CANDLE FOR PROVIDING RAPID FRAGRANCE DELIVERY

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ABSTRACT
A scented candle is provided which includes a dual braided wick in a candle mass. The candle mass is positioned on an inwardly sloping platform and such platform is snugly fit into a noncombustible container. A wick clip with louvers that secures and centers the wick in the candle mass allows maximum fuel flow to the wick during use to ensure full consumption of the melted candle mass.
Surface Melt Pool Diameter Formation
Test 3-18-10
YCC Sweet Pea
Past Invention Spiced Rose & Vanilla

FIG. 8
CANDLE FOR PROVIDING RAPID FRAGRANCE DELIVERY

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a scented candle and more particularly to a scented candle which provides for a rapid release of the fragrance after the candle is lit.

[0002] Most scented candles emit fragrance readily from the melt pool created when the candle wick is lit. The time for delivery of the fragrance is directly proportional to the time it takes for the melt pool to form, surface area of the melt pool and the temperature of the melt pool.

[0003] Some scented candles that rapidly release fragrances that are known in the art use a heat conductive device to melt the solid fuel element. Such additional heat conductive elements take away from the decorative nature of the candle. Moreover, such heat conductive elements do not produce a melt pool surface in a short time period because the conductive element transfers heat to the bottom of the candle containers rather than where the wick is burning and therefore do not produce fast fragrance delivery.

[0004] It is therefore a principal object of the present invention to provide a scented candle using traditional candle making materials that rapidly releases fragrance.

SUMMARY OF THE INVENTION

[0005] A scented candle is provided which includes a dual braided wick in a candle mass. The candle mass is positioned on an inwardly sloping platform and such platform is snugly fit into a noncombustible container. A wick clip with louvers that secures and centers the wick in the candle mass allows maximum fuel flow to the wick during use to ensure full consumption of the melted candle mass.

[0006] These and other features and objects of the present invention will be more fully understood from the following detailed description which should be read in light of the accompanying drawing in which corresponding reference numerals refer to corresponding parts throughout the several views.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is an elevational view of a traditional wick used in prior art candles.

[0008] FIG. 2 an elevational view of a braided wick of the candle of the present invention.

[0009] FIG. 3 is a sectional view of a candle of the present invention.

[0010] FIG. 4 is another sectional of the candle of the present invention.

[0011] FIG. 5 is an exploded sectional view of the candle of the present invention.

[0012] FIG. 6 is a perspective view of the wick clip used in the candle of the present invention;

[0013] FIG. 7 is a top view of the wick clip shown in FIG. 6.

[0014] FIG. 8 is a graph of the surface melt pool diameter formatting for the present invention vs. the prior art.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0015] The candle 10 of the present invention includes a candle mass 12 in which a wick 14 is embedded. The candle mass is positioned on a platform 20 which is inserted in a base container 26.

[0016] The candle mass 12 must be of a certain melting point to achieve the rapid release of fragrances. It is preferred that the candle mass melting point not exceed 145°F, and more preferably not exceed 130°F. The candle mass may be made from a number of combustible materials, such as fully refined paraffin, semi-refined paraffin, beeswax, soy wax, epoxidized soybean oil, tallow, microwax, palm wax, mineral wax, polyethylene wax, normal alpha olefins, poly alpha olefins, or other triacylglycerol-type materials or combustible polymers.

[0017] In one embodiment of the invention the following materials within Ranges 1 and 2 are used:

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Material</th>
<th>Product</th>
<th>Vendor</th>
<th>Range 1</th>
<th>Range 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>Fully Refined Paraffin</td>
<td>Parvan 1270</td>
<td>ExxonMobil</td>
<td>100.000%</td>
<td>41.75%</td>
</tr>
<tr>
<td>Hardness and melt</td>
<td>Semi-refined Paraffin</td>
<td>2281A</td>
<td>IGI Waxes</td>
<td>0.000%</td>
<td>41.75%</td>
</tr>
<tr>
<td>point control</td>
<td>Crystalline modifier</td>
<td>Microcrystalline wax</td>
<td>IGI Waxes</td>
<td>0.000%</td>
<td>6.00%</td>
</tr>
<tr>
<td>Crystalline modifier</td>
<td>Crystalline modifier</td>
<td>Poly alpha olefin</td>
<td>Vynbar 260</td>
<td>0.000%</td>
<td>2.00%</td>
</tr>
<tr>
<td>Protectant</td>
<td>UV absorber</td>
<td>Chimassorb 81</td>
<td>BASF</td>
<td>0.000%</td>
<td>0.20%</td>
</tr>
<tr>
<td>Protectant</td>
<td>UV absorber</td>
<td>Tinuvin 329</td>
<td>BASF</td>
<td>0.000%</td>
<td>0.20%</td>
</tr>
<tr>
<td>Protectant</td>
<td>Antioxidant</td>
<td>Irganox B225</td>
<td>BASF</td>
<td>0.000%</td>
<td>0.10%</td>
</tr>
<tr>
<td>Function</td>
<td>Source</td>
<td>Variable</td>
<td>Variable</td>
<td>0.000%</td>
<td>8.00%</td>
</tr>
</tbody>
</table>

[0018] The candle mass 12 may be formed using existing processes known in the art, such as, liquid pouring and molding, wax bead compression, and wax bead extrusion. A preferred embodiment of the present invention uses wax bead compression by means of a rotary press. In this preferred embodiment, the candle mass 12 is manufactured by mixing together the materials listed in Table 1 above. These materials are mixed and melted into a homogenous liquid state creating a molten “blend”. A molten blend is then sprayed into the air via nozzles with an orifice of 0.35 mm or 0.4 mm onto a rotating cold drum where small spheres (approximately 0.25 mm-1.25 mm in diameter) are formed. The small spheres are scraped off the cold drum into a vibrating pan and collected at a point of vacuum. The vacuum delivers small spheres into a candle pressing molding machine, such as the machine sold by Herrhammer, GmbH under Model No. STFM-1/450/3. The small spheres are compressed under pressure around a
pin to form a compressed solid wax blend with a centered channel for subsequent wick insertion. A wick 14 is then inserted into the compressed solid wax blend and attached to a wick clip 30 (FIG. 6) by inserting the wick 14 through the wick barrel 34 using a standard process called wick pinning.

[0019] Referring to FIGS. 4 and 5, the candle 10 also includes a platform 20 that is sized to fit snugly in a base 26. The candle mass 12 is positioned on the platform 20 when the candle 10 is in use. The platform 20 has a concave shape that inwardly slopes to a circular depression 22 where the candle mass 12 centrally sits. The platform may be any of the following materials: prime tinplate, aluminum, brass, copper, stainless steel, glass, ceramics, or any other non-combustible material suited to forming. It is preferred that the platform be locked into the base 26 so that the bottom of the platform 20 is not less than 32 mm from the bottom of the base 26.

[0020] The primary function of the base 26 is to hold the platform 20. The base 26 can also be designed of a variety of shapes and colors for decorative purposes. The base 26 may be comprised of any non-combustible material as long as it secures the platform 20 at least 32 mm from the bottom of the base 26.

[0021] The wick 14 is a critical component of the invention as it supports combustion and spreads the heat in both horizontal and vertical directions. It is the horizontal heat flow that is conducive to fast formation of the surface melt pool. Horizontal heat flow is obtained by the dual-wick design of the wick 14 that is most clearly shown in FIG. 2. During burning the dual-wick 14 unwinds and opens up causing the flame geometry to shift from a narrow-based flame to a broad-based flame. The result of this flame geometry shift yields greater heat flow onto the candle mass 12, subsequently quickly melting the solid candle mass 12 forming an active melt pool, thus, quickly releasing the scent. In many preferred embodiments the width of the flame achieved by using the dual braded wick 14 is twice as wide as the flame produced by a traditional wick 13 shown in FIG. 1. The dual-braded wick 14 used in this invention can be sourced as the Helix series of wicks from the supplier Atkins and Pearce at One Braid Way, Covington, Ky., 41017, U.S.A.

[0022] It should be noted that another critical aspect of surface melt pool time-to-form is a function of the candle mass' melting point. Therefore, it is important that these two critical parameters be in balance to produce the safest and most optimal end-use product.

[0023] Referring to FIGS. 6 and 7, the wick clip 30 is a device that holds the wick 14 in place within the candle mass 12. The present invention uses a modified wick clip 30 specifically designed to allow liquid wax to flow through two vertical channels or louvers 32 positioned 180 degrees apart, in an effort to support combustion and for complete fuel consumption. Barrel height of the wick clip and the barrel height to louver, both relative to the candle mass height, is another important aspect of the current invention. It is preferred that the barrel height not exceed 12 mm in length, and more preferably not exceed 7 mm in length. Barrel height dictates the flames position relative to the melted wax mass. A longer barrel height positions the flame too far from the melted candle mass resulting in loss of effective heating, thereby causing product failure. Shorter barrel heights position the flame too close to the melted candle mass causing excessive heat and uneven fragrance liberation. It is also important that the slats 33 of the louvers 32 extend parallel to the barrel 34 from the wick clip base 36 to about 0.50 mm from the top of the barrel 34. Longer louvers cause relight failures. Longer louvers compromise the barrel’s integrity causing collapse of the barrel 34 during wick pinning. Another important function of the louvers 32 is the locking of the wick clip into the candle mass. The slats 33 of louvers 32 extend about 0.0250” from the barrel’s surface. This extension provides a gripping surface keeping the wick clip 30 locked into the candle mass. The base 36 of the wick clip 30 may be of any suitable geometry or diameter as long as a minimum wick base surface area of 200 mm² is met.

[0024] A candle 10 of the present invention was compared for surface time-to-melt pool diameter formation to a prior art candle (a S.C. Johnson Glade Scented Oil Candle) using a single-braided wick and a wick clip without louvers. The candle mass 12 of the present invention contained the ingredients listed in Table 1. Both candles were placed 12” apart on a non-combustible surface and in an 8”x12” room with standard HVAC and an ambient temperature of 75°F. Each candle was lit concurrently and a timer activated at time of lighting. The melt pool was measured in 5 minute increments until the melt pool spilled its contents. It is well known in the art that fast melt pool formation is directly related to the amount of volatile or semi-volatile fragrance emanated by a candle. Results show that in five and ten minutes the candle of the present invention forms a melt pool greater than twice the diameter of the prior art candle and at fifteen minutes greater than 1.5 times. After fifteen minutes the current invention’s candle mass spilled its liquid contents into the platform where it subsequently fully liquefied and consumed. These results are shown in the table below and the graph in FIG. 8.

<table>
<thead>
<tr>
<th>Ambient</th>
<th>Surface Melt Pool time-to-form Diameter</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>75°F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweet</td>
<td>YCC Fast</td>
<td>0</td>
</tr>
<tr>
<td>Pea</td>
<td>Fragrance</td>
<td>0</td>
</tr>
<tr>
<td>Spiced</td>
<td>Delivery</td>
<td>0</td>
</tr>
<tr>
<td>Rose</td>
<td>Prior Art</td>
<td>0</td>
</tr>
<tr>
<td>Vanilla</td>
<td>S.C. Johnson Glade Scented Oil Candle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Current surface melt pool time-to-form</td>
<td>105%</td>
</tr>
<tr>
<td></td>
<td>significantly exceeds that of the prior art candle</td>
<td></td>
</tr>
</tbody>
</table>

[0025] While the foregoing invention has been described in light of its preferred embodiments, various alterations and modifications will occur to those skilled in the art. All such alterations and modifications are intended to fall within the scope of the appended claims.
What is claimed:
1. A scented candle for rapidly releasing fragrance comprising:
   a dual-braided wick;
   a wick clip into which said wick is inserted; and
   a candle mass made of a wax fuel, said candle mass positioned over and around said wick clip, said dual-braided wick passing from said wick clip through said candle mass.
2. The scented candle for rapidly releasing fragrance of claim 1 wherein a candle mass has a melting point of less than or equal to 145°F.
3. The scented candle for rapidly releasing fragrance of claim 1 wherein a candle mass has a melting point of less than or equal to 130°F.
4. The scented candle for rapidly releasing fragrance of claim 1 further comprising:
   a platform for holding said candle mass and for containing for the wax fuel in a liquid state when said wax fuel is melted;
   a base into which said platform is positioned.
5. The scented candle for rapidly releasing fragrance of claim 1 wherein said wick clip further comprises open louvers to allow maximum fuel flow to the wick when the candle is in use.
6. The scented candle for rapidly releasing fragrance of claim 1 wherein said wick clip is constructed of a malleable material.
7. The scented candle for rapidly releasing fragrance of claim 1 wherein said wick clip is constructed of a material selected from the group consisting of tin, aluminum, brass or copper.
8. A scented candle for rapidly releasing fragrance comprising:
   a wick;
   a wick clip into which said wick is inserted, said wick clip including open louvers to allow maximum fuel flow to the wick when the candle is in use; and
   a candle mass made of a wax fuel, said candle mass positioned over and around said wick clip, said wick passing from said wick clip through said candle mass.
9. The scented candle for rapidly releasing fragrance of claim 8 wherein a candle mass has a melting point of less than or equal to 145°F.
10. The scented candle for rapidly releasing fragrance of claim 1 wherein a candle mass has a melting point of less than or equal to 130°F.
11. The scented candle for rapidly releasing fragrance of claim 1 further comprising:
    a platform for holding said candle mass and for containing for the wax fuel in a liquid state when said wax fuel is melted;
    a base into which said platform is positioned.
12. The scented candle for rapidly releasing fragrance of claim 1 wherein said wick is a dual braided wick.
13. The scented candle for rapidly releasing fragrance of claim 1 wherein said wick clip is constructed of a malleable material.
14. The scented candle for rapidly releasing fragrance of claim 1 wherein said wick clip is constructed of a material selected from the group consisting of tin, aluminum, brass or copper.

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