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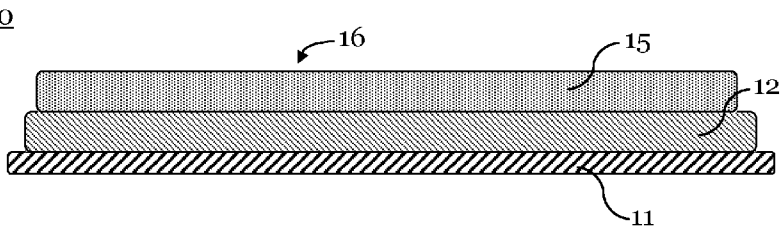

Fig. 1

(57) **Abstract:** The present invention is directed to a film (10) for coating a carrier plate (20) to manufacture a wall, ceiling, furniture, or flooring panel (1). The film (10) comprises the following layers in the given order: a bonding layer (11) based on a curable aminoplast resin, for attaching the film (10) to the carrier plate (20); a support layer (12) being polymer- based, and a lacquer layer (15), wherein the lacquer layer (15) was produced using excimer technology.

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Coating film

1. Technical field

The present disclosure relates to a film for coating a carrier plate to manufacture a wall, ceiling, furniture, or flooring panel, a method for the manufacturing of such film, a method for the manufacturing of a wall, ceiling, furniture, or flooring panel by means of said film, and a respective wall, ceiling, furniture, or flooring panel.

2. Prior art

Presently the market and the development of surfaces with an anti-fingerprint effect in general is significantly growing. Exemplarily, anti-fingerprint films are increasingly being used in the field of interior design, as they are perceived as more pleasant by consumers both haptically and visually. In addition, for contact surfaces, such as the fronts of kitchen units, skin contact is prevented from leading to residues that are perceived as visually disturbing. Further exemplarily, anti-fingerprint films are also increasingly being used in the food industry, as it has been found that many consumers prefer the matte look to high gloss.

Thereby said anti-fingerprint effect means that fingerprints on the surface cannot be seen by the naked eye, or only very slightly. Thus, even though the fingerprint may be actually on the surface, it is essentially "invisible". In practice said anti-fingerprint effect is usually achieved by the surface that is to have the anti-fingerprint effect being micro-folded, i.e. having folds on the micro scale.

There are various solutions to achieve an anti-fingerprint effect. However, the existing solutions such as respective films with anti-fingerprint effect are not suitable or only suitable to a limited extent for the production of wall, ceiling, furniture, and/or flooring panels with anti-fingerprint effect. Especially, if the commonly used processes for the production of such panels such as Low Pressure Laminate (LPL) processes, Continuous Pressure Laminate (CPL) processes, and/or High Pressure Laminate (HPL) processes, are to be applied. This is further illustrated in the following by means of two general solutions how an anti-fingerprint effect is presently achieved for wall, ceiling, furniture, and/or flooring panels.

I. A first solution to obtain wall, ceiling, furniture, and/or flooring panels with anti-fingerprint effect is based on so-called release films with a micro-folded structure. These release films which act as a negative in order to achieve the anti-fingerprint effect are placed on a commercially available melamine impregnate and the micro-folded surface structure is pressed into the melamine resin via the pressing process which may be for example a LPL, CPL, or HPL process.

However, this first solution shows weak points in industrial application. Exemplarily, grey spots and/or surface defects occur, e.g. due to resin dust between the melamine impregnate and the release film. Furthermore, the reject rates in this process and the waste caused by the release films are considerable.

II. A second solution to generate the micro-folded surface is the use of a lacquer layer which was produced using excimer technology. Thereby a lacquer film which was wet applied and pre-gelled is irradiated with short-wave excimer beams that polymerize the top layer, forming a thin, cured layer on the top surface. As polymerization also results in shrinkage, the film close to the top surface exhibits micro-folds which create a matt surface. The coating is then usually deep-cured by conventional medium-pressure UV lamps.

i. As a first option of this second solution, a decorative paper or a plastic film which was provided with a respective lacquer film is applied to a substrate, such as a carrier plate, using laminating equipment and adhesives. This first option is disadvantageous as the achievable production speeds are relatively low. Particularly, since LPL, CPL, and/or HPL processes are not feasible.

ii. As a second option of the second solution, a melamine impregnate that was provided with a respective lacquer film is bonded to a substrate, such as a carrier plate, by means of a pressing process. However, this second option regularly exhibits process-related deviations and thus limitations in application. Exemplarily, melamine dust causes gray spots and surface defects on the finished pressed surface. In addition, in the event of a defect, it has shown that the adhesives between the substrate and the impregnate adhere so strongly to the pressing sheet that it must be removed and reconditioned before reuse.

Thus, in summary and in view of the above, it is an object of the present disclosure to provide a film for coating a carrier plate to manufacture a wall, ceiling, furniture, or flooring panel, a method for the manufacturing of such film, a method for the

manufacturing of a wall, ceiling, furniture, or flooring panel by means of said film, and a respective wall, ceiling, furniture, or flooring panel that overcome the aforementioned drawbacks at least partially.

3. Summary of the invention

This object is achieved, at least partly, by a film for coating a carrier plate to manufacture a wall, ceiling, furniture, or flooring panel, a method for the manufacturing of such film, a method for the manufacturing of a wall, ceiling, furniture, or flooring panel by means of said film, and a respective wall, ceiling, furniture, or flooring panel, as defined in the independent claims. Further aspects of the present disclosure are defined in the dependent claims.

In particular, the object is achieved by a film for coating a carrier plate to manufacture a wall, ceiling, furniture, or flooring panel, the film comprising the following layers in the given order: a bonding layer based on a curable aminoplast resin, for attaching the film to the carrier plate; a support layer being polymer-based, and a lacquer layer, wherein the lacquer layer was produced using excimer technology. The film according to the present invention has several advantages. Three of them are exemplary lined out in the following.

First, the bonding layer based on a curable aminoplast resin allows that the film is attached to the carrier plate by means of a Low Pressure Laminate, LPL, process, a Continuous Pressure Laminate, CPL, process, or a High Pressure Laminate, HPL, process. Hence, high production speeds and continuous processes may be established.

Second, the curable aminoplast resin of the bonding layer is compatible with the pressing sheets of most commercially used presses so that the bonding layer does not adhere to the pressing sheet in case of a defect. Hence, compared to the above-described prior art solution process stability, i.e. the tolerance towards defects can be improved.

Third, in comparison to the above-described first and second prior art solutions, the quality of the finished pressed surface with the anti-fingerprint effect can be improved. Exemplarily, since it is avoided that melamine dust causes gray spots and surface defects on the finished pressed surface.

The carrier plate may be or comprise a board made of a wood-based material, such as a Medium Density Fiberboard or a High Density Fiberboard, a particleboard, an oriented strand board or similar.

The bonding layer may have a thickness which lies in a range from 10 to 100 μm. It has shown that this thickness allows for a good adhesion while at the same time an excessive use of resin is avoided. Further, it is understood that the film may be attached to the carrier plate by means of curing the aminoplast resin, e.g. in a pressing process.

The support layer may have a thickness which lies in a range from 50 to 400 μm. It has shown that this thickness allows for sufficient stability while at the same time an excessive use of material is avoided. That the support layer is polymer-based may refer to the aspect that the support layer substantially consists of a polymer. Moreover, that the support layer is polymer-based may refer to the aspect that the density and/or the mechanical properties of the support layer are primarily defined by a polymer. Furthermore, that the support layer is polymer-based may refer to the aspect that at least 50 % of the weight and/or volume of the support layer are a polymer. Particular examples for the support layer are given below.

The lacquer layer may have a thickness which lies in a range from 50 to 500 μm. It has shown that this thickness allows for visually appealing surfaces. The lacquer layer which was produced using excimer technology may be based on an acrylate resin.

Said excimer technology is already used in different applications. Thereby a lacquer film which was wet applied and pre-gelled is irradiated with short-wave excimer beams that polymerize the top layer, forming a thin, cured layer on the top surface. As polymerization also results in shrinkage, the film close to the top surface exhibits micro-folds which create a matt surface. The coating is then usually deep-cured by conventional medium-pressure UV lamps. As known in the art, excimer stands for “excited dimer”. Namely, a dimer, e.g. Xe-Xe-, Kr-Cl gas, which is excited to a higher energy state following application of an alternating voltage. This process physically separates at least one of the electrodes from the dimer gas by means of a dielectric barrier layer.

In view of the previous paragraph, it is understood that the lacquer layer which was produced using excimer technology may have a surface with micro-folds. This creates a matt appearance and/or an anti-fingerprint effect.

Further, the film may comprise a cured primer layer between the support layer and the lacquer layer, wherein optionally the primer layer is in direct contact with the support layer and/or the lacquer layer. It has shown in practice that said primer layer allows for an improved adhesion of the respective layers. Moreover, a mechanical decoupling of the support layer and the lacquer layer may be achieved which can increase the flexibility of the film. Optionally the primer layer may be based on an acrylate resin.

Moreover, the film may comprise the following layers in the given order between the support layer and the lacquer layer: a cured primer layer and a decorative printing layer. Optionally the primer layer is in direct contact with the support layer and/or the decorative printing layer, wherein further optionally the decorative printing layer is in direct contact with the lacquer layer. It has shown in practice that said primer layer allows for an improved adhesion of the respective layers, i.e. the support layer and the decorative printing layer. Moreover, a mechanical decoupling of the support layer and the decorative printing layer may be achieved which can increase the flexibility of the film and/or avoid that the decorative printing layer is damaged, e.g. when the film is rolled up. Optionally the primer layer may be based on an acrylate resin. Exemplarily the decorative printing layer may be UV-curable.

Furthermore, the bonding layer may be in direct contact with the support layer. This configuration has shown to allow for a particularly good adhesion of the film on respective carrier plates.

Further, the above-mentioned object is achieved by a method for the manufacturing of a film, particularly a film as described above. Hence, features and/or advantages described above with regards to the film may also apply for this method. Particularly, it is understood that details and/or advantages of the different layers which are described above with regards to the film may apply. The method comprises the following steps: providing a support layer being polymer-based; applying a lacquer layer on a first side of the support layer using excimer technology, and applying a bonding layer based on a curable aminoplast resin on a second side of the support layer. It is understood that the lacquer layer may be applied before the bonding layer or after the bonding layer. Moreover, applying the lacquer layer and/or the bonding layer may be achieved by rolling and/or casting. Exemplarily by means of anilox rollers and/or engraving rollers.

The method may further comprise the following step before applying the lacquer layer: applying and curing a primer layer on the first side of the support layer, wherein optionally the primer layer is directly applied on the support layer, wherein further

optionally the lacquer layer is directly applied on the primer layer. The primer layer may be cured or at least partially cured by means of a source of UV light and/or an electron beam. It is understood that further details and/or advantages of the primer layer which are described above with regards to the film may also apply.

Moreover, the method may further comprise the following steps before applying the lacquer layer: applying and curing a primer layer on the first side of the support layer, and applying a decorative printing layer on the primer layer. Optionally the primer layer is directly applied on the support layer, wherein further optionally the decorative printing layer is directly applied on the primer layer, and wherein even further optionally the lacquer layer is directly applied on the decorative printing layer. The primer layer may be cured or at least partially cured by means of a source of UV light and/or an electron beam. Further, it is understood that details and/or advantages of the primer layer and/or the decorative printing layer which are described above with regards to the film may also apply.

The bonding layer may be directly applied on the support layer. As above, this configuration has shown to allow for a particularly good adhesion of the film on respective carrier plates.

The support layer, as mentioned above with regards to the film and the method for the manufacturing of a film, may be a resin impregnated paper layer, the resin being in cured condition, wherein the cured resin is based on an acrylate resin and/or a urea resin. Alternatively, said support layer may be a thermoplastic layer, wherein the thermoplastic layer is based on biaxially oriented polypropylene, polypropylene, or polyethylene terephthalate. Particularly, the thermoplastic layer may be corona treated, as it is known in practice. These particular support layers allow for the application of LPL processes, CPL, processes, or HPL processes. Hence, the film may be efficiently produced. Moreover, a constant quality may be achieved.

The curable aminoplast resin of the bonding layer, as mentioned above with regards to the film and the method for the manufacturing of a film, may be based on a melamine resin, a urea resin, a melamine urea resin, a melamine phenolic resin, or a combination thereof. These materials have shown to be particularly compatible with the pressing sheets of most commercially used presses so that the bonding layer does not adhere to the pressing sheet in case of a defect. Hence, compared to the above-described prior art solution process stability, i.e. the tolerance towards defects can be improved. Further,

these materials allow for the application of LPL processes, CPL, processes, or HPL processes which leads to high efficiencies and/or constant qualities.

Further, said curable aminoplast resin of the bonding layer may have a solid content which lies in the range from 35 to 70 wt% and optionally from 40 to 65 wt%. These ranges of solid content are advantageuous with respect to the above-desdcribed film and method. Exemplarily, an improved quality of the film was identified while also a better processability of the resin was achieved.

Moreover, said curable aminoplast resin of the bonding layer may comprise plasticizers in a range from 0.5 to 10 wt% and optionally from 1 to 5 wt%. These plasticizers may comprise water free melamine resin and or glycols. It has been shown that the above-mentioned ranges change the mechanical properties of the film in such a way that the bonding layer has sufficient flexibility. For example, to prevent delamination and/or damage due to brittle material behavior after the film has been attached to the carrier plate. In addition, it can be prevented that deformation of the film, for example during rolling up for storage, leads to damage. Furthermore, the excessive use of plasticizers is prevented.

Furthermore, said curable aminoplast resin of the bonding layer may comprise catalysts in a range from 0.1 to 1.0 wt% and optionally from 0.2 to 0.8 wt%. These ranges have proven to be particularly suitable for the application of LPL processes, CPL, processes, or HPL processes. In particular with regards to the typical process times.

Further, said curable aminoplast resin of the bonding layer may comprise wetting agents in a range from 0.1 to 1.0 wt% and optionally from 0.2 to 0.8 wt%. Said wetting agents may comprise anionic surfactants. The given ranges have shown to allow for an improved adhesion on carrier plates.

Even further, said curable aminoplast resin of the bonding layer may comprise penetration aids in a range from 0.3 to 2.5 wt% and optionally from 0.5 to 2.0 wt%. These penetration aids may comprise alcohols and/or glycols. Further, it is understood that other commercially available penetration aids may be used. The ranges given above have proven to allow for an improved adhesion on carrier plates.

Furthermore, the curable aminoplast resin of the bonding layer may comprise modifiers in a range from 0.5 to 7.0 wt% and optionally from 1.0 to 5.0 wt%. These

modifiers may comprise water free resins, acrylates, glycols, and/or other commercially available modifiers. The ranges given above have proven to allow for increased resilience of the film when applied to the carrier plate.

Moreover, the above-mentioned object is achieved by a method for the manufacturing of a wall, ceiling, furniture, or flooring panel. The method comprises the following steps: providing a carrier plate; providing a film as described above; applying the film on the carrier plate such that the bonding layer of the film contacts the carrier plate, and pressing the carrier plate with the film under application of heat. The application of pressure and heat may fully cure or at least partially cure the bonding layer such that the film is attached to the carrier plate. Since a film as above-described is provided, it is understood that respective features and/or advantages may apply.

Pressing the carrier plate with the film may comprise the application of a pressure which lies in the range from 5 to 80 bar, optionally from 10 to 60 bar, and further optionally from 20 to 40 bar. These pressures have shown to allow for the film to be fixedly attached to the carrier plate while a damaging of the lacquer layer is avoided.

Further, pressing the carrier plate with the film may comprise the application of a temperature which lies in the range from 100 to 280°C, optionally from 140 to 240°C, and further optionally from 160 to 220°C. These temperatures have shown to allow for the film to be fixedly attached to the carrier plate while a damaging of the lacquer layer is avoided.

The carrier plate may be pressed with the film in a Low Pressure Laminate, LPL, process, a Continuous Pressure Laminate, CPL, process, or a High Pressure Laminate, HPL, process.

Furthermore, the above-mentioned object is achieved by a wall, ceiling, furniture, or flooring panel, particularly manufactured by means of the method for the manufacturing of a wall, ceiling, furniture, or flooring panel as described above. The panel comprises a carrier plate having a front major surface and a rear surface, whereby the front major surface comprises a layer system having the following layers in the given order as seen from the carrier plate: a bonding layer based on a cured aminoplast resin; a support layer being polymer-based, and a lacquer layer, wherein the lacquer layer was produced using excimer technology.

The features and/or advantages described above may apply for the panel. Particularly, compared to the above-described first and second prior art solutions, the quality of the finished pressed surface of the lacquer layer with the anti-fingerprint effect can be improved. Exemplarily, since it is avoided that melamine dust causes gray spots and surface defects.

The panel may comprise a primer layer between the support layer and the lacquer layer, wherein optionally the primer layer is in direct contact with the support layer and/or the lacquer layer. It has shown in practice that said primer layer allows for an improved adhesion of the respective layers. Moreover, a mechanical decoupling of the support layer and the lacquer layer may be achieved which can increase the flexibility of the film. Optionally the primer layer may be based on an acrylate resin.

Further, the panel may comprise the following layers in the given order between the support layer and the lacquer layer: a cured primer layer and a decorative printing layer. Optionally the primer layer is in direct contact with the support layer and/or the decorative printing layer, wherein further optionally the decorative printing layer is in direct contact with the lacquer layer. It has shown in practice that said primer layer allows for an improved adhesion of the respective layers, i.e. the support layer and the decorative printing layer. Moreover, a mechanical decoupling of the support layer and the decorative printing layer may be achieved which can increase the flexibility of the film and/or avoid that the decorative printing layer is damaged.

The bonding layer may be in direct contact with the support layer. This configuration has shown to allow for a particularly good adhesion of the film on the carrier plate.

The cured aminoplast resin of the bonding layer may be based on a melamine resin, a urea resin, a melamine urea resin, a melamine phenolic resin, or a combination thereof. As described above, these materials allow for an increased quality of the finished panel.

Further, the support layer may be a resin impregnated paper layer, the resin being in cured condition, wherein the cured resin is based on an acrylate resin and/or a urea resin. Alternatively, the support layer may be a thermoplastic layer, wherein the thermoplastic layer is based on biaxially oriented polypropylene, polypropylene, or polyethylene terephthalate.

In general, the above-mentioned carrier plate may comprise a High Density Fiberboard, a Medium Density Fiberboard, a phenolic paper, and/or a particleboard.

4. Brief description of the accompanying figures

In the following, the accompanying figures are briefly described:

Fig. 1 schematically shows a film for coating a carrier plate according to the present invention;

Fig. 2 schematically shows the film according to the present invention with additional layers;

Fig. 3 shows a flow chart of a method according to the present invention for the manufacturing of a film;

Fig. 4 shows a flow chart of a method according to the present invention for the manufacturing of a wall, ceiling, furniture, or flooring panel;

Fig. 5 schematically shows a wall, ceiling, furniture, or flooring panel according to the present invention, and

Fig. 6 schematically shows the wall, ceiling, furniture, or flooring panel according to the present invention with additional layers.

5. Detailed description of the figures

Fig. 1 schematically shows a film 10 for coating a carrier plate 20 to manufacture a wall, ceiling, furniture, or flooring panel 1. The film 10 comprising the following layers in the given order: a bonding layer 11 based on a curable aminoplast resin, for attaching the film 10 to the carrier plate 20; a support layer 12 being polymer-based, and a lacquer layer 15, wherein the lacquer layer 15 was produced using excimer technology. Since the lacquer layer 15 was produced using excimer technology it has a contact surface 16 with micro-folds which creates a matt appearance and/or an anti-fingerprint effect.

Fig. 2 schematically shows the film 10, wherein the film 10 further comprises the following layers in the given order between the support layer 12 and the lacquer layer 15: a cured primer layer 13, and a decorative printing layer 14. Thereby the primer layer 13 is in direct contact with the support layer 12 and the decorative printing layer 14. Further, the decorative printing layer 14 is in direct contact with the lacquer layer 15.

Moreover, as shown in **Fig. 1** and **Fig. 2**, the bonding layer 11 is in direct contact with the support layer 12.

Fig. 3 shows a flow chart of a method 100 for the manufacturing of a film 10, particularly as depicted in **Fig. 1** and **Fig. 2**. The method 100 comprises the following steps: providing 110 a support layer 12 being polymer-based; applying 140 a lacquer layer 15 on a first side of the support layer 12 using excimer technology, and applying 150 a bonding layer 11 based on a curable aminoplast resin on a second side of the support layer 12. Furthermore, as indicated with dashed lines, the method 100 further comprises the following optional steps before applying the lacquer layer 15: applying and curing 120 a primer layer 13 on the first side of the support layer 12, and applying 130 a decorative printing layer 14 on the primer layer 13.

The above-mentioned curable aminoplast resin of the bonding layer 11 is based on a melamine resin, a urea resin, a melamine urea resin, a melamine phenolic resin, or a combination thereof.

Fig. 4 shows a flow chart of a method 200 for the manufacturing of a wall, ceiling, furniture, or flooring panel 1, the method 200 comprising the following steps: providing 210 a carrier plate 20; providing 220 a film 10 as exemplarily depicted in **Fig. 1** and **Fig. 2**; applying 230 the film 10 on the carrier plate 20 such that the bonding layer 11 of the film 10 contacts the carrier plate 20, and pressing 240 the carrier plate 20 with the film 10 under application of heat.

Fig. 5 schematically shows a wall, ceiling, furniture, or flooring panel 1, particularly manufactured by means of the method 200 as exemplarily depicted in **Fig. 4**. The panel 1 comprises a carrier plate 20 having a front major surface 21 and a rear surface 22, whereby the front major surface 21 comprises a layer system having the following layers in the given order as seen from the carrier plate 20: a bonding layer 11 based on a cured aminoplast resin; a support layer 12 being polymer-based, and a lacquer layer 15, wherein the lacquer layer 15 was produced using excimer technology. As above, since the lacquer layer 15 was produced using excimer technology it has a contact surface 16 with micro-folds which creates a matt appearance and/or an anti-fingerprint effect.

Fig. 6 schematically shows the wall, ceiling, furniture, or flooring panel 1, wherein the panel 1 further comprises the following layers in the given order between the support layer 12 and the lacquer layer 15: a primer layer 13, and a decorative printing layer 14. Thereby the primer layer 13 is in direct contact with the support layer 12 and the

decorative printing layer 14. Further, the decorative printing layer 14 is in direct contact with the lacquer layer 15. Moreover, the bonding layer 11 is in direct contact with the support layer 12. Furthermore, the panel comprises a balancing layer 30 which is attached to the rear surface 22 of the carrier plate 20. The balancing layer 30 may comprise a layer system as the front major surface 21. Alternatively, the balancing layer 30 may comprise a counteracting paper.

The above-mentioned cured aminoplast resin of the bonding layer 11 is based on a melamine resin, a urea resin, a melamine urea resin, a melamine phenolic resin, or a combination thereof.

The support layer 12 of the film and the panel is either a resin impregnated paper layer, the resin being in cured condition, wherein the cured resin is based on an acrylate resin and/or a urea resin, or a thermoplastic layer, wherein the thermoplastic layer is based on biaxially oriented polypropylene, polypropylene, or polyethylene terephthalate.

The carrier plate 20 is a High Density Fiberboard, a Medium Density Fiberboard, a phenolic paper, or a particleboard.

List of reference signs

1	panel
10	film for coating a carrier plate
11	bonding layer
12	support layer
13	primer layer
14	decorative printing layer
15	lacquer layer
16	contact surface
20	carrier plate
21	front major surface of the carrier plate
22	rear surface of the carrier plate
30	balancing layer
100	method for the manufacturing of a film
110	providing a support layer
120	applying and curing a primer layer
130	applying a decorative printing layer
140	applying a lacquer layer
150	applying a bonding layer
200	method for the manufacturing of a wall, ceiling, furniture, or flooring panel
210	providing a carrier plate
220	providing a film
230	applying the film on the carrier plate
240	pressing the carrier plate with the film

Claims

1. A film (10) for coating a carrier plate (20) to manufacture a wall, ceiling, furniture, or flooring panel (1), the film (10) comprising the following layers in the given order:

a bonding layer (11) based on a curable aminoplast resin, for attaching the film (10) to the carrier plate (20);

a support layer (12) being polymer-based, and

a lacquer layer (15), wherein the lacquer layer (15) was produced using excimer technology.

2. The film (10) according to the preceding claim, wherein the film (10) comprises

a cured primer layer (13) between the support layer (12) and the lacquer layer (15), wherein optionally the primer layer (13) is in direct contact with the support layer (12) and/or the lacquer layer (15).

3. The film (10) according to claim 1, wherein the film (10) comprises the following layers in the given order between the support layer (12) and the lacquer layer (15)

a cured primer layer (13), and

a decorative printing layer (14),

wherein optionally the primer layer (13) is in direct contact with the support layer (12) and/or the decorative printing layer (14), wherein further optionally the decorative printing layer (14) is in direct contact with the lacquer layer (15).

4. The film (10) according to any one of the preceding claims, wherein the bonding layer (11) is in direct contact with the support layer (12).

5. A method (100) for the manufacturing of a film (10), particularly according to any one of the preceding claims, wherein the method (100) comprises the following steps:

providing (110) a support layer (12) being polymer-based;

applying (140) a lacquer layer (15) on a first side of the support layer (12) using excimer technology, and

applying (150) a bonding layer (11) based on a curable aminoplast resin on a second side of the support layer (12).

6. The method (100) according to the preceding claim, wherein the method (100) further comprises the following step before applying the lacquer layer (15):

applying and curing (120) a primer layer (13) on the first side of the support layer (12), wherein optionally the primer layer (13) is directly applied on the support layer (12), wherein further optionally the lacquer layer (15) is directly applied on the primer layer (13).

7. The method (100) according to claim 5, wherein the method (100) further comprises the following steps before applying the lacquer layer (15):

applying and curing (120) a primer layer (13) on the first side of the support layer (12), and

applying (130) a decorative printing layer (14) on the primer layer (13),

wherein optionally the primer layer (13) is directly applied on the support layer (12), wherein further optionally the decorative printing layer (14) is directly applied on the primer layer (13), and wherein even further optionally the lacquer layer (15) is directly applied on the decorative printing layer (14).

8. The method (100) according to any one of the preceding claims, wherein the bonding layer (11) is directly applied on the support layer (12).

9. The film (10) or the method (100) according to any one of the preceding claims, wherein the support layer (12) is

a resin impregnated paper layer, the resin being in cured condition, wherein the cured resin is based on an acrylate resin and/or a urea resin, or

a thermoplastic layer, wherein the thermoplastic layer is based on biaxially oriented polypropylene, polypropylene, or polyethylene terephthalate.

10. The film (10) or the method (100) according to any one of the preceding claims, wherein the curable aminoplast resin of the bonding layer (11) is based on a melamine

resin, a urea resin, a melamine urea resin, a melamine phenolic resin, or a combination thereof.

11. The film (10) or the method (100) according to any one of the preceding claims, wherein the curable aminoplast resin of the bonding layer (11) has a solid content which lies in the range from 35 to 70 wt% and optionally from 40 to 65 wt%.

12. The film (10) or the method (100) according to any one of the preceding claims, wherein the curable aminoplast resin of the bonding layer (11) comprises plasticizers in a range from 0.5 to 10 wt% and optionally from 1 to 5 wt%.

13. The film (10) or the method (100) according to any one of the preceding claims, wherein the curable aminoplast resin of the bonding layer (11) comprises catalysts in a range from 0.1 to 1.0 wt% and optionally from 0.2 to 0.8 wt%.

14. The film (10) or the method (100) according to any one of the preceding claims, wherein the curable aminoplast resin of the bonding layer (11) comprises wetting agents in a range from 0.1 to 1.0 wt% and optionally from 0.2 to 0.8 wt%.

15. The film (10) or the method (100) according to any one of the preceding claims, wherein the curable aminoplast resin of the bonding layer (11) comprises penetration aids in a range from 0.3 to 2.5 wt% and optionally from 0.5 to 2.0 wt%.

16. The film (10) or the method (100) according to any one of the preceding claims, wherein the curable aminoplast resin of the bonding layer (11) comprises modifiers in a range from 0.5 to 7.0 wt% and optionally from 1.0 to 5.0 wt%.

17. A method (200) for the manufacturing of a wall, ceiling, furniture, or flooring panel (1), the method (200) comprising the following steps:

providing (210) a carrier plate (20);

providing (220) a film (10) according to any one of claims 1 to 4 and 9 to 16;

applying (230) the film (10) on the carrier plate (20) such that the bonding layer (11) of the film (10) contacts the carrier plate (20), and

pressing (240) the carrier plate (20) with the film (10) under application of heat.

18. The method (200) according to the preceding claim, wherein pressing (240) the carrier plate (20) with the film (10) comprises the application of a pressure which lies

in the range from 5 to 80 bar, optionally from 10 to 60 bar, and further optionally from 20 to 40 bar.

19. The method (200) according to any one of claims 17 to 18, wherein pressing (240) the carrier plate (20) with the film (10) comprises the application of a temperature which lies in the range from 100 to 280°C, optionally from 140 to 240°C, and further optionally from 160 to 220°C.

20. The method (200) according to any one of claims 17 to 19, wherein the carrier plate (20) is pressed with the film (10) in a Low Pressure Laminate, LPL, process, a Continuous Pressure Laminate, CPL, process, or a High Pressure Laminate, HPL, process.

21. A wall, ceiling, furniture, or flooring panel (1), particularly manufactured by means of the method (200) according to any one of claims 17 to 20, wherein the panel (1) comprises a carrier plate (20) having a front major surface (21) and a rear surface (22), whereby the front major surface (21) comprises a layer system having the following layers in the given order as seen from the carrier plate (20):

a bonding layer (11) based on a cured aminoplast resin;

a support layer (12) being polymer-based, and

a lacquer layer (15), wherein the lacquer layer (15) was produced using excimer technology.

22. The panel (1) according to the preceding claim, wherein the panel (1) comprises

a primer layer (13) between the support layer (12) and the lacquer layer (15), wherein optionally the primer layer (13) is in direct contact with the support layer (12) and/or the lacquer layer (15).

23. The panel (1) according to claim 21, wherein the panel (1) comprises the following layers in the given order between the support layer (12) and the lacquer layer (15)

a cured primer layer (13), and

a decorative printing layer (14),

wherein optionally the primer layer (13) is in direct contact with the support layer (12) and/or the decorative printing layer (14), wherein further optionally the decorative printing layer (14) is in direct contact with the lacquer layer (15).

24. The panel (1) according to any one of the preceding claims, wherein the bonding layer (11) is in direct contact with the support layer (12).

25. The panel (1) according to any one of the preceding claims, wherein the cured aminoplast resin of the bonding layer (11) is based on a melamine resin, a urea resin, a melamine urea resin, a melamine phenolic resin, or a combination thereof.

26. The panel (1) according to any one of the preceding claims, wherein the support layer (12) is

a resin impregnated paper layer, the resin being in cured condition, wherein the cured resin is based on an acrylate resin and/or a urea resin, or

a thermoplastic layer, wherein the thermoplastic layer is based on biaxially oriented polypropylene, polypropylene, or polyethylene terephthalate.

27. The method (200) according to any one of claims 17 to 20 or the panel (1) according to any one of claims 21 to 26, wherein the carrier plate (20) comprises a High Density Fiberboard, a Medium Density Fiberboard, a phenolic paper, and/or a particleboard.

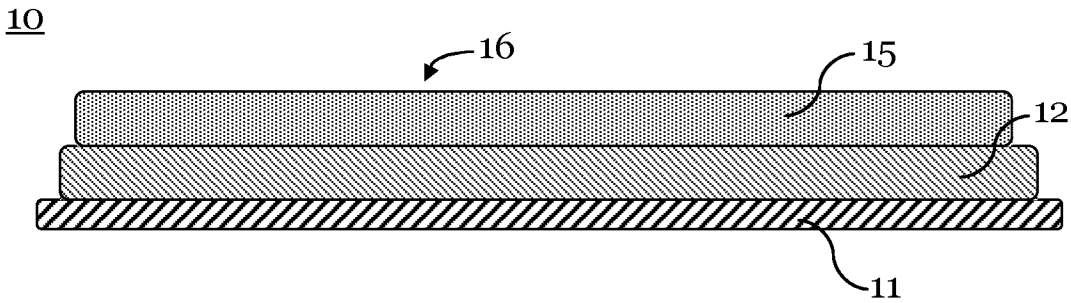

Fig. 1

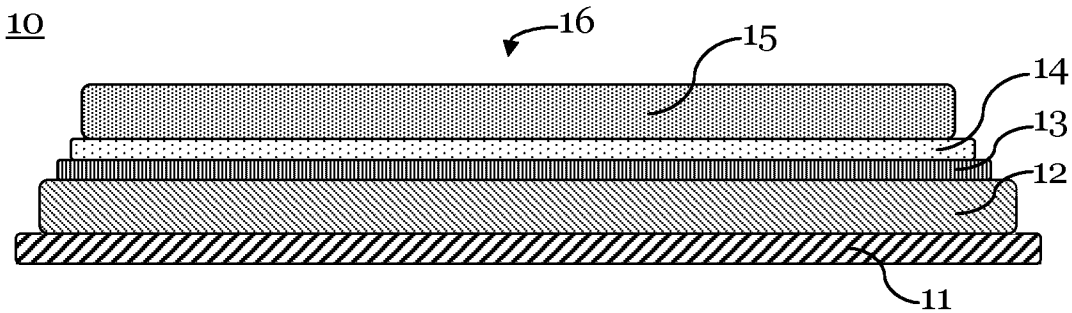

Fig. 2

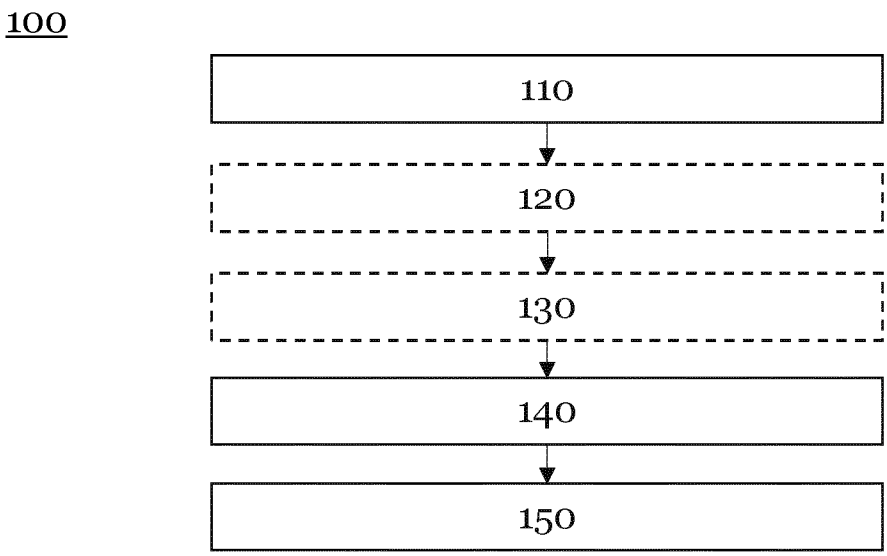

Fig. 3

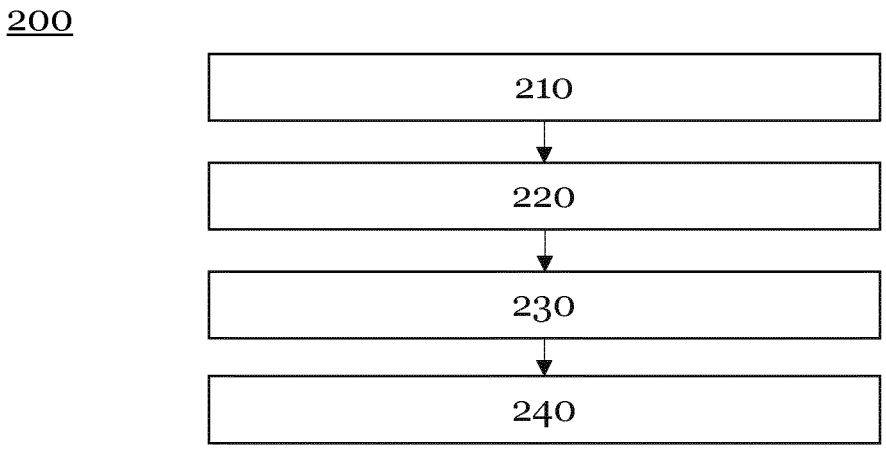

Fig. 4

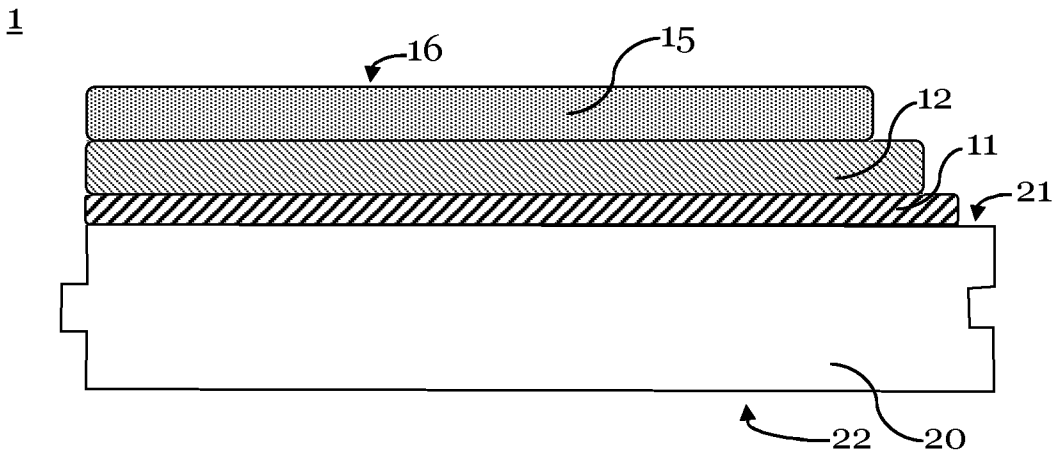

Fig. 5

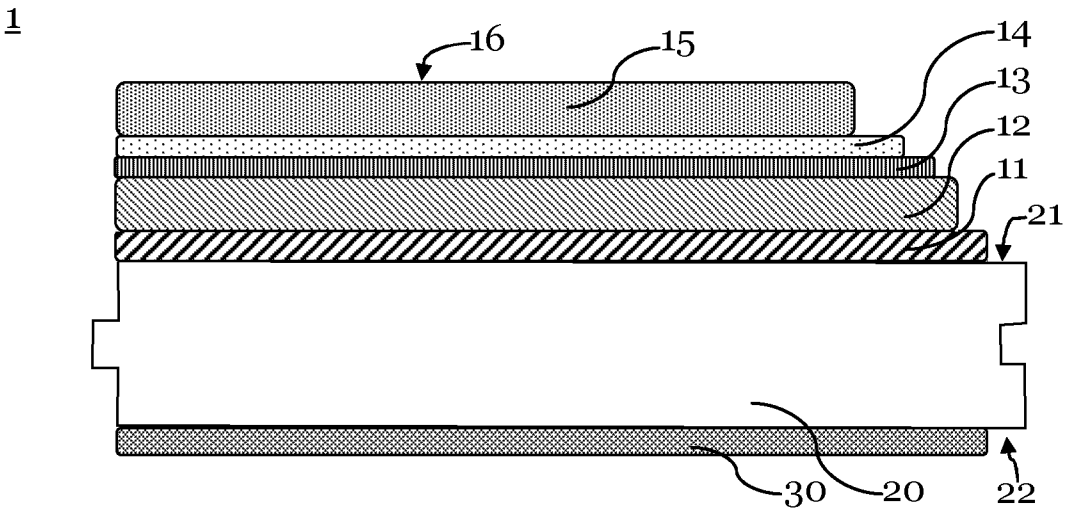

Fig. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2022/075228

A. CLASSIFICATION OF SUBJECT MATTER
INV. C08J7/043 D21H27/26 C09J7/29 B32B21/06 B32B21/08
B32B21/02 B44C5/04
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
C08J D21H C09J B32B B44C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2015/290910 A1 (HALLER HEINZ [DE] ET AL) 15 October 2015 (2015-10-15) paragraphs [0001], [0003], [0005], [0010], [0012], [0014], [0015], [0029], [0030]; claims	1-27
Y	US 2013/129980 A1 (MEINHARD DEITER [DE] ET AL) 23 May 2013 (2013-05-23) paragraphs [0001], [0025], [0029]; claims 1,3-5,15,16; figure 1	1-27
Y	CN 109 695 180 A (GUANGDONG TIANYUAN HUIBANG NEW MAT CO LTD) 30 April 2019 (2019-04-30) abstract examples	1-27

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[x] Further documents are listed in the continuation of Box C.
[x] See patent family annex.

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"X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 April 2023	09/05/2023

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Pamies Olle, Silvia

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2022/075228

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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1

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Information on patent family members

International application No
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