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(54) **PROCESS FOR DECORATING SURFACES OF HOUSEHOLD APPLIANCES**

VERFAHREN ZUM DEKORIEREN VON OBERFLÄCHEN VON HAUSHALTSGERÄTEN

PROCÉDÉ POUR DÉCORER DES SURFACES D'APPAREILS DOMESTIQUES

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**Description**CROSS-REFERENCE TO RELATED APPLICATIONS

**[0001]** This Patent Application claims priority from Italian Patent Application No. 102018000005818 filed on May 29, 2018.

TECHNICAL FIELD

**[0002]** The present invention relates to a process for decorating surfaces of household appliances, in particular (but not limited to) small household appliances.

BACKGROUND ART

**[0003]** In the household appliance sector, there are the traditionally so-called 'large household appliances', which are relatively large in size and which, once installed, are not normally moved for use (refrigerators, dishwashers, cooking units, washing machines, etc.); and the so-called 'small household appliances', i.e. small portable or semi-portable appliances which can be easily moved by the user and are generally used on tables or other support surfaces.

**[0004]** For example, in the field of kitchen household appliances, considered in general as appliances for food and beverage preparation and related activities, microwave ovens, electric ovens, toasters, coffee machines, juicers, blenders, kneading machines, etc. are commonly referred to as small household appliances.

**[0005]** In this sector, the purely functional aspect is so crucial as the aesthetic and emotional component: therefore, in addition to being practical and efficient, household appliances in general, and small household appliances in particular, must also be aesthetically attractive and original.

**[0006]** The need is therefore felt to decorate the external surfaces of household appliances, which are normally made of metal or polymeric material (plastic).

**[0007]** However, the decoration of the external surfaces (or parts thereof) of household appliances is related to various technical problems, since a variety of performances must be ensured, such as in particular:

- a high aesthetic quality;
- an adequate persistence of the decoration over time;
- an adequate resistance of the decoration to aggressive agents such as alcohols, grease, acids, etc.;
- an adequate behavior at high temperatures and vapor;
- suitability for food contact.

**[0008]** In fact, it is necessary not only to decorate the surfaces in an effective and durable manner, thus ensuring good adhesion of the decoration, whether it be impressed/applied; but also to ensure that the decorated surfaces maintain the characteristics required for their

specific use, being, for example, suitable for contact with food or adequately resistant to the aggressive and/or polluting agents normally used or present in the domestic environment.

5 **[0009]** Moreover, many small household appliances (and also some large household appliances) have relatively complex shapes and are provided with external surfaces that are not flat and comprise several surface portions variously shaped and oriented to one another; the decoration of these surfaces is therefore further complicated by their shape, especially if the decoration to be made comprises complex graphic parts, drawings and/or colors that must be coordinated on the different surface portions of the household appliance to form a predetermined overall graphic pattern.

10 **[0010]** US2009252543A1 discloses a method for conducting a water transfer printing process on a baking tray, comprising the steps of: cleaning an inner object-supporting and an outer surface of the baking tray and forming a crystalline protective film thereon; oven-drying the cleaned baking tray; spray-coating the inner object-supporting surface with a silicone and baking the silicone; spray-coating the outer surface with a primer and baking the primer; transferring a pattern onto the outer surface  
20 by water transfer printing, wherein a water flow is used to flatten a transfer paper attached to the baking tray; over-drying residual water left from the water transfer printing process; spray-coating the outer surface with a silicone-based transparent varnish and baking the transparent varnish. The method allows a baking tray having an irregular shape to be provided with a pattern thereon and thus beautifies the baking tray.

DISCLOSURE OF INVENTION

25 **[0011]** Therefore, it is an object of the present invention to provide a process for decorating surfaces of household appliances that is fully effective and allows to obtain high quality decorated surfaces, even with complex graphic patterns, and with durable and resistant decorations.

30 **[0012]** The present invention therefore relates to a process for decorating surfaces of household appliances as defined in the attached claim 1.

35 **[0013]** Additional preferred features of the invention are defined in the dependent claims.

40 **[0014]** The process according to the invention makes it possible to decorate the external surfaces of household slicers, scales, ice cream makers, vacuum cleaners and electric brooms, etc.

45 **[0015]** Essentially, according to the invention the decoration is applied to the surface to be decorated by decalomania (decal) .

50 **[0016]** Decalomania is a color printing technique that consists in transferring onto a final support (in this case, the surface of the household appliance to be decorated) a graphic pattern previously impressed on a support film (for example, paper).

**[0017]** The graphic pattern is detached from the film

by a wet process, by pressing the printed and moistened part on the final support.

**[0018]** The graphic pattern to be reproduced on the surface of the household appliance can be a drawing, an image, etc.

**[0019]** For example, the graphic pattern can be created by an artist who paints it on a form reproducing the item (household appliance) to be decorated, or in a two-dimensional form on a tissue or other support.

**[0020]** According to the invention, the preparation of the decal (support film with the graphic pattern to be transferred impressed thereon) is carried out according to specific procedures.

**[0021]** In particular, once created or selected, the graphic pattern is acquired in digital form, for example by means of high-resolution digital photography and scanning.

**[0022]** The graphic pattern is then subject to reconstruction and two-dimensional adjustment: the overall graphic pattern, which is, in use (i.e. once transferred onto the household appliance to be decorated), three-dimensional, extending on variously shaped and arranged surface portions, is resolved into a plurality of two-dimensional parts.

**[0023]** This ensures full respect for the original acquired, which is particularly important when the original is a unique work, for example hand-painted.

**[0024]** The various parts of the graphic pattern are then printed on a support film to make the corresponding decal.

**[0025]** According to the invention, the graphic pattern is printed on the support film using a mixed offset and silk-screen printing technique.

**[0026]** In this way, problems related to poor resolution and color and line definition (the so-called "brush stroke" effect) are avoided.

**[0027]** In general, the graphic pattern is printed in a plurality of printing stages with respective colors or groups of colors, comprising both offset printing stages and silk-screen printing stages.

**[0028]** In further detail, the graphic pattern is printed in one or more four-color offset printing stages and a plurality of monochromatic silk-screen printing stages with respective colors.

**[0029]** For example, the printing process comprises, preferably in the indicated sequence, the following printing stages of inks or compositions:

at least one first silk-screen printing stage with a transparent composition;

one or more silk-screen printing stages with a white ink;

one or more four-color offset printing stages;

one or more silk-screen printing stages of the respective colored inks (burgundy, yellow, black, blue, green, red, etc.);

one or more silk-screen printing stages with a transparent composition;

one or more silk-screen printing stages with a peelable composition.

**[0030]** The graphic pattern is then transferred from the support film to the surface of the household appliance to be decorated by means of a decal technique comprising, in succession, the steps of:

pre-treating the surface to be decorated by passivating the surface, for example by treating it with abrasive wool or paper (dulling), and/or washing it with detergents and/or degreasers, for example with white spirit;

applying a first primer on the surface to be decorated; drying;

applying the decal on the surface having the first primer and transferring the decal graphic pattern onto the surface;

drying;

applying a second primer on the surface decorated with the graphic pattern transferred from the decal;

drying;

applying a transparent finishing paint on the decorated surface;

drying;

polishing the decorated and painted surface.

**[0031]** The surface to be decorated is the external surface, optionally made up of several surface portions, which can be not adjacent and variously oriented and arranged with respect to one another, of a household appliance, in particular (but not necessarily) a small household appliance.

**[0032]** The invention applies in particular to the body or casing of the household appliance, normally made of metal material (e.g. metal sheet, stainless steel, aluminum, etc.) or polymeric material (e.g. ABS).

**[0033]** Preferably, the decal is wet-applied with denatured water.

**[0034]** The application of two primers in two successive application steps solves the problem of an effective adhesion/sticking of the decal to the surface to be decorated.

**[0035]** The final application of the finishing paint avoids any softening and deterioration of the decoration if exposed to heating, as can be the case during normal use of the appliance.

#### BRIEF DESCRIPTION OF THE DRAWING

**[0036]** The invention is further described in the following non-limiting embodiment examples, with reference to the attached figure that schematically shows the execution of a process to decorate surfaces of household appliances according to the invention.

## BEST MODE FOR CARRYING OUT THE INVENTION

**[0037]** With reference to the attached figure, a process is described for decorating the external surfaces of a household appliance, in the example a coffee machine, hereinafter referred to as appliance 1.

**[0038]** It is understood that the process according to the invention can be applied to any other household appliance.

**[0039]** First of all, a graphic pattern 2 is defined, understood as a set of graphic signs, images, drawings, colors, etc., to be transferred onto the apparatus 1 and precisely on an external surface 3 of the casing 4 or body of the appliance 1, made of metal material (e.g. metal sheet, stainless steel, aluminum, etc.) or polymeric material (e.g. ABS).

**[0040]** For example, the graphic pattern 2 to be transferred onto the surface 3 can be created by an artist who paints it on a form 5 reproducing the appliance 1 to be decorated, or in a two-dimensional form on a tissue or other support. Anyway, the graphic pattern 2 can be created in other ways, also in digital form, or selected from a repertoire, etc.

**[0041]** Clearly, although represented in the figure in an extremely schematic form, the graphic pattern 2 can be of any kind and have figures, drawings, images of any kind; in fact, the invention is adapted to decorate household appliances with particularly complex decorations as they can be handmade works.

**[0042]** Once created or selected, the graphic pattern 2 is acquired in digital form by means of high-resolution digital photography or another similar scanning method.

**[0043]** The graphic pattern 2 is then reconstructed and adjusted in two-dimensional mode, in which the graphic pattern 2 is resolved into a plurality of two-dimensional parts 6, corresponding to the respective surface portions of the surface 3 to be decorated.

**[0044]** The various parts 6 of the graphic pattern 2 are then printed on a support film 7 to make a decal 8 (support film having the graphic pattern to be transferred impressed thereon).

**[0045]** In particular, the graphic pattern 2 is printed on the support film 7 using a mixed technique of offset printing and silk-screen printing, in a plurality of silk-screen printing stages and offset printing stages with the respective colors or groups of colors.

**[0046]** Clearly, the sequence of printing stages depends on the graphic pattern 2 and its colors.

**[0047]** Purely by way of example, the graphic pattern 2 is printed by following the printing stages below:

- a first silk-screen printing stage with a transparent composition;
- three silk-screen printing stages with a white ink;
- four four-color offset printing stages;
- one silk-screen printing stage with a dark red ink;
- two silk-screen printing stages with a transparent composition;

one silk-screen printing stage with a peelable composition.

**[0048]** With other graphic patterns 2 other printing cycles will be used, in particular with different colors.

**[0049]** The decal 8 is then applied to the surface 3 to be decorated by wet decal technique.

**[0050]** In advance, the surface 3 is pre-treated by passivation, for example by passing an abrasive wool or paper on the surface 3 until the surface becomes opaque, and/or by washing with detergents and/or degreasers, for example white spirit.

**[0051]** A first primer is then applied on the surface 3 and, after drying, the moistened decal 8 is applied, by pressing the printed part of the decal 8 on the surface 3 and removing the support film 7, so as to transfer the graphic pattern 2 of the decal 8 onto the surface 3.

**[0052]** Preferably, the first primer is applied in such an amount so as to form a substantially uniform layer having a thickness ranging between about 10 and about 40 microns.

**[0053]** For example, the first primer is applied in an amount between about 10 and about 50 g/m<sup>2</sup>, in particular between about 20 and about 40 g/m<sup>2</sup>.

**[0054]** After drying, a second primer is applied to the surface 3 decorated with graphic pattern 2 transferred from the decal 8, which is then dried.

**[0055]** The second primer is also preferably applied in such an amount so as to form a substantially uniform layer having a thickness ranging between about 10 and about 40 microns.

**[0056]** For example, the second primer is also applied in an amount between about 10 and about 50 g/m<sup>2</sup>, in particular between about 20 and about 40 g/m<sup>2</sup>.

**[0057]** Lastly, a transparent finishing paint is applied on the decorated surface 3.

**[0058]** The finishing paint is applied for example in an amount so as to form a substantially uniform layer having a thickness ranging between about 10 and about 60 microns.

**[0059]** For example, the paint is applied in an amount between about 20 and about 60 g/m<sup>2</sup>.

**[0060]** After drying, a final polishing of the decorated and painted surface 3 is carried out.

**[0061]** In the following examples, further details of the invention process are given (purely by way of a not limiting example), in particular on the application steps of the decal on the surface to be decorated.

### EXAMPLE I

**[0062]** The first primer, in particular a polyester base primer and precisely a modified polyester resin, is applied on the surface 3.

**[0063]** A suitable primer is, for example, the commercial product LS925 (29925) 2K Helm Basecoat by Lechler.

**[0064]** By way of (a non-limiting) indication only, the

first primer is applied in an amount between about 20 g/m<sup>2</sup> and about 40 g/m<sup>2</sup> to form a uniform layer having a thickness ranging between about 15 microns and about 30 microns.

**[0065]** This is followed by drying, for example air drying for a few hours at room temperature (preferably at least 22°C).

**[0066]** The decal 8, moistened with denatured water at a minimal temperature of 22°C, is then applied on the surface 3, by pressing the printed part of the decal 8 on the surface 3 and removing the support film 7, so as to transfer the graphic pattern 2 of the decal 8 onto the surface 3.

**[0067]** This is followed by drying, for example air drying for 24 hours at least 22°C.

**[0068]** A second primer is applied on the surface 3 decorated with the graphic pattern 2 transferred from the decal 8, in particular an acrylic base primer and precisely a modified acrylic resin.

**[0069]** A suitable primer is, for example, the commercial product Lechler 31676 Decosealer by Lechler.

**[0070]** By way of (a non-limiting) indication only, the second primer is applied in an amount between about 20 g/m<sup>2</sup> and about 40 g/m<sup>2</sup> to form a uniform layer having a thickness ranging between about 15 microns and about 30 microns.

**[0071]** This is followed by drying, for example air drying at a minimum temperature of 22°C for 24 hours.

**[0072]** A transparent finishing paint is then applied to the decorated surface 3, in particular an acrylic paint (a mixture of acrylic resins), for example the commercial product Lechler 31590 Clear Glossy MS-HCR by Lechler, in an amount approximately between about 40 g/m<sup>2</sup> and about 60 g/m<sup>2</sup> to form a uniform layer having a thickness ranging between about 30 microns and about 50 microns.

**[0073]** This is followed by evaporation for at least 12 hours in air at room temperature and drying for at least one hour at 60°C.

**[0074]** Lastly, a final polishing of the decorated and painted surface 3 is carried out.

#### EXAMPLE II

**[0075]** The first primer, in particular a polyacrylate primer and precisely a modified acrylic resin, is applied on the surface 3.

**[0076]** A suitable primer is, for example, the commercial product s80100 by Bose-X.

**[0077]** By way of (a non-limiting) indication only, the first primer is applied in an amount between about 20 g/m<sup>2</sup> and about 40 g/m<sup>2</sup> to form a uniform layer having a thickness ranging between about 15 microns and about 30 microns.

**[0078]** This is followed by drying, for example at 50°C for 30'.

**[0079]** The decal 8, moistened with water, is then applied on the surface 3, and the support film 7 is removed, so as to transfer the graphic pattern 2 of the decal 8 to

the surface 3.

**[0080]** This is followed by drying, for example at 50°C for 20'.

**[0081]** The second primer is applied, in particular a polyacrylate primer, for example a modified acrylic resin.

**[0082]** A suitable primer is, for example, the commercial product s80153 by Bose-X.

**[0083]** By way of (a non-limiting) indication, the second primer is applied in an amount between about 20 g/m<sup>2</sup> and about 40 g/m<sup>2</sup> to form a uniform layer having a thickness ranging between about 15 microns and about 30 microns.

**[0084]** This is followed by drying, for example at 50°C for 90'.

**[0085]** A transparent finishing paint is then applied to the decorated surface 3, in particular a crosslinking acrylic base UV paint in an organic solvent, for example the commercial product Lechler UV0030 by Bose-X, in an amount approximately between about 20 g/m<sup>2</sup> and about 40 g/m<sup>2</sup> so as to form a uniform layer having a thickness ranging between about 15 microns and about 30 microns.

**[0086]** Drying for at least 15' with UV lamps follows.

**[0087]** Lastly, a final polishing of the decorated and painted surface 3 is carried out.

#### EXAMPLE III

**[0088]** The first primer, in particular a bi-component colorless transparent primer and precisely a mixture of hydroxylated acrylic resins, is applied on the surface 3.

**[0089]** A suitable primer is for example the commercial product L0310674 by Lechler.

**[0090]** By way of (a non-limiting) indication only, the first primer is applied in an amount so as to form a substantially homogeneous layer having a thickness ranging between about 10 and about 30 microns, for example of about 20 microns.

**[0091]** This is followed by drying, for example at 40°C for 60 min.

**[0092]** After an (optional) stage with an abrasive, the decal 8 moistened with water is applied and dried for 60 min at 50°C.

**[0093]** The second primer is applied, in particular a bi-component colorless transparent primer containing a mixture of acrylic resins.

**[0094]** A suitable primer is, for example, the commercial product L0980174 Acriplast by Lechler.

**[0095]** The second primer is applied in an amount so as to form a uniform layer having a thickness ranging between about 10 and about 30 microns, for example with a thickness of about 20 microns.

**[0096]** This is followed by drying, for example at 40°C for 180 min.

**[0097]** After a possible further stage with an abrasive, the transparent finishing paint is applied, in particular an acrylic paint (a mixture of acrylic resins), for example the commercial product L0960230 Tixo Klarlack by Lechler, so as to form a layer having a thickness ranging between

about 30 and about 50 microns, for example about 40 microns.

**[0098]** This is followed by drying at 50° for 300 min.

**[0099]** Lastly, a final polishing of the decorated and painted surface 3 is carried out.

**[0100]** Lastly, it is clear that further modifications and changes may be made to the process described and illustrated herein without departing from the scope of the attached claims.

## Claims

1. A process for decorating external surfaces of casings or bodies, made of metal material or polymeric material, of household appliances, comprising the steps of: making a decal (8) having a graphic pattern (2) to be transferred onto an external surface (3) of a casing or body, made of metal material or polymeric material, of a household appliance (1) to be decorated; transferring the graphic pattern (2) onto the surface of the household appliance (1) by decalcomania technique comprising, in succession, the steps of: applying a first primer on the surface (3); applying the decal (8) on the surface (3) having the first primer and transferring the graphic pattern (2) from the decal (8) to the surface (3); applying a second primer on the surface (3) decorated with the graphic pattern (2) transferred from the decal (8); applying a transparent finishing paint on the decorated surface (3); wherein the first primer is a polyester or acrylic base primer; and the second primer is an acrylic base primer.
2. The process according to claim 1, comprising respective drying steps after applying the first primer, and/or after applying the decal, and/or after applying the second primer, and/or after applying the finishing paint.
3. The process according to one of the preceding claims, wherein before the step of applying the first primer, the surface (3) to be decorated is pre-treated by passivation with an abrasive and/or by washing with detergents and/or degreasers.
4. The process according to one of the preceding claims, comprising, after the step of applying the finishing paint, a final step of polishing the decorated and painted surface (3).
5. The process according to one of the preceding claims, wherein the surface (3) to be decorated is made of metal sheet, stainless steel, aluminum; or ABS, and is optionally painted.
6. The process according to one of the preceding claims, comprising a step of treating the surface (3)

with an abrasive after applying the first primer and before applying the decal (8); and/or after applying the decal (8) and before applying the finishing paint.

7. The process according to one of the preceding claims, wherein in the step of making the decal (8), the graphic pattern (2) is printed on a support film (7) using a mixed technique of offset printing and silk-screen printing.
8. The process according to claim 7, wherein the graphic pattern (2) is printed in a plurality of printing stages with respective colors or groups of colors, comprising both offset printing stages and silk-screen printing stages.
9. The process according to claim 8, wherein the graphic pattern (2) is printed in one or more four-color offset printing stages and a plurality of monochromatic silk-screen printing stages with respective colors.
10. The process according to one of the preceding claims, comprising the steps of acquiring in digital form the graphic pattern (2) from an original, using high-resolution digital photography or another similar scanning method; and resolving the acquired graphic pattern into a plurality of two-dimensional parts (6), corresponding to respective surface portions of the surface (3) to be decorated and which are then printed on a support film (7) to make the decal (8).
11. The process according to one of the preceding claims, wherein the decal (8) is applied on the surface (3) to be decorated by wet decalcomania technique.
12. The process according to one of the preceding claims, wherein the first primer comprises at least one modified polyester resin or at least one hydroxylated acrylic resin.
13. The process according to one of the preceding claims, wherein the first primer is applied in an amount so as to form a substantially homogeneous layer having a thickness ranging between about 10 and about 40 microns; and/or in an amount ranging between about 10 and about 50 g/m<sup>2</sup>, in particular between about 20 and about 40 g/m<sup>2</sup>.
14. The process according to one of the preceding claims, wherein the second primer comprises at least one acrylic resin and/or at least one modified acrylic resin.
15. The process according to one of the preceding claims, wherein the second primer is applied in an amount so as to form a substantially homogeneous

layer having a thickness ranging between about 10 and about 40 microns; and/or in an amount ranging between about 10 and about 50 g/m<sup>2</sup>, in particular between about 20 and about 40 g/m<sup>2</sup>.

16. The process according to one of the preceding claims, wherein the finishing paint is an acrylic paint.
17. The process according to one of the preceding claims, wherein the finishing paint is applied in an amount so as to form a substantially homogeneous layer having a thickness ranging between about 30 and about 50 microns, for example of about 40 microns.

### Patentansprüche

1. Verfahren zum Dekorieren von Außenflächen von aus Metallmaterial oder Polymermaterial bestehenden Gehäusen oder Körpern von Haushaltsgeräten, umfassend die Schritte: Herstellen eines Abziehbildes (8) mit einem grafischen Muster (2), das auf eine Außenfläche (3) eines aus Metallmaterial oder Polymermaterial bestehenden Gehäuses oder Körpers von einem zu dekorierenden Haushaltsgerät (1) zu übertragen ist; Übertragen des grafischen Musters (2) auf die Oberfläche des Haushaltsgeräts (1) durch Abziehbild-Technik, umfassend die Schritte in Folge: Aufbringen einer ersten Grundierung auf die Oberfläche (3); Aufbringen des Abziehbildes (8) auf die Oberfläche (3) mit der ersten Grundierung und Übertragen des grafischen Musters (2) von dem Abziehbild (8) auf die Oberfläche (3); Aufbringen einer zweiten Grundierung auf die Oberfläche (3), die mit dem von dem Abziehbild (8) übertragenen grafischen Muster (2) dekoriert ist; Aufbringen einer transparenten Endlackierung auf die dekorierte Oberfläche (3); wobei die erste Grundierung eine polyester- oder acrylbasierte Grundierung ist; und die zweite Grundierung eine acrylbasierte Grundierung ist.
2. Verfahren nach Anspruch 1, umfassend jeweilige Trocknungsschritte nach Aufbringen der ersten Grundierung, und/oder nach Aufbringen des Abziehbildes und/oder nach Aufbringen der zweiten Grundierung und/oder nach Aufbringen der Endlackierung.
3. Verfahren nach einem der vorhergehenden Ansprüche, wobei vor dem Schritt des Aufbringens der ersten Grundierung die zu dekorierende Oberfläche (3) durch Passivierung mit einem Schleifmittel und/oder durch Waschen mit Detergenzien und/oder Fettlösern vorbehandelt wird.
4. Verfahren nach einem der vorhergehenden Ansprü-

che, umfassend, nach dem Schritt des Aufbringens der Endlackierung, einen abschließenden Schritt des Polierens der dekorierten und lackierten Oberfläche (3).

5. Verfahren nach einem der vorhergehenden Ansprüche, wobei die zu dekorierende Oberfläche (3) aus Metallblech, rostfreiem Stahl, Aluminium oder ABS besteht und gegebenenfalls lackiert ist.
6. Verfahren nach einem der vorhergehenden Ansprüche, umfassend einen Schritt des Behandeln der Oberfläche (3) mit einem Schleifmittel nach Aufbringen der ersten Grundierung und vor Aufbringen des Abziehbildes (8) und/oder nach Aufbringen des Abziehbildes (8) und vor Aufbringen der Endlackierung.
7. Verfahren nach einem der vorhergehenden Ansprüche, wobei in dem Schritt des Herstellens des Abziehbildes (8) das graphische Muster (2) auf eine Trägerfolie (7) unter Verwendung einer Mischtechnik aus Offsetdruck und Siebdruck gedruckt wird.
8. Verfahren nach Anspruch 7, wobei das grafische Muster (2) in einer Mehrzahl von Druckstufen mit jeweiligen Farben oder Gruppen von Farben gedruckt wird, umfassend sowohl Offsetdruckstufen als auch Siebdruckstufen.
9. Verfahren nach Anspruch 8, wobei das grafische Muster (2) in einer oder mehreren vierfarbigen Offsetdruckstufen und einer Mehrzahl von einfarbigen Siebdruckstufen mit jeweiligen Farben gedruckt wird.
10. Verfahren nach einem der vorhergehenden Ansprüche, umfassend die Schritte des Erfassens des grafischen Musters (2) von einer Vorlage in digitaler Form unter Verwendung hochauflösender Digitalfotografie oder eines anderen ähnlichen Abtastverfahrens und Zerlegen des erfassten grafischen Musters in eine Mehrzahl von zweidimensionalen Teilen (6), die den jeweiligen Oberflächenabschnitten der zu dekorierenden Oberfläche (3) entsprechen und die dann auf einen Trägerfilm (7) gedruckt werden, um das Abziehbild (8) herzustellen.
11. Verfahren nach einem der vorhergehenden Ansprüche, wobei das Abziehbild (8) auf die zu dekorierende Oberfläche (3) durch feuchte Abziehbild-Technik aufgebracht wird.
12. Verfahren nach einem der vorhergehenden Ansprüche, wobei die erste Grundierung mindestens ein modifiziertes Polyesterharz oder mindestens ein hydroxyliertes Acrylharz umfasst.
13. Verfahren nach einem der vorhergehenden Ansprü-

che, wobei die erste Grundierung in einer Menge, um eine im Wesentlichen homogene Schicht mit einer Dicke im Bereich zwischen etwa 10 und etwa 40 Mikron zu bilden; und/oder in einer Menge im Bereich zwischen etwa 10 und etwa 50 g/m<sup>2</sup>, insbesondere zwischen etwa 20 und etwa 40 g/m<sup>2</sup>, aufgebracht wird.

14. Verfahren nach einem der vorhergehenden Ansprüche, wobei die zweite Grundierung mindestens ein Acrylharz und/oder mindestens ein modifiziertes Acrylharz umfasst.
15. Verfahren nach einem der vorhergehenden Ansprüche, wobei die zweite Grundierung in einer Menge, um eine im Wesentlichen homogene Schicht mit einer Dicke im Bereich zwischen etwa 10 und etwa 40 Mikron zu bilden; und/oder in einer Menge im Bereich zwischen etwa 10 und etwa 50 g/m<sup>2</sup>, insbesondere zwischen etwa 20 und etwa 40 g/m<sup>2</sup>, aufgebracht wird.
16. Verfahren nach einem der vorhergehenden Ansprüche, wobei die Endlackierung eine Acryllackierung ist.
17. Verfahren nach einem der vorhergehenden Ansprüche, wobei die Endlackierung in einer Menge, um eine im Wesentlichen homogene Schicht mit einer Dicke im Bereich zwischen etwa 30 und etwa 50 Mikron, zum Beispiel von etwa 40 Mikron, zu bilden, aufgebracht wird.

#### Revendications

1. Procédé pour décorer des surfaces externes de boîtiers ou de corps, constitués d'un matériau métallique ou d'un matériau polymère, d'appareils ménagers, comprenant les étapes suivantes : la réalisation d'un décalque (8) comportant un motif graphique (2) à transférer sur une surface externe (3) d'un boîtier ou d'un corps, constitué d'un matériau métallique ou d'un matériau polymère, d'un appareil ménager (1) à décorer ; le transfert du motif graphique (2) sur la surface de l'appareil ménager (1) par une technique de décalcomanie comprenant, en succession, les étapes suivantes : l'application d'un premier apprêt sur la surface (3) ; l'application du décalque (8) sur la surface (3) comportant le premier apprêt et le transfert du motif graphique (2) depuis le décalque (8) à la surface (3) ; l'application d'un second apprêt sur la surface (3) décorée avec le motif graphique (2) transféré depuis le décalque (8) ; l'application d'une peinture de finition transparente sur la surface décorée (3) ; dans lequel le premier apprêt est un apprêt à base de polyester ou d'acrylique ; et le second apprêt est un apprêt à base

d'acrylique.

2. Procédé selon la revendication 1, comprenant des étapes respectives de séchage après l'application du premier apprêt et/ou après l'application du décalque, et/ou après l'application du second apprêt, et/ou après l'application de la peinture de finition.
3. Procédé selon l'une des revendications précédentes, dans lequel, avant l'étape de l'application du premier apprêt, la surface (3) à décorer est prétraitée par passivation avec un abrasif et/ou par lavage avec des détergents et/ou des dégraissants.
4. Procédé selon l'une des revendications précédentes, comprenant, après l'étape de l'application de la peinture de finition, une étape finale de polissage de la surface décorée et peinte (3).
5. Procédé selon l'une des revendications précédentes, dans lequel la surface (3) à décorer est constituée de feuille métallique, acier inoxydable, aluminium, ou ABS, et est facultativement peinte.
6. Procédé selon l'une des revendications précédentes, comprenant une étape de traitement de la surface (3) avec un abrasif après l'application du premier apprêt et avant l'application du décalque (8) ; et/ou après l'application du décalque (8) et avant l'application de la peinture de finition.
7. Procédé selon l'une des revendications précédentes, dans lequel, à l'étape de la réalisation du décalque (8), le motif graphique (2) est imprimé sur un film de support (7) en utilisant une technique mixte d'impression offset et de sérigraphie.
8. Procédé selon la revendication 7, dans lequel le motif graphique (2) est imprimé dans une pluralité d'étages d'impression avec des couleurs respectives ou des groupes respectifs de couleurs, comprenant à la fois des étages d'impression offset et des étages de sérigraphie.
9. Procédé selon la revendication 8, dans lequel le motif graphique (2) est imprimé dans un ou plusieurs étages d'impression offset à quatre couleurs et une pluralité d'étages d'impression de sérigraphie monochromatique avec des couleurs respectives.
10. Procédé selon l'une des revendications précédentes, comprenant les étapes de l'acquisition, sous forme numérique, du motif graphique (2) à partir d'un original, en utilisant une méthode de photographie numérique à haute résolution ou une autre méthode de balayage similaire ; et la résolution du motif graphique acquis en une pluralité de parties bidimensionnelles (6), correspondant à des parties de sur-



face respectives de la surface (3) à décorer et qui sont ensuite imprimées sur un film de support (7) pour réaliser le décalque (8).

11. Procédé selon l'une des revendications précédentes, dans lequel le décalque (8) est appliqué sur la surface (3) à décorer par une technique de décalcomanie humide. 5
12. Procédé selon l'une des revendications précédentes, dans lequel le premier apprêt comprend au moins une résine de polyester modifiée ou au moins une résine acrylique hydroxylée. 10
13. Procédé selon l'une des revendications précédentes, dans lequel le premier apprêt est appliqué dans une quantité de manière à former une couche sensiblement homogène présentant une épaisseur dans une plage entre environ 10 et environ 40 microns ; et/ou dans une quantité dans une plage entre environ 10 et environ 50 m/g<sup>2</sup>, en particulier entre environ 20 et environ 40 g/m<sup>2</sup>. 15 20
14. Procédé selon l'une des revendications précédentes, dans lequel le second apprêt comprend au moins une résine acrylique et/ou au moins une résine acrylique modifiée. 25
15. Procédé selon l'une des revendications précédentes, dans lequel le second apprêt est appliqué dans une quantité de manière à former une couche sensiblement homogène présentant une épaisseur dans une plage entre environ 10 et environ 40 microns ; et/ou dans une quantité dans une plage entre environ 10 et environ 50 m/g<sup>2</sup>, en particulier entre environ 20 et environ 40 g/m<sup>2</sup>. 30 35
16. Procédé selon l'une des revendications précédentes, dans lequel la peinture de finition est une peinture acrylique. 40
17. Procédé selon l'une des revendications précédentes, dans lequel la peinture de finition est appliquée dans une quantité de manière à former une couche sensiblement homogène présentant une épaisseur dans une plage entre environ 30 et environ 50 microns, par exemple d'environ 40 microns. 45

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**REFERENCES CITED IN THE DESCRIPTION**

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