance and texture.

[Brief description of the drawings]

[0013] The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a plan view illustrating an artificial leather according to one embodiment of the present invention;
FIG. 2 is a cross-sectional view of the artificial leather taken along the line A-A' of FIG. 1; and
FIGs. 3 to 6 are plan views illustrating an artificial leather according to another embodiment of the present invention.

[Best Mode]

[0014] Those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims. Accordingly, the present invention includes all alternations and modifications that fall within the scope of inventions described in claims and equivalents thereto.

[0015] The term herein used "preliminary artificial leather" means an artificial leather, to which a flame retardant composition is not added, that comprises a non-woven fabric and an elastic polymer resin impregnated in the non-woven fabric.

[0016] Hereinafter, embodiments of artificial leather according to the present invention will be described with reference to the annexed drawings in more detail.

[0017] FIG. 1 is a plan view illustrating an artificial leather according to one embodiment of the present invention.

[0018] FIG. 2 is a cross-sectional view of the artificial leather taken along the line A-A' of FIG. 1.

[0019] As shown in FIGs. 1 and 2, the artificial leather of the present invention comprises a preliminary artificial leather 30 and a flame retardant composition layer 10 disposed on the preliminary artificial leather 30 by partially coating a flame retardant composition thereon. According to one embodiment of the present invention illustrated in FIGs. 1 and 2, since the flame retardant composition is only partially coated on the preliminary artificial leather 30, grooves are formed in non-coated regions of preliminary artificial leather where the flame retardant composition is not coated and, as a result, the artificial leather of the present invention exhibit superior air-permeability without causing deterioration in texture of preliminary artificial leather made of fine fibers.

[0020] In addition, the amount of flame retardant composition used can be greatly reduced since the flame retardant composition is only partially coated on the preliminary artificial leather 30. As a result, production cost of the artificial leather can be reduced and economic efficiency can be thus improved.

[0021] On the other hand, when, in the related art, the flame retardant composition is coated over the entire surface of the preliminary artificial leather 30, problems such as reduction in economic efficiency and deteriorations in texture and air-permeability of artificial leather occur due to use of a great amount of flame retardant composition.

[0022] The artificial leather of the present invention comprises a flame retardant composition layer 10 that is formed by partially coating the flame retardant composition at an area ratio of 60 to 90% with respect to the total area of the preliminary artificial leather 30. When the area ratio of the flame retardant composition layer 10 is lower than 60%, an artificial leather satisfying flame retardancy required in the art cannot be obtained, and when the area ratio of the flame retardant composition layer 10 is higher than 90%, air-permeability of the artificial leather may be greatly deteriorated.

[0023] The flame retardant composition layer 10 may have a variety of shapes, as shown in FIGs. 1 and 3 to 5.

[0024] For example, as shown in FIG. 5, the flame retardant composition layer 10 may include a plurality of discontinuous unit layers having a predetermined shape. That is, the plurality of unit layers constituting the flame retardant composition layer 10 are discontinuously distributed on the preliminary artificial leather 30 and one groove 20 corresponding to the non-coated region of the preliminary artificial leather 20 surrounds the plurality of unit layers.

[0025] However, when one groove 20 surrounding discontinuously distributed unit layers is formed, the region where the preliminary artificial leather 20 is not coated may be readily burned along the continuously formed groove 20 and flame retardancy of artificial leather may be thus slightly deteriorated. As a result, in order to impart a level of flame retardancy required in the art to an artificial leather, a relatively great amount of flame retardant is inevitably used and, as a result, air-permeability and texture of artificial leather may be slightly deteriorated.

[0026] On the other hand, as shown in FIGs. 1, 3 and 4, the artificial leather of the present invention may include a plurality of grooves 20 that are discontinuously distributed in non-coated regions of preliminary artificial leather 30 to which the flame retardant composition is not coated.

[0027] The flame retardant composition layer 10 of the present invention, as shown in FIGs. 1 and 3, may be a body surrounding the plurality of grooves 20. Alternatively, as shown in FIG. 4, the flame retardant composition layer 10 of the present invention may include a plurality of discontinuously distributed unit layers.

[0028] When the artificial leather of the present invention including a plurality of grooves 20 that are discontinuously distributed in non-coated regions of preliminary artificial leather 30 to which the flame retardant composition is not coated is subjected to flame retardancy testing, the plurality of grooves 20 are discontinuously distributed, thus preventing blazes from spreading to the entire non-coated regions of the preliminary artificial leather 20. As a result, although the amount of the flame retardant composition coated is low, flame retardancy of artificial leather can be greatly improved.

[0029] Accordingly, when the flame retardant composition is coated at a constant amount on the preliminary artificial leather 30, the artificial leather including a plurality of discontinuously distributed grooves 20 exhibits superior flame

retardancy, as compared to the artificial leather including only continuously formed one groove 20.

[0030] The plurality of grooves 20 of the artificial leather of the present invention, as shown in FIG. 6, may be irregularly and discontinuously distributed, and the flame retardant composition layer 10 may be a body surrounding the plurality of grooves 20.

[0031] Each of the grooves 20 of the artificial leather of the present invention may have a variety of shapes such as circular, polygonal or linear shape.

[0032] Meanwhile, so as to improve both flame retardancy and air-permeability, the flame retardant composition layer 10 should have an optimal permeation depth and an upper part thickness. FIG. 2 is a cross-sectional view of the artificial leather taken along the line A-A' of FIG. 1 according to one embodiment of the present invention. As shown in FIG. 2, the artificial leather has an upper part thickness that means a level of the flame retardant composition layer 10 that protrudes on the surface of the preliminary artificial leather 30 and a permeation depth that means a level of the flame retardant composition layer 10 permeated into the preliminary artificial leather 30.

[0033] In order to produce an artificial leather having flame retardancy corresponding to a horizontal burning speed of 100 mm/min or less and an air-permeability of 20 to 50 L/min/100cm^2, the upper part thickness (a) is preferably within a ratio range of 0.1 to 4% with respect to the thickness (c) of the preliminary artificial leather 30. When the ratio of the upper part thickness (a) is lower than 0.1%, an artificial leather satisfying a level of flame retardancy required in the art cannot be produced, and when the ratio of the upper part thickness (a) is higher than 4%, the texture of artificial leather may be greatly deteriorated.

[0034] The permeation depth (b) is preferably within a ratio range of 5 to 50% with respect to the thickness (c) of the preliminary artificial leather 30. When the ratio of the permeation depth (b) is lower than 5%, adhesion force is deteriorated and durability is thus degraded and, on the other hand, when the ratio of the permeation depth (b) is higher than 50%, the texture of artificial leather may be hardened.

[0035] The upper part thickness (a) and permeation depth (b) of the flame retardant composition layer 10 may be measured by imaging the cross-section of a sample with a scanning electron microscope (SEM).

[0036] The flame retardant composition may comprise a flame retardant and a binder. As the flame retardant, a phosphorous-based flame retardant is preferred than a halogen-based flame retardant which is a cancer-inducing substance. The binder enhances adhesion force and may be selected from a variety of types of binders. In particular, a urethane-based binder containing silicon exhibits superior heat resistance due to presence of silicon, thus inhibiting decomposition of silicon during combustion, and can form a cross-linkage with urethane, thus improving flame retardancy of the artificial leather. Meanwhile, the urethane-based binder advantageously has strong adhesion force with the preliminary artificial leather 30 as well as superior adhesion force with other material such as sponge.

[0037] The flame retardant composition may comprise, in addition to the flame retardant and binder, a variety of additives. Examples of useful additives include an anti-oxidant, an anti-static agent, an ultraviolet ray absorbent, an anti-hydrolysis agent and a softening agent.

[0038] The preliminary artificial leather 30, as defined above, is an artificial leather, to which the flame retardant composition is not added, that comprises a non-woven fabric (not shown) and an elastic polymer resin (not shown) impregnated in the non-woven fabric and may be produced in accordance with the following method.

[0039] First, island-in-sea fibers are prepared through a conjugate spinning process. The island ingredient of the island-in-sea fibers may be nylon or polyester, and the polyester may be polyethylene terephthalate (PET), polytrimethylene terephthalate (PTT) or polybutylene terephthalate (PBT).

[0040] Subsequently, the island-in-sea fibers are formed into short fibers such as staple fibers through a cutting process. The short fiber-type island-in-sea fibers are subjected to carding and cross-lapping processes to form webs. Alternatively, the webs may be directly formed through a spun bonding without any cutting process using long fiber-type island-in-sea fibers.

[0041] A plurality of webs thus formed are joined together using a needle punch or water jet punch to complete a non-woven fabric.

[0042] Subsequently, a process for impregnating an elastic polymer resin in the non-woven fabric and an ultra-fining process for removing the island ingredient of the island-in-sea fibers are sequentially performed to complete a preliminary artificial leather 30. Alternatively, the ultra-fining process is first performed and impregnation of the elastic polymer resin is then performed.

[0043] The process of impregnating the elastic polymer resin in the non-woven fabric may be carried out by a coating, dipping process or the like. Of them, the dipping process that is simple and easy will be described in more detail.

[0044] First, a polyurethane or silicone resin may be used as the elastic polymer resin. The polyurethane resin may be a polycarbonate diol resin, a polyester diol resin or a polyether diol resin, or a mixture thereof.

[0045] A process for dipping a non-woven fabric in a composition comprising the elastic polymer resin, a process for solidifying the elastic polymer resin in a coagulation bath and a process for washing the non-woven fabric with water in a washing bath are sequentially performed to complete impregnation of the elastic polymer resin. The coagulation solution contained in the coagulation bath may be a mixed solution containing water, dimethylformamide and the like.

[0046] The ultra-fining process will be described in more detail. Of the composite fiber comprising an island ingredient and a sea ingredient, the sea ingredient is removed by elution using an alkali solution such as aqueous sodium hydroxide solution. As a result of removal of sea ingredient, the remaining island ingredient constitutes ultrafine fibers. The ultrafine fibers formed by the ultra-fining process preferably have a fineness of 0.3 denier or less in terms of texture.

[0047] Although the method for producing the preliminary artificial leather 30 using island-in-sea fibers has been described, the present invention is not limited thereto. That is, the preliminary artificial leather 30 may be produced by producing ultrafine fibers, producing a non-woven fabric using the ultrafine fibers, and impregnating an elastic polymer resin in the non-woven fabric.

[0048] The artificial leather described above exhibits excellent flame retardancy as well as superior air-permeability. That is, the artificial leather has a horizontal burning speed (that is measured in accordance with automobile interior material combustion test regulation of FMVSS. No. 302) of 100 mm/min or less, and an air-permeability of 20 to 50 L/min/100cm^2.

[0049] The horizontal burning speed is a parameter indicating flame retardancy, which is mainly used when the artificial leather is used as an interior material such as automobile sheet. When the horizontal burning speed of the artificial leather exceeds 100 mm/min, it cannot have a level of flame retardancy required in the art and may be unsuitable for use in interior materials for automobiles.

[0050] The air-permeability of the artificial leather means a level at which air is permeated into or is discharged from an automobile sheet, when the artificial leather is used for the automobile sheet. As air-permeability increases, a driver feels comfortable and fresh, and on the other hand, as air-permeability decreases, the driver feels unfresh and uncomfortable.

[0051] However, as air-permeability excessively increases, the content of the flame retardant composition layer 10 is decreased and flame retardancy of artificial leather is thus excessively deteriorated. Accordingly, the artificial leather preferably has an air-permeability of 20 to 50 L/min/100cm^2.

[0052] Hereinafter, the present invention will be described in detail with reference to examples and comparative examples. These examples are provided only for a better understanding and should not be construed as limiting the scope and spirit of the present invention.

Example 1

[0053] A copolymer polyester in which 5 mol% of polyester units containing metal sulfonate are copolymerized with polyethylene terephthalate as a main ingredient is molten to prepare a molten solution of a sea ingredient, and polyethylene terephthalate (PET) is molten to prepare a molten solution of an island ingredient. Then, 50% by weight of the sea ingredient molten solution and 50% by weight of the island ingredient molten solution were conjugate-spun to obtain filaments having a single yarn fineness of 3 denier and comprising 16 island ingredients on the cross-section thereof, and the filaments were extended at an extension ratio of 3.5 to produce filament-type island-in-sea fibers. Then, the island-in-sea fibers were crimped such that the number of crimps became 15/inch, thermally set at 130°C, and cut to 51 mm to prepare staple-type island-in-sea fibers.

[0054] Then, the staple-type island-in-sea fibers were subjected to carding and cross-lapping processes to form webs and the webs were subjected to a needle-punch process to produce a non-woven fabric.

[0055] Then, the non-woven fabric was padded with 5% by weight of an aqueous polyvinyl alcohol solution and then dried, and the dried non-woven fabric was dipped in 10% by weight of a 25°Cpolyurethane solution obtained by dissolving polyurethane in dimethylformamide (DMF) as a solvent, for 2 minutes. Then, the polyurethane solution-dipped non-woven fabric was coagulated in 15% by weight of an aqueous dimethylformamide solution and washed with water to obtain a polyurethane-impregnated non-woven fabric.

[0056] Then, the polyurethane-impregnated non-woven fabric was treated with 5% by weight of an aqueous sodium hydroxide solution, and the sea ingredient of the composite fiber was eluted and subjected to a ultra-fining process to obtain a preliminary artificial leather 30 having a unit weight of 346.3g/m^2, a thickness of 0.95 mm, and air-permeability of 56.4 L/min/100cm^2.

[0057] Subsequently, a flame retardant composition having a viscosity of 7,800 comprising 40% by weight of water, 40% by weight of ammonium polyphosphate as a phosphorous-based flame retardant, and 20% by weight of a polyurethane-based binder was coated in the shape as shown in FIG. 1 on the one surface of the preliminary artificial leather 30 using a rotary screen coating method and air-dried at 130°C for 10 minutes to obtain an artificial leather provided with the flame retardant composition layer 10 having an area ratio of 65%, a upper part thickness (a) of 16μm and a permeation depth (b) of 100μm. The rotary screen coating was performed using a rotary screen printing machine (produced by Ichinose Co., Ltd.) and an 80 mesh screen (produced by Stork Co. Ltd.)

Examples 2 and 3

[0058] Artificial leathers were obtained in the same manner as Example 1, except that area ratios of the flame retardant composition layer 10 were changed into 75% and 85%, respectively.

Example 4

[0059] An artificial leather was obtained in the same manner as Example 1, except that the flame retardant composition was coated in the shape shown in FIG. 4.

Examples 5 and 6

[0060] Artificial leathers were obtained in the same manner as Example 4, except that area ratios of the flame retardant composition layer 10 were changed into 75% and 85%, respectively.

Example 7

[0061] An artificial leather was obtained in the same manner as Example 1, except that the flame retardant composition was coated in the shape shown in FIG. 5.

Comparative Example 1

[0062] An artificial leather was obtained in the same manner as Example 1, except that the flame retardant composition was coated over the entire surface of the preliminary artificial leather 30.

Comparative Example 2

[0063] An artificial leather was obtained in the same manner as Example 1, except that the area ratio of the flame retardant composition layer 10 was changed into 55%.

[0064] Next, physical properties of artificial leathers obtained in Examples and Comparative Examples were measured in accordance with the following method and the results thus obtained are shown in Table 1.

Area ratio (%) of flame retardant composition layer 10

[0065] The area ratio (%) of the flame retardant composition layer 10 was expressed as a ratio of area of the flame retardant composition layer 10 formed on the preliminary artificial leather 30, with respect to the total area of the preliminary artificial leather 30.

[0066] Specifically, samples with a size of 50×50 were prepared at predetermined points of the artificial leather and the prepared samples were imaged using an image analyzer (using Image-Pro Plus as a software and JVC Digital Camera KY-F70B), and an area ratio of the flame retardant composition layer 10 was calculated in accordance with the following equation through an area analysis program. The total number of samples herein used was five, an arithmetic mean of the measured values was calculated, and an area ratio of the flame retardant composition layer 10 was finally obtained.

[Equation]

Area ratio (%) of flame retardant composition layer 10 = (area of flame retardant composition layer 10 coated on preliminary artificial leather 30/area of preliminary artificial leather 30)×100

Ratio (%) of upper part thickness of flame retardant composition layer 10

[0067] A ratio (%) of a upper part thickness of the flame retardant composition layer 10, as shown in FIG. 2, is a ratio of the upper part thickness (a), defined as an average height of the flame retardant composition layer 10 that protrudes upward from the surface of the preliminary artificial leather 30, with respect to the average thickness (c) of the preliminary

artificial leather 30. The average thickness (c) of the preliminary artificial leather 30 and the upper part thickness (a), corresponding to the average height of the flame retardant composition layer 10 were measured using a scanning electron microscope (SEM).

[0068] Specifically, two points were selected in the cross-section SEM image of the artificial leather such that the distance therebetween became 1000μm, and the thickness (c) of the preliminary artificial leather 30 and the upper part thickness (a) of the flame retardant composition layer 10 were calculated at the two points. The measurements were performed for the five samples in total, arithmetic means of the measured values were calculated, and the average thickness (c) of the preliminary artificial leather 30 and the average upper part thickness (a) of flame retardant composition layer 10 were finally obtained. Subsequently, the ratio (%) of the upper part thickness of the flame retardant composition layer 10 was obtained using the average thickness (c) of the preliminary artificial leather 30 and the average upper part thickness (a) of flame retardant composition layer 10.

Ratio (%) of permeation depth of the flame retardant composition layer 10

[0069] The ratio (%) of permeation depth (b) of the flame retardant composition layer 10, as shown in FIG. 2, is a ratio of permeation depth (b), defined as an average depth of the flame retardant composition layer 10 permeated inside from the surface of the preliminary artificial leather 30, with respect to the average thickness (c) of preliminary artificial leather 30. The average thickness (c) of preliminary artificial leather 30 and the permeation depth (b) corresponding to the average depth of the flame retardant composition layer 10 were measured using a scanning electron microscope (SEM).

[0070] Specifically, two points were selected in the cross-section SEM image of the artificial leather such that the distance therebetween became 1000μm, and the thickness (c) of preliminary artificial leather 30 and the permeation depth (b) of flame retardant composition layer 10 were calculated at the two points. The measurements were performed for the five samples in total, arithmetic means of the measured values were calculated, and average thickness (c) of the preliminary artificial leather 30 and the average permeation depth (b) of flame retardant composition layer 10 were finally obtained. Subsequently, the ratio (%) of permeation depth of the flame retardant composition layer 10 was obtained using the average thickness (c) of the preliminary artificial leather 30 and the average permeation depth (b) of the flame retardant composition layer 10.

Measurement of coating amount of flame retardant composition layer 10

[0071] The amount of coated flame retardant composition (g/m^2) was obtained from the difference between a weight of the preliminary artificial leather 30 before formation of the flame retardant composition layer 10 and a weight of the preliminary artificial leather 30 after formation of the flame retardant composition layer 10.

Measurement of horizontal burning speed of artificial leather

[0072] A horizontal burning speed (mm/min), indirectly indicating a flame retardancy level of artificial leather, was measured in accordance with automobile interior material combustion test regulation of Federal Motor Vehicle Safety Standard (FMVSS) No. 302.

Measurement of air-permeability of artificial leather

[0073] An air-permeability ($L/min/100cm^2$) was measured in accordance with the Frazier testing method of ASTM D 737.

TABLE 1

	Shape of groove formed on artificial leather	Area ratio (%)	Ratio of Ratio of upper part thickness (%)	Ratio of permeation depth (%)	Coating amount (g/m^2)	Horizontal combustion speed (mm/min)	Air-permeability ($L/min/100cm^2$)
Ex. 1	Discontinuous circles	65	1.7	10.5	35.7	Self-fire extinguishing	44
Ex. 2	Discontinuous circles	75	1.7	10.5	44.5	Self-fire extinguishing	37
Ex. 3	Discontinuous circles	85	1.7	10.5	49.8	Self-fire extinguishing	33

(continued)

	Shape of groove formed on artificial leather	Area ratio (%)	Ratio of Ratio of upper part thickness (%)	Ratio of permeation depth (%)	Coating amount (g/m^2)	Horizontal combustion speed (mm/min)	Air-permeability (L/min/ $100cm^2$)
Ex. 4	Discontinuous circles	65	1.7	10.5	38.1	Self-fire extinguishing	46
Ex. 5	Discontinuous circles	75	1.7	10.5	43.1	Self-fire extinguishing	37
Ex. 6	Discontinuous circles	85	1.7	10.5	51.1	Self-fire extinguishing	34
Ex. 7	One groove surrounding discontinuously coated circular regions	65	1.7	10.5	33.7	99	46
Comp. Ex. 1	Absence of groove due to entire-surface coating of flame retardant composition	100	1.7	10.5	60.6	Self-fire extinguishing	15
Comp. Ex. 2	Discontinuous circles	55	1.7	10.5	30.6	141	49

[0074] Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Claims

1. An artificial leather comprising:

a preliminary artificial leather comprising a non-woven fabric made of ultrafine fibers and an elastic polymer resin impregnated in the non-woven fabric; and
a flame retardant composition layer formed on the preliminary artificial leather by partially coating a flame retardant composition thereon at an area ratio of 60 to 90%, with respect to the total area of the preliminary artificial leather.

2. The artificial leather according to claim 1, wherein the artificial leather comprises a plurality of grooves discontinuously distributed in non-coated regions of the preliminary artificial leather where the flame retardant composition is not coated.

3. The artificial leather according to claim 2, wherein the flame retardant composition layer is a body surrounding the grooves.

4. The artificial leather according to claim 2, wherein each of the grooves has a circular, polygonal or linear shape.

5. The artificial leather according to claim 1, wherein the artificial leather has a horizontal burning speed, measured in accordance with automobile interior material combustion test regulation of FMVSS. No. 302, of 100 mm/min or less, and an air-permeability of 20 to 50 L/min/$100cm^2$.

6. The artificial leather according to claim 1, wherein the flame retardant composition layer has an upper portion thickness of 0.1 to 4% and a permeation depth of 5 to 50%, with respect to a thickness of the preliminary artificial leather.

7. The artificial leather according to claim 1, wherein the flame retardant composition layer comprises a phosphorous-based flame retardant.

8. The artificial leather according to claim 1, wherein the flame retardant composition layer comprises a urethane binder containing silicon.

9. The artificial leather according to claim 1, wherein the ultrafine fiber has a fineness of 0.3 denier or less.

FIG. 1

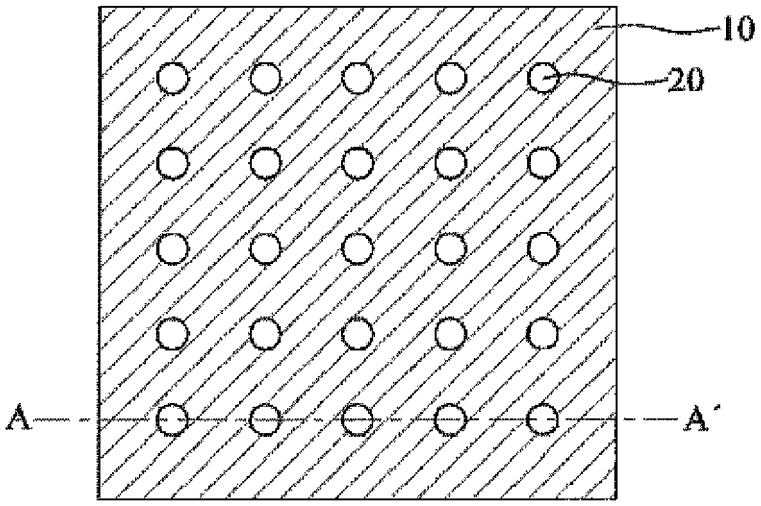

FIG. 2

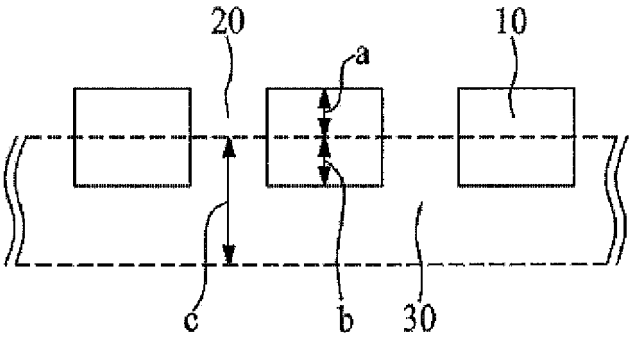

FIG. 3

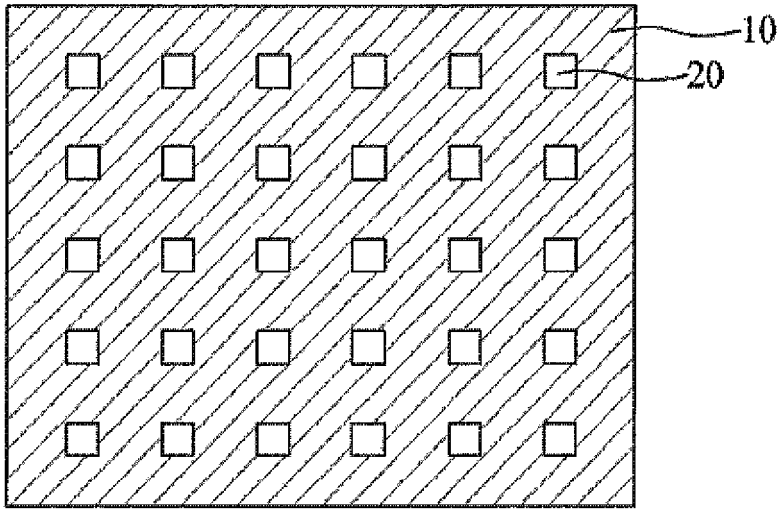

FIG. 4

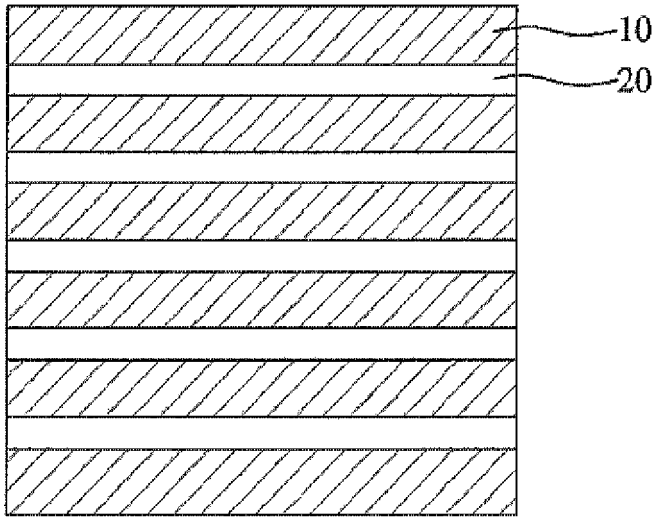

FIG. 5

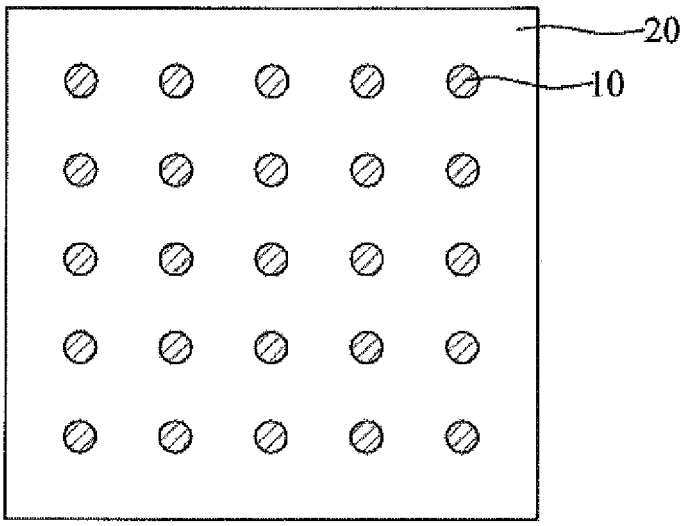

FIG. 6