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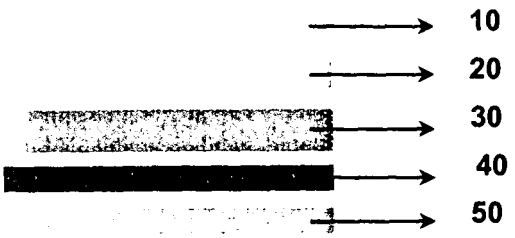
(54) Detachable and reattachable wallpaper

(57) The present invention provides a detachable and reattachable wallpaper. The wallpaper according to the present invention includes a printed layer on which a three-dimensional or two-dimensional shape is printed; a resin layer formed under the printed layer and made of resin; a base layer formed under the resin layer and made of a paper impregnated with resin; an adhesive layer formed under the base layer and formed of a reattachable adhesive of resin composition containing silicone copolymer; and a release sheet formed under the adhesive layer to protect the adhesive layer and be removed upon use. The wallpaper of the present invention allows beginners to easily install the wallpaper since it can be detached and reattached upon installation of the wallpaper and can be repeatedly replaced the according to a user's taste since it can still be detached and reattached after used for a certain period.

[Figure 1]



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Description

Technical Field

[0001] The present invention relates to a detachable and reattachable wallpaper, and more particularly, to a reattachable wallpaper, which includes a reattachable adhesive layer made of a resin composition containing silicone copolymer under a base layer of the wallpaper to allow detachment and reattachment of the wallpaper and is thus easily workable by anyone.

Background of the Invention

[0002] In general, wallpapers such as a polyvinylchloride (PVC) wallpaper and a laminated wallpaper are installed in a wet manner of applying a starch paste or a resinous adhesive on the wallpaper and then attaching the wallpaper on a lining paper in an interior of a room. Accordingly, this installation of the wallpapers should be carried out by a professional person and requires much space and time.

[0003] As another wallpaper, an interior film, which has an adhesive applied on an underside of a PVC resin layer, has an advantage of allowing the installation of an adhering manner, but has a limitation in expression of a three-dimensional effect on a surface thereof since it is provided with no base sheet and a heat resistance thereof is thus lowered to make embossing difficult and also has many limitations in expression of customer's own space in a "do-it-yourself" manner by the customer with a trendy wallpaper since it is difficult to replace the interior film and it is required to be installed by a professional person since it not only requires pre-processes such as woodworking, putty, primer and sanding but also uses a permanent adhesive.

[0004] Korean Patent Laid Open Publication No. 2003-0060086 discloses an easily detachable and reattachable interior wallpaper. In this patent application which has improved a disadvantage that a conventional wallpaper having an adhesive layer on a backside of a surficial sheet is not reattachable, a polyethylene terephtalate coating layer is inserted between the surficial sheet and the adhesive layer to reinforce and protect the surficial sheet, thereby preventing the surficial sheet from being torn upon detachment of the wallpaper. That is to say, detachment and reattachment of the wallpaper is enabled to allow beginners to install the wallpaper.

Summary of the Invention

[0005] It is an aspect of the present invention, to solve the above problems, to provide "do-it-yourself" type wallpaper, which is a detachable and reattachable wallpaper and thus allows beginners to easily perform installation of attaching the wallpaper on the wall.

[0006] It is another aspect of the present invention to provide a "do-it-yourself" type wallpaper, which can not only be detached and reattached in many times upon installation but also still be detached and reattached after used for a certain period and thus allows repeated replacement according to a user's taste.

[0007] To achieve the aspects of the invention, the present invention provides a detachable and reattachable wallpaper. The wallpaper according to the present invention includes a printed layer on which a three-dimensional or two-dimensional shape is printed; a resin layer formed under the printed layer and made of resin; a base layer formed under the resin layer and made of a paper impregnated with resin; an adhesive layer formed under the base layer and formed of a reattachable adhesive of resin composition containing silicone copolymer; and a release sheet formed under the adhesive layer to protect the adhesive layer and be removed upon use. Herein, the resin used in the base layer is preferably selected from the group consisting of acryl based resin, melamine resin, urea resin and a mixture thereof, and an amount of the resin impregnated in the base layer is preferably 0.05 to 0.3 times the amount of the paper in the base layer. In particular, the base layer and the adhesive layer are bound with each other as strong as they are not released from each other even with a vertical tensile strength of at least 1,500 N/cm^2, preferably at least 2,000 N/cm^2.

[0008] Hereinafter, the present invention is described in detail with reference to an accompanying drawing.

[0009] Fig. 1 is a sectional view illustrating a structure of a wallpaper according to the present invention.

[0010] As illustrated in Fig. 1, a detachable and reattachable wallpaper of the present invention has a structure in that a printed layer 10, a resin layer 20, a base layer, an adhesive layer 40 and a release sheet 50 are sequentially laminated from the top to the bottom.

[0011] In the structure of the present invention, the printed layer 10 is for expressing two-dimensional or three-dimensional pattern to raise a decorative beauty of the wallpaper and the pattern is printed on a layer made of printable resin or paper, for example, by a silk screen printing. This printed layer is also realized in conventional wallpapers and, in the present invention, can be formed by known methods. To form a three-dimensional pattern, a blowing agent may be included in the printed layer 10.

[0012] The resin layer 20 functions to bind the base layer 30 and the printed layer 10 of the wallpaper and conventional resins may be used as the resin used in the present invention.

[0013] The base layer 30 may be formed of paper made from pulp or nonwoven made from synthetic resin. The materials for this base layer are generally well known and, in the present invention, the base layer can be formed according to the known materials and methods. In the present invention, the base layer 30 is particularly impregnated with resin. The resin impregnated in the base layer 30 is, though other resins may be used, preferably selected from the group consisting of acryl based

resin, melamine resin, urea resin and a mixture thereof. An amount of impregnation is preferably 0.05 to 0.3 times the amount of the paper in the base layer. For example, the amount may be 5 to 30 g/m^2 for 100 g/m^2 of the base sheet. The resin impregnated in the base layer functions so that the base layer 30 to be bound well not only with the resin layer 20 but also with the adhesive layer 40.

[0014] The adhesive layer 40 included in the wallpaper of the present invention is formed of a reattachable adhesive composition and preferably has an adhesive strength of 1.0 to 3.0 kg/25mm when measured according to a standard measurement method. Herein, the standard measurement method is a method of measuring by KS A 1107:1992. In the present invention, the reattachable adhesive layer refers to an adhesive layer which is able to be reinstalled since it can be cleanly detached and reattached after a predetermined time (20 minutes) is elapsed from the attachment of the adhesive layer on various wall faces such as a concrete wall face, a wall face in which a resin layer is scraped from existing wallpaper, a plywood or MDF wall face, a wall face of a conventional PVC wallpaper and so on, is also able to be detached after lapse of a long time (one or two years), and is thus able to be replaced according to a user's taste. Accordingly, by the characteristics of the adhesive layer, when detaching the wallpaper of the present invention from a certain base sheet or wallpaper already attached on the wall, the wallpaper of the present invention can be easily detached without damaging the base sheet or wallpaper already attached on the wall and can also be reattached on another base sheet or wallpaper. Although the reattachable adhesive composition has been employed so far in other fields, the adhesive strength thereof was generally too weak to be employed in the wallpaper. In order that the reattachable adhesive is used in the wallpaper, the adhesive strength should be at least a predetermined level, generally at least 1.0 kg/25mm, i.e. the level required in the wallpaper. Accordingly, there has been almost no attempt to form a reattachable adhesive layer in a wallpaper and, if any, a suitable material has not yet been found.

[0015] In consideration of this situation, to form this reattachable adhesive layer, the present invention provides a resin composition containing 10 to 60 weight% of a certain silicone copolymer. From this resin composition, the reattachable adhesive layer 40 is formed on the base layer 30. This adhesive layer 40 can be formed to a suitable thickness, preferably to a thickness of 0.02 to 0.045 mm.

[0016] Next, to protect the adhesive layer 40, the release sheet 50 is formed under the adhesive layer 40. This release sheet 50 is released before the installation of the wallpaper of the present invention.

[0017] Accordingly, the wallpaper of the present invention has a characteristic in that, as the adhesive layer is formed of a reattachable adhesive, the wallpaper can be maintained being attached on the wall, detached from the wall when a force of at least predetermined strength is applied and reattached. The wallpaper of the present invention does not leave the adhesive of the present invention on the wall face when detached from the wall.

[0018] The wallpaper of the present invention also has a characteristic in that the adhesive layer 30 is strongly bound with the base layer 30. In particular, an adhesive force between the adhesive layer and the base layer is larger than an adhesive force between the wall face to be attached and the adhesive layer. In a case that the base layer 30 is made under a conventional condition without impregnation of resin, that is to say, made of paper formed of pulp and is bound with the reattachable adhesive layer used in the present invention, the base layer and the adhesive layer are released when a vertical, i.e. z-direction tensile strength of about 400 N/cm^2 is applied. On the contrary, in a case that the base layer impregnated with resin is bound with the reattachable adhesive layer, the base layer 30 and the adhesive layer 40 are released only when the z-direction tensile strength of about 2,000 N/cm^2 is applied. Preferably, they are bound as strong as they are not released even with the vertical tensile strength of at least 1,500 N/cm^2, preferably at least 2,000 N/cm^2. The adhesive force between the base layer and the adhesive layer is larger than the adhesive force between the wall face and the adhesive layer of the wallpaper as described above. Accordingly, in the wallpaper of the present invention, release between the base layer and the adhesive layer is not generated when the wallpaper is detached from the wall. That is to say, the wallpaper of the present invention is not torn or destroyed when the wallpaper is detached from the wall.

[0019] Accordingly, by the combination of these two characteristics, the wallpaper of the present invention can be safely detached and reattached without destroy of the wall face and without destroy of the base layer or printed layer of the wallpaper of the present invention. That is to say, the wallpaper of the present invention can be easily detached and reattached without leaving contaminant on the wall face and without destroy of the wall face particularly by the structure and characteristics in that the base layer 30 impregnated with resin and the adhesive layer 40 made of a certain material are laminated. Furthermore, in the wallpaper of the present invention, the base layer 30 or the printed layer 10 is not destroyed upon detachment of the wallpaper since the base layer 30 and the adhesive layer 40 are very strongly bound.

[0020] Accordingly, the wallpaper of the present invention allows beginners to easily install the wallpaper since it can be detached and reattached upon installation of the wallpaper and can be repeatedly replaced the according to a user's taste since it can still be detached and reattached after used for a certain period. The wallpaper of the present invention can be detached and reattached up to at least ten times and is expected to be used up to more times. If the condition is optimized, it can be used quite many times.

Brief Description of the Drawings

[0021]

Fig. 1 illustrates schematically a structure of a wallpaper according to the present invention.

Best Mode for Carrying Out the Invention

[0022] Practical and presently preferred embodiments of the present invention are illustrative as shown in the following Examples. However, it will be appreciated that those skilled in the art, on consideration of this disclosure, may make modifications and improvements within the spirit and scope of the present invention.

Example

[0023] A wallpaper in which a printed layer, a resin layer, an adhesive layer and a release sheet are sequentially laminated was fabricated according to a conventional wallpaper fabrication method and, as the base layer, one fabricated by impregnating an aqueous acryl resin as an impregnation resin with an impregnation amount of 10 g/m2 in 100 g/m^2 of a raw sheet was used. And the adhesive layer is formed by coating a reattachable adhesive made of a resin composition containing 10 to 60 weight% of a certain silicone copolymer to a thickness of 0.020 to 0.045 mm. The wallpaper fabricated as such was repeatedly attached and detached, after the release sheet is removed, on a wall face on which a PVC wallpaper is previously attached. This was repeated ten times and the wallpaper could be reattached with no problem. Meanwhile, the wallpaper fabricated as such was attached on a wall face on which a PVC wallpaper is previously attached, detached again after two or three days and then reattached on another wallpaper, but there was no problem.

[0024] Further, a z-direction tensile strength was tested to examine an adhesive strength between the base layer and the adhesive layer and it could be found from the result that release between the two layers is generated only at at least 2,000 N/m^2.

Comparative Example 1

[0025] A wallpaper was fabricated by coating the reattachable adhesive layer used in Example 1 under a base layer of a conventional wallpaper made of a printed layer, a resin layer and a base layer. This wallpaper was attached on a wall face, on which existing PVC wallpaper was attached, and detached. At this time, it could be found that the reattachable adhesive layer was not released from the existing wallpaper on the wall and the base layer of the wallpaper of this Comparative Example 1 was destroyed and the destroy of the base layer was generated at a z-direction tensile strength up to 1,500 N/cm^2.

Comparative Example 2

[0026] A wallpaper was fabricated by the same manner as Example, except that a conventional acryl adhesive layer was used instead of the reattachable adhesive layer in Example. A wallpaper on a wall face was destroyed when this wallpaper was attached on and then detached from the wall face, on which existing PVC wallpaper was attached, and the adhesive layer of this wallpaper was contaminated by the wallpaper on the wall face.

[0027] As described above, it was found that the wallpaper of the present invention fabricated by laminating the base layer impregnated with acryl resin and a reattachable adhesive layer made of a resin composition containing a certain silicone copolymer can be detached and reattached at least ten times and still be detached and reattached after used for a certain period by the combination of the strong binding between the base layer and the adhesive layer and the characteristics of the reattachable adhesive.

Industrial Applicability

[0028] As explained hereinbefore, the wallpaper according to the present invention allows beginners to easily install the wallpaper since it can be detached and reattached upon installation of the wallpaper and can be repeatedly replaced the according to a user's taste since it can still be detached and reattached after used for a certain period.

[0029] Those skilled in the art will appreciate that the conceptions and specific embodiments disclosed in the foregoing description may be readily utilized as a basis for modifying or designing other embodiments for carrying out the same purposes of the present invention. Those skilled in the art will also appreciate that such equivalent embodiments do not depart from the spirit and scope of the invention as set forth in the appended claims.

Claims

1. A wallpaper comprising:

a printed layer (10) on which a three-dimensional or two-dimensional shape is printed; a resin layer (20) formed under the printed layer (10) and made of resin;
a base layer (30) formed under the resin layer (20) and made of a paper impregnated with resin;
an adhesive layer (40) formed under the base layer (30) and formed of a reattachable adhesive of resin composition containing silicone copolymer; and
a release sheet (50) formed under the adhesive layer (40) to protect the adhesive layer and be removed upon use.

2. The wallpaper as set forth in claim 1, wherein the resin used in the base layer (30) is selected from a group consisting of acryl based resin, melamine resin, urea resin and a mixture thereof.

3. The wallpaper as set forth in claim 1, wherein an amount of the resin impregnated in the base layer (30) is 0.05 to 0.3 times an amount of the paper in the base layer.

4. The wallpaper as set forth in claim 1, wherein an adhesive strength of the adhesive layer made of the reattachable adhesive is 1.0 to 3.0 kg/25mm when measured by KS A 1107:1992 standard method.

5. The wallpaper as set forth in claim 1, wherein a thickness of the adhesive layer is 0.02 to 0.045 mm.

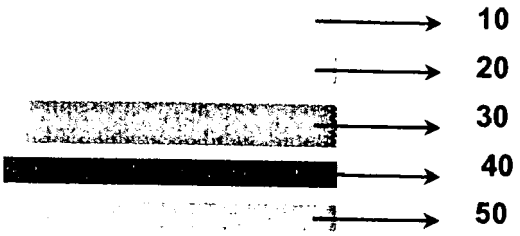
6. The wallpaper as set forth in claim 1, wherein the base layer and the adhesive layer are bound with each other as strong as they are not released from each other even with a vertical tensile strength of at least 1,500 N/cm^2.

7. The wallpaper as set forth in claim 1, wherein the resin of the resin layer is selected from a group consisting of polyvinylchloride, polyethylene, polypropylene, polyurethane and polylactic acid.

8. The wallpaper as set forth in claim 1, wherein the base layer is selected from a group consisting of paper, nonwoven and composite nonwoven (composed of paper and nonwoven).

9. The wallpaper as set forth in claim 1, wherein the reattachable adhesive is made of a resin composition comprising 10 to 60 weight% of a silicone copolymer.

[Figure 1]



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EUROPEAN SEARCH REPORT

Application Number
EP 09 01 2161

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 March 2010	Karlsson, Lennart

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EUROPEAN SEARCH REPORT

Application Number
EP 09 01 2161

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