

UPCs AND BARCODES: A RESOURCE GUIDE



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INTRODUCTION

Universal Product Codes (UPCs) and bar codes have revolutionized the way businesses manage inventory, track sales, and streamline operations. Since their introduction in the 1970s, these codes have become ubiquitous in retail and logistics, providing a standardized method for identifying products and capturing data efficiently. The simplicity and reliability of bar codes have made them an essential tool in various industries, from grocery stores to healthcare. Electronic devices can quickly scan and interpret the bar code, facilitating rapid and accurate data entry. The adoption of UPCs has led to significant improvements in supply chain management, reducing errors and enhancing the speed of transactions. [1]

How are UPCs built and used?

A UPC is a specific type of bar code consisting of a series of black-and-white bars that encode numerical information unique to each product. It represents the twelve numbers beneath the symbol (known as the GTIN-12 – Global Trade Item Number), which allows electronic devices, such as a grocery store scanner, to quickly scan and interpret the information in the bar code. Information stored in the UPC must include brand name and product description, and can include additional detail such as industry, packaging level, SKU number, and product page URL. [2]

The GTIN-12 is a twelve-digit number primarily used in North America at Point-of-Sale for single-unit items – the most common structure for food brands at traditional retail and e-commerce outlets. There are three parts to a GTIN number (see Figure 1 below):

1. GS1 Company Prefix: a unique string of digits used to identify a specific company as the owner of a product, typically licensed from GS1, a not-for-profit global data standards organization that creates the common language to help companies and their trading partners identify, capture, and share trusted data that links their physical and digital supply chains by managing industry standard Universal Product Codes (UPCs) and barcodes for products. Ideally, every GTIN from a specific company should use the same prefix, typically licensed from GS1 US, to easily connect a specific product or products to that unique company. If the barcode is associated with another company or is simply not found, the code may risk rejection, potentially incurring additional costs to relabel the product(s) with a barcode that meets retailer requirements. Prefixes are available in different “capacities” that allow you to barcode as few as 10 and as many as 100,000 unique products. [3]
2. Item Reference Number: a number assigned to identify a specific product variation, which varies in length depending on the prefix. [2]
3. Check Digit: the final digit of a GTIN number that can be used to verify a GTIN has been entered properly. [2]

COMPANY PREFIX (6-10 DIGITS)

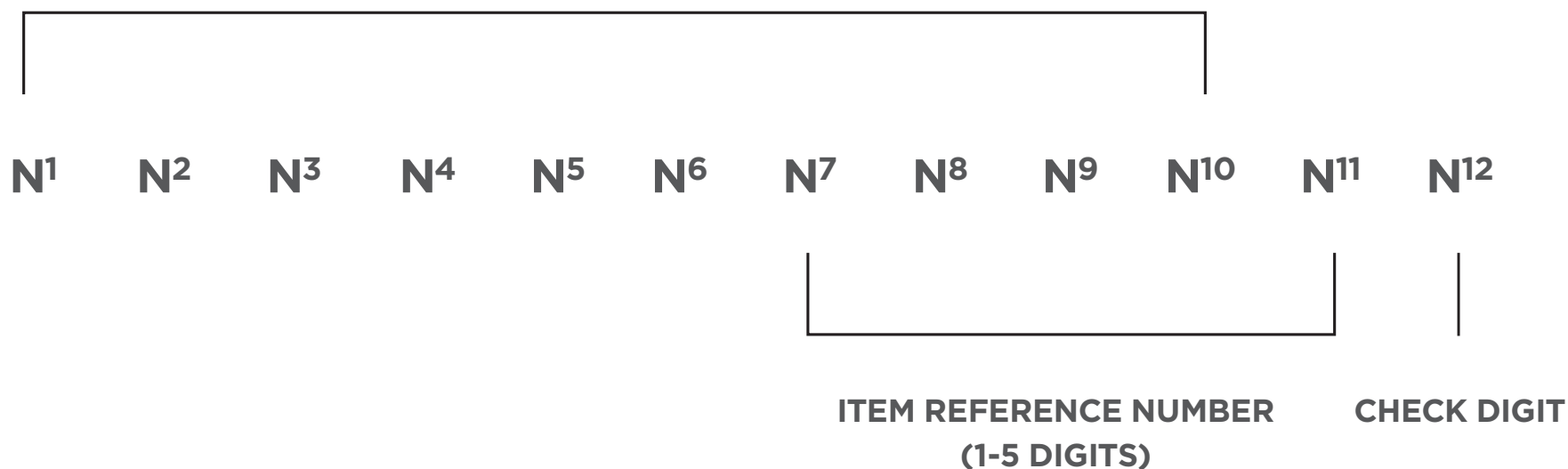


Figure 1. Structure of a GTIN-12 number. [2]

When are UPCs required?

A business must purchase a UPC when it plans to sell products through online marketplaces like Amazon or in physical retail stores. A UPC code allows retailers, distributors, and food manufacturers to accurately track products for improved recall accuracy, inventory management, and sales trends visibility. [4]

How many UPCs does a business need?

Each product variation a business intends to sell (e.g., different sizes, colors, or styles) needs its own unique UPC. [1] See Figure 2 below.

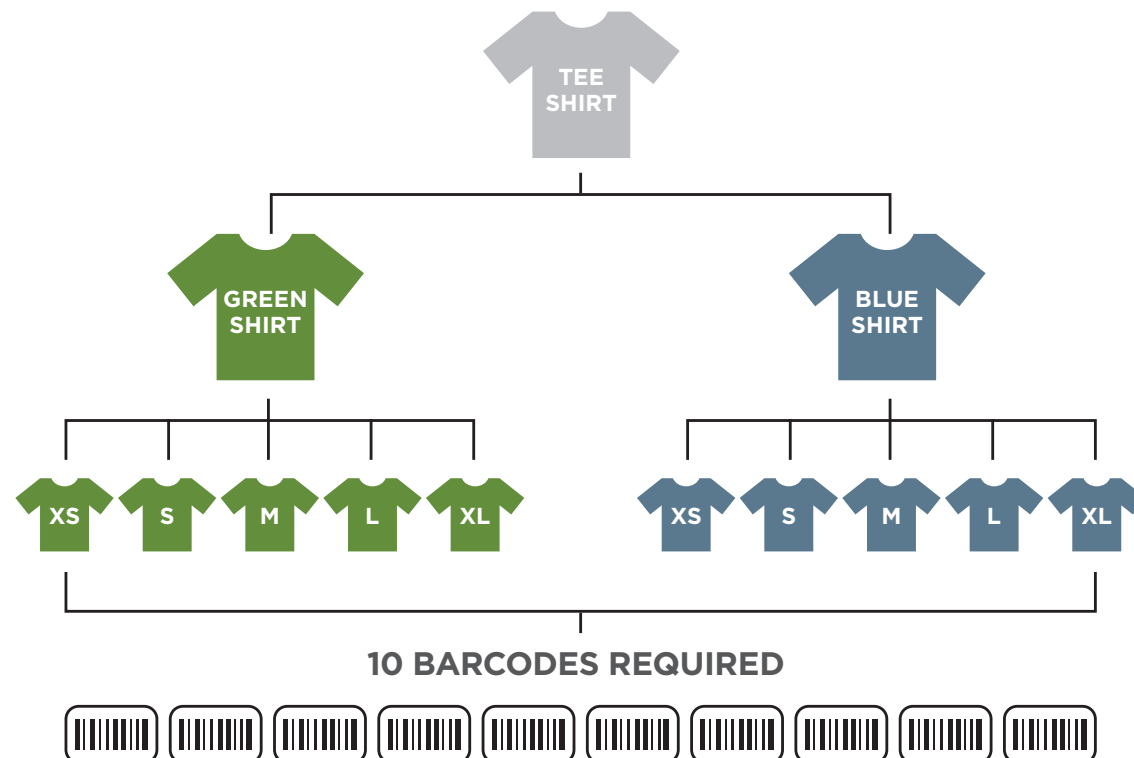


Figure 2. Number of unique barcodes required for an example T-Shirt product line. [1]

Where does a business purchase UPCs?

Businesses have two options to purchase their necessary UPCs.

Option 1: Purchase directly from GS1.

Millions of businesses around the world power commerce with GS1 Standards. [5] GS1 US is the globally recognized source of industry barcodes. Businesses can purchase UPCs / GTINs one at a time for \$30 each with no annual fee. However, a business should consider licensing a capacity-based GS1 company prefix once it requires more than nine UPCs / GTINs, for an initial fee and an annual renewal fee (see Table 1 below). All pricing is accurate as of July 2024. [6]

Table 1. Company Prefix Pricing at GS1 US as of July 2024. [6]

Note that if a business does not pay the annual renewal fee, GS1 will “take the codes back” and may recycle them.

Number of products needing a barcode	Initial fee	Annual renewal fee
1 -10	\$250	\$50
1-100	\$750	\$150
1-1,000	\$2,500	\$500
1 - 10,000	\$6,500	\$1,300
1-100,000 \$	\$10,500	\$2,100
GS1 Company Prefix including U.S. FDA NOC Labeler Code	\$2,100	\$2,100

Option 2: Purchase from an Internet-based UPC broker, such as Buyabarcodes.com or Bar Codes Talk.

Internet-based UPC sellers have purchased UPCs in large batches directly from the GS1 database, passing bulk pricing savings and lifetime ownership rights with no annual fee on to the purchaser. Buyabarcodes.com purchases UPCs directly from GS1 today, while Bar Codes Talk takes advantage of a 2002 class action lawsuit filed against GS1 (at that time, known as UCC - the Uniform Code Council, Inc.) that found UCC members were “not obligated to pay annual renewal fees to UCC, either now or in the future, as a condition for continued membership in UCC, or as a condition for your continued use of the company prefix issued to you before August 28, 2002. However, this does not apply to any company prefix(es) issued to you by UCC [now known as GS1] after August 28, 2002.” [7] As such, UPCs from Bar Codes Talk all originated prior to 2002. Both Buyabarcodes.com and Bar Codes Talk claim that they can provide proof of ownership for retailers such as Amazon; however, Buyabarcodes.com claims compliance with all retail organizations [8], while Bar Codes Talk claims compliance for most retail outlets (significant retailers such as Walmart and Costco do not accept these UPCs). [9] The pricing listed in Table 2 is for comparison purposes and is accurate as of July 2024.

Table 2. Select UPC broker pricing as of July 2024. [10], [11].

Number of barcodes	Buyabarcodes.com [10]	Bar Codes Talk [11]	Annual Fees
1	\$30	\$5	\$0
5	-	\$10	\$0
6	\$125	-	\$0
10	\$195	\$15	\$0
50	\$495	\$35	\$0
100	\$695	\$45	\$0
1000	\$1,995	\$180	\$0

AURI Guidance

Ideally, a business should become a member of the GS1 US organization instead of purchasing through a broker, for the following reasons:

- Businesses are assigned a unique company prefix that connects products in the marketplace to that specific company, with all product information and item reference numbers linked to that prefix.
- GS1 UPCs and barcodes are the industry standard and guaranteed to work at all retailers. Given the industry standard nature of GS1 barcodes, the potential of needing to change barcodes for a noncompliant UPC, particularly once a business has achieved substantial distribution, is a major hurdle for a small business; it is very costly from distributor and retailer points of view, who will pass those change costs to the business.
- GS1 UPCs and barcodes are, however, not owned by the individual business but rather are licensed and thus become an ongoing, regular cost to a business’s profit and loss statement. [12]

If money is a barrier AND the business’s sales objective is to remain small and regional (or e-commerce only), an Internet-based broker can be a good option. However, note that despite the lower upfront cost, UPCs purchased from Bar Codes Talk have a higher potential for retail noncompliance, and thus a higher potential for incurring future expenses associated with changing those UPCs once the products are in the marketplace.

For additional information related to packaging for a food product, please review AURI’s Packaging Guide for Scaling Food Businesses. For additional information related to digital marketing or starting an e-commerce business, please review AURI’s Demystifying Digital Marketing and E-Commerce for Food Businesses guide. Both are available at <https://auri.org/>, in the Food Business Toolbox section of the site.

References

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3. <https://www.gs1us.org/upcs-barcodes-prefixes/what-is-a-prefix>
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