



# About Product Barcodes

Item

## About Product Barcodes

### Overview

Like Kleenex® is colloquially used to describe facial tissue, the term UPC has become a universal word for any type of barcode label that identifies a product.

Giant Eagle warehousing, purchasing, and ordering systems take advantage of the barcode to process information. However, humans, have to know what type of barcode is used on the product so that it can be entered correctly into systems. This document describes some barcode history and explanation of the barcode types.

The UPC (Universal Product Code) and EAN (European/International Article Number) barcodes are the most frequently used in the grocery industry. The UPC barcode was created for use in the United States. EAN barcodes are European versions. Either type of code uses numbers to indicate the country of origin, the manufacturer, a unique product number, and a check digit. The check digit is always the last digit. Fundamentally, the UPC and EAN contain the same information. The barcode number is identical; however, how the numbers are arranged at the bottom of the barcode are slightly different. See the examples below.

It is critical that vendors provide either an actual barcode label or a photo of the barcode. Seeing the barcode is the only method by which a human can identify the barcode type.

Once the type is known, you can follow rules to enter the barcode into one of the many Giant Eagle systems.

There are several types of barcode identifiers. UPC-A and EAN-13 are the most common types used in the grocery industry.

Since the origin of the UPC barcode in 1970, the UPC and EAN have merged into the GTIN code (Global Trade Item Numbers).

In the examples below, the check digit is circled in red. The system designator is blocked in blue.

## Types

### UPC-A

This is the most commonly used barcode system for products in the US and Canada. With the worldwide adoption of GTIN, UPC-A will be phased out over time.



SYSTEM DESIGNATOR + 10 DIGITS + CHECK DIGIT

### UPC-E

This is a shorthand version of the UPC-A barcode. It's commonly used on smaller products due to its smaller size. With the adoption of GTIN, UPC-E will be phased out over time. Applications like HQ convert UPC-Es to UPC-As.



SYSTEM DESIGNATOR + 6 DIGITS + CHECK DIGIT

### EAN-13

This is the most commonly used worldwide barcode system for products. You will see this mostly on products from countries other than the US and Canada.



SYSTEM DESIGNATOR + 11 DIGITS + CHECK DIGIT



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### EAN-8

This is a shorthand version of the EAN-13 barcode system. It's commonly used on smaller products due to its smaller size. There is no conversion of EAN-8 to EAN-13.



**SYSTEM DESIGNATOR +  
6 DIGITS + CHECK DIGIT**

### EAN Bookland

Special use of the EAN-13 barcode to describe the ISBN number on books. ("ISBN" stands for "International Standard Book Number". An ISBN is a book number, not a product barcode.) Not all books use this code. Some books use UPC-A.



**SYSTEM DESIGNATOR +  
11 DIGITS + CHECK DIGIT**

## Decoding the UPC-A code

### System Designator

The first digit is the System Designator. It is considered part of the Manufacturer's ID number. 0, 6, 7 and 8 indicate a "standard" number. 2, 3, 4 and 5 indicate a specific product type. Refer to the table to the right.



**GENERAL PRODUCT UPC**



**RANDOM WEIGHT ITEM**



**NON-US PRODUCT  
VITA COCO V COCO COCONUT WATER**

### System Designator

0	Standard UPC Number
1	Reserved for future use
2	Random-weight items (fruit, meats, etc)
3	Pharmaceuticals
4	In-store marketing for retailers. Giant Eagle uses this for psuedo codes and Giant Eagle Advantage Cards.
5	Coupons
6	Standard UPC number
7	Standard UPC number
8	Standard UPC number
9	Reserved



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**SPECIAL PRODUCT UPC: PHARMACEUTICAL**

### Manufacturer's Identifier (5 digits)

Every manufacturer is assigned a unique number by GS1, a global industry standards committee that governs barcode standards and policy.

Assigned by the GS1 committee.

Giant Eagle's UPC manufacturer code is 30034.



**GENERAL PRODUCT UPC: 49000 IDENTIFIES COCA-COLA**

### Product Code (5-digits)

A manufacturer's UPC Coordinator is responsible for registering a unique identifier for each individual product, making sure that the same code is not used for more than one product, retiring codes as products are removed from the product line, etc. Each individual product (every size package and every repackaging of the item) should have a unique item code. For example, a 12-ounce can of Sprite needs a different product number than a 16-ounce bottle of Sprite, as does a 6-pack of 12-ounce cans, a 12-pack, a 24-can case, and so on.

The product code is arbitrarily created by the manufacturer's UPC Coordinator.





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### Check Digit (1-digit)



The check digit is the sum of a globally, standard mathematical calculation of all the other digits in the barcode. All barcode scanners and POS computers are programmed with this calculation. When a barcode is scanned, the calculation determines if the barcode was successfully read, or if there was an error and the barcode needs to be rescanned.

Based on a globally, standard mathematical calculation using all the other digits in the code. Barcode scanners and POS computers automatically compute the calculation and compares the results to the printed check digit to ensure that the code was scanned correctly.

### Existing UPC-A converted to GTIN

As UPC-As (12 digits long) and EANs (13 digits long) are merged into the GTIN (13 digits long), UPC-As are prefaced with a leading zero.

**UPC-A:** 0 49000 00551 6

**GTIN:** 0 049000 005516

Prefacing the UPC-A with a zero does not effect the check digit.

## Decoding UPC-E Barcode

This type of shorthand barcode is called a zero-suppressed number. Manufacturers who know that they will use these shorthand codes, design the initial product codes with lots of zeros. There are standardized rules for how to create a shorthand code from the UPC-A code, but basically four of the zeros are removed. The first digit is always a zero.

**UPC-A:** 0 49000 00551 6

**UPC-E:** 0 49510 0

Example of Large Manufacturer Code

- Coke - 49000

Example of Large Manufacturer Product Code (Lemon Lime Sprite Soda)

- 00551

## Decoding EAN-13 Barcode

The EAN-13 is the same as the UPC-A except that an additional first digit was added to allow for more possible number combinations.



UPC FOR SPRITE



EAN FOR SPRITE



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### GS1 Prefix

First three digits replace the UPC system designator and includes the country in which the product is registered, not the country in which the product is manufactured.

It is considered part of the Manufacturer's ID number.



**GENERAL PRODUCT EAN**  
**THIS ITEM IS H. J. HEINZ LEA & PERRINS**  
**WORCESTERSHIRE SAUCE AS REGISTERED IN THE UK**



**SPECIAL PRODUCT EAN: PHARMACEUTICAL**  
**TYLENOL US MARKET**

### GS1 Prefix

000 - 019	Standard Number in US and Canada
020 - 029	US Random-weight items (fruit, meats, etc)
030 - 039	US Pharmaceuticals
030 - 039	In-store marketing for retailers. (US) Giant Eagle uses this for their own brands.
050 - 059	GS1 US reserved

060 - 139	Standard GS1 US and Canada
500 - 509	GS1 UK
754 - 755	Canada
750	Mexico
99	GS1 coupon identification

For a full list of country identifiers, refer to <http://www.gs1.org/company-prefix>.

Assigned by the GS1 committee.

Giant Eagle's EAN/GTIN manufacturer code is 0 030034.

### Manufacturer's identifier (7 digits)

Every manufacturer is assigned a unique number.



**GENERAL PRODUCT UPC:**  
**0049000 IDENTIFIES COCA-COLA USA**

### Product Code (5-digits)

As in the UPC-A code, the product code is an arbitrarily code created by the manufacturer's UPC Coordinator.





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### Decoding EAN-8 Barcode

EAN-8 is a short version of the EAN-13 code. It includes a 2 or 3 digit country code, 4 or 5 data digits (depending on the length of the country code), and a check digit. The primary purpose of the EAN-8 code is to use as little space as possible. It is not converted to an EAN-13.

**EAN-8:** 0495 5100

### Decoding EAN Bookland

Because there are so many books in the world, books are assigned to their own "country": 978 or 979. The remaining numbers are calculated from the document's ISBN number and end with a calculated check digit.



### Decoding PLU Codes

Price Lookup Codes (PLUs) identify bulk produce and other supermarket items to make checkout and inventory control more efficient and more accurate. PLUs usually appear on a small sticker applied to an individual item and communicate to checkout systems variety, size, and price. Conventionally grown produce or bulk item numbers are in the range of 3000 to 4999. Items grown organically are prefaced by an 8 or 9.

Other blocks of numbers are unassigned and designated for use by individual retailers. The retailer assigns these codes and are applicable only within the retailer's business systems.

For example, each type of apple (Fuji, Delicious, etc.) has different PLU numbers so that the specific type of apple does not have to be identified by the cashier. When the PLU is entered into the POS system, the correct price is charged to the customer. For example, the PLU of 4131 is a traditionally grown large Fuji apple.

A fifth first digit indicates specific information about the produce:

8 – Organic

9 – Organic

