

Express Guide to Retail Barcodes

Introductory guide to GS1-standard barcodes for products and outer cases



About GS1 barcodes

What is a barcode?

A barcode is simply data in a machine readable format. Barcodes operate on a principle similar to Morse Code – the printed bars and spaces are of different widths and are combined in specific sequences to represent numbers and letters depending upon the symbol type. A scanner reads the barcode by measuring the bars and spaces and decoding the information contained.

What types of barcode are there?

There are a number of different barcode symbol types depending upon the item to be identified and the environment in which the barcode will be scanned. Within the GS1 system, which is recommended for use on products in open distribution, a specific group of barcodes are used - please see the GS1 barcodes table.

What is a GTIN?

A GTIN or **Global Trade Item Number** is the globally unique identification number allocated to identify a product or service, using a GS1 Global Company Prefix (GCP). GCPs can be licenced from your local GS1 office.

GS1 barcodes

EAN 13	A linear barcode used for consumer units sold at a point of sale.
EAN 8	A linear barcode for small products that do not have sufficient label or packaging space for an EAN 13.
UPC A	Used for retail scanning in selected outlets in North America.
GS1 DataBar	A family of new generation point-of-sale barcodes that can encode product identification and other useful information such as best before or expiry dates.
ITF 14	A robust linear barcode used on outer cases (traded units).
GS1 128	A barcode used on cases and pallets that can contain identification codes and additional information such as dates, weights, batch numbers and serial supply container codes.
GS1 Data Matrix	A two-dimensional barcode (made up of small squares) used to encode variable data and most typically used in healthcare applications.



Product



Case



Pallet

Product Hierarchies

Products and their associated packaging create levels known as hierarchies. Your product and packaging type will determine the level of the product hierarchy for which you will need to allocate barcode numbers. Inner packs, cases and pallets may contain all the same item (homogeneous) or may be of a mixed assortment (heterogeneous). All levels require a separate, unique identification number called a GTIN or **Global Trade Item Number**.

Base Unit or Each

The smallest denomination of an item that is used by the end consumer; for example a product sold to a customer in a retail outlet.

Example:
a single pot of yogurt



Pack or Inner Pack

Some products may be packed into intermediary groups such as multipacks that are also sold to consumers or shelf ready displays.

Example:
a six-pack of yogurt pots



Outer Case

A grouped set of products (base units or inner packs) typically sold to business trade partners.

Example:
a case of 18 six-packs of yogurt or a case of 108 single yogurt pots



Pallet

A unit brought together for the purpose of transport or storage typically consisting of a number of outer cases.

Example:
24 outer cases of yogurt



Q: What barcode symbol should I use for checkout scanning?

A: If the product to be barcoded is a consumer unit i.e. it will be sold at a retail point of sale you should use an EAN 13 symbol to encode your product's identification number or GTIN (Global Trade Item Number). For very small products with an 8-digit GTIN, the EAN 8 symbol will be used. For manufacturers distributing to the US or Canada a 12-digit UPC may be required.

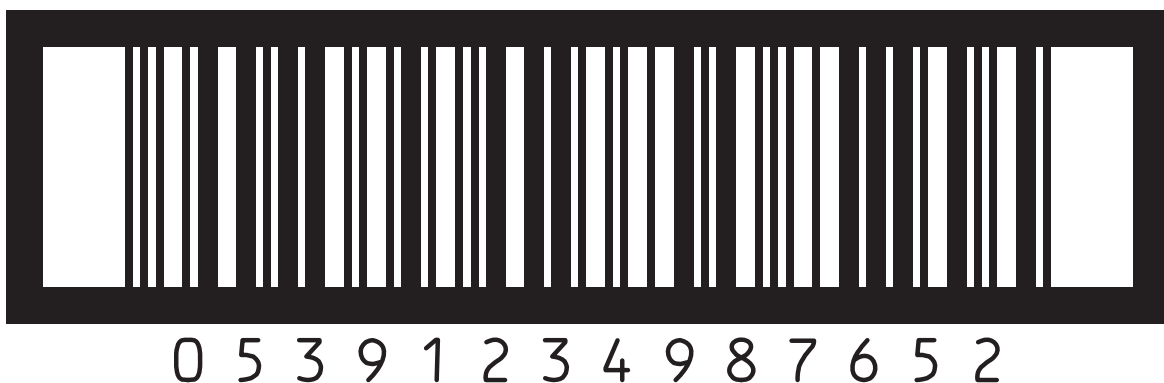


Q: What barcode symbol should I use for transport and warehousing?

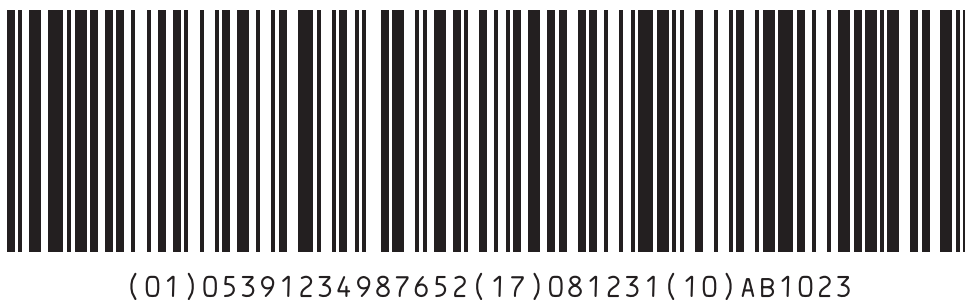
A: The ITF 14 or GS1 128 barcode symbols should be used for barcoding the identification numbers of traded units i.e. outer cases. Choosing between them will depend upon how much information you need to encode:

- If only the identification number (GTIN) of the case needs to be barcoded you may use the ITF 14 symbology.
- If additional information such as expiry dates or weights needs to be barcoded you must use the GS1 128 symbology.
- If your trading partner has requested you to include a Serial Shipping Container Code (SSCC) on your goods you must use the GS1 128 symbology.

ITF 14 Symbol



GS1 128 Symbol



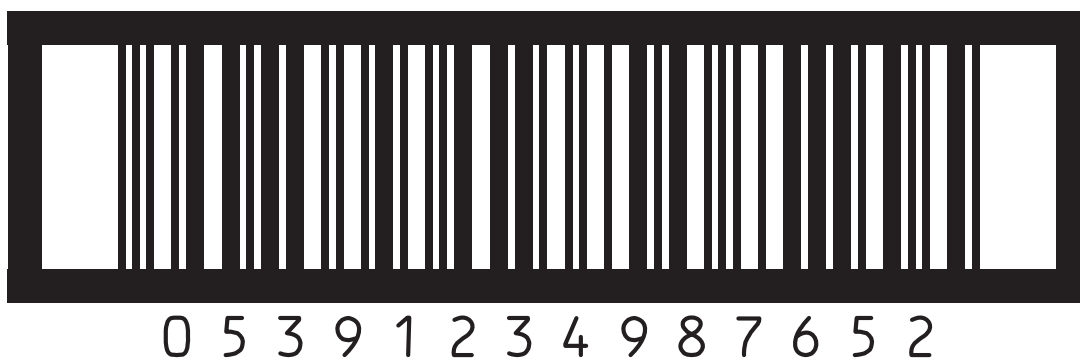
Q: Do barcodes need to be a particular size?

A: Yes. There are global guidelines on the target size for each type of barcode symbol. For example the target size for an EAN 13 is 37.29mm wide by 27.85mm high. ITF 14 symbols should be 142.75mm wide and 32mm high.



EAN 13 SIZE GUIDE

	X dimension	Width	Height	Left Quiet Zone(11x)	Right Quiet Zone(7X)
Nominal	0.33mm	37.29mm	27.85mm	3.63mm	2.31mm
Maximum	0.66mm	74.58mm	45.7mm	7.26mm	4.62mm
Minimum	0.264mm	29.83mm	18.28mm	2.904mm	1.848mm



ITF 14 SIZE GUIDE

	X dimension	Width	Height	Left Quiet Zone(10x)	Right Quiet Zone(10X)
Minimum	0.495mm	71.4mm	32.00mm	4.95mm	4.95mm
Maximum	1.016mm	142.75mm	32.00mm	10.2mm	10.2mm

Q: How do I know if my barcode will scan?

A: Barcodes can be tested by a process known as verification. This is a rigorous set of tests that measures various aspects of a barcode symbol from its size, print quality and the contrast between the darkness of the bars and the lightness of the spaces. GS1 Ireland offers a barcode verification service for those that need an external validation of symbol quality.

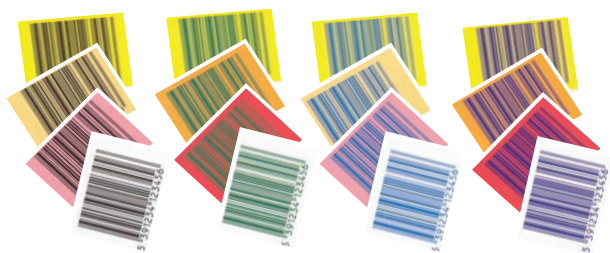


Q: What colours should a barcode be?

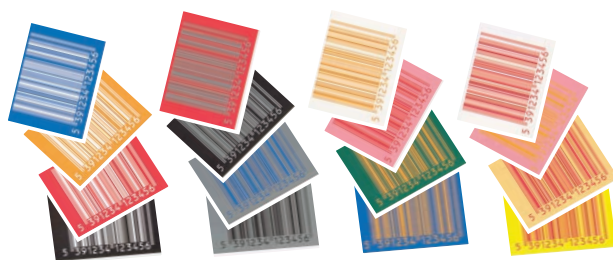
A: Scanners read barcodes by using a red light to recognise the contrast between the bars and spaces of the symbol. Black bars against a white background are the safest choice, but other combinations will also work well.



SCANNABLE COLOURS



NON SCANNABLE COLOURS



Q: Where should I put the barcode on a retail pack?

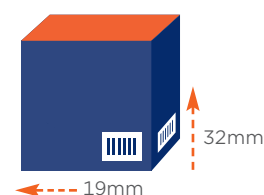
A: For consumer units the barcode should ideally be in the bottom right corner on the rear of the pack, at least 8mm away from any edge, seam or fold. Only one barcode symbol should be placed on a retail unit.



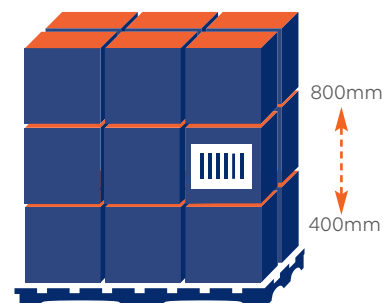
Q: Where should I put the barcode on shipping units?

a) For outer cases the barcode label should be placed at least 32mm up from the base of the item and 19mm in from the vertical edge.

Traded units should be marked with two barcode symbols - one on a long side and one on an adjacent short side.



b) On cases and pallets greater than 1 meter in height the label should be placed between 400mm and 800mm up from the base and 50mm in from the vertical edge.



GS1 services

GS1 works with organisations to improve the way they order, supply and buy products. By using processes such as barcode scanning and electronic orders and invoices, businesses can cut costs and become more efficient in how they operate.

GS1 Ireland provides a range of supports for local businesses looking to bring accuracy and efficiency to their businesses through open, global supply chain standards-based solutions.

GS1 services for Members include:

- Barcode Manager tool
- Helpdesk support
- Training courses and workshops
- Barcode verification
- On-site advisory services.

To find out more about any of our Membership Services simply contact us today.

Who can I talk to for help?

This leaflet provides a very high level introduction to the topic of GS1 barcodes. For more information on any of the technical aspects of GTIN (barcode number) allocation or symbol size and quality, please contact the GS1 Ireland Helpdesk.

T 01 208 0660
E helpdesk@gs1ie.org

Subscribe to our mailing list



Send your name and company name to **marketing@gs1ie.org** and we'll add you to the list for barcode updates.



Training and Education

If you feel you need to get a more in depth understanding of how GS1 barcode numbers and symbols are created and managed, then why not attend one of GS1 Ireland's expert led training courses? Dates and course details can be found on our website www.gs1ie.org/training or from our Helpdesk.



Barcode Manager

The stress-free way to generate barcode numbers and symbols.



Barcode Manager is a new online tool from GS1 Ireland to help you allocate barcode numbers and generate barcode symbols accurately and effortlessly.

With Barcode Manager you can:

- Generate barcode numbers for a new product
- Store barcode details for existing products
- Compile a data profile for products to include brand name, description and details such as weight, size, flavour or colour
- Generate barcode symbols in a variety of file formats
- Upload existing product information from other systems via spreadsheet.

Fast, accurate,
effortless - barcodes
made easy with
Barcode Manager

Barcode Manager

With Barcode Manager's built-in check digit function a whole stage of the barcode generation process is now automated, saving time and preventing errors.

www.gs1ie.org/Barcode-Manager



GS1 Ireland

2nd Floor The Merrion Centre, Nutley Lane, Donnybrook, Dublin 4, D04 KF62, Ireland.

T +353 1 208 0660 | F +353 1 208 0670 | E info@gs1ie.org

www.gs1ie.org

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