GS1

Ireland

THE GLOBAL LANGUAGE
OF BUSINESS

GS1 MAKES IT POSSIBLE ...

GS1 Standards for identifying, capturing and sharing information, about products, business locations and more, make it possible for companies to speak the same language, connect with each other and move their business forward.

CAPTURE

GS1 DATA CARRIERS

GS1 Data Carriers are a way to translate or encode information in a machine readable format. This is known as Automatic Data Capture or AIDC.
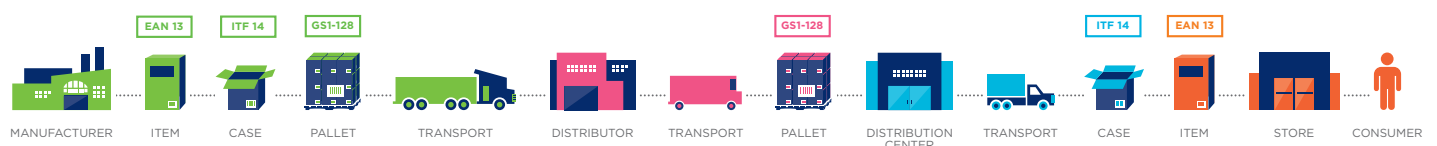
GS1 Data Carriers are capable of holding varying amounts of data to accommodate different information needs for products, locations and assets within different business processes. For example, some barcodes are used simply for product identification, such as at a shop checkout, while others are used in warehouses to store additional information about a product such as its expiry date. Different barcode types are used for transport and warehousing to those used at a checkout.

The data encoded in GS1 Data Carriers not only uniquely identifies products at every level of packaging (item, case and pallet) but they also act as a key to look up even more product information stored in a database. Scanning barcodes and RFID tags makes capturing, storing and looking up information quick, easy and accurate.

TYPES OF DATA CARRIER

The various GS1 Data Carriers, that include both barcodes and radio frequency identification (RFID) tags, can be broadly divided into four groups depending upon their area of use. These include linear barcodes that are scanned at a retail point of sale, barcode symbols that are specifically designed for use in transport and warehousing, two dimensional (2D) barcodes that are capable of holding larger amounts of data and have found specialist uses in areas such as healthcare and mobile technology, and finally RFID tags that are encoded with GS1 Electronic Product Code (EPC) identifiers and data structures.

ILLUSTRATIVE EXAMPLE OF SOME BARCODE TYPES THROUGHOUT THE SUPPLY CHAIN

	EAN 13	ITF 14	GS1-128				GS1-128				ITF 14	EAN 13		
MANUFACTURER	ITEM	CASE	PALLET	TRANSPORT	DISTRIBUTOR	TRANSPORT	PALLET	DISTRIBUTION CENTER	TRANSPORT	CASE	ITEM	STORE	CONSUMER

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TYPES OF DATA CARRIER

BARCODES SCANNED AT CHECKOUT/POINT OF USE

EAN/UPC

Used on retail items that are scanned at point of sale.

GS1 DataBar

Used on very small consumer items, such as loose produce.

EAN, UPC and GS1 DataBar are examples of barcodes scanned at the point of sale/use and are used to identify products at the item level (e.g. the product a consumer buys in a shop).

EAN and UPC and the two most commonly found barcodes in retail across the globe. Both barcodes carry a unique product identification code called a Global Trade Item Number (GTIN). The UPC is a 12 digit code that originates from the US and Canada. The EAN 13, as its name suggests contains 13 digits and is the symbol predominantly used for retail scanning today.

GS1 DataBar is the name for a family of seven barcodes that can be used for various purposes and each has a specific application or use. GS1 DataBar was originally created to enabling the barcoding of small and hard-to-mark products such as loose produce (fruit and vegetables), jewellery, cosmetics and hardware/DIY items. Some GS1 DataBar symbols contain only a product identification code (GTIN) while others also include additional information like expiry dates and batch numbers.
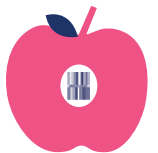
BARCODES FOR CASES AND PALLETS

ITF-14

Used on standard product groupings, such as a case of a particular product.

GS1-128

Used on cases as well as large bulk items, such as pallets or logistics units.

ITF 14 and GS1-128 are used to uniquely identify products at case and pallet level.

ITF-14 carries a GTIN to uniquely identify bulk units such as cartons, cases or pallets. ITF-14 only carries a 14 digit GTIN. These barcodes are often used in warehouses to enable the fast and accurate management of stock.

GS1-128 can carry a GTIN, a Serial Shipping Container Code (SSCC) or a GTIN as well as additional data such as quantity, expiry date, serial number or location identification. The GS1-128 barcode symbol uses "Application Identifiers" (AIs) to identify each of the information fields in the symbol. GS1 128 barcodes are often used on packages, cases and pallets to provide fast and automatic access to key product information such as an expiry date, as a product moves through the supply chain from manufacturer to distributor to retailer or hospital.
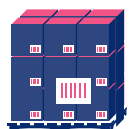
TYPES OF DATA CARRIER

SPECIAL APPLICATION DATA CARRIERS

GS1 DataMatrix

Used for direct part marking of surgical instruments in the healthcare industry.

GS1 QR Code

Marketing information retrieved by a consumer from a POS product.

GS1 Data Matrix is a two-dimensional (2D) barcode that holds large amounts of data in a small space. Data Matrix symbols can contain product identification codes (GTINS) as well as additional data such as expiry date and batch numbers.

Data Matrix barcodes can only be read by camera based scanners, such as those found in hand-held scanners or on smart phones. Data Matrix symbols are not intended for use in general distribution but are used in specialist areas such as pharmaceuticals, medical devices and in aerospace.

GS1 QR Codes are used to encode information such as a website address used in marketing materials. Like the Data Matrix a QR code can only be read by an image or camera based scanner.

EPC-ENABLED RFID TAGS

HF RFID

Used for RFID systems operating in 13.65 MHz frequency.

UHF RFID

Used for RFID systems operating in 860 MHz–960 MHz frequency range.

GS1/EPC Radio Frequency Identification (RFID) tags contain an Electronic Product Code (EPC), an electronic version of the GS1 numbers used for product, location, asset, service and document identification. Some of the benefits of using RFID tags are that they are quick to read, can be read and/or written to without requiring line of sight and many tags can be read at the same time.

EPC RFID tags are read throughout the supply chain to capture and share information about an item's movement. Many industries including clothing, healthcare and aerospace have implemented systems to track and trace items using RFID tags because of the benefits they deliver in terms of efficiency and visibility.

GS1 MAKES IT POSSIBLE ...

CAPTURE

GS1 Standards make it possible for businesses to see more clearly. For an item to be visible in a business process, it must first be identified, its activity captured and the information shared in a standard way. The use of GS1 Standards helps answer the what, when and where of an item's movement throughout the supply chain, enabling visibility from the manufacturing source to the end consumer.

Where did barcodes come from?

It all started with the U.P.C. in the US — the barcode that was first scanned at retail point of sale in 1974. Barcode technology has today evolved to encode even more product information, often in less space, including data such as Expiry Date, Batch/Lot or Serial Number.

While most barcodes are still scanned manually, Radio Frequency Identification (RFID) tags are read quickly and easily without line of sight and carry data that can be added to or modified as the tagged item moves through the supply chain.

Across the supply chain trading partners are connecting with each other and leveraging the power of information by using GS1 Standards as the foundation of their business processes.

www.GS1ie.org/Capture

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