

An alternative way: inside metal can printing

Brand owners have begun using the real estate on the inside of a metal container. But why? Gerald L. Napiecek investigates



No longer is there the space to put information on the outside of cans. Brand owners are exploring other avenues

The printing of metal containers and closures, particularly the printing of metal food and beverage containers and closures, is a time honoured, high quality and mature printing activity. Every day we see beautifully decorated beer, soft drink and juice cans, with the printing on the cans enhancing the consumer's enjoyment during the consumption of its contents.

In addition to the vibrantly colourful graphics that brand owners use to capture consumer's attention as they wander through aisles in stores, more of the real estate on the outside of these containers is being called upon to contain government-mandated nutritional statements, ingredient lists (including the presence of food allergens or GMO materials) and a variety of other regulatory statements.

Given this, the traditional ways for a marketer to promote a product on the outside surface of the can have to be revisited as the available real estate is shrinking. No longer is there the space to put giveaway information, contest descriptions and premium savings promotions. One alternative that a number of brand owners have begun using with increased frequency is to utilise the real estate inside the food contact surface of the metal container for such activities.

General direct food contacting surface printing has been employed for many decades, particularly in the US. Different types of packaging with printing on the inside, food contact surface are seen daily. Common examples include the coloured stripes on the inside of fast food cartons (particularly French fry paperboard cartons), contests or promotions on the inside of chocolate bar wrappers or yogurt cup heat-sealable lidding, flavouring pouches inserted into rice or pasta boxes, the messages placed inside of Chinese fortune cookies and stripes on drinking

straws, to name but a few. In order to assure that chemical components from such printed surfaces do not migrate to the food during the life span and conditions of the contact, resulting in the potential adulteration of the food by affecting its odour, taste, appearance or, in worst case scenarios rendering the food injurious to a consumer's health upon ingestion, food companies have several options available to them to prevent these events.

One method is to employ what the US Food and Drug Administration (FDA) calls an "effective functional barrier" which completely prevents, from a migration standpoint, the print from contaminating the food. There are very few materials that the FDA considers to serve as effective functional barriers, and contrary to what much of the packaging industry believes, formulated coatings applied by standard application methods are not included in its definition. Increasingly, however, more and more such situations are addressed by using printing inks formulated solely from what the FDA classifies as either direct or indirect food additives as the components of the printing inks*. This approach can have both economic and regulatory advantages, which can be quite attractive to both a packaging manufacturer and its food company customers.

Direct food additives, as specifically defined by the US FDA, are, simply speaking, materials that are approved by the FDA to be intentionally added to foods in order to render a technical effect. Colourants, flavourings, emulsifiers and aromas are common examples of direct additives. Indirect food additives, on the other hand, cannot be added directly to foods but have been determined to be chemically safe, based upon toxicological and other relevant scientific studies, to be used in situations where they may be reasonably expected to migrate into foods. Examples of such situations include, but are not limited to: food manufacturing equipment, processing utensils or packaging components, including ink and coating ingredients.

In the US, inks formulated for printing intended to directly contact foods without an effective functional barrier are formulated using either direct and/or indirect food additives, or materials that have FDA clearance under an effective Food Contact Notification (FCN).

As food additives can be cleared by the FDA for either general use without restrictions, or for more limited use with only certain types of foods or under certain conditions of contact, everyone within the supply chain must have a complete understanding of applications. Direct food contact printing inks and coatings can be formulated for all of the major printing processes, including the conventional curing lithographic and letterpress printing techniques and the drying oven processes commonly used by metal food container decorators.**

Ink manufacturers are also currently working on formulations that will meet the requirements for food contact compliance as established by the European Union and the European Food Safety Authority (EFSA).

As mentioned earlier, printing on the food contacting surface of metal containers has been done in the USA for special promotions for some time. Applications have included printing on the inside surface of either the lids or bottoms of soup and prepared pasta product cans, tobacco product tins, beverage can flip-tops or crowns and processed meat containers for foods such as Polish hams and Vienna sausages.

In some cases, the ink was printed before the deposit of any of the number of coatings that are commonly normally applied to the inside of the can (such as for protecting the metal from attack by acidic foods), and in other cases directly on top of such a coating itself. If the FDA compliant inks are used, it is not necessary that the coating be placed over the ink, as the ink films are completely

compliant for contact with the food by themselves.

Historically, black has been the colour of choice for these applications. By no means, however, is this the only available ink shade for such use. A wide range of colours, including four colour process shades, are available. However, due to the limited number of pigments compliant with the food contact regulations, exact colour matches may not always be possible.

It is hoped that the information contained in this short article will raise the awareness level of decorating companies and its food and beverage customers as to the many potential applications of this novel approach to promoting their products in metal containers.

Through an understanding of the governmental regulations associated with direct food contact materials, and with the knowledge that specialised printing inks can be used to safely create direct food contact surfaces, exciting novel promotional and marketing campaigns can be employed. ☐

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**(Direct and Indirect Additives are specifically listed by the FDA in Title 21 of the United States Code of Federal Regulations ("21 CFR").*

*** Due to the very few photoinitiators and oligomers that have been deemed to be acceptable as indirect food additives by the FDA to-date, UV printing on the direct food contact surface of most packaging materials is not recommended.*

