

# Incorporating product life information in bar codes

Bar codes are now available that incorporate product-life information. Although their roll-out is at an early stage, there are potential waste prevention benefits that can be gained from using these new bar codes, including:

- a more detailed and accurate view of stock that distinguishes between different batches and expiry dates so minimising the risk of old stock remaining in store or on a shelf;
- expiry dates can be recorded at the point of sale on the till receipt providing the consumer with better information and a day-by-day meal planner; and
- manual checking of displayed food can be minimised or eliminated making mark-down policies more effective.

## Conventional bar codes

Bar-code systems are used to automatically identify and manage the flow of products from receipt at a retailer's depots and stores, through storage and display to the point of sale.

At its simplest, the GS1<sup>1</sup> bar code contains a unique code for each trade item<sup>2</sup>. It is mainly used for scanning items at the point of sale, and capturing transactional details that are uploaded into a retailer's stock management and financial systems.



**Conventional 13-digit EAN/UPC bar code**

<sup>1</sup> GS1 (Global Standards 1) is a neutral, not-for-profit, global organisation that provides standards for product identification and bar codes.

<sup>2</sup> The codes are called the Global Trade Item Number (GTIN) which brings together two systems previously used in different parts of the world, namely the European Article Number (EAN) and the Universal Product Code (UPC). The bar code containing the GTIN comprises 12 or 13 digits in a one-dimensional printed format and is referred to as the EAN/UPC bar code.

For more than 40 years, conventional bar codes and scanning systems have greatly improved retailers' efficiencies by enabling product descriptions and prices to be captured accurately at the checkout. However, they do not contain any variable data such as batch information, product source and product life expiry date. This means that, where separate batches of the same product get mixed in storage or on the shelf, the store's IT system cannot link each sale to the consignment in which it was received from the supplier.

Typically, this can impede in-store stock rotation, with the consequent risk that older batches will remain in store or on the shelf until their expiry date, potentially leading to significant food waste. In many cases, staff have to manually inspect expiry dates of products and re-label them with price markdowns to minimise waste. There is also the danger that consumer and food-safety legislation could be contravened if food items that have passed their use-by date and have not been removed from shelves by daily, manual, checking procedures, are sold.

## Variable data at point of sale using GS1 DataBar

The introduction of the GS1 DataBar™, which can carry 20 or more digits, has greatly increased the amount of information that can be contained in the same space.

With a GS1 DataBar, data are stacked in rows, rather than being encoded into one long bar code. This makes it possible to add considerably more transactional data to the bar code. Also, the bar codes are omnidirectional, meaning they can be scanned from any direction at the checkout so that the cashier does not have to spend time orientating the pack.



Example of a GS1 DataBar Label

Using the GS1 DataBar system on fresh food items means that, among other things, batch information (such as the product source and expiry date) can be captured for each item. In turn, this can be scanned at the checkout. Also, where pack weights, quantities and prices vary from item to item (such as at a fresh meat or delicatessen counter), then these data can be captured. This facilitates improved stock management and, if required, enables automatic price reductions of products that are close to their expiry date.

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The benefits of implementing GS1 DataBar systems for fresh foods include better management of expiry dates and pricing, improved product replenishment efficiency and full product traceability. This means retailers realise gains in supply chain and in-store efficiencies, and retailers and customers are able to reduce the amount of food that is wasted due to missed expiry dates.

## Implementation in food retailing

A Polish food retailer decided to implement the GS1 DataBar system because it wanted to develop efficient, fresh-food management programmes, such as improving consumer safety and satisfaction, and ensuring traceability and recall. The main objective of the project was to guarantee that any product that had exceeded its best-before date would not be sold. A secondary objective was to support a potential recall process for any product that might have quality problems.

The configuration used by the company is the Expanded Stacked format, which has eight or ten segments and is optimised for multidirectional scanning at the point of sale. It was adopted after a number of trials concluded it was the best balance between the amount of data carried and the speed that it could be reliably scanned.

The retailer has the GS1 DataBar label on over 100 specific items and is now able to manage the expiry date of products in an automated way at the point of sale, ensuring that the products meet the highest quality requirements of customers.

A retailer in South Korea uses the DataBar Expanded Stacked format on fresh foods to manage weight, price and count information where these vary from pack to pack. The retailer is then able to automatically read this information at the point of sale and capture it in its systems. The benefits of doing this include more accurate sales forecasting and improved inventory management. This has resulted in improved efficiency, accuracy and cost savings in the 'variable measure' products supply chain.

## Barriers to the use of the DataBar

The DataBar system is scheduled for trialling with national retailers in the UK. However, there are some barriers to overcome before the wider uptake of the system can take place.

Firstly, printing the labels is slower, but this is not thought to be a significant drawback in the fresh food supply chain. Secondly, in spite of its omnidirectional scanning facility, the speed of scanning a DataBar label is less than that possible using the EAN/UPC system.

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Additionally, the length of the 'human readable interpretation' (HRI) number is greater. All these issues can cause slower throughput at checkouts, especially if cashiers are required to key in the 20-digit (or more) product number. Finally, retailers' IT systems have to be significantly upgraded to accommodate and, more importantly, use the additional information provided by the DataBar.

These barriers need to be overcome or weighed against the potential gains in efficiencies and reductions in food waste in the UK supply chain that DataBar has the potential to provide.

## Improving supply chain efficiency and reducing food waste

Listed below are some of the potential advantages of using DataBar compared with conventional bar-code systems.

- A more detailed and accurate view of stocks can be achieved with the additional information provided (such as variable weights and quantities, batch codes and expiry dates).
- The combination of a full product identification and batch code enables the system to automatically check if an item has been recalled, which prevents accidental sale.

- The labour cost associated with manually checking expiry dates and relabelling for price markdown can be reduced or eliminated.
- Items that have exceeded their expiry dates will be picked up at the point of sale, which provides a safety net for human error when product expiry dates are checked.
- Management of display stock rotation will be improved. Self-service customers tend to choose displayed items with the longest life. This means older products are left on the shelf until their expiry date and then become part of the waste stream.

For the consumer, the potential gain is that expiry dates, recorded at the point of sale, can be printed on the till receipt. The receipt can also be sorted in expiry-date order. This provides the consumer with a virtual day-by-day meal planner or, at least, it can act as a reminder of the latest dates by which to use each item and thereby avoid the food going to waste. In addition, they can automatically receive price reductions of near-to-expiry products. This can reduce food waste and ensure sell out of product.



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