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(54) **Method for the production of a self-adhesive coating**

(57) The invention relates to a method for the production of a self-adhesive coating, wherein (i) an unprinted coating layer is applied to one side of a detachable carrier material and (ii) an adhesive layer is applied to the unprinted coating layer or to the other side of the

detachable carrier material. The invention also relates to a method for coating a substrate with the self-adhesive coating and to a method for printing an image on the substrate with the self-adhesive coating.

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Description

[0001] The present invention relates to a self-adhesive coating, in particular to a self-adhesive coating to which images can be applied by means of digital printing techniques. This coating can be applied to a substrate, for example plastic sheet, aluminium sheet, cardboard, glass, mirrors, plastic film and banner material, using a conventional laminating device. An image can then be printed on the coating using digital or conventional printing techniques, preferably digital printing techniques.

[0002] Methods for the production of self-adhesive images have already been known for a long time in the state of the art. For instance, they can be produced by applying an adhesive layer to one side of a carrier, which may or may not be opaque, and applying a transparency image to the other side, for example by means of inkjet printing, after which the carrier with image is applied, that is to say stuck, to a substrate. A transparent protective layer can then be applied thereto to protect the image against light, dust and dirt (see, for example, WO 97/30852 and WO 97/43128). On the other hand, an image can first be applied as a mirror image to one side of a transparent protective layer and an adhesive layer can then be applied, after which the whole is applied to the substrate (see, for example, NL C 1010888).

[0003] JP-A 9240196 relates to a self-adhesive film consisting of, successively, a detachable carrier layer, a coating layer and an adhesive layer, the coating layer already having been provided with an image.

[0004] When printing images on, for example, hard substrates of fluctuating dimensions, for example advertising hoardings or panels, for example two by four metres in size, to date the images are printed directly on the substrates by the printer by means of, for example, screen printing or a digital printing technique. These substrates are not provided with a coating layer and this has the disadvantage that the quality of the images leaves something to be desired. In order to improve this quality it is now proposed to provide the substrates with a coating layer. However, if the printer wishes to use substrates which have a coating layer it is necessary that a manufacturer of such substrates buys in the uncoated substrates, provides these with a coating and transports them to the printer. Of course, the transport of such large items is laborious and expensive.

[0005] The present invention provides a solution to this problem. The present invention provides a coating layer that a printer can apply to the substrate himself in a simple manner with the aid of a simple laminating device. The self-adhesive coating according to the invention can be transported to the printer simply and easily, for example in the form of a roll. The printer can then apply this to the substrate as desired on site, making use of a conventional laminating device.

[0006] A self-adhesive film consisting of, successively, an adhesive layer ("adhesive layer"), a carrier material ("substrate") and a coating layer ("image receiving

layer") is described in US 5 747 148, the coating layer consisting of a protective layer ("protective penetrant layer") and an image layer ("inkjet receptor layer") and it being possible for the coating layer to be printed by means of inkjet printing. The adhesive layer can be provided with a detachable protective layer ("release liner"). According to Example 1 of US 5 747 148 the carrier layer is applied to the coating layer by means of crosslinking followed by a drying step, before printing. A transparent, colourless protective layer ("overlamine layer") can optionally be applied after printing in order to protect the image against moisture, scratching and the like. US 5 747 148 does not disclose that the carrier material is detachable, that is to say that the carrier material can be separated from the coating layer after printing.

[0007] The invention then also relates to a method for the production of a self-adhesive coating, in particular a self-adhesive coating to which images can be applied by means of digital printing techniques, wherein (i) a coating layer is applied to one side of a detachable carrier material and (ii) an adhesive layer is applied to the coating layer or to the other side of the detachable carrier material.

[0008] Therefore, according to this method according to the invention a self-adhesive coating can be provided that comprises (1) the coating layer, (2) the detachable carrier material and (3) the adhesive layer or that comprises (1) the detachable material (2) the coating layer and (3) the adhesive layer.

[0009] In the description of this patent application the term "detachable carrier material" or "detachable layer" signifies that this can be removed easily without causing damage to, for example, the coating layer.

[0010] According to the invention the detachable carrier material is preferably a silicone-coated plastic film or silicone-coated paper (i.e. "silicone paper") and in particular silicone-coated paper.

[0011] According to the invention it is preferable that a detachable protective layer is applied to the adhesive layer, the protective layer preferably being a silicone-coated plastic film or silicone-coated paper (i.e. "silicone paper") and in particular silicone-coated paper. In this way no damage can occur to the adhesive layer. According to a preferred embodiment of the invention the self-adhesive coating then therefore consists of (1) a carrier material, (2) a coating layer, (3) an adhesive layer and (4) a protective layer. This preferred embodiment can easily be transported, for example in the form of a roll, to the printer, who, after removing the protective layer, can apply the self-adhesive coating to the substrate. The carrier material - that also serves as protective coating for the coating layer, can then be removed and an image can be printed on the coating layer.

[0012] If the adhesive layer is applied to the coating layer, the carrier material also serves as protection for the coating layer. If, however, the coating layer is applied to a side of the detachable carrier material other than the side to which the adhesive layer is applied, the coat-

ing layer is preferably provided with a detachable protective layer. This protective layer is preferably of the same material as the protective layer for the adhesive layer.

[0013] The invention then also relates to a method for coating a substrate with a self-adhesive coating according to the invention, wherein the protective layer - which may or may not be present - is removed from the adhesive layer, the self-adhesive coating is applied to the substrate and then either the detachable carrier material or the protective layer is removed from the coating layer.

[0014] The invention furthermore relates to a method for providing a substrate with a self-adhesive coating, which has been obtained according to the method according to the invention, with an image, which, in particular, is made by means of digital printing techniques, wherein the coating layer - which may or may not be present - is removed from the adhesive layer, the self-adhesive coating is applied to the substrate, either the detachable carrier material or the protective layer is removed from the coating layer and the image is then printed on the coating layer.

[0015] Furthermore, according to the invention, the image is preferably applied by means of digital printing, in particular by means of inkjet printing. One or more different colours can be used for printing, to produce colour images such as prints of photographs, drawings, graphic designs and the like that are used for decoration, as a logo, as lettering or for advertising purposes. As is known to those skilled in the art, with such inkjet printing techniques the image is built up by means of individual small dots of different colours, the density with which said dots ("dots per inch" or "dpi") are applied determining the resolution or definition of the image. The density with which these dots are applied is preferably 320 - 1440 dpi. However, it will be obvious to a person skilled in the art that the image can be produced with the aid of other printing, injection or spraying techniques instead of such printing techniques.

[0016] Although the invention is not restricted to specific types of ink, it is preferable according to the invention that the ink that is used for inkjet printing contains a low proportion of volatile solvents or is based on water as the solvent.

[0017] The image can, of course, also be applied as a mirror image. This is necessary if a translucent substrate is used and the image must be discernible through the substrate (in this case the substrate serves to protect the side of the image that is to be seen). In that case an adhesive layer can once again be applied to the substrate with the image, on the "rear" of the image (that is to say that side of the image that is not intended to be seen), after which the whole can optionally be stuck to a second substrate (to protect the "rear"). According to such an embodiment, the self-adhesive coating according to the invention comprises: (1) a coating layer, (2) a translucent, detachable carrier material and (3) an adhesive layer, the coating layer and/or the adhesive layer

being provided with a protective layer.

[0018] The adhesive layer can therefore be a white or translucent layer and can comprise any suitable adhesive or any suitable glue. The advantage of using an essentially white, opaque adhesive layer is that a good background is obtained for the image, that is to say the background contrasts well with the image. Suitable adhesives or glues are usually white, opaque adhesives and types of glues that can be transferred to silicone-coated plastic film, or to silicone-coated paper. On the other hand, transparent glues that contain white pigments and/or fillers are also suitable adhesives.

[0019] If desired, after printing the image on the substrate with the self-adhesive coating a transparent layer can be applied (to protect the image). Such a transparent layer can be applied by means of a fluid coating that is able to set or by means of a self-adhesive plastic film. The plastic from which the film is made is preferably polyethylene, polypropene or polyvinyl chloride.

[0020] According to the invention, the self-adhesive coating can be produced in various ways. According to one embodiment a coating layer is applied to one side of a carrier material that is silicone-coated on two sides and the adhesive layer is applied to the other side, after which the coating layer and/or adhesive layer is optionally provided with a protective layer. On the other hand, the laminate can be brought into contact with an adhesive while rolling up the laminate, which consists of the carrier material that is silicone-coated on two sides and the coating layer, a transfer then taking place. According to another embodiment, a laminate consisting of the carrier material that is silicone-coated on two sides and the coating layer can be combined with a laminate of adhesive layer and protective layer. It is obvious that instead of the ready-to-use self-adhesive coating these laminates can also be supplied to a customer as separate products.

Claims

1. Method for the production of a self-adhesive coating, wherein (i) an unprinted coating layer is applied to one side of a detachable carrier material and (ii) an adhesive layer is applied to the unprinted coating layer or to the other side of the detachable carrier material.
2. Method according to Claim 1, wherein images are applied to the coating layer by means of digital printing techniques.
3. Method according to Claim 1 or 2, wherein the detachable carrier material is a silicone-coated plastic film or silicone-coated paper.
4. Method according to any one of the preceding claims, wherein the image is applied by means of

digital printing.

5. Method according to any one of the preceding claims, wherein the adhesive layer is a white, essentially opaque layer. 5
6. Method according to any one of the preceding claims, wherein (iii) a detachable protective layer is applied to the adhesive layer. 10
7. Method for coating a substrate with a self-adhesive coating that is obtainable by to the method according to any one of Claims 1-6, wherein the protective layer - which may or may not be present - is removed from the adhesive layer, the self-adhesive coating is applied to the substrate and then either the detachable carrier material or the protective layer is removed from the coating layer. 15
8. Method for printing an image on a substrate with a self-adhesive coating that can be obtained according to the method according to any one of Claims 1 - 6, wherein, after removing either the detachable carrier material or the protective layer from the coating layer, an image is printed on the coating layer. 20
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9. Method according to Claim 8, wherein the image is printed as a mirror image.
10. Method according to Claim 7 or 8, wherein images are applied to the coating layer by means of digital printing techniques. 30
11. Self-adhesive coating that is a laminate that comprises: (1) an unprinted coating layer, (2) a detachable carrier material, (3) an adhesive layer and (4) a protective layer, wherein the protective layer has been applied to the unprinted coating layer. 35
12. Self-adhesive coating that is a laminate that comprises (1) detachable carrier material (2) an unprinted coating layer, (3) an adhesive layer and (4) a protective layer, wherein the protective layer has been applied to the adhesive layer. 40
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13. Self-adhesive coating according to Claim 11 or 12, wherein the detachable carrier material and the protective layer are a silicone-coated plastic film or silicone-coated paper. 50
14. Self-adhesive coating according to one of Claims 11 - 13, wherein the detachable carrier material is translucent. 55



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EUROPEAN SEARCH REPORT

Application Number
EP 03 07 8719

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X	US 5 747 148 A (D.WARNER ET AL.) 5 May 1998 (1998-05-05) * column 2, line 20 - line 44 * * column 3, line 44 - column 4, line 27 * * column 5, line 10 - line 16 * * figure 1 * ---	1-23	
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Place of search	Date of completion of the search	Examiner	
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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