The Global Language of Business

# Apparel and General Merchandise

# Best Practice Guideline for Sustainability in Packaging Materials

*Release 1.0, November 16, 2020*

# Table of Contents

## About GS1

GS1® is a neutral, not-for-profit, global organization that develops and maintains the most widely-used supply chain standards system in the world. GS1 Standards improve the efficiency, safety, and visibility of supply chains across multiple sectors. With local Member Organizations in over 110 countries, GS1 engages with communities of trading partners, industry organizations, governments, and technology providers to understand and respond to their business needs through the adoption and implementation of global standards. GS1 is driven by over a million user companies, which execute more than six billion transactions daily in 150 countries using GS1 Standards.

## About GS1 US

GS1 US®, a member of GS1 global, is a not-for-profit information standards organization that facilitates industry collaboration to help improve supply chain visibility and efficiency through the use of GS1 Standards, the most widely-used supply chain standards system in the world. Nearly 300,000 businesses in 25 industries rely on GS1 US for trading-partner collaboration that optimizes their supply chains, drives cost performance and revenue growth while also enabling regulatory compliance. They achieve these benefits through solutions based on GS1 global unique numbering and identification systems, barcodes, Electronic Product Code (EPC®)-based RFID, data synchronization, and electronic information exchange. GS1 US also manages the United Nations Standard Products and Services Code® (UNSPSC®).

# Document Summary

| Document Item | Current Value |
|---|---|
| **Document Title** | Best Practice Guideline for Sustainability in Packaging Materials |
| **Date Last Modified** | November 16, 2020 |
| **Document Description** | This guideline provides guidance on how to incorporate sustainable practices into the supply chain. |

### The GS1 System of Standards

The GS1 System of Standards is an integrated suite of global standards that provides for accurate identification and communication of information regarding products, assets, services and locations. Using GS1 Identification Numbers, companies and organizations around the world are able to globally and uniquely identify *physical things* like trade items, assets, logistic units and physical locations, as well as *logical things* like corporations or a service relationship between provider and recipient. When this powerful identification system is combined with GS1 barcodes, 3Com, EPC®-enabled item level RFID, and the Global Data Synchronization Network™ (GDSN®), the connection is made between these physical or logical things and the information the supply chain needs about them.

### About the GS1 US Apparel and General Merchandise Initiative

The GS1 US Apparel and General Merchandise Initiative serves as a strategic effort in which retailers, marketplaces, brand owners, suppliers, manufacturers, industry trade associations, solution providers and academia voluntarily join to assist in helping the retail industry drive the adoption and use of the GS1 Standards.

**To learn more about the Initiative, visit:**

**www.gs1us.org/ApparelGM**

## Executive Summary

In 2019, several retailers, brand owners, and solution providers determined a need for industry guidance on sustainable packaging. The retail landscape is being transformed to utilize burgeoning omni-channel fulfillment capabilities and to create new customer experiences. Against this backdrop, there is a call to reduce packaging waste in the delivery of products through the supply chain. Consumers are increasingly concerned about brands' environmental and financial responsibility. Packaging is an area of particular interest.

The team agreed that the best way to proceed was to form a GS1 US Apparel and General Merchandise Initiative Sustainability in Packaging Workgroup. This would allow all supply chain partners to work together to create practical industry guidelines for packaging that protects products while minimizing waste and negative environmental impact.

The rapid growth of online shopping presents new challenges for retailers that must adapt and sell products to consumers through a variety of channels. The retailers, in turn, need their suppliers to assist them in the most cost-effective and environmentally-responsible manner possible, remaining mindful of related cost impacts.

# 1 Introduction

## 1.1 Overview

This Application Guideline was prepared by the *GS1 US Apparel and General Merchandise Initiative* Sustainability in Packaging Materials Workgroup to assist trading partners with the use of GS1 Standards. It provides guidance on how to incorporate sustainable practices in the supply chain. Implementation of this guideline is voluntary. Trading partner relationships will determine the scope and timing of individual deployments.

**Note**: As with all GS1 Standards and solutions, this guideline is voluntary, not mandatory. It should be noted that use of the words "must" and "require" throughout this document relate exclusively to technical recommendations for the proper application of the standards to support the integrity of an implementation. The information contained herein is for informational purposes only as a convenience and does not constitute legal advice or a substitute for legal counsel. GS1 US Inc. assumes no liability for the use or interpretation of the information contained herein.

## 1.2 Who Developed This Guideline?

This Guideline was developed by the *GS1 US Sustainability in Packaging Materials Workgroup*. The workgroup includes representatives from leading North American general merchandise and apparel vendors, retailers, and supply chain solution providers. This group of companies represents a broad spectrum of product categories within the retail industry and includes companies large and small.

## 1.3 Objectives

The Workgroup focused on actions that can be taken to decrease the resources used in packaging and shipment of products from suppliers to retailers, retailers to consumers, suppliers to consumers (known as Direct to Consumer), as well as from suppliers to their own retail stores. The guideline also provides ideas for reducing waste inherent in the use of plastics, reducing packaging costs, and meeting trading partners' overall sustainability objectives to:

- Align with corporate ESG (Environmental, Social, Governance) goals that many trading partners are embracing as a measure of corporate awareness of sustainability.
- Ensure that that products are shipped and handled in a way that protects them but minimizes non-recyclable waste.
- Remove barriers that prevent trading partners from using new or alternative methods or materials in packaging. By allowing flexibility, companies can utilize new technology or products while ensuring the products are kept clean and safe.

## 1.4 Scope

The scope of this document is focused on sustainability of packaging materials used in Apparel, Footwear and General Merchandise retail categories. The guidance provides sustainability recommendations to reduce the amount of polybags used in the retail ecosystem and to optimize the use of cartons and related supplies.

The authors have given careful consideration to the impact of their recommendations and for this reason, this document focuses on considerations deemed essential for the preservation and shipment of products. The document serves as a starting point for all trading partners to analyze their current internal capabilities and begin planning to examine their use of polybags and cartons in the apparel and general merchandise supply chain, and to identify opportunities for improved sustainability.

### 1.5 Audience

This guidance is written for both suppliers and retailers, and establishes a framework for third-party providers that may service them. It is applicable to all North American companies trading products in the general merchandise and apparel sector. This includes, but is not limited to, cosmetics, jewelry, footwear, fashion accessories, apparel and sportswear, sporting goods, home fashion, and small appliances. The primary audience is the company department tasked with execution on sustainability and ESG goals.

### 1.6 Release 1.0 Summary

This first release of the guideline focuses on polybags, packing techniques and materials, and cartons. Considerations and suggestions are provided to minimize non-recyclable waste while still maintaining the package performance standards needed to deliver merchandise through the supply chain in pristine condition.

## 2 Importance of Sustainability in Apparel and General Merchandise

Dramatic growth in omni-channel shopping is driving major supply-chain changes to meet evolving consumer needs. First and foremost, consumers expect the items they purchase to arrive in pristine condition. This requires the correct and optimal use of packaging materials. The goal of supply chain sustainability is to deliver the best possible customer experience and eliminate waste where possible.

Additionally, there are other approaches not covered in this guide aimed at minimizing waste and maximizing recycling of packaging materials. These include use of reverse logistics and targeted recycling programs at shopping malls for tenants or within retail store locations.

## 3 Polybags

### 3.1 Overview of Polybag Usage

Polybags are clear, typically low-density polyethylene (LDPE)-based plastic bags that protect products during transit from manufacturing sites to distribution centers and onwards to retail stores and consumers' homes (through e-commerce). These bags may have specific closures such as adhesives or plastic strips and are often printed with inks displaying warning labels and branding. Often, paper-based labels and/or stickers are placed on the bags displaying product information and barcodes.[1]

The explosion of e-commerce is causing more packages – often containing polybags – to end up in households, in addition to retail stores and distribution centers. For all trading partners, the primary purpose of packaging is to safely deliver products to end users in pristine condition, essential to support customer satisfaction. Polybags are used because they provide effective cushioning for products within shipping containers. Minimizing their use will help reduce plastic waste – an environmental issue that is generating widespread concern.

### 3.2 Rightsizing

A great deal of material can be saved by rightsizing every packaging component – including the polybags – to minimize waste. Ensure that the polybag used is the correct size for the package and its contents, sized to provide the necessary cushioning without going overboard. For example, using a larger polybag for an item that could be accommodated in a smaller polybag creates additional waste,

[1] Source: Polybags in the Fashion Industry: Evaluating the Options, Fashion for Good in collaboration with the Sustainable Packaging Coalition, December 2019

  

as well as additional cost. For some products, defining minimum and maximum margins between the edge of the item and the polybag will help drive use of an appropriately sized polybag and eliminate plastic waste.

**Figure 3-1** Example of polybag that is larger than needed for the product

## 3.3 Right Specification

Consider the optimal polybag specifications needed to protect the product, including the plastic thickness (usually referred to in mils- one mil is equivalent to one thousandth of an inch or .001 inch). Thinner polybags use less plastic – a priority in many companies' sustainability programs. This material reduction must be balanced with the type and degree of protection needed for the product, with consideration given to its weight, dimensions, and other properties. The polybag's ability to maintain integrity during shipment must always be considered above all.

## 3.4 Alternative Materials

When considering alternative materials for product protection, the ability to deliver an item through its supply chain journey in good condition is paramount. Alternative materials should meet trading partners' requirements including:

- Protection from dirt, dust, or abrasion
- Transparency (allowing light to pass through) so that objects behind can be distinctly seen
- Ability to scan through the material
- Structural integrity to keep the product "retail ready," so it can be placed immediately on a sales floor directly out of the bag.

## 3.5 Recyclability and Recycled Content

Review options on the content of polybags, including post-consumer waste, post-industrial waste, and the use of scrap. Investigate the composition of the plastic in terms of recycled content and recyclability. There are local, regional and commercial variations in acceptability of certain plastic grades for recycling. Check on available recycling options and, where possible, recycle any waste at the source (packing plant). Many residential recycling programs do not accept LDPE, but commercial recovery streams can be more flexible, where volume is consolidated and contamination more readily controlled. Evaluate options for the bags' recycled content as well.

## 3.6 Closure Options

Closure options on polybags vary and can impact bags' recyclability. Self-adhesive, folding flaps, self-seal, heat seal, and tape can all affect the ability for the bags to be recycled, which should be considered when determining a product's packaging and packing process. Investigate recyclable or even easily removable closure options.

## 3.7 Labels on Polybags

Often product and shipping information is printed on a label and attached to the outside of a polybag. Sometimes, the same information is also available on labels or tickets attached directly to the product. With trading partner agreement and meeting regulatory requirements, companies can also consider eliminating the label on the bag, if the item label meets their business needs.

Another consideration would be printing barcodes directly on the polybag using environmentally friendly ink so the item could be scanned in the receiving process.

# 4 Folding Techniques

## 4.1 Roll and Tie

Roll and Tie is a method of packing items that does not utilize polybags but instead relies on folding and rolling an item (usually apparel) tightly and securing it with twine or excess fabric. Using roll and tie reduces movement of the garment during shipment and reduces the need for polybags on individual items.

**Figure 4-1** Roll and Tie example


## 4.2 Bulky Items

Some bulky items can be reduced in volume by vacuum sealing, so they can fit into a smaller container, thereby using less resources in shipment. The smaller size and tighter wrap can reduce the need for external padding in the package.

## 4.3 Use of Alternative Materials

The use of items like twine or other fabric to hold the item together is a method that does not use polybags or non-recyclable items but still enables firm packing of items.

# 5 Carton Fulfillment

## 5.1 Rightsizing

An optimized carton is designed to meet requirements for safely shipping a product through the supply chain while minimizing the size of the package itself. Eliminating wasted space inside a carton reduces material consumption and shipping cost, and improves shipping supply-chain efficiency. Trading partners can discuss and review carton size to discover solutions that withstand the rigors of processing and shipping, while using the minimal packaging material necessary to provide the appropriate level of protection.

## 5.2 Carton Specifications

Different combinations of paperboard used to create corrugated cartons can be utilized. There are various constructions available that offer a variety of specialized properties, with a range of thicknesses, layers and flute sizes to meet different packaging requirements. Some cartons are made with paper consisting of 100% recycled fiber, or a combination of recycled and virgin fibre. The average corrugated container contains 50% recycled fiber. The proper specification must be selected to protect the specific product and provide an incremental sustainability improvement through reduction of material and waste.

## 5.3 Coating on Cartons

Carton coatings are available that can reduce or eliminate the need for polybags while supporting the safe transport of merchandise. Additives and coatings can be applied to the inside liners of corrugated cartons to enhance moisture barrier properties, for example. This can be a good alternative to using bulk or individual polybags for product protection in certain scenarios. Today, there are recyclable coating options available that will not preclude the carton's recyclability.

## 5.4 Double Wall vs. Single Wall

Discussion between trading partners on the use of double or single wall cartons can clear the way to reduce corrugated materials and cubic volume of the carton. A small change in the carton specification can lead to a substantial improvement when combined with other techniques. Trading partners should investigate if humidity or other environmental factors play a part in the integrity of the carton when considering these options.

## 5.5 Light Weighting

Material usage can be optimized to reduce waste through a practice called "light weighting" – using the least amount of raw materials possible without compromising performance for the intended contents. Reducing the carton's grammage (the weight of paper expressed as grams per square meters) helps drive waste reduction. Corrugated weight specification must be considered in balance with carton performance requirements to ensure products arrive at their final destinations undamaged.

## 5.6 Light Weighting

The structural design of a corrugated carton can also be optimized for material reduction. For example, the Regular Slotted Container (RSC) and One-Panel Folder (OPF) are two common box constructions. Many others are available, with nearly unlimited options as corrugated packages can be custom-designed to fit their intended use. In some cases, OPFs can reduce corrugated material usage.

## 5.7 Carton Closure

Package sustainability can be further enhanced through careful consideration of closure mechanisms. It is recommended to minimize the use of staples, tapes and adhesives that can inhibit carton recyclability. When possible, using recyclable tape to seal cartons is suggested.

## 5.8 Alternatives to Cartons

More alternatives to corrugated cartons are becoming available each year. For some business-to-business and business-to-consumer needs, the use of alternatives may be appropriate. Some potential alternatives are:

- Shipping envelopes made from either 2- or 3-ply kraft paper. This option is best suited for small quantity apparel or accessory shipments via e-commerce or ship-to-consumer delivery in omni-channel retail scenarios.

  **Figure 5-1** Example of shipping envelope


- Returnable packaging. In some scenarios, plastic totes can be used to ship products from point of manufacture to point of sale. They are then returned to the manufacturer for re-use. There are even emerging possibilities for the use of returnable packaging in direct to consumer deliveries.
- Carton reuse is encouraged whenever possible, before recycling.

# 6 Process Change

Modifying existing supply chain processes can also help reduce and/or eliminate the use of polybags and unrecyclable waste. Partnership between brand owners and retailers can produce alternatives specific to the nature of particular merchandise and its shipping requirements.

Possible alternatives are:

- Removing the polybag at the distribution center, enabling a consolidated recycling opportunity
- Using a single carton liner for prepacks to minimize polybag use
- Configuring orders to minimize the packaging materials needed.

# 7 Closed Loop Systems

Working together to create innovation, trading partners should consider focusing on methods that address the use of polybags and cartons on multiple levels to reduce waste and improve sustainability. These should include retailers taking empty polybags back to the DC, use of returnable packaging, and intentional recycling programs for mall tenants.[2]

[2] Source: Polybags in the Fashion Industry: Evaluating the Options, Fashion for Good in collaboration with the Sustainable Packaging Coalition, December 2019

## Proprietary Statement

This document contains proprietary information of GS1 US. Such proprietary information may not be changed for use with any other parties for any other purpose without the expressed written permission of GS1 US.

## Improvements

Improvements and changes are periodically made to publications by GS1 US. All material is subject to change without notice. Please refer to GS1 US website for the most current publication available.

## Disclaimer

Except as may be otherwise indicated in specific documents within this publication, you are authorized to view documents within this publication, subject to the following:

1. You agree to retain all copyright and other proprietary notices on every copy you make.
2. Some documents may contain other proprietary notices and copyright information relating to that document. You agree that GS1 US has not conferred by implication, estoppels, or otherwise any license or right under any patent, trademark, or copyright (except as expressly provided above) of GS1 US or of any third party.

This publication is provided "as is" without warranty of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. Any GS1 US publication may include technical inaccuracies or typographical errors. GS1 US assumes no responsibility for and disclaims all liability for any errors or omissions in this publication or in other documents which are referred to within or linked to this publication. Some jurisdictions do not allow the exclusion of implied warranties, so the above exclusion may not apply to you.

Several products and company names mentioned herein may be trademarks and/or registered trademarks of their respective companies. GS1 US does not, by promulgating this document on behalf of the parties involved in the creation of this document, represent that any methods, products, and/or systems discussed or recommended in the document do not violate the intellectual property rights of any third party. GS1 US has not performed a search to determine what intellectual property may be infringed by an implementation of any strategies or suggestions included in this document. GS1 US hereby disclaims any liability for any party's infringement of intellectual property rights that arise as a result of any implementation of strategies or suggestions included in this document.

This publication may be distributed internationally and may contain references to GS1 US products, programs, and services that have not been announced in your country. These references do not imply that GS1 US intends to announce such products, programs, or services in your country.

GS1 US shall not be liable for any consequential, special, indirect, incidental, liquidated, exemplary, or punitive damages of any kind or nature whatsoever, or any lost income or profits, under any theory of liability, arising out of the use of this publication or any content herein, even if advised of the possibility of such loss or damage or if such loss or damage could have been reasonably foreseen.

GS1 US HEREBY DISCLAIMS, AND YOU HEREBY EXPRESSLY RELEASE GS1 US FROM, ANY AND ALL LIABILITY RELATING TO YOUR COMPLIANCE WITH REGULATORY STANDARDS AND LAWS, INCLUDING ALL RULES AND REGULATIONS PROMULGATED THEREUNDER. GS1 US MAKES NO WARRANTIES OF ANY KIND RELATING TO THE SUITABILITY OF THE GS1 STANDARDS AND THE SPECIFIC DOCUMENTS WITHIN THIS PUBLICATION TO COMPLY WITH ANY REGULATORY STANDARDS, LAWS, RULES AND REGULATIONS. ALL INFORMATION AND SERVICES ARE PROVIDED "AS IS."

*GS1 US employees are not representatives or agents of the U.S. FDA, and the content of this publication has not been reviewed, approved, or authorized by the U.S. FDA. The following information contained herein is for informational purposes only as a convenience and is not legal advice or a substitute for legal counsel. GS1 US Inc. assumes no liability for the use or interpretation of the information contained herein.

## No Liability for Consequential Damage

In no event shall GS1 US or anyone else involved in the creation, production, or delivery of the accompanying documentation be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other loss) arising out of the use of or the results of use of or inability to use such documentation, even if GS1 US has been advised of the possibility of such damages.

## IAPMO

In this publication, the letters "U.P.C." are used solely as an abbreviation for the "Universal Product Code" which is a product identification system. They do not refer to the UPC, which is a federally registered certification mark of the International Association of Plumbing and Mechanical Officials (IAPMO) to certify compliance with a Uniform Plumbing Code as authorized by IAPMO.

*If applicable

  

**GS1 US Corporate Headquarters**

Princeton South Corporate Center, 300 Charles Ewing Boulevard
Ewing, NJ 08628 USA
**T** +1 609.620.0200 | **E** info@gs1us.org

**www.gs1us.org**



**Connect With Us**