



Guidelines for Wireless Device and Accessory Packaging

Version 1.0

November 2020

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Table of Contents

Section 1	Introduction	6
1.1	Purpose	6
1.2	Scope.....	6
1.3	Acronyms and Terms.....	6
Section 2	Guidelines for Mobile Wireless Device and Accessory Packaging	7
2.1	Reduce packaging material that is unnecessary to sufficiently protect the product, and eliminate as much single-use plastic as possible	7
2.2	Avoid constructions that inhibit recycling.....	7
2.3	Increase the amount of recycled and certified paper/corrugated materials	7
2.4	Include proper labeling or e-labeling to educate consumers on how to recycle packaging materials	8
2.5	Promote consideration of the environment in the printing process	8
2.6	Perform due diligence on packaging vendors and sourced materials.....	8
Appendix A	Elimination of Problematic Materials and Proposed Alternatives	9
Appendix B	Key Performance Indicators in Packaging	10
Appendix C	Fiber Certifications	11
Appendix D	Guidance on Recycling Instructions and Labels	12
Appendix E	Alternative Inks	13
Appendix F	Supplier Assessments	14
Appendix G	Packaging Design Process.....	15
Appendix H	Revision History	16

List of Tables

Table 1.3-1 Terms and Acronyms.....	6
Table A.1-1 Packaging Materials Guidance.....	9

Acknowledgements

This document was created by the mobile wireless industry with input from the following companies and their representatives.

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Asurion , Jim Haddon, Gregory Iles, Gary Gallion	Southern Company , Kasey Chow
AT&T , Bob Boyle, Angel Manriquez, Sarah Williams, Gary Duffy, Brianne Scott, Jasen Mehta, Ariel Yeh	T-Mobile , Alex Rosenthal, Mary Sue Cummings
Samsung , Chris Kaasmann, Jenni Chun	Verizon , Brian Gallo

Section 1 Introduction

1.1 Purpose

The purpose of this document is to provide guidance on mitigating the environmental impact from mobile wireless device and accessory packaging.

CTIA's Sustainable Packaging Working Group has worked to develop these guidelines to facilitate the wireless industry's continued commitment to environmental stewardship. The intention of this document is not to define specific packaging requirements. An organization can modify or adapt these guidelines to meet their specific business needs.

1.2 Scope

This document defines recommended sustainable practices and guidelines for mobile wireless device packing and mobile wireless device accessory packaging.

1.3 Acronyms and Terms

Table 1.3-1 Terms and Acronyms

Acronym/Term	Definition
ASTM	International standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services
FFC	Fair Factories Clearinghouse
FSC	Forest Stewardship Council
KPI	Key Performance Indicator
LDPE	Low-Density Polyethylene
PCW	Post-Consumer Waste
PEFC	Programme for the Endorsement of Forest Certification
PET	Polyethylene Terephthalate
PLA	Polylactic Acid or Polylactide
RBA	Responsible Business Alliance
rPET	Recycled Polyethylene Terephthalate or Recycled PET
SFI	Sustainable Forest Initiative
VOCs	Volatile Organic Compounds

Section 2 Guidelines for Mobile Wireless Device and Accessory Packaging

2.1 Reduce packaging material that is unnecessary to sufficiently protect the product, and eliminate as much single-use plastic as possible

- Eliminate plastic wire ties from packaging materials. Reference [Appendix A, Elimination of Problematic Materials](#).
- Minimize use of protective plastic films and bags.
- Where it is not possible to eliminate plastic, increase the amount of pre-consumer and/or post-consumer recycled plastic material (e.g., rPET) in packaging materials and/or shift to bio-based versions of conventional plastics (e.g., sugarcane-based PE).

2.2 Avoid constructions that inhibit recycling

- Eliminate metal wire ties from packaging materials. Reference [Appendix A, Elimination of Problematic Materials](#).
- Eliminate plastic insert trays within product containers. Reference [Appendix A, Elimination of Problematic Materials](#).
- Avoid permanent adhesives to ensure dissimilar materials can be separated without the use of tools.
- Strive to ensure materials used are fully recyclable in a majority of communities served.

2.3 Increase the amount of recycled and certified paper/corrugated materials

- Maximize Post-Consumer Waste content (PCW) by including some measure of recycled or certified paper products in the external packaging, the internal components and the printed material.
- Increase reputable certified fiber by sourcing through such programs as the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC), and PEFC-endorsed programs like the Sustainable Forest Initiative (SFI). Reference [Appendix C, Fiber Certifications](#).
- Source fiber from supply chains that demonstrate lawful sustainable forest management practices, source paper/corrugated materials to ensure zero net deforestation, and allow traceability to the fiber's region of origin.

2.4 Include proper labeling or e-labeling to educate consumers on how to recycle packaging materials

- Label all packaging and content with internationally recognized symbols including ASTM marks or other marks (e.g. How2Recycle) for specific packaging material. [Appendix D, Guidance on Recycling Instructions and Labels.](#)
- Opt for e-labeling, which can consist of QR codes or a direct link to a website with detailed packaging information. [Appendix D, Guidance on Recycling Instructions and Labels.](#)
- Include certification logos on all packaging materials that contain certified fiber. Reference [Appendix C, Fiber Certifications.](#)

2.5 Promote consideration of the environment in the printing process

- Follow government and industry standards pertaining to specific ink and coding formulation.
- Replace inks and coatings with those providing lower emission of VOCs. Reference [Appendix E, Alternative Inks.](#)
- Demonstrate proper maintenance of printing equipment to prevent negative environmental impacts from refurbishment.

2.6 Perform due diligence on packaging vendors and sourced materials

- Conduct initial reviews of new suppliers and utilize third-party assessment platforms to track, score, and monitor suppliers on an ongoing basis. Reference: [Appendix F, Supplier Assessments.](#)
- Recommend verification of third-party testing (e.g. fiber testing) on packaging materials when necessary.

Appendix A Elimination of Problematic Materials and Proposed Alternatives

Table A.1-1 below provides guidance on specific packaging materials to eliminate in business operations when possible (first column), and examples of potential sustainable material alternatives if the material cannot be eliminated in packaging (second column). The below is not meant to be a comprehensive set of requirements, rather potential alternatives to consider as a part of the packaging design process.

Table A.1-1 Packaging Materials Guidance

Problematic Materials to Eliminate	Proposed Alternatives
LDPE Plastic Films/Bags	Alternative plastic films that contain recycled content or bio-based content within the framework of PE
Styrofoam Packing Peanuts	Packing peanuts made from starch (dissolve in water)
Formed Styrofoam	Molded pulp
Formed Plastic Trays (PE/PET)	rPet or molded pulp
Polystyrene	PLA lined paper Bagasse Molded pulp

When possible, it is recommended to eliminate problematic materials, rightsize when elimination isn't possible, and maximize recycled content or bio-based materials. Many companies make a commitment to use recycled materials (bio-based renewable or non-renewable) to encourage waste reduction. Utilization of post-consumer waste content (PCW) can contribute to sustainable material flows and encourage waste reduction.

Appendix B Key Performance Indicators in Packaging

There is an increasing demand for reporting on environmental matters that have an impact on business operations. While organizations are encouraged to define and measure key performance indicators (KPIs) that make the most sense for their business, the following KPIs are examples of how to measure, manage, and communicate your environmental performance internally:

- **Weight of packaging** to measure percent reduction in material by weight
- Overall **percent of recycled material** used in packaging to determine if virgin material inputs to the product can be further reduced.

For more information on KPIs, reference [Environmental Key Performance Indicators](#).

Appendix C Fiber Certifications

For product packaging made of paper or cardboard, it is recommended to source reputable certified fiber. There are different certifications that focus on different aspects of the fiber supply chain. Primary examples of fiber certifications include Forest Management Certification and Chain-of-Custody Certification.

The [Forest Stewardship Council](#) (FSC) is an independent, non-profit organization that sets standards under which forests and companies are certified. The FSC administers Forest Management and Chain of Custody Certification. In both types of certification, independent FSC-accredited Certification Bodies ("certifiers") verify that all FSC-certified forests conform to the requirements contained within an FSC forest management standard.

The [Programme for the Endorsement of Forest Certification](#) (PEFC) is a leading global alliance of national forest certification systems. PEFC promotes sustainable forest management through third-party certification. The forest certification program is open to all companies that manufacture, process, trade or sell forest-based products, and includes a sustainable forest management certification and chain or custody certification.

The [Sustainable Forest Initiative](#) (SFI) is another independent authority responsible for certifying companies to the SFI 2015-2019 Fiber Sourcing, Forest Management, and Chain-of-Custody Standard. These certifications include assurance mechanisms for recycled content. Once certified, organizations can apply to use SFI on- product labels, which are globally recognized and show customers products are responsibly sourced.

Many companies make a commitment to incorporate post-consumer waste content (PCW) in their fiber. PCW is content created by consumers after a product has reached the end of its use. By using recycled content in their products, companies can help support and improve the recycling system.

Appendix D Guidance on Recycling Instructions and Labels

Often, non-OEM accessories such as chargers and headphones use packaging components that are not widely recycled, such as LDPE bags. To keep these bags out of landfills, all plastic bags/packaging components that have a recycling logo should also include messaging that clearly conveys if the item is only accepted in a store drop-off receptacle. For consideration, labels should also include:

- Direction on how to prepare material for recycling, whether the material can be recycled traditionally or by other means (if available in the consumer's region)
- Type of material the packaging is made of
- Specific packaging components that the label refers to

Vendors may also consider e-labeling. E-labeling allows organizations to communicate locational specific instructions on how to prepare the material for recycling, and/or whether the material can be recycled traditionally or by other means by making this information available to the consumer online.

[How2Recycle](#) is a good example of a standardized labeling system that clearly communicates recycling instructions to consumers.

[ASTM](#) provides paper and packaging standards that help evaluate and test the physical, mechanical, and chemical properties of labeling products. The ASTM standards help to identify characteristics such as chemical content, acidity or alkalinity, tensile breaking strength, peel adhesion, and water, oil, and tear resistance among others. They also help producers and end-users of paper materials to understand the appropriate processing and assessment procedures for efficient commercial use.

To help navigate specific country/state packaging labeling requirements, businesses should develop a matrix for all environmental requirements and disclosures.

Appendix E Alternative Inks

There are carcinogenic volatile organic compounds (VOCs) released by solvents during the printing process for some inks. VOCs are compounds of carbon that can evaporate into the air, releasing emissions that cause global air pollution. To lower carbon emissions and alleviate toxicity concerns, it is recommended to avoid the use of VOC-containing inks, and use alternative inks such as water-based, UV-cured or soy inks. While the composition of ink can be complex, it is recommended to look for ink alternatives that are “VOC free” or inks that comply with [DIN ISO 2846-1](#) printing standards.

Appendix F Supplier Assessments

In an effort to conduct ethical sourcing more efficiently, it is recommended to evaluate suppliers on social and environmental issues. There are several assessment platforms that can help an organization to manage, review and evaluate third-party suppliers. Some examples of those tools and resources are included below.

- [Fair Factories Clearinghouse \(FFC\)](#): Offers a compliance management system to help monitor the labor, health and safety, ethical and environmental practices of suppliers.
- [Ecovadis](#): An enterprise software that delivers comprehensive sustainability assessments. The company's assessment model helps buyers monitor suppliers' performance across four categories; Environment, Labor & Human Rights, Ethics, and Sustainable Procurement.
- [Assessor](#): An online sustainability assessment tool that enables companies to self-assess and benchmark their sustainability and corporate social responsibility programs against industry best practices.
- [Responsible Business Alliance \(RBA\)](#): World's largest industry coalition dedicated to corporate social responsibility in global supply chains. RBA provides assessment tools to members to identify their greatest social, environmental, and ethical risks in their supply chains.

Appendix G Packaging Design Process

It is best to include a representative member of the design team for the product or other item being packaged, in the initial phases, to support the development of sustainable packaging. Obtain sign-offs from key stakeholders throughout the design process as a means to guarantee alignment. This will allow for immediate feedback on look and or feel to ensure consistent branding, efficient packaging design, recyclability and an optimal user experience.

Appendix H Revision History

Date	Version	Description
November 2020	1.0	Initial release