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.

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.

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.

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.
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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.

EAN Bookland

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.

<table>
<thead>
<tr>
<th>System Designator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Standard UPC Number</td>
</tr>
<tr>
<td>1</td>
<td>Reserved for future use</td>
</tr>
<tr>
<td>2</td>
<td>Random-weight items (fruit, meats, etc)</td>
</tr>
<tr>
<td>3</td>
<td>Pharmaceuticals</td>
</tr>
<tr>
<td>4</td>
<td>In-store marketing for retailers. Giant Eagle uses this for psuedo codes and Giant Eagle Advantage Cards.</td>
</tr>
<tr>
<td>5</td>
<td>Coupons</td>
</tr>
<tr>
<td>6</td>
<td>Standard UPC number</td>
</tr>
<tr>
<td>7</td>
<td>Standard UPC number</td>
</tr>
<tr>
<td>8</td>
<td>Standard UPC number</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
</tr>
</tbody>
</table>
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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.

```text
00746 60601 7
```

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.

```text
00551 6
```

The product code is arbitrarily created by the manufacturer’s UPC Coordinator.
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## Check Digit (1-digit)

![Barcode Image]

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.

### 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

## 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 495510 0

## 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

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.

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

**Example of Large Manufacturer Code**

- Coke - 49000

**Example of Large Manufacturer Product Code**

(Lemon Lime Sprite Soda)  
- 00551
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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.

<table>
<thead>
<tr>
<th>GS1 Prefix</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>000 - 019</td>
<td>Standard Number in US and Canada</td>
</tr>
<tr>
<td>020 - 029</td>
<td>US Random-weight items (fruit, meats, etc)</td>
</tr>
<tr>
<td>030 - 039</td>
<td>US Pharmaceuticals</td>
</tr>
<tr>
<td>030 - 039</td>
<td>In-store marketing for retailers. (US) Giant Eagle uses this for their own brands.</td>
</tr>
<tr>
<td>050 - 059</td>
<td>GS1 US reserved</td>
</tr>
<tr>
<td>060 - 139</td>
<td>Standard GS1 US and Canada</td>
</tr>
<tr>
<td>500 - 509</td>
<td>GS1 UK</td>
</tr>
<tr>
<td>754 - 755</td>
<td>Canada</td>
</tr>
<tr>
<td>750</td>
<td>Mexico</td>
</tr>
<tr>
<td>99</td>
<td>GS1 coupon identification</td>
</tr>
</tbody>
</table>

For a full list of country identifiers, refer to [http://www.gs1.org/company-prefix](http://www.gs1.org/company-prefix).

Manufacturer’s identifier (7 digits)
Every manufacturer is assigned a unique number.

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

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