

Study on Computer-aided Design and Making of Packing Box of Chinese Moon Cakes

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Abstract. Mid-Autumn Day is a traditional festival in China, during which it is a Chinese conventional custom to send and eat moon cakes. It has become a kind of economic law that businesses sell moon cakes with the help of Mid-Autumn Day and the sales of moon cakes largely depend on the packaging. As an important component of culture of moon cakes, the design of moon cake packaging contains and is injected abundant spirits of Chinese culture. According to the characteristics and market positioning of products and related factors, the orientation of packaging design and the workmanship are determined, all the design procedures are introduced in details and present situation of moon packaging is stated and analyzed.

1. Introduction

High-class packaging requires one-stop advanced techniques like refraction, embossing, dull polish and offset print. With quality requirements for food products, the moon cake packaging is manufactured by internationally advanced manufacturing facilities like five-color machines, bronzing machine and cover-ray machines, new-craft silk screen printing equipment, new technology for plate making and design by computer, advanced printing engineering techniques and perfect quality measurement system. First make and design plate by computer, and then measure, observe and design the samples and manufacture packaging, and finally, after printing films and product prices, the perfect packaging will emerge.

2. Design and making of the packaging

2.1 The present situation of moon cake packaging

With the coming of Mid-Autumn Day every year, quantities of moon cakes appear on the market, the packaging of which contend in beauty and fascination. At present, there are various packaging patterns, like plastic packaging, paper packaging, iron packaging and wooden packaging, and bulk packaging (namely no packaging). Plastic packaging is relatively simple and crude, mainly applied to moon cakes of lower prices. Paper packaging can be divided into exquisitely made ones applied to higher-class moon cakes and relatively simple and crude ones applied to those of lower price. Wooden and iron packaging are mainly applied to high-class moon cakes. Recently, high-class moon cakes appear on the markets of large and medium sized cities, mainly bought as presents. Nevertheless, some over-packaged moon cakes flood the market.

2.2 Requirements and characteristics of this product's packaging and its manufacture scheme

What the client provided is the moon cake of middle and low class with fruit filling and the size of about 5*5*2cm, which are mainly purchased by ordinary families to eat or companies to distribute to employees. Therefore, it can be concluded that what is required is not high-class packaging or over-packaging but simple ones. The moon cakes belong to food, all problems which should be noticed in food packaging, such as damp proof, mildew proof, moth proof, shock proof, leakage proof, breakage proof and pinch proof should be taken into consideration when moon cake packaging is designed. But in terms of the outer packaging box, only shock proof and pinch proof should be paid attention to. What's more, QS, bar code and ingredients should be marked on the packaging. In

addition, when inserted, if the bar code is a dot chart, it should be transformed into vector diagram. First draw a rectangle to cover the bar code and fill in a certain color (white or blank is not allowed), then pitch on both. After determining the transparency level of the filter and choosing application of freezing, dissolve the frozen groups and the moderate bar codes come out (shown in Figure1). Note that do not randomly alter it, or recognition by the computer may be influenced. If necessary, alter its size after combination.



Figure 1 Bar code

The main consumer group of moon cakes is inclined to middle-aged people, which should be taken into consideration when determining its external appearance style. Moon cake is also a carrier inheriting the culture of Mid-Autumn Day, containing national culture, which also requires adequate consideration in design of the outer packaging. These two styles can be concluded as being decent and have cultural appeal. In summary, it is the most appropriate to choose E-type three-layer corrugated board. The accurate size of the packaging box is 30*20*6.7cm. Because it is inclined to middle-aged consumer group, brown is chosen as its basic color tone, decorated with golden yellow and bright red to highlight the atmosphere of festival and antique fringe patterns and shading and featured typefaces bring out the best of the design.

2.3 Stretched plane structure chart of the packaging box

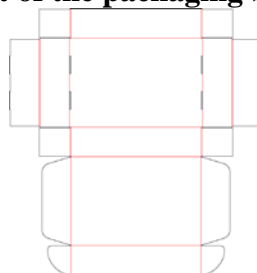


Figure 2 Plane structure chart

Auto CAD draws the stretched plane structure chart of the packaging box (shown in Figure 2). There are two layers in all. One layer is colored by red, the other by white. Cutting marks of the external profile should be in the white layer while indentation lines should be in the red one so that they can be distinguished during the process of die-cutting after being printed. What should be noticed is that the sizes of important parts such as paper thickness, paper cover and back cover at the folding point should be adjusted properly to achieve tight sealing effectiveness. Figures 3 and 4 show the inter space between the front page of the back cover and the lid of the box. Because the paper thickness is approximately 1.1-2.0mm, an inter space of about 1mm enables the box to be sealed tightly but not to be too compact after it is shaped.

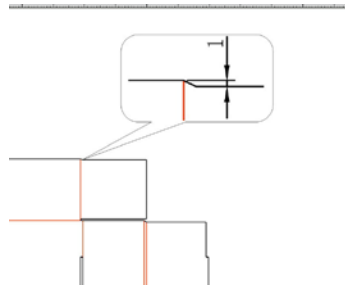


Figure 3 Lid of the box

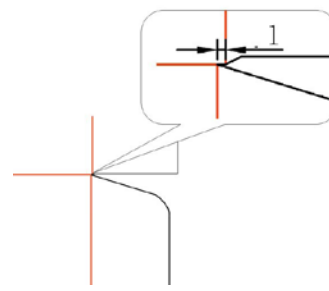


Figure 4 Back cover

There is some inter space between side page and back cover (as shown in Figure 5 and 6). Because the side page is a two-layer folded structure with front and back pages and needs to be inserted into the folding inter space, the inter space required should be relatively wide. Inter space of 2mm is just enough for folding and can achieve excellent sealing effectiveness.

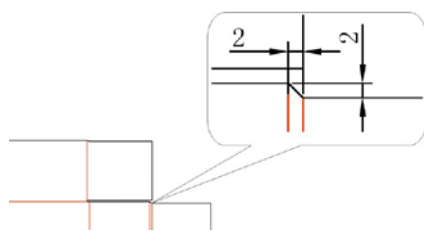


Figure 5 Side page

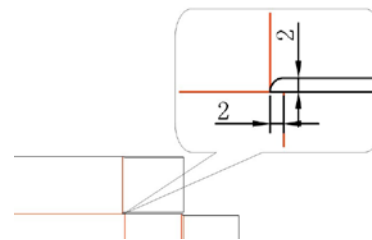


Figure 6 Back cover

Being of the disc folded structure, the box is formed by its side wings folding to lock the front and hind wings. The side wings are locked after being folded and inserted into the back cover, so there are two male tabs on the side wings which on the positions of two fifths and four fifths respectively have the width of approximately 40mm (1/5 of the whole box) and length of 2mm(as shown in Figure 7). The sockets on the middle back cover depend on the size of the male tab and thickness of the corrugated paper, which should have the size of 2x40mm. After all the above mentioned processes are completed, the structure of the box appears.

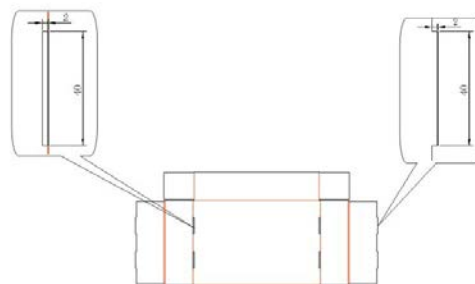


Figure7 Socket, male tab

2.4 Making of superficial effect of the packing box

It is designed according to the outer packaging design figure of the packaging box made by CorelDRAW. After opening CorelDRAW, first draw the standard line on one side of the box. Note that the location of standard line has to be exact. After the standard line is drawn, copy a layer of the bottom paper board and fill in color. Because there may be some deviation during die cutting, “bleeding” is necessary, namely the outer contour of the bottom paperboard should expand for 3mm uniformly. The usual “bleeding” of packaging box is 1.5-3.0mm, and only very large packaging box or outer box uses “bleeding” with the size over 5mm. The box here is relatively large, so 3mm is best for it. Because this product belongs to medium- and low-class products, so clients require the lower cost of packaging. Considering about costs of printing technology, processing after printing and packaging, primary color and simple printing technology would be better. Dark brown is selected and the CMYK values C=50,M=100,Y=100 and K=20 are chosen as the bottom colors. After choosing

the output frame, tune out the color options under the dockers, type in correct CMYK value, and then choose to fill in. And the whole layout of the packaging box is finished, which is shown in Figure 8.

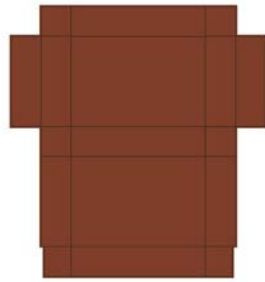


Figure 8 Bottom paper board



Figure 9 Cumberbund

Because there is a need to intensify the Mid-Autumn Festival atmosphere of the packing box, a rectangle with the width of 60mm and the length equaling that of the whole plane is drawn in the front right position and a circle with the diameter of 85mm and its center is aligned at the rectangle. Because the bottom paper board is of dark tone, so it is filled with the gradient ramp from red to yellow to intensify the festival happiness. The gradient effect of the circle and the rectangle should be of the same color but of different types. the circle should apply the half line while the rectangle should be linear and adjust the gradient magnitude to be the same with that of the circle. Taste is important for food, so the creative typeface “taste” emerges above the word “Good fortune” on the colorful cumberbund and is filled as bright red and aligned at the cumberbund center, which is shown in Figure 9.

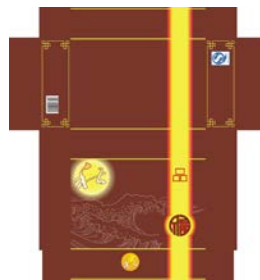


Figure 10 Final effect Figure

Draw a circle with the diameter of 170mm at the top left corner, and fill it with gradient effect from yellow to the color of the bottom paperboard. In the middle part of the side face, draw a perfect circle, and fill it with gradient colors to make it into a moon effect. In consideration of the inaccurate overprint, in the cross connecting areas of different colors, sometimes after adding the outline border, overprint of it is needed. After overprint, even though the overprint color is inaccurate, starved area unlikely emerges. Effect Figure of the overall packaging box is shown in Figure 10.

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