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(54) Title: IMPROVEMENTS IN OR RELATING TO PACKAGING

(57) Abstract

An epilatory wax container or a device, for example an applicator, for use in conjunction with said container includes a thermochromic material. The colour change of the thermochromic material provides an indication that the wax in the container is at an appropriate temperature for application to the body.

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Improvements in or Relating to Packaging

The present invention relates to the removal of unwanted hair from the body and, in particular, to the removal of unwanted hair from the human body by means of a wax composition.

Various methods of hair removal are known. For example, the hair can be shaved from the body or can be removed by the use of tweezers or other instruments which pluck the hairs from the skin, such as devices including bent rotating coil springs and the like. In addition, chemical depilatory preparations and waxes have been formulated for the purpose of hair removal. Conventional depilatory preparations, often containing sulphide chemicals, act by weakening the structure of the hair to such an extent that scraping the cream off the skin breaks the hair at skin level and thus removes it. Alternatively, waxes can be applied to the skin which can then be peeled away with the hairs embedded therein.

Each of these methods has attendant disadvantages. Shaving brings only temporary alleviation since the roots of the hair are still present and the hair will grow again after a very short period. Also, there is the danger of cutting the skin on shaving. Chemical depilatory preparations tend to have an unpleasant smell and the use of waxes and coil spring devices can cause some discomfort.

Currently, waxes are increasing in popularity. Epilatory waxes tend to be supplied as generally solid materials which are melted prior to use. The molten material is applied to the skin, whereat it cools and is then peeled away together with the unwanted hair. Often, a tool such as a spatula or stirrer is provided with the wax composition for applying the composition to the skin. Wax compositions may conveniently be heated in the container in which they are supplied, for example by means of a microwave oven or a hot water bath (a so-called "bain-marie"). However, a particular problem with such wax compositions lies in

ensuring that the wax is heated to the correct temperature for application to the skin. If the wax is insufficiently hot, it may not be entirely molten and its effectiveness may be reduced. More seriously, if the wax is too hot, it may cause burns to the skin.

Therefore, it would be desirable to provide a means of ensuring that the wax is at the correct temperature before application to the skin.

Since the advent of thermochromic materials, indicator strips containing thermochromic materials have been applied to the outside of containers for temperature indication. For example, thermochromic liquid crystal inks have been used in labels placed on the outer surface of a container. However, the change in colour of the ink on the label may not most accurately reflect the actual temperature of the contents of the container. For example, if the container was to be heated in a water bath, the label on the container would change as a consequence of the temperature of the water, and not the temperature of the contents of the container. Furthermore, thermochromic liquid crystal compositions change colour at a precise temperature. Thus, an ink could be selected which would change colour at a substantially precise temperature, for example at 50°C or at 60°C.

However, such prior art systems are not ideal for use on a container of wax to indicate whether the wax is at a suitable temperature for application to the skin. This is because wax can be used safely and effectively over a reasonably broad temperature range, for example between about 44°C and 58°C. Therefore, it would be preferable to be able to determine whether the temperature of the wax falls within a predetermined broad temperature range, rather than to be able to determine that the wax is at one specific temperature.

It has now been appreciated that by ensuring a more intimate relationship between a thermochromic material and the wax, a more reliable indication of the

temperature of the wax can be provided. In addition, in contrast to most prior art systems in which the change of colour of the thermochromic material occurs over one to two degrees celsius, by way of the present invention, it is possible to provide a visual indication that the temperature of the wax falls within a broad temperature range, within the whole of which temperature range the wax may be used safely. Thus, the danger of burning the skin is obviated.

According to a first aspect of the invention there is provided a container for an epilatory wax composition and/or a device for use in conjunction with said container wherein the container and/or the device includes a thermochromic material which is adapted to change colour over a predetermined temperature range when in contact with a melting or molten epilatory wax composition.

According to a second aspect of the invention, there is provided an apparatus for the removal of hair from the body comprising a container of an epilatory wax composition, which wax is adapted to melt on heating, and a device for use in conjunction with said container, which device is adapted to make contact with the melting or molten wax composition, wherein the device includes a thermochromic material adapted to change colour over a predetermined temperature range when in contact with the melting or molten wax composition.

In a particularly preferred embodiment of the present invention, the said device comprises an applicator adapted to be used to apply the molten wax to the skin.

According to a third aspect of the invention there is provided a method of removing hair from the body, which method includes the steps of providing a container of wax for epilation, wherein the container and/or a device adapted for use in conjunction with said container is adapted to change colour over a predetermined temperature range when in contact with a melting or molten wax composition; heating the wax until the container and/or device changes colour;

applying the wax to the body and removing the wax together with the unwanted hair.

As used in the present specification, the term "wax" refers generally to any composition used for the removal of hair from the body which is initially heated and is then applied to the body in a generally molten state, allowed substantially to solidify and removed from the body with the unwanted hair. Thus, the term includes both true waxes and other materials suitable for epilation, such as compositions based on resins or compositions based on sugars, in particular glucose.

The temperature range within which the container or device changes colour will be selected depending on the properties (in particular the melting point) of the particular wax used. However, the most important indication is that the wax is not too hot and will not therefore burn the skin. As waxes should not be applied to the skin at temperatures in excess of about 60°C, the container or device should therefore show a colour change below that temperature.

The choice of thermochromic material used in the container for epilatory wax or the device for use therewith in accordance with the present invention is not particularly limited, although clearly the thermochromic material must change colour within an appropriate temperature range. Wax can be used safely and effectively between about 44°C and 58°C. Above about 58°C, the wax is too hot and could burn the skin. Below about 44°C, the wax becomes too viscous and is difficult to spread. Thus, the thermochromic materials used in accordance with the present invention will have a colour change within a temperature range between about 40°C and 60°C. A most preferred thermochromic material for use in accordance with the present invention changes colour between 44°C and 58°C, so that the intensity of the colour of the thermochromic material begins to decrease at 44°C and is at its minimum intensity at 58°C. Therefore, during the entire colour change of the thermochromic material, the wax is at an appropriate

temperature for application to the body. However, it will be appreciated that thermochromic materials that change colour over other temperature ranges within the temperature range of 40°C and 60°C are also appropriate. For example, a thermochromic material could be selected which changed colour between 40°C and 50°C as, again, during the entire colour change, the wax could be used safely. Also, the thermochromic material must be compatible with the material of the container or device and should not leach from the container or device into the molten wax.

Suitable thermochromic materials may be found, for example, amongst those described in US Patent No 4,717,710 which is incorporated herein by way of reference. The thermochromic materials used in accordance with the present invention change colour over a wide span of temperature, for example over a temperature range of about 5 to 20°C, and most preferably over a temperature range of about 8 to 15°C. For example, as noted above, a preferred thermochromic material for use in accordance with the present invention changes colour between 44°C and 58°C, that is over a temperature range of 14°C. However, many other thermochromic materials can be used in accordance with the present invention which change colour over different temperature ranges, provided that they show a colour change within a temperature range which is suitable for providing an indication that the wax in a container is at an appropriate temperature for application to the skin.

The choice of material for the wax container or the device for use with the container is not especially limited, provided that the material is resistant to the temperatures employed on melting the wax. Also, the material of the container or device should be compatible with the chosen thermochromic material. In addition, if it is desired that the thermochromic material is included in a device adapted to be used as a stirring means, the material of the device should have appropriate mechanical and chemical properties, that is, it should be sufficiently rigid to act as an effective stirrer. For example, the container for the epilatory

wax may be comprised of a plastics material and the device for use therewith may be comprised of wood or a plastics material.

According to a first embodiment of the present invention, the container itself includes a thermochromic material. Suitably, the container for the wax includes the thermochromic material in its lid. Following the heating of the container and its inversion so that the molten wax is in direct contact with the lid, the lid of the container will then change colour over a defined temperature range according to the temperature of the wax within the container.

According to a second embodiment of the invention, the thermochromic material is included in one or more walls of the container itself.

In a preferred embodiment of this aspect of the invention, one or more of the walls and/or the lid of the wax container contain a thermochromic resin concentrate, which is adapted to change colour within a temperature range between about 40°C and 60°C. Where the resin concentrate is included in one or more walls of the container itself, the resin concentrate is preferably present in an amount of from 5 to 15%, most preferably about 10%, of the overall polymer weight of the container. Similarly, where the resin concentrate is included in the lid of the container, the resin concentrate is preferably present in an amount of from 5 to 15%, most preferably 10%, by weight of the lid of the container. For example, the colour of the wax bottle or jar and/or its lid may be red when the container is at low temperature, but the intensity of this colour may begin to decrease at about 40°C and the container may have lost its red colour entirely at about 50°C. When the thermochromic material is incorporated only into the lid of a wax container, it will be necessary to invert the container after heating so that the molten wax is in contact with the part of the container which contains the thermochromic material. Then, according to the colour of the lid of the container, the consumer will know whether or not the wax in the container is too hot for application to the skin.

In accordance with a most preferred embodiment of the invention, the thermochromic material is included in a separate device adapted for use in conjunction with a container of epilatory wax.

Preferably, the said device comprises an applicator. The applicator may, for example, be a spatula made of wood. Alternatively, the applicator may comprise a spatula made of plastics material, especially polystyrene, polyethylene, polypropylene or polycarbonate. The spatula which includes the thermochromic material may then be dipped intermittently into the wax to see whether a change in colour of the spatula is observed to thereby test the wax temperature. If the wax is at an appropriate temperature for application to the body, the molten wax can be applied to the skin using the spatula. Alternatively, the wax can be heated whilst stirring continuously with the spatula. If the colour change of the spatula indicates that the wax is too hot for safe application to the skin, the wax is allowed to cool until the colour of the spatula indicates that the wax has cooled to an appropriate temperature for use.

According to a further embodiment of the present invention, the epilatory wax can be used with a conventional spatula and the device for use in conjunction with a container of epilatory wax in accordance with the present invention may comprise a further component, for example an independent stirring means or an indicator such as a plastic tester for dipping into the wax.

Alternatively, the device may be placed on to the molten wax in the container. For example, in a further embodiment of the invention, the device may comprise a strip of material, for example a piece of cardboard, which includes a thermochromic material such as an ink, and is thereby heat-sensitive and able to change colour over a predetermined temperature range. The device can be placed intermittently on top of the wax or can be rested continuously on the wax as it is heated, until a colour change is noted. Such a device could also be dipped into the wax after heating.

In another preferred variation of the invention, the device comprises a wooden spatula, on which is printed a printing ink which contains a thermochromic material. Thus, the spatula may initially have a graphic legend or a pictorial design printed thereon, for example. Assume, for example, that a particular wax is most preferably used between about 45°C and 56°C, at which temperature it spreads correctly on the body and will not burn the skin. Therefore, a thermochromic material may suitably be incorporated into the printing ink on the spatula which starts to lose its colour at about 44°C and is completely colourless at about 58°C. Thus, the print on the spatula will start to disappear gradually in accordance with the temperature rise and will have disappeared completely at 58°C, although the consumer will probably cease to see the writing at a temperature slightly below 58°C due to the coating of the spatula with the wax composition. When the print has disappeared completely, there is a clear indication provided to the consumer that the wax is too hot to be applied to the skin and should be allowed to cool slightly, that is, until the print reappears on the spatula. Whereas, if the consumer can see the print, the wax can be used safely.

A printing ink which contains a thermochromic material can also be applied to the lid or sides of the container.

In a further variation of the invention, the device comprises a plastic spatula which incorporates a thermochromic material. Preferably, the resin concentrate is present in an amount of from 5 to 15% of the overall polymer weight of the spatula. Most preferably, the resin concentrate is present in an amount of about 10% of the overall polymer weight. The spatula will exhibit one colour at low temperature, but the intensity of this colour will decrease in accordance with a temperature rise until the spatula becomes a different colour at a predetermined temperature. For example, the spatula may contain a thermochromic resin concentrate which is initially blue, but which begins to lose its blue colour at about 44°C and becomes completely colourless at 58°C. In use,

when the spatula reaches 58°C, the thermochromic material has lost its blue colour entirely and the spatula becomes white. Thus, when the spatula is colourless, there is a clear indication provided to the consumer that the wax is too hot and must be allowed to cool slightly, that is, until the spatula regains some of its blue colour. Also, the consumer will know that the wax is safe to use provided the spatula is blue, even if the blue colour is of low intensity. The spatula will gradually lose its blue colour over a temperature range between about 44°C and 58°C, during all of which time the wax is at an appropriate temperature for application to the body.

Such a spatula is suitably made by injection moulding or by bi-injection moulding. If the spatula is made by bi-injection moulding, it is possible to incorporate the thermochromic material into one distinct area of the spatula. For example, the thermochromic material can be incorporated only into a small section (for example, 1 cm by 1 cm) of the spatula. In this case, only this panel will then undergo a distinct colour change in accordance with the temperature of the wax, so as to provide the necessary indication that the wax is at an appropriate temperature for application to the body.

The container of epilatory wax is suitably made of plastics material. If the thermochromic material is to be incorporated into the lid of the container, the lid is suitably made by injection moulding or by bi-injection moulding. If the lid is made by bi-injection moulding, the thermochromic material can be incorporated into only one portion of the lid, as discussed above.

Where the thermochromic material is incorporated into the container itself, the container is suitably made by extrusion or injection blow moulding. For example, the container can be made by mono-extrusion blow moulding (in which case the container will comprise only one plastics material) or by co-extrusion blow moulding (in which case the container will comprise different layers of plastics material). If the container is made by co-extrusion blow moulding, it is

possible to incorporate the thermochromic pigment into only one of the layers of plastics material.

It is also known to provide a container for wax which consists of a bottle with an applicator provided at one end to enable the wax to be discharged from the container directly onto the skin of the user. In use, the bottle is subjected to elevated temperature and the container is then inverted so that the molten wax flows out of the container via the outlet of the applicator and onto the skin. According to a further embodiment of the invention, the thermochromic material is included in such an applicator, or a part thereof. Prior to use of the wax, the container is inverted so that the wax can flow out of the container via the outlet of the applicator device. If the colour change of the thermochromic material in the applicator indicates that the wax is too hot for application to the skin, the consumer will know that the wax should be allowed to cool slightly prior to use.

It will also be readily appreciated that the container or device may incorporate more than one thermochromic material, where desired. Thus, the container or device may change from a first colour to a second colour near the melting point of the wax and from the second colour to a third colour when the wax is too hot. For example, two thermochromic materials may be incorporated into the container of wax or the device for use therewith, so that one colour is observed when the wax is not hot enough, a second colour is observed when the wax is at the correct temperature for use and a third colour is observed when the wax is too hot for use.

The epilatory wax compositions present in the container of the present invention are used in conventional manner to remove unwanted hair from the human body. A container of a suitable wax is provided and is heated by known means such as, for example, by placing the container in a microwave oven, a hot water bath, or in a specially designed heating unit which would be part of a kit comprising the subject container and, for example, a heating sleeve. When the

wax in the container reaches the desired temperature - as indicated by the expected colour change - the wax composition is ready for use. The wax is then applied in its molten state to the areas of the body from which it is desired to remove hair. The wax readily solidifies and can then be removed, along with the unwanted hair.

CLAIMS

1. A container for an epilatory wax composition and/or a device for use in conjunction with said container, wherein the container and/or the device includes a thermochromic material which is adapted to change colour over a predetermined temperature range when in contact with a melting or molten wax composition.

2. A container or device as claimed in claim 1, wherein the thermochromic material changes colour over a temperature range of between 5 and 20°C.

3. A container or device as claimed in claim 2, wherein the thermochromic material changes colour over a temperature range of between 8 and 15°C.

4. A container or device as claimed in claim 1, 2 or 3, wherein the thermochromic material changes colour within a temperature range between 40°C and 60°C.

5. A container or device as claimed in claim 4, wherein the thermochromic material changes colour between 44°C and 58°C.

6. A container or device as claimed in any of claims 1 to 5, wherein the epilatory wax comprises a sugar-based composition.

7. A container as claimed in any of claims 1 to 6, wherein the thermochromic material is included in one or more walls of said container or in its lid.

8. A container as claimed in any of claims 1 to 7, in which the thermochromic material is present as a thermochromic resin concentrate comprising from 5% to 15% by weight of the lid of said container.

9. An apparatus for the removal of hair from the body comprising a container of an epilatory wax composition, which wax is adapted to melt on heating, and a device for use in conjunction with said container, which device is adapted to make contact with the melting or molten wax composition, wherein the device includes a thermochromic material adapted to change colour over a predetermined temperature range when in contact with the melting or molten wax composition.

10. An apparatus as claimed in claim 9, in which the device is an applicator.

11. An apparatus as claimed in claim 10, in which the applicator is a spatula comprised of wood or of a plastics material.

12. An apparatus as claimed in claim 11, in which the thermochromic material is incorporated only into a portion of the spatula.

13. An apparatus as claimed in claim 11, in which the applicator is made of a plastic which incorporates, in an amount of from 5% to 15%, the thermochromic material in the form of a resin concentrate, wherein the spatula exhibits one colour at a temperature below about 44^{o}C and, as the temperature rises above 44^{o}C, begins to gradually lose further colour until all of said colour is lost at a temperature of about 58^{o}C, at which point only the underlying colour of the spatula remains visible.

14. An apparatus as claimed in claim 11, in which the applicator comprises wood on which is imprinted a legend or pictorial design using a printing ink which includes the thermoplastics material, wherein the printing ink begins to lose its colour at about 44^{o}C and, with increasing temperature, gradually loses further colour until said ink becomes substantially invisible at about 58^{o}C.

15. A method of removing hair from the body, which method includes the steps of providing a container of epilatory wax, wherein the container and/or a device adapted for use in conjunction with said container is adapted to change colour over a predetermined temperature range when in contact with a melting or molten wax composition; heating the wax until the container and/or device changes colour; applying the wax to the body and removing the wax together with the unwanted hair.

INTERNATIONAL SEARCH REPORT

Interi .nal Application No
PCT/GB 97/03491

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A45D26/00

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)
IPC 6 A45D

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 practical, search terms used)

C. 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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E	EP 0 813 828 A (MAGIC DREAMS COSMETICA INFANTIL) 29 December 1997 see the whole document	1,15
A	---	
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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1

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30 March 1998	06/04/1998

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INTERNATIONAL SEARCH REPORT

Intern ..al Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern. ..al Application No
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