

Recyclable Packaging Materials Selection and Identification

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For convenience, new content in this version will be in blue text. Deleted items are not noted except as mentioned below.

Hardcopy printout is only valid on the date of printing. The online version applies.

Change History		
Date	EC	Description
May-2008	L80729	<ul style="list-style-type: none"> Added Waste Bin symbol per EU Battery Directive (see Section 2.3) Added guidance note regarding the "Green Dot" (table 7)
Aug-2012	L81024	<ul style="list-style-type: none"> Added "Batteries - Europe Only" wording to accompany the Waste Bin symbol. Also, see important additions on Chinese packaging marking requirements based on actual inspections that have held up shipments. See pages 8, 9 and 20
May 2012	L80800K L80800L	<ul style="list-style-type: none"> Section 4, Updated Korean Symbols (must be implemented by July 1, 2012) Revised trash bin symbol (removing "Europe Only" wording) Updated Table 4 on page 8 with new recycling symbols and removed Chinese codes Updated definitions of Rigid Plastic Packaging Containers and Guidance
Nov 2013	L80800M	<ul style="list-style-type: none"> Updated table 4 to reflect removal of Chinese marking codes and add new images Guidance notes related to material markings (2.3) and usage of the folded ribbon symbol (2.4.1) sometimes referred to as the Mobius loop. Removal of Japanese recycling markings (apply only to consumer goods). Reorganization to create new section 2.4 for "Other Markings" including folded ribbon symbol (2.4.1), Waste Bin Symbol (2.4.2) and Dangerous goods markings (2.4.3). Added numerous new terms and definitions into section 4.
Jan 2018	L11779	<ul style="list-style-type: none"> Modified to stay in concert with EPEAT Server Standard NSF/ANSI 426-2017

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1.0 Introduction

1.1 Abstract

IBM uses a comprehensive waste management system to reduce the impact of its waste materials on the solid waste stream. This integrated system emphasizes source reduction and recycling programs prior to investigating alternatives for disposal. Material recycling strategies will focus upon the use of:

1. Recycled material(s) in packaging,
2. Other materials which provide a resource for secondary applications (e.g., recyclable materials).

1.2 Purpose

- To establish parameters for the recycled content to be included in corrugated and plastic packaging.
- To reduce and/or eliminate the use of non-recyclable materials or materials compositions that prevent or hinder the recycling of IBM packaging after use.
- To promote recycling by providing information (in the form of markings) which will increase the likelihood that packaging materials will be recycled as well as ease and support recovery processes (collection, separation, recycling).

1.3 Compliance

Compliance with the requirements herein will be enforced as a condition of purchase per IBM purchase contracts. When the requirements of this specification conflict with applicable governmental regulations, the more stringent shall take precedence.

Related international standards include ISO 11469, DIN 6120 (Germany), ISO 1043, and the Korean "Extended Producer Responsibility" law (1/2003) [and the new EPEAT standard applicable to Server Products \(NSF/ANSI 426-2017, chapter 8\)](#). This specification ([5897660](#)) aims to comply with all of these; routinely applied to all subject materials regardless of origin or destination.

1.4 Scope

This specification considers two ways recycling may be used to reduce IBM's contribution to the solid waste streams.

- It redirects material which would otherwise be sent to a landfill.
- It may conserve natural resources or reduce the amount of waste material generated from processes which utilize raw or virgin materials.

1.5 Application

- This specification applies to all primary, secondary, and tertiary packaging for products, devices, parts, subassemblies, materials, and supplies purchased by IBM

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for use in its manufacturing and distribution operations.

- This specification applies to all packaging used in protecting, handling, or marketing of IBM logo products, parts and supplies including those manufactured by an OEM (original equipment manufacturer)
- This specification applies to, but is not limited to, the following packaging materials and packaging components:
 - Molded cushions (of any resin), Fabricated cushions (of any resin), Corrugated fiberboard, Paperboard, Rigid and flexible plastics (bags and wraps), Wooden pallets, crates and skids

1.6 Referenced Documents

The following represent the regulatory force behind these requirements in the various countries that are affected or an internationally recognized standard (ISO, DIN, etc.).

Table 1: External Documents and Standards	
Country	Document Title / Description
Korea	Separate Discharge Marks for Packaging
<u>ISO 11469</u>	"Plastics -- Generic identification and marking of plastics products"
ISO 1043	Plastics -- Symbol and abbreviated terms (4 parts):
	Part 1: Basic polymers and their special characteristics
	Part 2: Fillers and reinforcing materials
	Part 3: Plasticizers
	Part 4: Flame Retardants
Germany	DIN 6120-1: Marking of Packaging and Packing Material for the Purpose of Recovery - Plastics Packaging and Packing Material - Part 1: Artwork / Graphics
	DIN 6120-2: Marking of Packaging and Packing Material for the Purpose of Recovery - Plastics Packaging and Packing Material - Part 2: Additional Marking
EU	EU Battery Directive: 2006/66/EC and EU Packaging Directive 96/62/EC (2005/20/EC) EU Decision on material identification no. 97/129/EC

Table 2: Related IBM Internal Documents	
Part No.	Document Title / Description
<u>31L5345</u>	[same as] <u>GA21-9261</u> : "Packaging and Handling: Supplier and Interplant Requirements" (linked below)
<u>31L5039</u>	<u>Global Labeling Guide Vol. 2 - Product Package Labels</u>
<u>31L5241</u>	<u>Global Labeling Guide Vol. 6 - FRU Package Labels</u>
<u>36P3127</u>	<u>Global Labeling Guide Vol. 8 - Symbols and Special Labels</u>
<u>37L8024</u>	<u>Wooden Packaging, Materials Selection, Treatment and Identification</u>
Http://www-03.ibm.com/procurement/proweb.nsf/ContentDocsByTitle/United+States-Information+for+suppliers#packaging	

2.0 Requirements

Korean marking requirements are now a part of this specification. In short, this means that packaging materials subject to identification marking requirements will bear the traditional symbols included herein and **in addition** will bear the Korean symbol(s). Refer to table 4 for a convenient summary of these symbols. For artwork, refer to the official Korean web site for

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downloadable files.

In addition, the European waste bin symbol intended to prevent discarding batteries into the trash is now also part of this specification (see 2.3 for details). Reference: European Union Battery Directive: 2006/66/EC

http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_266/l_26620060926en00010014.pdf

General Rule for [Augmenting Recycling per NSF/ANSI 426-2017, section 8.2.1:](#)

a) All non-reusable packaging components ≥ 25 g shall be separable by material type, including by plastic material type as specified in b) below, using only commonly available tools. The following are exempt from this requirement: labels affixed to plastics bags or wraps, tape, staples, co-laminated materials for purposes of moisture or ESD barrier protection, and plastic bags over expanded foam.

b) All plastic packaging components ≥ 25 g shall be clearly marked with material type in accordance with ISO 11469/1043, ASTM D7611/D7611M, or DIN. The following are exempt from this requirement: plastic protective films, stretch wraps, strapping, and expanded polyurethane foam.

Meet the US EPA’s recommended recovered fiber content levels for paperboard and packaging products (<https://www.epa.gov/smm/comprehensive-procurement-guidelines-paper-and-paper-products#04>)

2.1 Cellulosic Materials

2.1.1 Performance of Recycled Paper Products

The following principles should be adopted to achieve maximum performance from recycled paper products:

- Use a recycled fiber source of premium grade (long fiber length).
- Use a recycled fiber source that is free of contaminants.

Use recycled fiber in moderation since too much can result in poor performance. High-performance corrugated packaging is best achieved through the specification of performance properties (e.g., burst and compression strength).

2.1.2 Guidelines for Recycled Fiber Content

Corrugated fiberboard packaging should be manufactured using a **minimum of 25%** recycled fiber content using the maximum available post consumer material where adequate supplies exist. It is **not** recommended to far exceed 50% recycled content for external primary cartons or over-packs made from corrugated fiberboard due to performance (burst and crush resistance). Higher recycled content percentages should only be used for interior pads, dividers and other less critical applications. Refer to Table 1.

Fiber-based packaging materials derived from alternative sources to traditional paper mill products are exempt from this recycled fiber requirement and shall not be included in the calculation of recycled content of a complete package assembly. Examples of alternative sources include, but are not limited to, kenaf, bamboo and mushrooms.

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Table 1: EPA Recommended Recovered Fiber Content Levels for Paperboard and Packaging Products

(source: <https://www.epa.gov/smm/comprehensive-procurement-guidelines-paper-and-paper-products#04>)

Description	Postconsumer Fiber (%)	Total Recovered Fiber (%)
Corrugated containers: ¹		
(< 300 psi)	25-50	25-50
(> 300 psi)	25-30	25-30
Solid Fiber Boxes	40	40
Folding Cartons ²	40-80	100
Industrial paperboard (e.g., tubes, cores, drums, and cans)	45-100	100
Miscellaneous (e.g., pad backs, covered binders, book covers, mailing tubes, protective packaging)	75-100	90-100
Padded mailers	5-15	5-15
Carrierboard ³	10-15	10-100
Brown papers (e.g., wrapping paper and bags)	5-20	5-40

¹The recovered fiber and postconsumer fiber content is calculated from the content of each component relative to the weight each contributes to the total weight of the box.

²The recommended content ranges are not applicable to all types of paperboard used in folding cartons. Cartons made from solid bleached sulfate or solid unbleached sulfate contain no or small percentages of postconsumer fiber, depending on the paperboard source.

³Carrierboard made from unbleached Kraft contains up to 25 percent recovered fiber, while carrier board made from recycled paperboard contains up to 100 percent recovered fiber.

2.1.3 Calculating Recycled Fiber Content

Because corrugated mediums travel in the vertical as well as horizontal direction, take-up factors must be used when calculating a material's combined basis weight to compensate for the additional material. Industry approximations for the take-up factors are shown below:

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Flute	Take-up Factor	Typical Example:	
A	1.55	Board Type:	Double wall
B	1.35	Flute:	B/C
C	1.43	Test:	350 psi
		Liner Combination:	42/26/44/26/42
		Combined Basis Weight:	180 lbs/msf

Sample Calculation: The combination of 100% recycled mediums and interior liners with near-virgin outside liners produces a high-performance, corrugated product with a proportionately large amount of recycled fiber. An example of a high-performance board with a similarly high contribution from reclaimed material is illustrated in [Table 3](#).

Component	Basis Weight (lbs/msf)	(times) Recycled Content (%)	(equals) Recycled Content (lbs/msf)	(times) Take-up Factor	(times) Quantity	(equals) Total Recycled Content (lbs/msf)
Liner board	42	25%	10.5	--	2	21.0
Liner board	44	100%	44.0	--	1	44.0
Medium	26	100%	26.0	1.43	1	37.2
Medium	26	100%	26.0	1.35	1	35.1
Total	180					137

$$\text{Recycled Content (\%)} = \frac{137 \text{ lbs/msf}}{180 \text{ lbs/msf}} = 76.1\%$$

2.1.4 Recycling Aids for Second-Generation Cellulosic Materials

IBM wishes to reduce or eliminate the use of non-recyclable packaging materials and packaging materials compositions that hinder recycling. The performance of any recycled paper products may be enhanced by incorporating any or all of these IBM required practices that apply. Refer to [GA21-9261](#) for suggested alternatives:

- Eliminate the use of adhesives to commingle materials (e.g., foam cushions glued to a corrugated pad).
- Eliminate the use of free-rise foam-in-place where feasible. Do not use bleached white corrugated board or oyster white board.
- Use water / soy based inks when printing packaging materials.
- Use only functional coatings or impregnating that does not adversely affect material recycling. Some coatings that aid resistance to water, grease, or scuffing may be used with no adverse effect on material recycling. Avoid wax based coatings.
- Avoid the use of film laminations and/or cross-linked resins such as urea formaldehyde or polyethylene coated paperboard or solid bleached sulfate (SBS). Exceptions may apply for packaging designed for reuse.

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2.2 Polymeric Materials

2.2.1 Guidelines for Recycled Resin Content

In addition to specifying the use of easily recyclable materials, IBM Corporation promotes recycling through its purchase of products that contain recycled materials. To assist in achieving this objective, IBM requires that plastic packaging must be manufactured using the maximum possible post consumer recycled resin. This requirement is contingent upon several factors, including the existence of processes that produce equivalent performing materials. The percentage of post consumer content technically achievable depends on the chemistry of the material utilized, the performance requirements of its end use application, and the availability of usable post consumer recycled feed stocks. Due to these variables, this requirement will be measured on an individual application basis. For example, polyurethane foams are currently produced using a process that does not permit recycled resin to supplement prime material while some high density polyethylene (HDPE) materials can achieve up to 100% recycled content. It is IBM's intention for suppliers to assess the use of post consumer recycled resin for IBM applications, and utilize the maximum percentage content practicable and for engineering teams to select materials which are capable of achieving higher percentages of recycled content than competing materials where feasible.

Note: Rigid plastic packaging containers (RPPCs) with a minimum capacity of 0.236 liters (eight ounces) or its equivalent volume and a maximum capacity of 19 liters (five gallons) or its equivalent volume must comply with the California RPPC regulation regardless of origin or destination. Refer to 5897660, section 2 (7) for additional details.

2.2.2 Packaging Material Coding System

The Society of Plastics Industry (SPI) has developed a coding system that identifies the commonly used plastic resins for the purpose of separation and recycling. Although originally designed to assist plastic bottle manufacturers, some industrial plastic manufacturers and users of plastic packaging have adopted use of the system to assist them with resin sortation for recycling; this approach has also been extended to other types of packaging materials other than plastics and are also listed in Table 4 for convenience.

2.2.3 Marking of the Resin Identifier

Molded Parts

When marking a molded plastic piece with the resin identifier, it is recommended that the identifier be embossed on the part ejection pins. Because the pins are not an integral part of the mold, the molder selects the appropriately marked pin whenever new parts are molded. This method of imprinting is preferred as this process allows flexibility in resin recycled content identification. It also adds little expense to tool development or

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the piece price of molded cushion parts.

Fabricated Parts

It is recommended that fabricated parts including those made of polyurethane or polyethylene similarly apply the resin identifier using either hot wire imprinting or a stamp which prints the appropriate mark using permanent ink. Caution must be used when selecting the ink and location to ensure it does not smear or transfer to the machine covers. Each individual component must be marked. The marking may be applied with a small permanent label if that is the only way to achieve compliance.

2.3 Material Markings

Table 4: Summary of Packaging Material Categories and their respective Identification Codes
 Good online reference http://en.wikipedia.org/wiki/Recycling_codes

Material Category	Others See 2.4 and 3.0	Packaging Material Description	Material Initials	Code Numbers
Plastics		Polyethylene Terephthalate	PET(E)	1
		High Density Polyethylene	HDPE	2
		Polyvinyl Chloride (1)	PVC	3
		Low Density Polyethylene	LDPE	4
		Polypropylene	PP	5
		Polystyrene (includes Arcel®)	PS	6
		Others (includes Polyurethane)	Other	7
Paper 	See also 2.4.1 (Folded Ribbon Recycling Symbol)	Corrugated Fibreboard (2)	PAP	20
		Non-Corrugated Fibreboard	PAP	21
		Paper	PAP	22
		Paperboard	PAP	23
Metals 		Steel	FE	40
		Aluminum	ALU	41
		Others reserved for future use (TBD)		42-49
Wood 		Wood (see also 37L8024)	FOR	50
		Cork	FOR	51
		Others reserved for future use (TBD)	FOR	52-59
Fabrics 		Cotton	TEX	60
		Jute	TEX	61
		Others reserved for future use (TBD)	TEX	62-69
Glass 		Colorless Glass	GL	70
		Brown Glass	GL	71
		Green Glass	GL	72
		For more >>> http://en.wikipedia.org/wiki/Recycling_codes		
Composites		Paper and cardboard / various metals	C/**	80
		Paper and cardboard / plastics	C/**	81
		Paper and cardboard / aluminum	C/**	82
		Paper and cardboard / steel tinplate	C/**	83

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		Paper and cardboard / plastics / alum / steel	C/**	84
		Paper and cardboard / plastics / aluminum	C/**	85
		Plastics / Aluminum	C/**	90
		Plastics / steel tinplate	C/**	91
		Plastics / various metals	C/**	92

** The predominant material of the composite structure follows the C/ marking on composites

Guidance Notes: Although codes have been assigned for various materials in the EU, aside from plastics, they are not commonly used and are considered to be voluntary. If any item is being printed anyway, use the applicable symbols also. If an item is not printed at all (example stretch wrap) marking is not mandatory UNLESS it was printed on for other reasons in which case the markings should be added.

(1) Reminder: IBM prohibits the use of PVC (polyvinyl chloride) for packaging applications.

(2) The PAP symbol is now specified for corrugated fibreboard and all paper based packaging materials but rework and retooling of existing printing plates is not required. It may be phased in over time.

2.4 Other Markings

2.4.1 Folded Ribbon Chasing Arrows Symbol

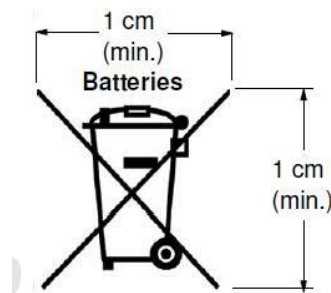
This is the familiar chasing arrows symbol designed like a folded ribbon sometimes referred to as the mobius loop which is a misnomer. This symbol generically means simply that the item on which it appears is recyclable (where facilities exist) and should be recycled. Guidance: It may be used in lieu of, or in addition to, the PAP markings shown in Table 3. It may also be used in addition to the other numbered symbols from Table 3 but not in lieu of them.



2.4.2 European Battery Recycling, Waste Bin Symbol

A modified European waste bin symbol (inset at right showing specified proportions), intended to prevent discarding batteries into the trash, is now also part of this specification. It is included in this specification as an alternative for shipping locations to have this symbol preprinted on the packaging in lieu of printing on the product package labels in case that capability does not exist at any given location.

Words "Europe Only" were removed from beneath the symbol



Symbol showing minimum dimensional size (ref.) For packaging applications (dimensions are not printed)



Updated symbol as it would appear on packaging or labels applied to packaging.

Note: The appearance of the waste bin symbol on the packaging is not intended to suggest that the packaging itself cannot be discarded. The regulation requires that the

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waste bin symbol appear on packaging if the battery is too small to have the symbol on the battery itself, such as in the case of button cell batteries. The addition of the word “Batteries” is intended to qualify this scope and prevent misinterpretation.

How to Comply:

2.4.2.1 Systems and MES Packaging:

The waste bin symbol must appear on all systems packages and MES packages if the symbol is not already present on the package label since virtually all systems and MES’s include parts which contain batteries.

2.4.2.2 Options and Field Replaceable Units (FRU’s):

The waste bin symbol is only required on those packages which are known to contain batteries or parts which include batteries if the symbol is not already on the FRU labels.

- Method 1 (preferred): The waste bin symbol may be printed on demand as part of the product package label (ref. Global Labeling Guides, Volumes 2, 6 and 8) or,
- Method 2 (acceptable): Alternatively, the waste bin symbol may be printed on the packaging as artwork for locations that cannot print the image on demand, or
- Method 3 (last resort): The waste bin symbol may be applied as a separate marking or sticker (label) placed on the package exterior.

Each location can determine for themselves which of the above alternatives works best.

2.4.2.3 Image Size:

The minimum size of the image on packaging is 1cm x 1cm. It may be proportioned larger as appropriate for larger packages. Maximum size is 5cm x 5cm but this would be only for very large rack style products.

2.4.3 Dangerous Goods Transportation Markings and Labels

Markings or labels that are required by dangerous goods transportation regulations must only be applied to the package when the package contains the corresponding dangerous goods. Conversely, it is strictly **prohibited** for a package to carry dangerous goods markings or labels if there are no dangerous goods packaged inside.

Example: Uninterruptible Power Supply (UPS) chassis that do NOT contain sealed lead acid batteries must NOT have the “NONSPILLABLE” marking on the package.

2.5 Responsibilities of IBM’s Suppliers

2.5.1 These requirements apply to all packaging materials used to make shipments to IBM or to customers on IBM’s behalf. They also apply to all packaging materials

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purchased by IBM, and subsequently used by IBM for its products, parts and supplies shipments.

2.5.2 Suppliers who design packages for shipment of parts, options, supplies or products **must ensure** that they utilize materials and methods which are conducive to recycling. Examples that introduce contaminants which would preclude the subsequent recycling of packaging materials are:

- The use of free-rise foam-in-place where foam is dispensed directly into the corrugated container, or
- The use of adhesives to commingle materials (e.g., polyethylene foam glued to a corrugated pad).
- In addition, avoid the specification of colors which may inhibit recycling

2.5.3 Suppliers who use packaging materials for shipments to IBM or sell packaging materials to IBM, but do not manufacture and monitor all phases of the material production, shall verify that their supplier conforms to the requirements identified above.

2.5.4 Suppliers should contact IBM Purchasing at a manufacturing or distribution location if they are in need of assistance in understanding these responsibilities.

2.6 Local IBM Responsibilities

It is recommended that local Procurement and Packaging Engineering groups establish site audit programs to assure packaging materials entering the manufacturing or distribution process are recyclable (eg not permanently commingled) and properly identified with the correct resin identifier (in the case of plastics) or properly marked using the chasing arrows symbols and codes (refer to Table 4). These programs may vary depending upon number of suppliers, number of parts received, etc.

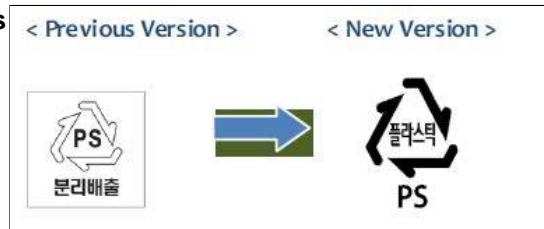
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3.0 Korean Discharge Marks for Packaging

The scope of this law that affects IBM products is almost all packaging materials of plastic resin, in particular that used for foam cushions (“buffers”), bags, and clam-shells are applicable. Material initials are derived from ISO 11469. The updated marks are **mandatory** for almost all electronic and electrical products sold in Korea. Markings must be as large as practical but must be at least 8 mm x 8 mm or larger. Direct printing or embossing (molded in) is preferred but an attached label may also be used if necessary.

Executive Summary for all Electronic / Electrical Items (finished goods) shipped to Korea. The primary focus is on plastic “buffers” (or cushions) and film or sheet type plastics used for bags, thermoformed clam-shells and so on made of PS, PP, PE, and OTHER.



Mark (mandatory): Molded and Fabricated Foam Cushions, poly bags, ESD bags, Padded Envelopes and other cushioned plastic wraps or bags including microfoam and Bubble Wrap used for **Finished Goods (Systems) AND Options.**

Optional (Out of Scope): Corrugated boxes or inserts, tape, banding, stretch wrap, Molded [Paper] Pulp, paper cushions (ie. Pad Pak and similar) or any packaging for **FRU’s** (field replacement units), Spare Parts, components including inbound parts destined for manufacturing consumption. FRU’s are out of scope because they are not SOLD.

Additional Exemptions include the following types of packaging:

- Packaging materials whose surface is less than 50cm² (7.72 in²).
- Plastic sheet and film with a surface area less than 100 cm² (15.5 in²). Plastic bags are included in the scope of plastic sheet and film. Example for bags: A 6 cm wide x 10 cm tall bag uses 120 cm² plastic film (60 cm² x 2 sides = 120 cm²) which exceeds the 100 cm² limit, and must be marked unless otherwise exempt.
- Packaging material on which it is technically difficult to print, engrave, or label due to elements or structural properties. One example would be polyurethane foam.
- Plastic film or sheet packaging materials with a thickness less than 20 microns (µm).
- Plastic bags, plastic sheet, and plastic film packaging materials that do not have any printing, engraving, embossing, or labeling are not required to carry the Korean discharge mark. However, if they are marked with ANY information (for instance, PN’s) they must carry the discharge mark.

Exempted Products: Packaging for the following products are exempt from the Korean discharge marking requirements; **however, we are specifying that the markings still be routinely applied anyway for the focus materials regardless of origin or destination due to inconsistent enforcement by authorities and due to client requests. Exceptions to this policy should be reviewed and approved by IBM Packaging Engineering.**

- Rack mounted server consoles, mass storage, switches and their associated displays and keyboards are out of scope.
- Barcode printers, label printers, receipt printers, bank book printers, graphics-only printers, plotters are out of scope.
- Uninterruptible Power Supplies with a capacity of more than 10 KVA.





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Table 6: Korean Packaging Material Identification Requirements (revised)		
Material Description (Shown only are those that are likely to exist in IBM).	Korean Discharge Marks: The use of colors is not mandatory for the marking of plastics (may be black/white), but if colors ARE used they must be per the Korean Graphics Standard. Symbols shown in BLUE would be for solid plastics Symbols shown in PURPLE would be for flexible film and sheet type plastics. The Korean words inside are the symbols are different for each type.	
	Symbols for SOLID Plastics (including foam cushions ie. "Buffers")	Symbols for FILM and SHEET Plastics
<p>Polystyrene (EPS or PS)</p> <p>Ref: #6 on the SPI scale</p> <p>Note: ARCEL™ qualifies for this symbol since it is also marked as #6 on the SPI scale.</p>		
<p>HIGH Density Polyethylene (HDPE)</p> <p>Ref: #2 on the SPI system.</p> <p>Note: The proportions shown in this example apply to all Korean symbols.</p>		
<p>LOW Density Polyethylene (LDPE)</p> <p>Ref: #4 on the SPI system.</p>		

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<p>Polypropylene (EPP or PP)</p> <p>Ref: #5 on the SPI scale</p>		
<p>OTHER: May include the following:</p> <ul style="list-style-type: none"> • Composite Materials (mixed resins) such as ESD bags <p>Ref: #7 on the SPI scale</p>		
<p>Note: Korean markings also exist for PET, PVC, Paper, Aluminum, Steel, Glass and other specialty items which should not apply to IBM packaging subject to this regulation or are optional.</p>		

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4.0 Definitions and Key Words

Some of these terms may not be explicitly mentioned in this specification but may be relevant when evaluating requirements provided in the specification.

Biodegradable	Capable of being slowly decomposed by biological agents or other natural processes, bacteria, etc.
Oxo-biodegradable (plastics)	See full explanation here: http://en.wikipedia.org/wiki/Oxo_Biodegradable
Buffer	Another word for "foam cushion" in Korea. Specifically, packing materials that are made from foam-like single synthetic resins, which are made of beads containing hydrocarbons such as butane, hexane, pentane, etc., puffed by applying heat, or by other means. Examples of "buffer" materials: expanded polystyrene (EPS), expanded polyethylene (EPE) and expanded polypropylene (EPP).
Cellulosic	A substance made of natural plant parts including wood, paper
Commingle	To intermix dissimilar materials.
Composite	A material or package made of a combination of dissimilar materials which cannot be separated manually. Example: An ESD bag made of a colamination of Polyethylene, Polyester and Aluminum.
Discharge Mark (Korea)	A marking placed on the packaging materials to support recycling efforts.
Expanded Foam	Expanded resinous material with a cellular structure, manufactured by the dispersion of a gas in the liquid resin, and the subsequent setting of the expanded mass.
Fabricated Foam	Foam, usually expanded and extruded in plank form, that is cut and/or bonded into its final useful form.
Flexible Container	A plastic container that can be flexed and twisted, without the aid of tools, without damaging the container.
Foam-In-Place	Two liquid components combined under heat to produce a polyurethane foam which is cast and formed around a particular shape. This process may be performed in either of two ways: A. Using a mold, as with pre molding where finished cushions will be sent to the packager. B. Using only the item to be packaged and the shipping carton, as with free-rise foam-in-place.
High Grade (fiber)	Generally refers to white or cream-colored paper recovered from offices, homes, schools, and other sources. Includes used copy paper, stationery, and old books.
Industrial or Manufacturing Waste	Material discarded from industrial operations or manufacturing processes. Such material can only be counted as recycled content if it would otherwise have not been recovered. This includes dry paper and paperboard waste generated <u>after</u> completion of the papermaking process (that is, those manufacturing operations up to and including the cutting and trimming of the paper machine reel into smaller rolls or rough sheets) including: envelope cuttings, bindery

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	<p>trimmings, and other paper and paperboard waste resulting from printing, cutting, forming, and other converting operations; bag, box, and carton manufacturing wastes; and butt rolls, mill wrappers, and rejected unused stock; and repulped finished paper and paperboard from obsolete inventories of paper and paperboard manufacturers, merchants, wholesalers, dealers, printers, converters, or others.</p>
Mill Broke	<p>Any paper waste generated in a paper mill <u>prior</u> to completion of the papermaking process. It is usually returned <u>directly</u> to the pulping process. Mill broke is excluded from the definition of “recovered fiber.”</p>
Molded Foam	<p>Foam that has been cast into a particular form and allowed to expand and form its cellular, bubble-like structure. Note: all molded foams are expanded but not all expanded foams are molded, some are extruded.</p>
Options	<p>Items that are purchased by consumers for the purpose of upgrading their computer systems. Examples: Monitors, hard disk drives, mice, keyboards, speakers, etc. These are “in scope” for Korean markings.</p>
Polymeric	<p>A substance made of plastic.</p>
Post consumer Waste	<p>Materials which have been diverted, sorted for recycling after they have performed their designed purpose. <i>Example: Paper, paperboard, and fibrous materials from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item, including: used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards; and used cordage; and All paper, paperboard, and fibrous materials that enter and are collected from municipal solid waste.</i></p>
	<p>Guidance: Same principles would apply to non-paper materials.</p>
Primary Package	<p>The first layer of packaging in contact with the part.</p>
Recovered Fiber (paper)	<p>Recovered fiber is the combined total of post-consumer recycled fiber and recovered manufacturing wastes that would have otherwise entered the waste stream.</p>
	<p>Guidance: Same principles would apply to non-paper materials.</p>
Recyclable	<p>Waste material which is capable of being processed for subsequent use. Materials are only recyclable if there is a widely available economically viable collection, processing, and marketing system for the material.</p>
Recycled	<p>Material which has already been reclaimed from a waste product and processed in order to regain material.</p>
Recycling	<p>The conversion of an item or material from its existing state for reuse as a similar or different item or material. Not to be confused with reuse (see next definition).</p>
Recycling Rate	<p>Recycling rate = Total recycled (by weight) divided by total discarded (by weight) + recycled (by weight).</p>
Refillable	<p>Similar to reusable but this term implies that it is reused for another shipment of the exact same type of product usually in a closed loop with the original manufacturer. Example: Beer kegs, ARBO crates.</p>
Reusable	<p>When applied to packaging, reusable means a container, package,</p>

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or component of the container or package (e.g., a foam cushion, plastic bag, etc.) is capable of being used more than one time, without being significantly changed (i.e., used in its same physical form, requiring only minor repair or cleaning). Reusable is not to be confused with recycling (which reprocesses it back into raw materials). Reusable containers may be refilled by the original manufacturer or by another user for a similar purpose. Example: standard wooden pallets.

Rigid Plastic Packaging Container (RPPC)

<http://www.calrecycle.ca.gov/plastics/rppc/>

What are rigid plastic packaging containers?

Currently the California Code of Regulations (CCR) Defines RPPCs as containers that:

- Are made entirely of plastic, except for lids, caps, or labels.
- Have a capacity of at least 8 fluid ounces but no more than 5 gallons, or the equivalent volumes (important: this applies even if the container is not used for liquids or powders).
- Can maintain their shape while holding a product.
- Are capable of multiple re-closures, and are sold with an attached or unattached lid or cap.

Guidance:

RPPC's: Molded Clam-Shells and wafer containers are considered to be RPPC's if they meet the size criteria.

Not RPPC's: Molded cushions (foam or vacuum formed) since there is no closure or lid even though they hold their shape when empty.

Secondary Material

Resultant material of a processed recyclable material.

Secondary Package

The second layer contains primary package(s).

Source Reduction

The design and manufacture of products and packaging with minimum volume of material and/or a longer useful life.

Suppliers

Organizations that provide parts, products, and components to an IBM site. This can include other IBM sites as well as independent vendors.

Tertiary Package

This includes the shipping container and all additional internal dunnage materials, if any.

Virgin Fiber

Refers to cellulose fiber derived directly from trees and other plants that is newly pulped, previously unused.

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