Frequently Asked Questions

The Barcode: 50 Years of Transforming the Way We Eat, Shop, and Live

Q. What is a barcode?

A barcode is a visual machine-readable symbol used to convey data, such as product information, which can be read by technologies such as scanners, mobile devices, and vision systems. GS1® barcodes contain information that uniquely identifies products, companies, assets, and more.

Q: What is the history of the barcode?

In 1973, the grocery industry came together to agree on a more efficient way of doing business by adopting the UPC barcode to drive speed and efficiency at retail checkout. Then on June 26, 1974, a UPC on a 10-pack of Wrigley's chewing gum was the first item scanned at a Marsh Supermarket in Troy, Ohio. This historic milestone marked the beginning of the modern shopping experience. Today, the barcode is scanned more than 10 billion times daily and continues to be one of the most recognized symbols in the world, powering global commerce.

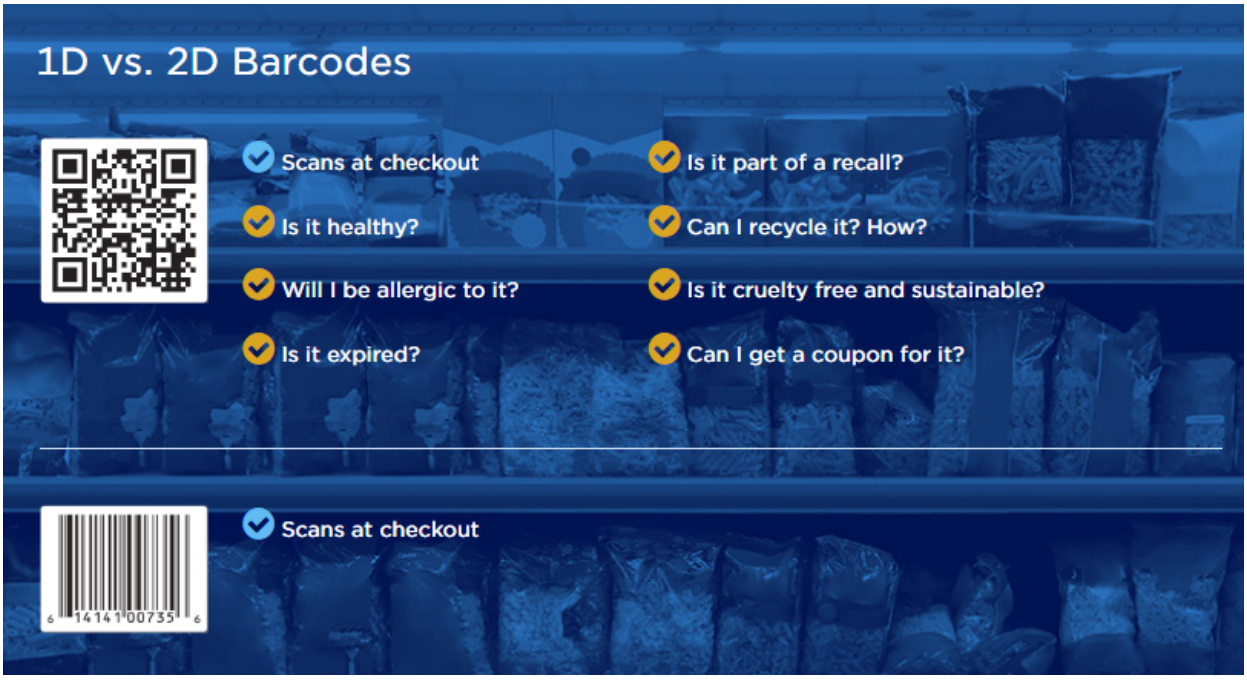
Q. Are all barcodes the same?

No. Different types of barcodes fit the needs of different applications. For example, current checkout systems in most retail stores still use linear UPC barcodes for item identification, while applications at the carton/case level often use a GS1-128 barcode, which is designed to encode the item identification plus additional information such as a batch/lot number or expiration date.

In today's digital world, industries are upgrading technologically to incorporate a wider universe of electronic data capabilities and applications. Many brands are transitioning from the linear one-dimensional (1D) UPC to two-dimensional (2D) barcodes, like QR codes, which offer much higher data capacity, can be smaller in size, and can also connect users to online content.

Q: What is a 2D barcode?

A 2D barcode, like a QR code, has data encoded in a grid-like pattern using an X- and Y-axis (hence 2D). 2D barcodes are leveraged in a wide array of industries and applications. 2D barcodes used in the GS1 System of Standards include GS1 DataMatrix, and QR Code and DataMatrix with GS1 Digital Link. In addition to scanning at point-of-sale (POS) and going "beep" at checkout, a 2D barcode encoded with the GS1 Digital Link Standard can give shoppers access to much more information, including product ingredients, allergens, recipes, rewards, promotions, and more, as well as details about where the item was manufactured, facts about sustainable sourcing, guidance on recycling, easy ways to reorder, and more. Along with consumer transparency and engagement potential, the expanded data capacity of GS1 2D barcodes provides numerous supply chain benefits for retailers, including visibility, traceability, inventory management, and more.



Q: Why does data capability matter for a barcode?

Consumers today demand more information about the products they purchase, they get their information online, and they engage with brands via digital media. In addition, regulators increasingly require disclosure of more-detailed product information, and there's an ongoing need to more effectively track and trace products such as food and prescription medicines through the supply chain. The UPC barcode does not have the capacity or the web-enabled capability that a 2D barcode offers for providing such information. By web-enabling a 2D barcode like a QR code by using the GS1 Digital Link Standard, businesses and consumers alike can take advantage of these nearly limitless data capabilities to enhance consumer engagement and create efficiencies along the supply chain.

Q: Are there different types of 2D barcodes?

There are many different types of 2D barcodes. QR codes have been around for 30 years, but there are other 2D barcodes, such as GS1 DataMatrix codes, which are being adopted across healthcare to comply with regulation. To avoid confusion and align on a single barcode, the GS1 DataMatrix is recommended by industry as a preferred data carrier for healthcare products across both retail and non-retail areas because of its benefits related to efficient recall management, improved inventory management, and enhanced traceability and support for electronic health records. GS1 DataMatrix can also be used outside of healthcare for those that need more data or a smaller barcode but do not require the online experiences created by 2D barcodes using GS1 Digital Link.

Q: Are these 2D barcodes on packages yet?

Brands like Patagonia, PepsiCo., Puma, and more are piloting 2D labeling on product packaging. As industry transitions to 2D barcodes, some products may contain both a UPC and a 2D barcode. The goal, however, is to use one barcode for both consumer engagement and retail checkout. This will improve efficiency and create more space on product packaging for aesthetics, branding, and merchandising.

Q: Who is GS1 US®?

Best known as a source for UPC barcodes, GS1 US is a not-for-profit global data standards organization that creates a common language for companies to identify, capture, and share trusted data that links their physical and digital supply chains. Millions of businesses around the world power commerce with GS1 Standards.

Q: What does the GS1 System of Standards do?

The GS1 System of Standards provides a way to accurately identify, capture, and share information about products, assets, services, and locations. The standards include numbers for the identification of objects, standards for data carriers (barcodes, RFID tags), and standards for exchanging electronic messages between trading partners.

Q. Why are standards important?

Standards are the foundation for clear, understandable data exchanges between companies in an increasingly globalized economy. The best-known GS1 Standard is the Global Trade Item Number® (GTIN®), which uniquely identifies a product and is commonly encoded in a UPC barcode. Standardized data that is encoded in a machine-readable format is essential to accurately and swiftly move products throughout the supply chain while ensuring that all supply chain stakeholders around the globe can read and understand that data.

Consumers benefit because barcodes and the data within help keep store shelves stocked and speed up time at checkout while making hybrid shopping experiences like Buy Online Pickup In Store (BOPIS) and omni-channel fulfilment a reality. Standards can also improve safety in healthcare, as they help ensure that the right products are being delivered to the right patients for the right procedures.

GS1 barcodes benefit all parties in the trading cycle by reducing costs, saving time, and increasing accuracy and efficiency through management of the entire supply chain. GS1 barcodes allow the globally recognized GS1 Identification Keys to be used on things such as

trade items, locations, logistic units, and assets. Barcodes used by GS1 include EAN/UPC, GS1 DataBar®, GS1-128, ITF-14, GS1 DataMatrix, QR Code and Data Matrix with GS1 Digital Link, and Composite Barcode. Among these, the more advanced barcodes, like GS1-128, GS1 DataBar, QR Code, and GS1 DataMatrix, allow encoding of attribute information such as batch numbers and expiration dates.

Q. How many companies use the GS1 System of Standards?

The GS1 System of Standards is used by 2 million companies in more than 20 industries worldwide.