



Guidelines on Environmental Mooncake Packaging Design

1. Introduction

1.1 Hong Kong mooncakes are very popular both in local and other 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 worldwide trend in 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 is considerable. With the implementation of environmentally friendly packaging designs, mooncake manufacturers can, in addition to reducing packaging waste, utilise their resources more efficiently and cost-effectively. 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 trades' reference. It is hoped that these initiatives can assist mooncake manufacturers in balancing 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

Simple Packaging

2.1 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 a festive gift. Excessive packaging means overconsumption of valuable resources, as well as generating unnecessary trash, thus causing adverse impact to the environment.

The "3R" Principle

2.2 Manufacturers may help reduce waste by adopting the "3R" principle in their product packaging:

- a) **Reduce** – minimise the weight and volume of packaging materials while optimising product safety, hygiene and 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.

Choice of Materials

2.3 From the environmental viewpoint, the variety of materials chosen for product packaging should be minimised to enable easy separation for recycling that saves consumers' effort and time.

2.4 Packaging materials 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, using recycled material as a food-contact layer may not always be possible. Nevertheless, the potential application of environmentally friendly materials for those parts of the packaging that have no direct contact with the food content should be explored.

2.5 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 of 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 the colourings in the packaging materials will limit the use of the recycled plastics and therefore reduce their recycling values.

2.6 Manufacturers should also avoid using "composite materials", e.g. glossy laminated paper which is 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.

Easy to Disassemble














2.7 The design of an environmentally friendly packaging should be conducive to 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.

Clear Labeling

2.8 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, such as those adopted by the Society of the Plastics Industry, Inc., USA (see Table 1), and be marked with appropriate Plastics Recycling Identification Codes to facilitate waste collectors' separation for recycling.

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.

Table 1 Plastic Recycling Identification Code List

Code 編碼	Material 物料	Applications 應用例子
 OR  PETE PET	Polyethylene Terephthalate 聚對苯二甲酸乙二醇酯	Clear soft drink and beverage bottles, films 透明汽水及飲品樽、菲林
 OR  HDPE PE-HD	High Density Polyethylene 高密度聚乙烯 (硬性軟膠)	Detergent bottles, industrial wrapping and film, sheets, shopping bags 洗潔精樽、工業包裝及薄膜、膠板、背心膠袋
 OR  V PVC	Polyvinyl Chloride 聚氯乙烯	Water pipes, bath curtains, credit cards, packaging film, water containers 水管、浴簾、信用卡、包裝薄膜、盛水容器
 OR  LDPE PE-LD	Low Density Polyethylene 低密度聚乙烯	Cling film, bread bags, plastic bags, shrink wrap, T-shirt bags 保鮮紙、麵包袋、收縮膠膜、背心膠袋
 OR  PP PP	Polypropylene 聚丙烯 (百折膠)	microwave containers, sweet and snack wrappers, straws, artificial lawns 微波爐膠盒、糖果及小吃、飲管、人造草皮
 OR  PS PS	Polystyrene 聚苯乙烯 (硬膠)	Disposable cups and plates, fast-food boxes, CD cases, VHS tapes 即棄膠碟、飯盒、雷射唱片膠盒、錄影帶
 OR  OTHER 0	All other resin and multi-materials not otherwise defined 其他所有未列出之樹脂及混合料	CD, complex composites 雷射唱片、合成樹脂製品

2.9 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 marking “OTHER” or “O” underneath the code. If the plastic material is made of a single component, the full name or abbreviation of the material should be marked clearly underneath the Recycling Identification Code (7) as shown below.



Polycarbonate



PC



Polyurethane



PU

3. Detailed Guidelines

Mooncake Box

Materials

3.1 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.

3.2 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.

Shape and Size

3.3 To avoid overconsumption of valuable resources, achieve costs reduction and prevent generation of unnecessary waste, manufacturers should maximise space utilisation 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.

Design concept

3.4 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 designed in a way that the consumers may retain the boxes for some other creative uses. In doing so, the design should still stick to the principles of minimising consumption of packaging materials and adopting the use of recyclable materials as far as possible.

Printing

3.5 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 minimised to reduce the use of ink. This will help reduce the impact to the environment during both the production and recycling of the mooncake boxes.

Promotional Pamphlets

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

Inner Packaging

Individual Packs

3.7 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 packaging can avoid or reduce natural spoilage, contamination and damage during transportation, thus minimising product wastage and contributing to environmental protection.

Partitioning

3.8 It is common to have a plastic moulded 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 paragraph 3.3 and to avoid using excessive partition materials leading to the need for bigger mooncake boxes and more consumption of materials, resulting in an increase in production costs.

3.9 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 food safety standards. The relevant legislation for the regulation of disposable plastic tableware and other plastic products (“The Legislation”) came into effect on 22 April 2024², which bans the manufacture, sale, and free distribution of oxo-degradable plastic products and the manufacturers are required to comply with the relevant requirements.

Layers of Packaging

3.10 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.

3.11 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 pack these gift sets. This greatly increases the time in disassembling the parts for recycling and is likely to lead to overconsumption of materials. From the environmental protection point of view, manufacturers should avoid using multi-layered packaging as far as possible.

Accessories

Disposable Cutlery

3.12 The Legislation is also regulating merchants from selling or supplying specified disposable plastic tableware and products in the course of their businesses. Regarding the sale of mooncake, some consumers may find the disposable cutlery provided in the mooncake boxes come in handy, but most people do not. As such, manufacturers are encouraged not to include disposable cutlery in the mooncake boxes.

Shopping Bags

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

² <https://www.cuttheplastics.hk/index.php/en/about-the-regulation-en>

- 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.

3.14 The Plastic Shopping Bag Charging Scheme (the Scheme)³ came into operation on 7 July 2009. The first phase of the Levy Scheme covers major retail chain stores, supermarkets, convenience stores and personal health and beauty products retail shops. The Scheme was extended to the entire retail sector on 1 April 2015. To maintain the effectiveness of the Scheme, on 31 December 2022, the Government implemented enhancement measures, including increasing the charging level per plastic shopping bag (PSBs) from the current level of at least 50 cents to at least \$1; removing the present exemption for PSBs carrying frozen or chilled foodstuff items; and tightening the exemption relating to foodstuff items such that free PSBs can only be provided when purchasing foodstuff items without packaging or not wholly contained in any packaging, or food and beverage takeaway items in non-airtight packaging, subject to the basic principle of “one free PSB per single transaction”. Therefore, manufacturers should not provide free plastic shopping bags at their mooncake retail outlets nor ask retail shops to offer free plastic shopping bags to customers.

Others

Mode of Sale

3.15 Many local consumers purchase mooncakes for self-consumption. 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 reduce the need for mooncake boxes and shopping bags to save cost and in turn lower the selling price of mooncakes and make the festival food more environmentally friendly.

Keep Up With the Trend

3.16 Over the years, Hong Kong underwent significant changes in population structure and family composition, such as aging population and shrinking family size. These changes have a 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 the development of the society but will also make this traditional food more environmentally friendly.

Producer Responsibility

3.17 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 to achieve the objectives of waste

³ For details on the Plastic Shopping Bag Charging Scheme, please refer to the website of the Environmental Protection Department:
https://www.epd.gov.hk/epd/english/environmentinhk/waste/pro_responsibility/env_levy.html

reduction, recovery and recycling. To this end, we encourage mooncake manufacturers to support and participate in any waste reduction and recovery activities related to mooncake boxes and their packaging materials.

Requirements in Other Places

3.18 Manufacturers should note that the new national standard of mooncakes and their packaging (GB/T 19855-2023) came into operation in the Mainland of China (the Mainland) in 1 Apr 2024, while the new national standard (GB23350-2021) “Restrictions on Excessive Packaging for Food and Cosmetics” was announced and came into operation on 10 August 2021 and 1 September 2023 respectively. These standards may have an impact on the packaging of mooncakes to be imported into the Mainland. Similarly, China’s Taiwan region 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 touch upon the environmentally friendly requirements of mooncakes packaging and these standards/regulations can serve as useful references 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 – General Rules for Mooncake’s Quality (GB/T 19855 – 2023) (Chinese version only) ⁴
- The National Standard on Restricting Excessive Packaging for Food and Cosmetics (GB23350 – 2021) (Chinese version only)⁵
- Notice of Restrictions on Over-packaging of Merchandise (Notice of Environmental Protection Administration, Executive Yuan, China’s Taiwan region: No. 0940050818E of Environmental Protection Administration) (Chinese version only)⁶

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 summarised the principles of the abovementioned environmentally 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 environmentally friendly packaging design should meet the various packaging requirements with the minimum use of materials, and its parts should also be readily recyclable. 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 used for each of their products each year and gradually reduce

⁴ <https://std.samr.gov.cn/gb/search/gbDetailed?id=053404E3EEA38F91E06397BE0A0A9209>

⁵ <https://openstd.samr.gov.cn/bz/gk/gb/newGbInfo?hcno=30366DF41D69DA50E3EEABC0CE18A241>

⁶ <https://oaout.moenv.gov.tw/law/SearchAllResultList.aspx?KW=0940050818E>

packaging material usage and switch to 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 environmentally friendly technologies on product packaging, EPD would like to communicate, exchange and share the 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 and Strategy Group
Environmental Protection Department

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Appendix 1

Checklist on the Design of the Packaging of Environmental friendly Mooncakes

		Yes	No	Paragraph for Reference
1. Packaging Materials				
1.1	Types of materials have been reduced to a minimum	<input type="checkbox"/>	<input type="checkbox"/>	2.3
1.2	Use packaging materials that are recyclable (such as tin, paper, PET, HYPE and LDPE plastics)	<input type="checkbox"/>	<input type="checkbox"/>	2.4 & 3.1
1.3	Minimize colouring of the packaging materials as far as possible	<input type="checkbox"/>	<input type="checkbox"/>	2.5
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"/>	2.5
1.5	Avoid using “composite materials”	<input type="checkbox"/>	<input type="checkbox"/>	2.6 & 3.2
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"/>	2.7
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"/>	3.3
2.3	The blister tray has been reduced to a minimum.	<input type="checkbox"/>	<input type="checkbox"/>	3.8
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"/>	3.8
2.5	The number of layers of packaging has been reduced to 2 or below.	<input type="checkbox"/>	<input type="checkbox"/>	3.10 & 3.11
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"/>	2.8 & 2.9
3.2	A note encouraging recycling is printed in an appropriate space on the packaging.	<input type="checkbox"/>	<input type="checkbox"/>	2.8
3.3	Avoid printing and distributing additional product description or publicity leaflets as far as possible	<input type="checkbox"/>	<input type="checkbox"/>	3.6
4. Other Arrangements				
4.1	Avoid giving cutlery	<input type="checkbox"/>	<input type="checkbox"/>	3.12
4.2	Take measures to reduce the use of shopping bags	<input type="checkbox"/>	<input type="checkbox"/>	3.13 & 3.14

**Assessment of Individual Product's
Packaging Material Usage (for the year 202_____)**

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 used per gramme of mooncake (g)					Total :