CLEANING IMPLEMENT COMPRISING A LAYER OF MELAMINE FOAM

Inventors: Gary Ashe, Buffalo, NY (US); Alan Scott Goldstein, Blue Ash, OH (US)

Correspondence Address:
THE PROCTER & GAMBLE COMPANY
INTELLECTUAL PROPERTY DIVISION
WINTON HILL TECHNICAL CENTER - BOX 161
6110 CENTER HILL AVENUE
CINCINNATI, OH 45224 (US)

Assignee: The Procter & Gamble Company

A cleaning implement comprising a layer of melamine foam, having a thickness of at least 15 mm, and a layer of a second foam having a water-absorbency of at least 0.35 g of water per cm² of said second foam.
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CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of the filing date U.S. Provisional Application Ser. No. 60/587,070 filed Jul. 12, 2004, the disclosure of which is incorporated by reference herein.

TECHNICAL FIELD

[0002] The present invention relates to a cleaning implement comprising a layer of melamine foam and a layer of a second foam.

BACKGROUND OF THE INVENTION

[0003] Melamine-formaldehyde resin foams, also referred to herein as melamine foams, are well known in the art for use in industrial applications, for example, as heat or sound insulating materials as well as for fire protection purposes. Indeed, in the automotive industry, melamine foam is commonly used to insulate motor compartments and driver cabins of cars and trucks.

[0004] Recently, a novel application for such melamine foams in the area of hard surface cleaning has been discovered. Indeed, cleaning implements of cut or molded pieces of melamine foam have become popular to remove soils and/or stains from hard surfaces (i.e., cleaning of hard surfaces) such as tiles, walls, floors, sanitary fittings such as sinks, showers, shower curtains, wash basins, WCs, household appliances including, but not limited to, refrigerators, freezers, washing machines, automatic dryers, ovens, microwave ovens, dishwashers and so on. Indeed, melamine foam sponges are currently marketed under the tradename Mr. Clean Magic Eraser®. In order to stabilise the melamine foam and to prevent early break-up of it, sponges combining melamine foam and a stabilising material, such as a rigid polyurethane have been proposed and marketed (sold under the tradename Scotch Brite Easy Erasing Pad® by 3M Corp.). Melamine foam pieces combined with or laminated to a second material are known in the art, for example, from U.S. 2001/0024720 or JP 2001-258809.

[0005] It is has been observed that melamine foam shows an excellent soil and/or stain removal performance when used to clean hard surfaces. Indeed, it has been observed that melamine foam when wetted with an appropriate solvent, such as tap water, removes soils and/or stains from a hard surface when said hard surface is brought into contacted with said wetted melamine foam. By “bringing into contact” it is meant wiping, wiping, rubbing or the like. In order for the melamine foam to optimally remove soils and/or stains from hard surfaces substantial amounts of an appropriate solvent, such as tap water, have to be used. Most commonly, tap water is used by the users of melamine foam when removing soils and/or stains from hard surfaces. When used with water or any other appropriate solvent, the melamine foam comes off as small particles (meaning, the foam crumbles) when brought into contact with a hard surface. Indeed, a milky suspension of small melamine foam particles in water is formed.

[0006] It has been discovered by consumer research that users of melamine foams, when removing soils and/or stains from hard surfaces, are looking for a way to absorb excessive amounts of water that have been used as well as the milky suspension of small melamine foam particles in water. Although the melamine foam itself is capable of absorbing water and/or milky melamine-water suspension, the absorbance of water and/or milky melamine-water suspension by the melamine foam is regarded as not sufficient by the users. The same applies to the currently marketed sponges combining melamine foam and a stabilising material, as the stabilising material therein alone or in combination with the melamine foam is not capable of absorbing sufficient amounts of water and/or milky melamine-water suspension. Furthermore, it is inconvenient for a user of melamine foams, when removing soils and/or stains from hard surfaces, to use a separate absorbent utensil, like an absorbent paper towel, a sponge or a cloth, in addition to the melamine foam to absorb excessive amounts of water that has been used as well as the formed milky melamine-water suspension.

[0007] It is therefore, an objective of the present invention to provide a cleaning implement based on a melamine foam, wherein said implement is capable of absorbing excessive amounts of water (or another appropriate solvent) that have been used as well as the milky melamine-water suspension (i.e., milky suspension of small melamine foam particles in water (solvent)) generated upon use.

[0008] It has now been found that the above objective can be met by a cleaning implement comprising a layer of melamine foam, having a thickness of at least 15 mm, and a layer of a second foam having a water-absorbency of at least 0.35 g of water per cm² of said second foam.

[0009] Advantageously, having a thickness of at least 15 mm of the layer of melamine foam in the cleaning implement of the present invention, the amount of melamine foam provided is sufficient material for an acceptable number of cleaning operations (i.e., the removal of soils and/or stains from hard surfaces).

[0010] Another advantage of the cleaning implement herein is that the second foam not only absorbs the excessive amounts of water that have been used as well as the milky melamine-water suspension but also provides stability to the cleaning implement. Indeed, it has been found that non-stabilised melamine foam is prone to breakage or puncturing when used to remove soils and/or stains from hard surfaces due to its relative fragility as well as the user’s uneven pressure when bringing it into contact with the hard surfaces to be cleaned.

SUMMARY OF THE INVENTION

[0011] The present invention encompasses a cleaning implement comprising a layer of melamine foam, having a thickness of at least 15 mm, and a layer of a second foam having a water-absorbency of at least 0.35 g of water per cm² of said second foam.

[0012] The present invention further encompasses a cleaning implement comprising a layer of melamine foam, having a thickness of at least 15 mm, and a layer of a second foam, wherein the layers are joined together by foam flame lamination.

[0013] The present invention further encompasses a method of cleaning a hard surface by bringing a cleaning
implement according to the present invention into contact with said hard surface, preferably wherein said cleaning implement has been wetted with an appropriate solvent (tap water) prior to bringing said cleaning implement into contact with said hard surface.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a cleaning implement according to the present invention.

FIG. 2 is a top view thereof.

FIG. 3 is a bottom view thereof.

FIG. 4 is a side elevation view thereof (the opposite side view being the same).

FIG. 5 is an end view thereof (the opposite side view being the same).

FIG. 6 is a perspective view of a cleaning implement according to the present invention featuring the Mr. Clean® Head logo.

DESCRIPTION OF THE REFERENCE NUMERALS

1: Cleaning implement

2: Melamine foam layer

3: Layer of a second foam having a water-absorbency of at least 0.35 g of water per cm² of said second foam

4: Line indicating the separation of the melamine foam layer and said second foam.

5: Mr. Clean® Head logo.

DETAILED DESCRIPTION OF THE INVENTION

Cleaning Implement

The cleaning implement (1) herein comprises at least two separate layers. A first layer of melamine foam (2), having a thickness of at least 15 mm, and a second layer of a second foam (3) having a water-absorbency of at least 0.35 g of water per cm² of said second foam.

By a “cleaning implement” it is meant herein an article of manufacture of any suitable shape and/or size and/or volume suitable for cleaning, i.e., removing spots and/or stains from hard surfaces. In a highly preferred embodiment according to the present invention, the cleaning implement herein is in a shape and/or size and/or volume suitable for use by a consumer to clean hard surfaces therewith.

The layers of melamine foam and second foam may be arranged in said cleaning implement in any way suitable. In a preferred embodiment the layers of melamine foam and second foam are arranged parallel to at least one side, preferably two opposite sides, of the cleaning implement. However, the cleaning implement may also have an irregular shape. Indeed, the thickness of the layers may be constant or vary throughout the cleaning implement. The separation line (4) between the two layers may form a straight line or may form a bend or be completely irregular. In addition, the separation plane of the layers may be in the center of cleaning implement, dividing the implement in two equal parts, or may be in the upper or lower part of the implement. In addition, the cleaning implement may be in the shape of a sphere or a globule or an ellipsoid with the separation plane of the layers forming a spherical segment or one of the layers, preferably the layer of a second foam here, forming a sphere in a sphere (similar to the layers of an onion).

Suitable shapes of the cleaning implements herein may be selected from the group consisting of: cube shape, rectangular shape, pyramid shape, cylindrical shape, cone shape, pencil eraser shape, cuboid shape, tetrahedron shape; sphere shape; globular shape; and ellipsoid shape. Preferably, said cleaning implement has a shape selected from the group consisting of: cube shape, rectangular shape, pencil eraser shape, and cuboid shape.

Suitable volumes of the cleaning implements herein may be from 1 cm³ to 10,000 cm³, preferably from 10 cm³ to 1,000 cm³, more preferably from 150 cm³ to 250 cm³.

In a highly preferred embodiment herein, the cleaning implement (1) herein has a cuboid shape defined by three groups of parallel and equal length sides, referred to as a, b and c, wherein a ranges from 2 cm to 20 cm, preferably 4 cm to 8 cm, b ranges from 2 cm to 20 cm preferably 8 cm to 15 cm, and c ranges from 1.5 cm to 5 cm, preferably 2 cm to 4 cm.

In this highly preferred embodiment, wherein the cleaning implement (1) herein has a cuboid shape, the line indicating the separation (4) of the two layers (or the surface areas where the two layers are joined together) of the implement is preferably substantially parallel (preferably parallel) to the side of the cuboid shaped implement having the largest surface area (as shown in FIGS. 1-5).

In another highly preferred embodiment herein the cleaning implement herein is in the shape of a pencil eraser. By “shape of a pencil eraser” it is meant herein a voluminous body having six walls, wherein three pairs of parallel and equally shaped and sized walls exist and wherein one pair of walls are in the shape of a parallelogram and the remaining two pairs of walls are of rectangular shape. In this preferred embodiment, wherein the cleaning implement herein has the shape of a pencil eraser, the line indicating the separation of the two layers (or the surface areas where the two layers are joined together) of the implement is preferably substantially parallel (preferably parallel) to the side of implement in the shape of a pencil eraser having the largest surface area.

In order to obtain suitable cleaning implements according to the present invention, the melamine foam layer and the second layer of a second foam having a water-absorbency of at least 0.35 g of water per cm² of said second foam have to be attached to each other. This attachment can be achieved by any attachment means suitable for joining the two layers. The attachment may be either a permanent attachment (wherein the two layers cannot be separated without inflicting substantial damage to the layers) or temporary attachment (wherein the two layers may be separated without inflicting substantial damage to the layers). Suitable attachment means providing a permanent attachment are selected from the group consisting of: foam flame laminating the two layers together; use of a permanent adhesive; sewing the two layers together; and needle-punching the two
layers together; and combinations thereof. Suitable attachment means providing a temporary attachment are selected from the group consisting of: a weak adhesive; Velcro; and a water-based, water-soluble coating or adhesive; and combinations thereof.

In a preferred embodiment here, the attachment of layers herein is a permanent attachment. Even more preferably, the layers are joined together by foam flame lamination.

Foam flame lamination is a continuous process that can adhere foams and additional materials, if any, to one or both sides of a foam in a single pass. The process of flame lamination involves the passing of a first foam (either the melamine foam herein or the second foam herein) over an open flame, which creates a thin layer of molten foam/polymer. A second foam (either the second foam herein or the melamine foam herein, depending on the first step) is pressed against the first foam while it is still in the molten state. Foams and additional material, if any, can be adhered to one or both sides of the foam in a single pass. Furthermore, additional passes are optional. The strength of the bond depends upon the foams and additional material, if any, selected and the processing conditions (i.e., gas type, flame height and spread, foam burn-off and nip pressure).

Indeed, it has been found that the cleaning implement according to the present invention wherein the melamine foam layer and the layer of a second foam having a water-absorbency of at least 0.35 g of water per cm² of said second foam are joined together by foam flame lamination as compared to the use of an adhesive, show no hard bond line from the adhesive at the interface between the two layers. Furthermore, no additional chemicals (such as adhesives) are added to the cleaning implement, which may redeposit on the hard surface to be cleaned when the melamine foam layer has worn off.

In view thereof, the present invention further encompasses as an independent embodiment a cleaning implement (1) comprising a layer of melamine foam (2), having a thickness of at least 15 mm, and a layer of a second foam (2), wherein the layers are joined together by foam flame lamination.

The cleaning implement according to the present invention comprises at least two separate layers as described herein. The cleaning implement may contain more than two layers, wherein said additional layers, if any, may be of the same or similar materials as the melamine foam or said second foam, or may be made of another material having similar properties as said second foam or different properties therefrom. Indeed, the cleaning implement herein may be in a so-called sandwich configuration, wherein three layers are present. In a preferred embodiment, wherein the cleaning implement herein is in a sandwich configuration, the middle layer may be said second foam and at least one of the two outer layers is a melamine foam with the second outer layer being either a melamine foam or another material providing other feature, such as abrasiveness or increased rigidity.

The layers of the cleaning implement according to the present invention may cover each other either partially or fully. By a “partial coverage” it is meant that at least one of the layers overlaps the other layer (or other layers, if any) and is not fully covered by said other layer (or other layers, if any). By a “full coverage” it is meant that the layers of the cleaning implement do fully cover each other and that none of the layers substantially overlap the other layer (or other layers, if any).

The ratio of said melamine foam to said second foam in the cleaning implement according to the present invention is preferably from 20:1 to 1:20 by volume, more preferable from 10:1 to 1:10 by volume, even more preferably 5:1 to 1:1, still more preferably 5:1 to 2:1, and most preferably from 4:1 to 3:1 by volume.

In order to obtain suitable cleaning implements according to the present invention, the melamine foam- and second foam-raw materials may have to be modified in shape and/or size. This modification can be done by any means known to those skilled in the art. Suitable means of modifying the shape and/or size of melamine foam- and second foam-raw materials may be selected from the group consisting of: compression, heat-compression, cutting, breaking, and tearing, and combinations thereof.

The cleaning implement herein may be modified or post-processed. In particular, such modification and/or post-processing of the cleaning implement may be used to associate a brand-name and/or logo of a hard surface cleaner with said cleaning implement. Suitable modification and/or post-processing of the cleaning implement may be printing on one or several sides of said cleaning implement, and/or embossing of one or several sides of said cleaning implement using heat and/or pressure, and combinations thereof. A cleaning implement modified in order to associate a logo of a hard surface cleaner (Mr. Clean® head logo) with said cleaning implement is shown in FIG. 6, wherein said logo of a hard surface cleaner (Mr. Clean® head logo (5)) has been embossed or printed onto said second foam.

Melamine Foam

The cleaning implement (1) herein comprises a layer of melamine foam (2), having a thickness of at least 15 mm.

By “melamine foam” it is meant herein a melamine-formaldehyde resin foam. By “thickness” it is meant herein, the length in mm of the side having the smallest extension compared to other sides of the melamine foam layer (the height of the melamine foam layer). In case the cleaning implement is based on a rectangular shape and the melamine foam layer extends in parallel to the sides of the shape having the largest surface area (extensions in the x and y axis), the thickness can be referred to as the extension in the direction of the y axis. In case the cleaning implement is based on an irregular shape and/or the extension of the thickness of the melamine foam layer varies (i.e., the layer is thicker in some parts of the implement as compared to others), it is sufficient that at least once the thickness of the melamine foam layer extends over the thickness required herein.

The thickness of the melamine foam layer herein is at least 15 mm, preferably from 15 mm to 100 mm, more preferably from 17 mm to 50 mm, even more preferably from 20 mm to 40 mm, and most preferably from 21 mm to 25 mm.

The total volume of said layer of melamine foam in the cleaning implement herein is preferably from 50 cm³ to
400 cm$^3$, more preferably from 80 cm$^3$ to 300 cm$^3$, even more preferably from 150 cm$^3$ to 275 cm$^3$, and most preferably from 200 cm$^3$ to 250 cm$^3$.

[0047] A suitable melamine-formaldehyde resin foam raw material is commercially available under the trade name Basotect® from BASF.

[0048] The “melamine foam” described above can be prepared by blending major starting materials of melamine and formaldehyde, or a precursor thereof, with a blowing agent, a catalyst and an emulsifier, injecting the resultant mixture into a mold, and making the reaction mixture generate heat through a proper means such as heating or irradiation with electromagnetic wave to cause foaming and curing. The molar ratio of melamine to formaldehyde (i.e., melamine:formaldehyde) for producing the precursor is preferably 1:1.5 to 1:4, particularly preferably 1:2 to 1:3.5 in melamine:formaldehyde. In addition, number average molecular weight of the precursor is preferably 200 to 1,000, particularly preferably 200 to 400. Additionally, formalin, which is an aqueous solution of formaldehyde, is usually used as formaldehyde.

[0049] As monomers for producing the precursor, the following various monomers may be used in an amount of 50 parts by weight (hereinafter abbreviated as “parts”) or less, particularly 20 parts by weight or less, per 100 parts by weight of the sum of melamine and formaldehyde in addition to melamine and formaldehyde. As other monomers corresponding to melamine, there may be used C1-5 alkyl substituted melamines such as methylmelamine, methylmethylolmelamine and methylbutylolmelamine, urea, urethane, carbonic acid amides, dicyandiamide, guanidine, sulfurylamides, sulphonlic acid amides, aliphatic amines, phenols and the derivatives thereof. As aldehydes, there may be used acetaldehyde, trimethylacetaldehyde, acrolein, benzaldehyde, furfural, glyoxal, pthalaldehyde, terephthalaldehyde, etc.

[0050] As the blowing agent, there may be used pentane, trichlorofluoromethane, trichlorotrifluoroethane, etc. However, use of so-called freons® such as trichlorofluoromethane is regulated from the point of view of environmental problems, thus not being preferred. On the other hand, pentane is preferred in that it easily provides a foam when used even in a small amount but, since it has a volatile flammability, it requires sufficient care in its handling. Further, as the catalyst, formic acid is commonly used and, as the emulsifier, anionic surfactants such as sodium sulfonate may be used.

[0051] The amount of the electromagnetic wave to be irradiated for accelerating the curing reaction of the reaction mixtures is preferably adjusted to be 500 to 1,000 kW, particularly 600 to 800 kW, in electric power consumption based on 1 kg of an aqueous formaldehyde solution charged in the mold. In case when this electric power consumption is insufficient, there results an insufficient foaming, leading to production of a cured product with a high density. On the other hand, in case when the electric power consumption is excessive, the pressure upon foaming becomes seriously high, leading to serious exhaustion of the mold and even the possibility of explosion. Thus, electric power consumption outside the range is not preferred.

Second Foam

[0052] The cleaning implement (1) herein also comprises a layer of a second foam (3) having a water-absorbency of at least 0.35 g of water per cm$^2$ of said second foam.

[0053] Preferably, said second foam has a water-absorbency of at least 0.4 g, more preferably at least 0.45 g, even more preferably at least 0.5 g, still more preferably at least 0.55 g and most preferably at least 0.575 g of water per cm$^2$ of said second foam.

[0054] The total water absorbency of the layer of a second foam is preferably at least 10 g of water, preferably at least 11 g of water, more preferably at least 13 g of water and most preferably at least 15 g of water.

[0055] Any foam material suitable to provide the water-absorbency required herein may be used as said second foam.

[0056] Suitable second foams for use herein are selected from the group of foams having the required water-absorbency and consisting of: polyurethane foams; polypropylene foams; polyethylene foams; cellulose foam sponges; naturally occurring sponges; open-cell polyester foams; and cross-linked polyethylene foams; and combinations thereof.

[0057] In a preferred embodiment herein, the second foam is a polyurethane foam having a water-absorbency of at least 0.35 g of water per cm$^2$ of said second foam. Polyurethane foams are generally prepared by the reaction of an active hydrogen-containing compound (i.e., a polyol) and a polyisocyanate, in the presence of a blowing agent such as water, and usually a reaction catalyst and foam stabilizer.

[0058] In a highly preferred embodiment herein, the second foam is a hydrophilic ester polyurethane foam. A suitable hydrophilic ester polyurethane foam is commercially available under the tradename Celulux® from Foamex I.P. Hydrophilic ester polyurethane foams and their preparation is described in U.S. Pat. No. 6,756,416. Such hydrophilic ester polyurethane foam does not swell appreciably upon absorbing and retaining liquids. By a “hydrophilic ester polyurethane foam” it is meant a ester polyurethane foam capable of absorbing liquids, such as water, in sufficient amounts.

[0059] The preparation of hydrophilic ester polyurethane foam as described in U.S. Pat. No. 6,756,416 is by: a) forming a polyurethane foam by mixing together the following components: 100 parts by weight of an ester polyol; from 20.0 to 62.0 parts by weight, based on 100 parts polyol, of an isocyanate, wherein the isocyanate index is 110 or less; and from 1.0 to 3.0 parts by weight, based on 100 parts polyol, of a stabilizing surfactant; and b) treating the polyurethane foam in a caustic bath to form the hydrophilic ester polyurethane foam. The hydrophilic ester polyurethane foams described in U.S. Pat. No. 6,756,416 have a water absorption rate of at least 0.32 g of water per cm$^2$ of foam (20 pounds of water per square foot).

[0060] The water-absorbency by cm$^2$ of a foam material can be measured by: The dimensions (length x width x height), of a sample of the foam material is measured in “cm” to determine the volume (cm$^3$) of material used for the test. The initial weight of the sample is measured and recorded in grams. The sample is submerged in water and then is squeezed out by hand until no additional water drips
out. The sample is then weighed again and the weight is recorded (grams). This weight is considered the tare weight. The sample is then allowed to soak in a tub of water for 1 minute. The sample is removed from the tub after 1 minute, and hung vertically to allow excess water to drip for 5 minutes. The sample is then weighed and recorded in grams (wet sample weight). The sample is squeezed out by hand and weighed until tare weight is achieved. For each sample the steps of soaking, dripping off, weighing and squeezing are repeated three times. For each foam material the above measurements are repeated with at least 12 samples. For each sample the total amount of water absorbed is calculated by subtracting the tare weight from wet sample weight. To calculate the water-absorbency by cm\(^2\) of a sample the total amount of water absorbed in grams, is divided by the total volume of the sample. To calculate the water-absorbency by cm\(^2\) of a foam material the calculated water-absorbency by cm\(^2\) of each of its samples is averaged.

[0061] The total water-absorbency a foam layer can be measured by: Dimensions (length\times width\times height), of the foam layer is measured in “cm\(^3\)” to determine the volume (cm\(^3\)) of material used for the test. The initial weight of the foam layer is measured and recorded in grams. The foam layer is submerged in water and then is squeezed out by hand until no additional water drips out. The foam layer is then weighed again and the weight is recorded (grams). This weight is considered the tare weight. The foam layer is then allowed to soak in a tub of water for 1 minute. The foam layer is removed from the tub after 1 minute, and hung vertically to allow excess water to drip for 5 minutes. The foam layer is then weighed and recorded in grams (wet foam layer weight). The foam layer is squeezed out by hand and weighed until tare weight is achieved. For each foam layer the steps of soaking, dripping off, weighing and squeezing are repeated three times. For each foam layer the above measurements are repeated with at least 12 samples. For each foam layer the total amount of water absorbed is calculated by subtracting the tare weight from wet sample weight and the results are averaged for the described repetitions.

[0062] The above measurements are performed at room temperature and normal humidity conditions and the measurements are performed with normal tap water.

[0063] The thickness of said layer of a second foam is preferably up to 30 mm, preferably from 0.5 mm to 20 mm, more preferably from 1 mm to 15 mm, even more preferably from 2 mm to 10 mm, and most preferably from 4 mm to 8 mm.

[0064] The total volume of said layer of a second foam having a water-absorbency of at least 0.35 g of water per cm\(^3\) of said second foam in the cleaning implement herein preferably from 10 cm\(^3\) to 100 cm\(^3\), more preferably from 20 cm\(^3\) to 70 cm\(^3\), even more preferably from 30 cm\(^3\) to 60 cm\(^3\), and most preferably from 40 cm\(^3\) to 50 cm\(^3\).

[0065] In a preferred embodiment, said a layer of a second foam having a water-absorbency of at least 0.35 g of water per cm\(^3\) of said second foam is made of a material other than melamine foam.

Additional Material

[0066] The cleaning implement may contain more than two layers, wherein said additional layers, if, any, may be of a material (additional material) other than said melamine foam and said second foam. The additional material may be suitable to provide beneficial features to the cleaning implement, such as abrasiveness or increased rigidity or increased grip.

[0067] In view thereof, said additional material may be a scouring material or a scouring pad, a rigid foam material, a handle made of thermoplastic material, wood, metal or combinations thereof, and the like.

Packaging Means

[0068] The cleaning implement herein may be combined in an article of manufacture with a packaging means.

[0069] The packaging means herein may be any suitable means known to package cleaning implements. Indeed, particularly suitable packaging means herein are selected from the group consisting of: paper bags, plastic bags, cartons, carton boxes, flow wraps, plastic wraps, and paper wraps, and the like and combinations thereof.

[0070] The packaging means herein may be printed and/or modified. In particular, such printing and/or other modifications may be used to associate a brand-name and/or logo of a hard surface cleaner with said cleaning implement.

Method of Cleaning a Hard Surface

[0071] In another embodiment the present invention encompasses a method of cleaning a hard surface by bringing a cleaning implement according to the present invention into contact with said hard surface. By “cleaning” it is meant herein removing spots and/or stains from hard surfaces.

[0072] Suitable hard surfaces herein are tiles, walls, floors, sanitary fittings such as sinks, showers, shower curtains, wash basins, WCs, household appliances including, but not limited to, refrigerators, freezers, washing machines, automatic dryers, ovens, microwave ovens, dishwashers and so on.

[0073] The method of cleaning a hard surface according to the present invention may additionally include the step of wetting said cleaning implement with an appropriate solvent, preferably tap water, prior to bringing said cleaning implement into contact with said hard surface.

[0074] While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

1. A cleaning implement (1) comprising a layer of melamine foam (2), having a thickness of at least 15 mm, and a layer of a second foam (3) having a water-absorbency of at least 0.35 g of water per cm\(^3\) of said second foam.

2. The cleaning implement (1) of claim 1, having a shape selected from: cube shape, rectangular shape, pyramid shape, cylindrical shape, cone shape, pencil eraser shape, cuboid shape, and tetrahedron shape.

3. The cleaning implement (1) of claim 1, having a volume of from 1 cm\(^3\) to 10,000 cm\(^3\).
4. The cleaning implement (1) of claim 1, wherein said layer of melamine foam (2) and said layer of a second foam (3) are joined by means of a permanent attachment or a temporary attachment.

5. The cleaning implement (1) of claim 1, wherein said layer of melamine foam (2) and said layer of a second foam (3) are joined by an attachment means providing a permanent attachment selected from: foam flame laminating the two layers together; use of a permanent adhesive; sewing the two layers together; and needle-punching the two layers together; and combinations thereof.

6. The cleaning implement (1) of claim 5, wherein said layers are joined together by foam flame lamination.

7. The cleaning implement (1) of claim 1, wherein the ratio of said melamine foam (2) to said second foam is from 20:1 to 1:20 by volume.

8. The cleaning implement (1) of claim 1, wherein the thickness of the melamine foam (2) layer is from 15 mm to 100 mm.

9. The cleaning implement (1) of claim 1, wherein said melamine foam (2) is a melamine-formaldehyde resin foam.

10. The cleaning implement (1) of claim 1, wherein said second foam (3) has a water-absorbency of at least 0.4 g of water per cm² of said second foam.

11. The cleaning implement (1) of claim 1, wherein said second foam (3) is selected from the group of foams having a water-absorbency of at least 0.35 g of water per cm² of said second foam and consisting of: polyurethane foams; polypropylene foams; polyethylene foams; cellulose foam sponges; naturally occurring sponges; open-cell polyester foams; and cross-lined polyethylene foams; and combinations thereof.

12. The cleaning implement (1) of claim 11, wherein said second foam (3) is a polyurethane foam having a water-absorbency of at least 0.35 g of water per cm² of said second foam.

13. The cleaning implement (1) of claim 11, wherein said second foam is a hydrophilic ester polyurethane foam.

14. The cleaning implement (1) of claim 1, wherein said layer of a second foam (3) has a total water absorbency of at least 10 g of water.

15. A cleaning implement (1) comprising a layer of melamine foam (2), having a thickness of at least 15 mm, and a layer of a second foam (3), wherein the layers are joined together by foam flame lamination.

16. A method of cleaning a hard surface comprising bringing a cleaning implement according to claim 1, into contact with said hard surface.

17. The method of cleaning a hard surface of claim 16, wherein said method additionally comprises wetting said cleaning implement (1) with an appropriate solvent prior to bringing said cleaning implement into contact with said hard surface.

18. The method of cleaning a hard surface of claim 17, wherein said appropriate solvent comprises water.