



Guidelines on Environmental Mooncake Packaging Design

1. Introduction

- 1.1 Hong Kong mooncakes are very popular both in local and overseas markets. This widespread popularity owes much to the mooncake manufacturers who continue to improve the quality of their products and the design and packaging of their mooncakes. Many are catching up with the growing worldwide green consumerism and have adopted green measures in their mooncake packaging.
- 1.2 Every year, millions of boxes of mooncakes are sold and the consumption of packaging materials involved is considerable. With the implementation of environmental friendly packaging designs, mooncake manufacturers can help, in addition to reducing packaging waste, utilize their resources more efficiently, thus contributing to cost savings. It also helps them to join the eco-leaders in the green retail trade.
- 1.3 The guidelines set out in this document are trade experiences consolidated by the Environmental Protection Department (EPD), further supplemented with technical suggestions, for the traders' reference. It is hoped that these initiatives can assist mooncake manufacturers in balancing the benefits amount environmental protection, food hygiene, shelf-life, transportation, appearance, brand image and costs when designing the mooncake packages and in the end making their products "more sustainable".

2. General Principles

2.1 Simple Packaging

- 2.1.1 With growing awareness of environmental protection, consumers are buying more products with simple packaging. To many consumers, mooncakes in simple and green packaging can still be very presentable as being a festive gift. Excessive packaging means overconsumption of valuable resources which may end up in the trash, thus a detriment to the environment.

2.2 The "3R" Principle

- 2.2.1 Manufacturers may help to reduce waste by adopting the "3R" principle in their

product packaging:

- a) **Reduce** – minimize the weight and volume of packaging materials while optimizing product safety, hygiene, consumers' acceptance.
- b) **Reuse** – facilitate retention and reuse of packaging materials.
- c) **Recycle** – allow effective and efficient segregation of different packaging materials in order to facilitate their recycling and reprocessing into useful materials or products

2.3 **Choice of Materials**

2.3.1 From the environmental viewpoint, the variety of materials chosen for product packaging should be reduced to a minimum to enable easy separation for recycling with a view to saving consumers' effort and time.

2.3.2 Packaging materials chosen should be recyclable (that is, materials that can be collected through existing recyclable waste collection system for recycling¹) such as metal, plastic and paper, preferably those containing recycled constituents (such as recycled paper). Due to the stringent requirements placed on food-contact packaging, the use of a recycled material as a food-contact layer may not always be possible. Nevertheless, the potential application of environmental friendly materials for those parts of the packaging that have no direct contact with the food content should be explored.

2.3.3 For plastic packaging materials, priority should be given to the use of Polyethylene Terephthalate (PET), High Density Polyethylene (HDPE) and Low Density Polyethylene (LDPE) while Polyvinyl Chloride (PVC) and Expanded Polystyrene (EPS) (the so-called polyfoam) should be avoided as far as possible. The main advantage for using PET, HDPE and LDPE is that they are widely used plastic materials and there are more demand and outlets for their recycled materials. On the other hand, chemicals used in producing PVC and their additives have a greater impact on the environment. They will also release harmful substances when being incinerated. The low density of EPS, however, will render it not cost-effective to collect for recycling. It is also important to keep the plastic packaging transparent or in the original colours as far as possible, since colourings in the packaging materials will limit the use of the recycled plastics and so will reduce their recyclable values.

2.3.4 Manufacturers should also avoid using “composite materials”, e.g. the glossy laminated paper commonly used in making carrying bags. Such materials are made up of multi layers of different materials and separation of the layers for recycling is extremely difficult.

2.4 **Easy to Disassemble**

2.4.1 The design of an environmental friendly packaging should be conducive to

¹ The materials recovered under the current waste separation programmes (including the 3-coloured recycling bins and the Source Separation of Domestic Waste Programme) in Hong Kong mainly include waste paper, metal and plastic.

recovery for waste reduction such that consumers can easily disassemble the packages for removing the recyclable and reusable parts for recycling. Each part should be able to be conveniently detached from the packaging without the assistance of any tools. As such, sealing should not be excessive (e.g. the use of strong adhesives, thermal plastics, nails or screws) in assembling the packaging to facilitate recycling.

2.5 Clear Labeling

2.5.1 Manufacturers should include clear instructions or reminders on the recyclable parts of the packaging in order to encourage consumers to segregate those parts for recycling. In particular, plastic parts should follow international coding practices and be marked with appropriate Plastics Recycling Identification Codes, such as those adopted by the Society of The Plastics Industry, Inc., USA (see Table 1), to facilitate waste collectors' separation for recycling.

Table 1 Plastic Recycling Identification Code List

Code 編碼	Material 物料	Applications 應用例子
 PET OR PETE	Polyethylene Terephthalate 聚對苯二甲酸乙二醇酯	Clear soft drink and beverage bottles, food packaging 透明汽水及飲品樽，食品包裝
 HDPE OR PE-HD	High Density Polyethylene 高密度聚乙烯 (硬性軟膠)	Bottles (especially for food products, detergent and cosmetics), industrial wrapping and film, sheets, plastic bags 食物，洗潔精及化妝品樽，工業包裝及薄膜，背心膠袋
 PVC OR V	Polyvinyl Chloride 聚氯乙烯	Bottles, packaging film, credit cards, water containers, water pipes 塑膠樽，包裝薄膜，信用卡，盛水容器，水管
 LDPE OR PE-LD	Low Density Polyethylene 低密度聚乙烯	Cling film, plastic bags, flexible containers and food wrap 保鮮膜，背心膠袋，彈性容器，食品包裝
 5 PP	Polypropylene 聚丙烯 (百折膠)	Packaging such as yoghurt and margarine pots, sweet and snack wrappers, medical packaging, milk and beer crates, shampoo bottles 酸乳酪及牛油器皿，糖果及小吃包裝，醫療用品包裝，牛奶及啤酒樽箱，洗頭水樽
 6 PS	Polystyrene 聚苯乙烯 (硬膠)	Disposable hot or cold drink cups and plates, fast food clamshells, dairy product containers 塑膠杯碟，外賣飯盒，乳製品容器
 7 OR O OTHER OR O	All other resins and multi-materials not otherwise defined 其他所有未列出之樹脂及混合料	Other resins, complex composites and laminates 其他樹脂或合成製品

2.5.2 If manufacturers use plastic materials with Recycling Identification Code (7), they should, as far as possible, provide additional information to supplement the code instead of just mark "OTHER" or "O" underneath the code. If the plastic material is made of a single component, the full name or abbreviated form of the material should be marked clearly underneath the Recycling Identification Code (7) as shown below.



Polycarbonate



PC



Polyurethane



PU

3. Detailed Guidelines

3.1 Mooncake Box

3.1.1 Materials

3.1.1.1 Traditionally, mooncakes are sold in boxes made of tin metal or paper. These are materials with higher recyclable values and are recommended for mooncake boxes as they are more suitable for recycling.

3.1.1.2 The use of composite materials should be avoided as far as possible as in the case of single-coloured cardboards laminated with plastics used as mooncake boxes. These boxes appear like plastic containers but the cardboards with plastic coating are a typical composite material. In fact, such boxes have only a small amount of plastic which is firmly attached to the paper material making it very difficult to separate the plastic and paper contents in the recycling process. Thus, manufacturers should use non-composite packaging materials to facilitate recycling.

3.1.2 Shape and Size

To avoid overconsumption of valuable resources, achieve costs reduction and prevent generation of unnecessary waste, manufacturers should maximize space utilization in the mooncake box so that the space is fully used to contain the mooncakes inside the box and avoid using excessive partitioning materials. There should also be minimal gap space between the plastic tray used to hold the mooncake in place and sides of the mooncake box.

3.1.3 Design concept

3.1.3.1 Apart from using recyclable packaging materials, the design of the mooncake boxes should also enable or encourage their reuse so as to reduce disposal. For example, mooncake boxes can be so designed that the consumers may choose to retain the boxes for some other creative uses. In doing so, the design should still stick to the principles of minimizing consumption of packaging materials and adopting the use of recyclable materials as far as possible.

3.1.4 Printing

3.1.4.1 When designing the mooncake boxes, manufacturers should strike a proper balance among environmental protection, visual design and brand-building. As far as possible, printing should be kept at a minimum to reduce the use of ink.

This will help minimize the impact to the environment during both the production and recycling of the mooncake boxes.

3.1.5 Promotional Pamphlets

3.1.5.1 Manufacturers should avoid issuance of additional product flyers or promotional pamphlets in order to save the use of paper. Such information can be printed onto the mooncake boxes.

3.2 Inner Packaging

3.2.1 Individual Packs

3.2.1.1 In order to meet the stringent food hygiene, quality assurance and transportation requirements, mooncakes are now commonly packed individually in unit packing by an automated production system. Such packing can avoid or reduce natural spoilage, contamination and damage during transportation thus minimizing product wastage and can contribute to environmental protection.

3.2.2 Partitioning

3.2.2.1 It is common to have a plastic molded tray (commonly known as “blister tray”) or paper-made partitions placed inside a mooncake box to hold the mooncakes securely in place so as to provide the necessary protection to the mooncakes. Each holding or partition space should be just sufficient to accommodate an individually packed mooncake (that is, there should not be any unnecessary loose gap between the mooncake and the sides of the holding partition). When designing the plastic blister trays, manufacturers should also make reference to the suggestion in section 3.1.2.1 and to avoid using excessive partition materials leading to the need for bigger mooncake boxes and more consumption of materials, resulting in increase in production costs.

3.2.2.2 If manufacturers intend to use the plastic blister trays, they should mark the correct Plastics Recycling Identification Codes on a conspicuous spot of the trays. In recent years, some manufacturers have used “biodegradable materials” to replace recyclable plastics for making the blister trays. However, manufacturers should check whether the quality of such “biodegradable materials” meets the required safety standards for food. For details, please refer to “Testing Guideline on the Degradability and Food Safety of Containers and Bags” at EPD’s website: https://www.wastereduction.gov.hk/en_html/assistancewizard/guide_food_cont.htm

3.2.3 Layers of Packaging

3.2.3.1 On the basis that a complete enclosing packaging is counted as one-layer, the locally produced traditional four-mooncake gift boxes normally would have two layers of packaging, namely the mooncake box and individual packaging of the mooncakes. Such two-layer packaging is good enough to make the mooncake gift box a neat and attractive container for the festival gift.

3.2.3.2 Some mooncake gift sets in the market, however, may also contain tea leaves, tea

set, wine, sauces, bird's nest, etc, which effectively turn the gift sets into multi-layer boxes. In most cases, more than one type of material would be used to package these gift sets. This greatly increases the time in disassembling the parts for recycling and is likely lead to overconsumption of materials. From the environmental protection point of view, manufacturers should avoid using multi-layered packaging as far as possible.

3.3 Accessories

3.3.1 Disposable Cutlery

3.3.1.1 Some consumers may find the disposable cutlery provided in the mooncake boxes come in handy but most people do not. As such, there is no genuine need for manufacturers to include disposable cutlery in the mooncake boxes. To allow the consumers to make a choice, manufacturers may consider giving away the cutlery self-serve at the sales outlets.

3.3.2 Shopping Bags

3.3.2.1 The Environmental Protection Department and various green groups have been actively promoting "Bring Your Own Bag" practice in order to help reduce waste production at source. Manufacturers should refrain from providing disposable shopping bags for mooncake purchases at the retail outlets by:

- Put up posters to urge consumers to use less disposal shopping bags in support of environmental protection;
- Ask the consumers if they really need a shopping bag;
- Ask for the consumer's consent to put boxes of mooncakes into single shopping bag where possible; and
- Provide training to the frontline staff and remind them to offer less shopping bags.

3.3.2.2 The environmental levy scheme on plastic shopping bags (the Levy Scheme) came into operation on 7 July 2009. Phase I of the Levy Scheme covers retail chain stores, supermarkets, convenience stores and personal health and beauty products retail shops. Under the Levy Scheme, retail stores no longer offer free plastic shopping bags and will charge their customers an environmental levy of no less than HK\$0.5 for each plastic shopping bag they ask for. So, manufacturers should either not provide free plastic shopping bags at their mooncake retail outlets or ask retail shops to offer free plastic shopping bags to customers for them.

3.4 Others

3.4.1 Mode of Sale

3.4.1.1 Many local consumers purchase mooncakes for self-consumption. As such, apart from selling mooncakes in the usual box-packs, manufacturers may consider alternative packaging, for example, offering single-packed mooncake so that consumers can purchase any number of mooncakes as they wish. This can do away with the need for mooncake boxes and shopping bags and achieve cost savings which in turn can lower the selling price of mooncakes and make the festival food more environmental friendly.

3.4.2 Keep Up With the Trend

3.4.2.1 Over the years, Hong Kong underwent significant changes in population structure and family composition, such as aging in population and reduction in average family size. These changes have profound impact on consumers' practice in purchasing and consuming mooncakes. In the long run, it is worthwhile for mooncakes manufacturers and/or associations of the trade to invest more resources in conducting systematic and in-depth market surveys to understand the consumption pattern and behaviour of the new generation of families as well as their acceptance and demand for green packaging. This will enable the trade to make corresponding adjustments and improvement in product design and along the supply chain, enhancing the utilization of resources. This will not only enable the trade to keep up with development of the society, but will also make this traditional food more environmental friendly.

3.4.3 Producer Responsibility

3.4.3.1 In accordance with the "polluter pays" principle and the concept of producer responsibility, the manufacturer, importer, wholesaler, retailer and consumer of a product should share the responsibility of disposal of their waste in order to achieve the objectives of waste reduction, recovery and recycling. To this end, we encourage mooncake manufacturers to support and participate in any waste reduction and recovery activities in relation to mooncake boxes and their packaging materials.

3.4.4 Overseas Controls

3.4.4.1 Manufacturers should note that the national standard of mooncakes and of their packaging (GB19855-2005) came into operation in June 2005, while the national standard (GB23350-2009) "Restrictions on Excessive Packaging for Food and Cosmetics" came into operation on 1 April 2010. These standards may have an impact on the packaging of mooncakes to be imported into the Mainland. Similarly, Taiwan has also introduced regulations restricting the over-packaging of products, those parts applicable to mooncake gift sets packaging were implemented in July 2006. Both the Mainland national standards and the regulations of Taiwan touches upon the environmental friendly requirements of mooncakes packaging and these standards can serve as useful reference materials to local mooncake manufacturers. Manufacturers who intend to export mooncakes to these areas for sale are encouraged to study the requirements in detail.

- **The National Standard of the People's Republic of China of Mooncakes (GB19855 – 2005)**
(Web page: <http://www.shfood.net/ShowDetail.aspx?id=125>; reprint on Shanghai Food Net)
- **The National Standard on Restricting Excessive Packaging for Food and Cosmetics (GB23350 – 2009)**
(Web page: <http://down.foodmate.net/standard/sort/3/18181.html>; reprint on

- Foodmate Net)
- **Regarding GB19855 – 2005 “Mooncake” Mandatory National Standard No.1 Revised List (Paper No.2006 of the Standardization Administration)**
(Web page: <http://www.shfood.net/ShowDetail.aspx?id=895>; reprint on Shanghai Food Net)
 - **Notice of Restrictions on Over-packaging of Merchandise (Notice of Environmental Protection Administration, Executive Yuan, Taiwan: No.0940050818E of Environmental Protection Administration)**
(Web page: <http://w3.epa.gov.tw/epalaw/docfile/170060.pdf>)

4. Packaging Evaluation and Assessment

- 4.1 To facilitate manufacturers to evaluate whether they have sufficiently considered the environmental factors in their packaging design, EPD has summarized the principles of the above-mentioned environmental friendly packaging design of mooncakes into a “Checklist” (Appendix 1). Manufacturers can make reference to the Checklist when they design the mooncake packaging.
- 4.2 A sound and environmental friendly packaging design should meet the various packaging requirements with the minimum use of materials, and its various parts should also be readily recycled. To assist mooncake manufacturers in evaluating the environmental performance of their packaging, we have also compiled a “Table for Recording Mooncake Packaging Material Usage” (Appendix 2) for manufacturers’ reference. We encourage mooncake manufacturers to record the packaging material usage for each of their products each year and gradually reduce packaging material usage and switch to the use of recyclable materials so as to enhance the environmental performance of its product packaging.

5. Exchange of Technology and Support

- 5.1 Given the continuous advancement in the environmental friendly technologies on product packaging, EPD would like to communicate, exchange and share experience with the trade. EPD also welcomes views and suggestions from the trade to further improve these guidelines. For enquiries or assistance, please contact us at 2838 3111.

Waste Management Policy Group

Environmental Protection Department

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Checklist on the Design of the Packaging of Environmental friendly Mooncakes

1. Packaging Materials		Yes	No	Paragraph for Reference
1.1	Types of materials have been reduced to a minimum	<input type="checkbox"/>	<input type="checkbox"/>	2.3.1
1.2	Use packaging materials that are recyclable (such as tin, paper, PET, HYPE and LDPE)	<input type="checkbox"/>	<input type="checkbox"/>	2.3.2 3.1.1.1
1.3	Minimize colouring of the packaging materials as far as possible	<input type="checkbox"/>	<input type="checkbox"/>	2.3.3
1.4	Avoid using materials that are not environmental friendly or of low recyclable benefits (such as PVC plastic or plastic foam)	<input type="checkbox"/>	<input type="checkbox"/>	2.3.3
1.5	Avoid using “composite materials”	<input type="checkbox"/>	<input type="checkbox"/>	2.3.4 3.1.1.2
2. Design of the Packaging				
2.1	Different packaging materials can be easily dissembled for waste separation and recycling	<input type="checkbox"/>	<input type="checkbox"/>	2.4.1
2.2	Design of the shape of mooncake box has maximized the utilization of space therein and reduced void space.	<input type="checkbox"/>	<input type="checkbox"/>	3.1.2
2.3	The blister tray has been reduced to a minimum.	<input type="checkbox"/>	<input type="checkbox"/>	3.2.2.1
2.4	The space between each mooncake and the space between mooncakes and the mooncake box have been reduced to a minimum.	<input type="checkbox"/>	<input type="checkbox"/>	3.2.2.1
2.5	The number of layers of packaging has been reduced to 2 or below.	<input type="checkbox"/>	<input type="checkbox"/>	3.2.3
3. Environmental friendly and Recycling Sign				
3.1	An appropriate “Recycling Identification Code” or a note has been printed on the plastic parts.	<input type="checkbox"/>	<input type="checkbox"/>	2.5
3.2	A note encouraging recycling is printed in an appropriate space on the packaging.	<input type="checkbox"/>	<input type="checkbox"/>	3.5.1
3.3	Avoid printing and distributing additional product description or publicity leaflets as far as possible	<input type="checkbox"/>	<input type="checkbox"/>	3.1.5
4. Other Arrangements				
4.1	Avoid giving cutlery, or arrange cutlery to be placed in retail shops for collection by customers	<input type="checkbox"/>	<input type="checkbox"/>	3.3.1
4.2	Take measures to reduce the use of shopping bags	<input type="checkbox"/>	<input type="checkbox"/>	3.3.2

**Assessment of Individual Product's
Packaging Material Usage (for the year 201__)**

Mooncake Packaging Material Usage Record

1. Product Description

Product Name :	Photo of product with packaging
Product Bar Code :	
Product content :	
Number of Mooncake per box : _____ pcs	
Each mooncake's net weight : _____ gramme	

2. Packaging Material Used Per Box of Mooncakes

Name of Packaging	Weight of Material (g)				Is material recyclable
	Paper	Metal	Plastic (please specify the type)	Others (please specify)	
Exterior box					
Plastic mooncake tray					
Individual mooncake packaging (total weight)					
Individual mooncake's plastic tray (total weight)					
Plastic cutlery					
Plastic cutlery packaging					
Promotional / illustration pamphlets					
Others (please specify)					
Weight of packaging material used per box of mooncakes (g)					Total :
Packaging material user per gramme of mooncake (g)					Total :