

Barcode location for Retail Point-of-Sale

Fact Sheet

Number of barcodes

At least one barcode is needed on a trade item intended for the Point-of-Sale (POS). Exceptions include large, heavy or bulky items and random or unregistered wrapping where two or more barcodes with the same Global Trade Item Number (GTIN) may be required.

Trade items intended to be scanned at retail point-of-sale SHALL be marked with one of the linear barcodes - EAN-13, UPC-A, EAN-8, UPC-E, GS1 DataBar Omnidirectional, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Expanded or GS1 DataBar Expanded Stacked barcode. During the 2D transition period, a GS1 DataMatrix, Data Matrix (GS1 Digital Link URI) or QR Code (GS1 Digital Link URI) may be applied to trade items scanned at retail POS, in addition to the linear barcode.

When there is more than one barcode with GTIN on trade items, it is essential that the POS systems will ensure:

- The system SHALL only process one set of the desired data in the final transaction.
 - Scanning systems SHOULD only produce one acknowledgement (e.g., beep) when multiple barcodes are scanned from the same trade item.

Important: If the points above are not implemented unintended POS transactions may occur.

Trade items should never have two or more barcodes encoding different GTINs. At the POS this is particularly relevant with multipacks such as over-wrapped items, sleeved items, and banded items, where the individual inner units carry a different GTIN from that on the outer wrapper or container. The barcodes on the inner products must be totally obscured so that they cannot be read by POS systems. For more information refer to *Overwrap* under *Special Packaging Considerations*.

Identifying the Back of the Trade Item

The front of the trade item is the primary trading/advertising area, which typically displays the product name and the company's logo. The back of the trade item is directly opposite the front and is the preferred placement area for the barcode on most trade items.

Where an item is deemed to have two fronts, one in each orientation, the “portrait” face takes priority as the front.

Barcode Placement

The preferred barcode placement is on the lower right quadrant of the back, respecting the proper Quiet Zones around the barcode and the edge rule. See also *Special Packaging Considerations*.

To avoid scanning difficulties make sure the distance between the barcode area and the scanner surface does not exceed 12 mm.

The alternative placement for a barcode is the lower right quadrant of another side of the container. Positioning the barcode on the base of a trade item continues to be acceptable, except for large, heavy or bulky trade items, however it is not preferred.

When a linear barcode and a 2D barcode are both being used for retail POS applications, the entire 2D barcode including Quiet Zones SHOULD be placed within a 50 mm radius from the centre of the linear barcode.

Important: If the 2D barcode is outside of the 50 mm radius of the linear barcode, the scanning system may not identify that both barcodes are related to the same trade item.

Figure 1: 2D barcode placement examples in relation to linear barcode



Whenever possible, do not place the barcode on the lid or neck of a trade item. This helps ensure that contents do not spill or leak when the trade item is passed over the scanner.

For more information about where to place 2D barcodes, please see the [2D in Retail implementation guideline](#)

Edge

When possible, the barcode must not be closer than 8mm or further than 100mm from the nearest edge of the item. Previous guidelines suggested a distance of 5mm as a minimum, however practical experience has shown this to be inadequate. For example, cashiers often grab the edges of bags and other trade items with their thumbs. Avoid placing the barcode too close to the edge. Such placement reduces efficiency at the POS.

Avoid Truncated Barcodes

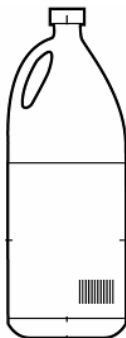
Truncation of a barcode is the reduction of the height of a symbol relative to its length/width. Truncation is not recommended because it destroys the ability of a symbol to be scanned omnidirectionally at the POS. A truncated symbol can only be scanned when the trade item is orientated in particular directions across the scanning beam. Truncation, therefore, reduces checkout efficiency. The more the height of the symbol is reduced, the more critical becomes the alignment of the symbol across the scanning beam. Truncation should be avoided unless absolutely necessary, for example, when printing on a tightly curved surface, and then the maximum height possible should be printed.

Orientation

Barcode orientation is determined primarily by the print process and any curvature of the item. If the printing process and curvature allow, the preferred placement is picket fence orientation, in which the bars of the barcode are perpendicular to the surface on which the package stands in its normal display position.

When a barcode is printed onto a curved surface ladder orientation is required so that both ends of the symbol are visible to the scanner at the same time.

Figure 2: Barcode placement on Curved Surfaces



Picket Fence Orientation
(avoid on tightly curved surfaces)



Ladder Orientation
(preferred for curved surfaces)

Exceptions to the General Placement Guidelines

Some trade items require special considerations for barcode placement.

Bags

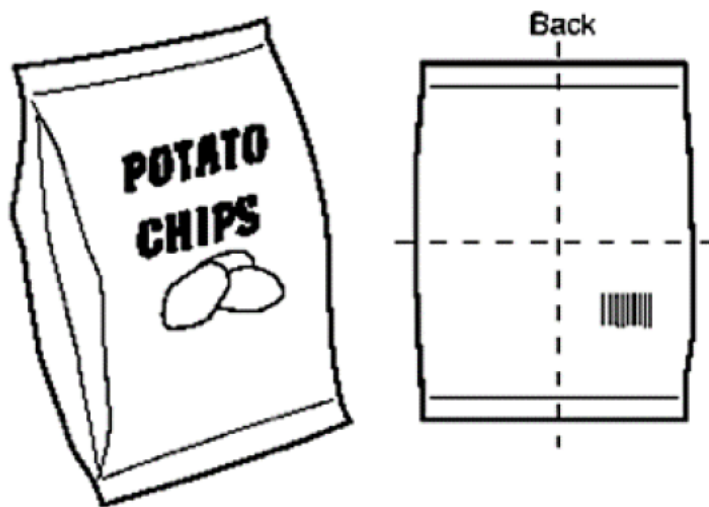
Settling of the contents usually results in bag edges bulging to the extent that barcodes located on the lower right quadrant may not be flat enough to permit successful scanning. For this reason, barcodes on bags should be placed in the centre of the back, about one third up from the bottom and as far from the edge as possible while respecting the edge rule.

Bags are often called sacks or pouches. This category includes paper or plastic containers that are:

- Fold-sealed on both ends (e.g. flour and sugar)
- Fold-sealed on one end and pinched sealed at the other end (i.e. potato chips)
- Pinch-sealed at both ends (e.g. cough drops)
- Fold-sealed on one end and gathered at the other end (e.g. bread)

Note: Some bags are sealed at both ends and carded for display, such as bags of sweets. These types of trade items are not considered a bag package type.

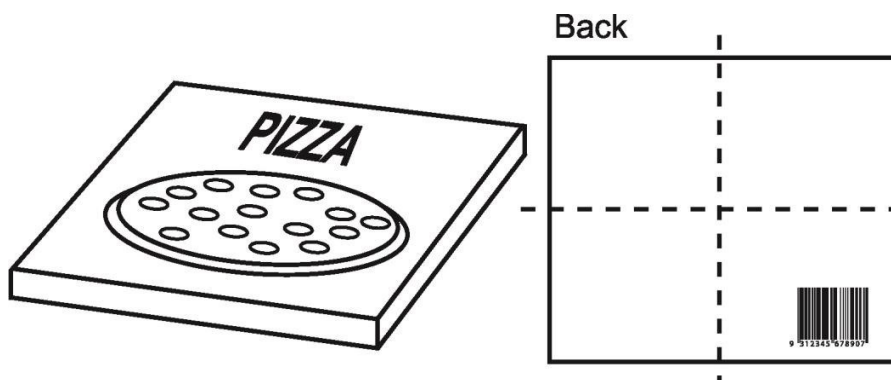
Figure 3: Symbol placement on bags



Thin items or containers

Thin items or containers are items with a dimension less than 25mm (height, width, or depth). Examples of thin items or containers are packages of pizza, powdered drink mixes, and writing pads. Any placement of the symbol on the edge hinders effective scanning because the symbol is obscured from the cashier and is likely to be truncated. The preferred location is on the lower right quadrant of the back, near the edge, respecting the proper Quiet Zones.

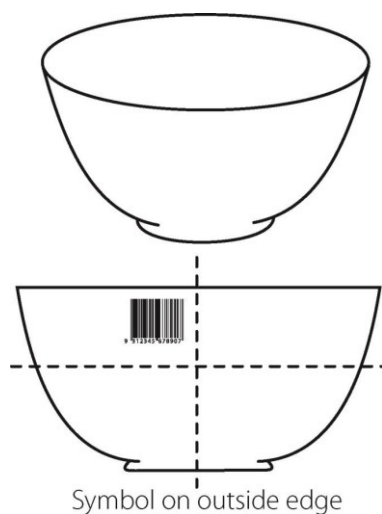
Figure 4: Barcode placement on thin items or containers



Blister packs or unpackaged items

Trade items that cause scanners to read beyond the flat plane include blister packs and unpackaged items (e.g. deep bowls). For these package types, the distance between the scanner window and the barcode on the item must be considered. The barcode cannot be closer than 8 millimetres or farther than 100 millimetres from any edge of the package/container.

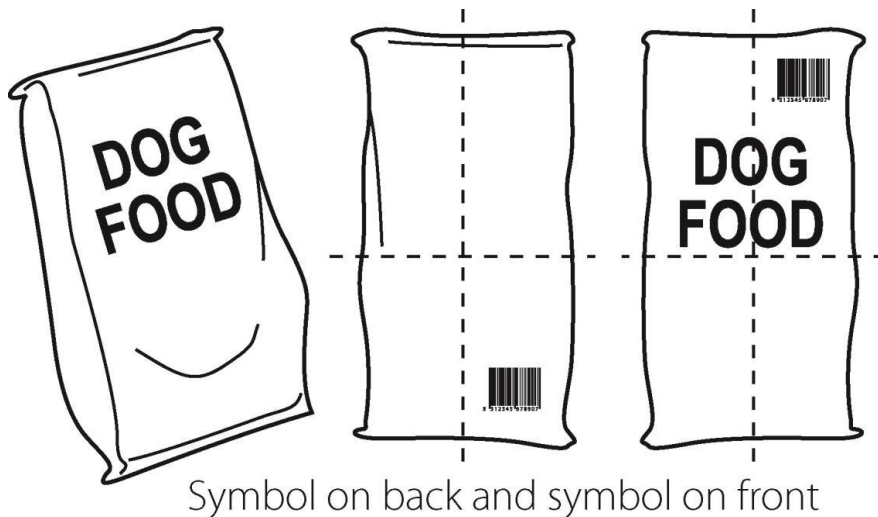
Figure 5: Barcode placement on an unpackaged bowl



Large, heavy, or bulky items

Any item weighing more than 13kg or having two dimensions greater than 450mm (width/height, width/depth, or height/depth) is considered a large, heavy, or bulky item. Large, heavy, or bulky items tend to be hard to handle. Large, heavy, or bulky items SHOULD have barcodes with the same GTIN placed on top and on the bottom of the opposite faces of the trade item.

Figure 6: Barcode placement on large, heavy or bulky items



Special Packaging Considerations

Specific packaging methods require special considerations for barcode placement.

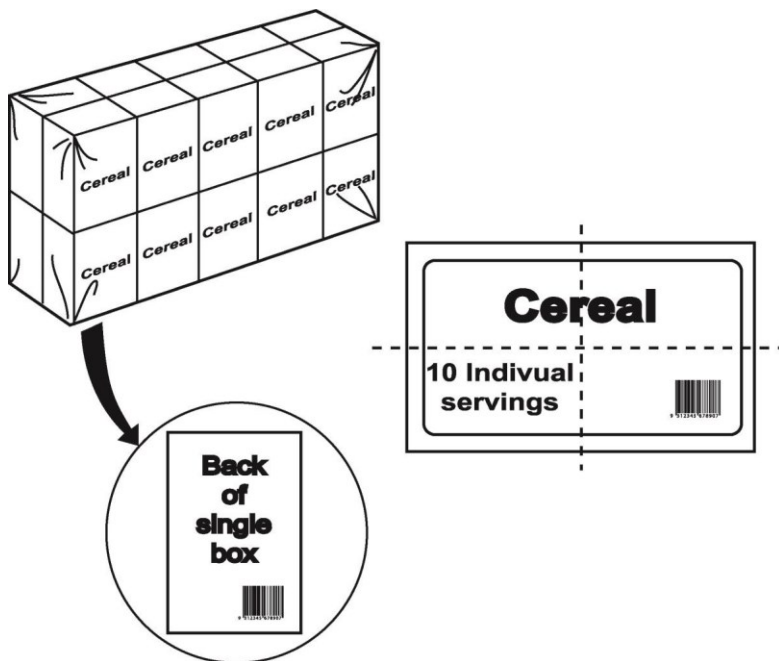
Overwrap

Trade items to be sold in multiples are mechanically gathered and covered with clear over-wrap material that will carry print. Typical over-wrapped items are small cereal boxes and chocolate bars. Package over-wrap can create two distinct problems:

- Obscuring the barcodes on individual units inside the multipack is necessary so they are not confused with the outer multipack barcode, which must be different.
- Over-wrapping with such materials as cellophane causes diffraction or reflection of the light beam of the scanner and can reduce contrast, which causes scanning inefficiencies.

To determine proper barcode placement for over-wrapped packaging, follow the guidelines specific to the applicable package type/shape as described under *Location Guidelines for Specific Packaging Types*.

Figure 7: Barcode placement on over-wrapped items



Random (Unregistered) Wrap

Some wrappers, like those used on sandpaper, have a repeating design and are neither cut nor placed on the product such that a particular part of the design always appears in the same location. This is referred to as random or unregistered wrapping. As the wrapper is not registered, it is unlikely that the barcode will appear on one face of the package when the wrapper is placed on the product.

Experience has shown that the presence of more than one barcode on a package can have a detrimental effect on scanning productivity and, if these repeated barcodes are too far apart, can lead to a double read. For this reason, it is essential that the POS systems be updated to only process one set of the desired data in the final transaction or the use of registered packaging is preferred over random wrap. If random wrap must be used, the minimum requirement is to print the barcode with sufficient frequency that a full barcode will appear on one package face.

If any additional barcodes are outside of the 50 mm radius from the centre of the linear barcode, the scanning system may not likely identify that both barcodes are related to the same trade item.

Consideration should also be given to elongating the bars of the barcode to ensure a full barcode on one face, instead of repeating it.

Figure 8: Barcode placement on a random-wrapped item

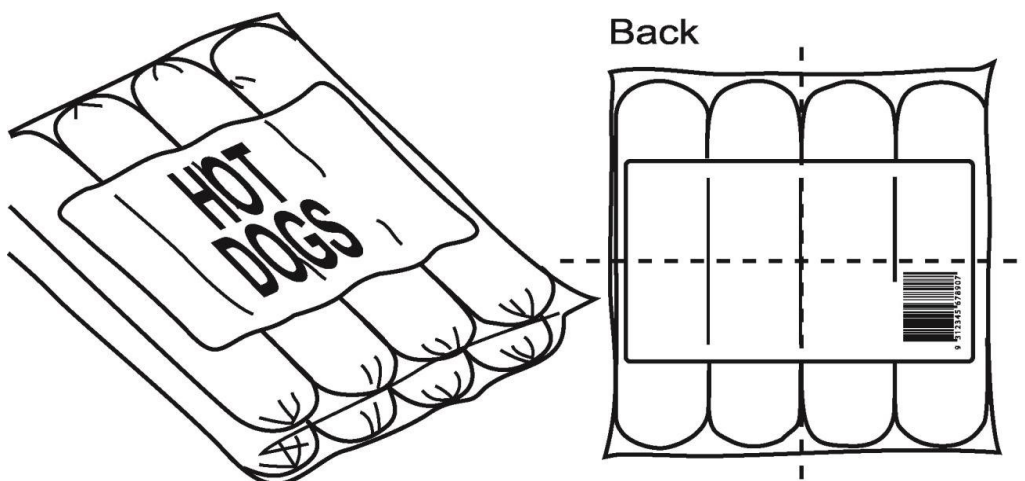


Shrink Film/Vacuum-Formed Packages

The barcode on an item packaged in shrink film or that is vacuum-formed should be located on a flat surface and in an area free of creases, wrinkles, or other types of distortions. The figure below shows a barcode placement on hot dogs. A ladder orientation barcode was selected due to the curvature of the hot dogs.

To determine proper barcode placement for shrink film/vacuum-formed packaging, follow the guidelines specific to the applicable package type/shape.

Figure 9: Barcode placement on shrink film/vacuum-formed items

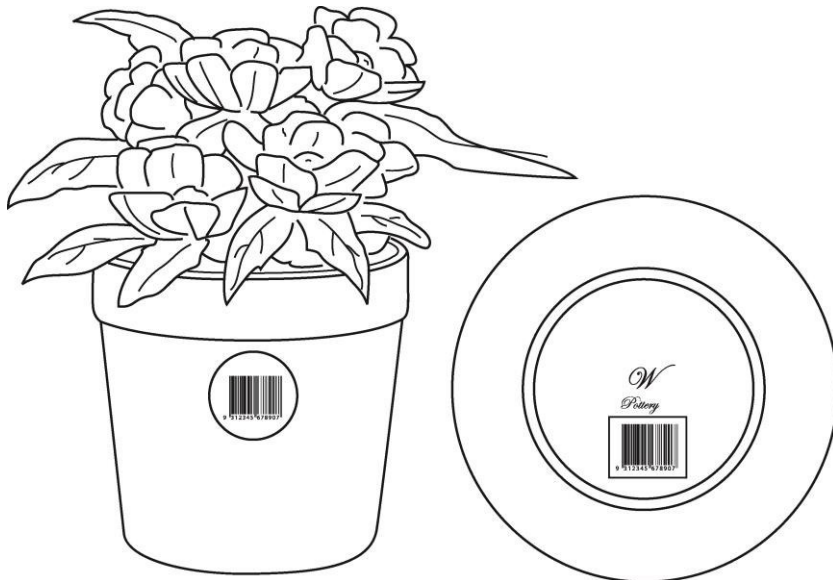


Spot Labels

Barcodes printed on spot labels that are applied to the trade item are acceptable alternatives that incorporate barcodes into existing packaging graphics or for use on items without packages, such as some pots, pans, tableware, and glassware. The most suitable type of spot labels is those that cannot be removed from the item without destroying the barcode. Labels that are applied directly to the product should use an adhesive that is strong enough to adhere to the label for an extended shelf life, but which also allows the label to be removed without the use of solvents or abrasives.

To determine proper barcode placement on items bearing spot labels, follow the guidelines specific to the applicable package type/shape.

Figure 10: Barcode placement with a spot label



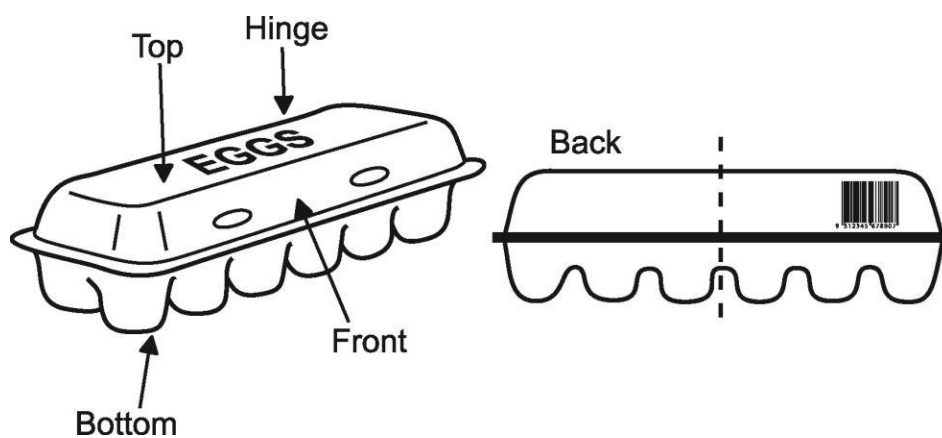
Location Guidelines for Specific Packaging Types

Egg cartons

Moulded pulp, foam, or plastic egg cartons come in sizes according to the count of the eggs contained.

The preferred location is near the edge, on the right half of the back, above the hinge on the lid, respecting the proper Quiet Zones and the edge rule.

Figure 11: Barcode placement on egg cartons

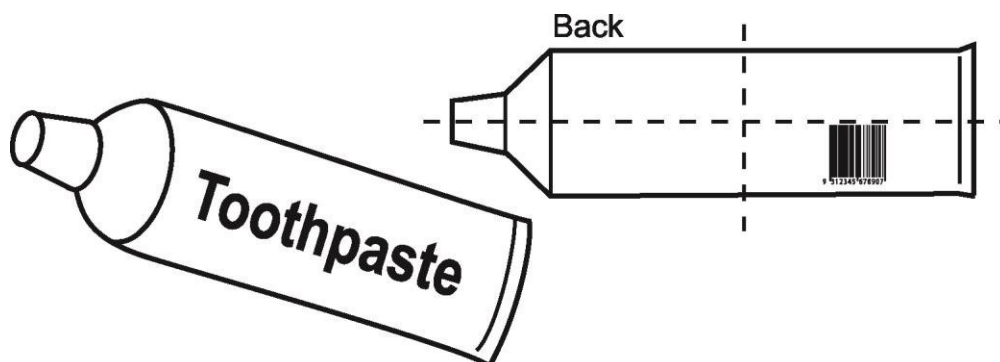


Tubes

Tubes are cylindrical shaped trade items or containers that are either sealed at both ends (such as sausage or refrigerated dough) or that are sealed at one end and have a cap or valve on the other end (such as toothpaste).

The preferred location is on the lower right quadrant of the back, near the edge, respecting the proper Quiet Zones and the edge rule.

Figure 12: Barcode placement on tubes



Multipacks

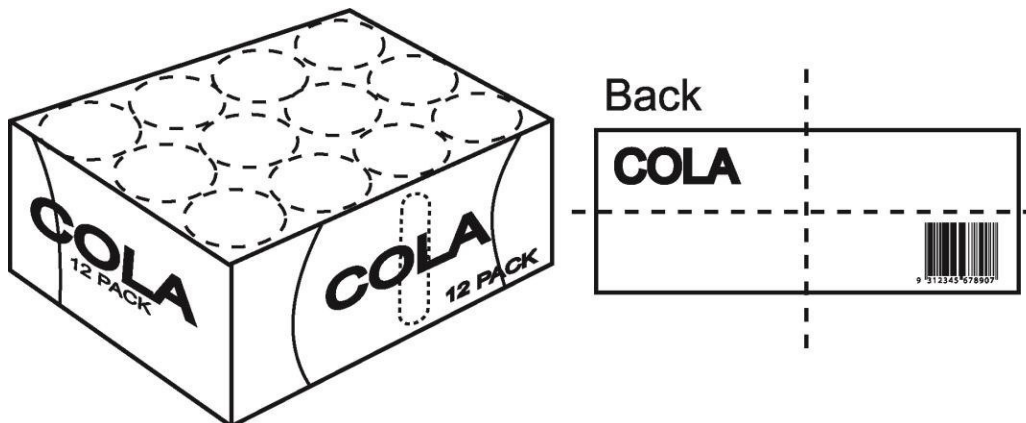
Single trade items are sometimes packaged together as one unit or trade item. This is referred to as a multipack. Multipacks provide convenience to the consumer, and/or may represent a price reduction compared to purchasing trade items individually. Typical multipacks contain bottles, cans, jars and tubs.

As a general rule, a barcode should be placed on every consumer package traded through the supply chain. Consequently, trade items sold in multipacks as well as those sold individually must carry a unique barcode for each consumer package variation or aggregation.

To avoid confusion at the POS, the multipack barcode should be the only visible barcode when both the multipack and individual trade items are barcoded. The binder of the multipack acts as a screen to obscure the barcodes on the individual trade items.

The preferred location is on the lower right quadrant of the back, near the edge, respecting the proper Quiet Zones and the edge rule.

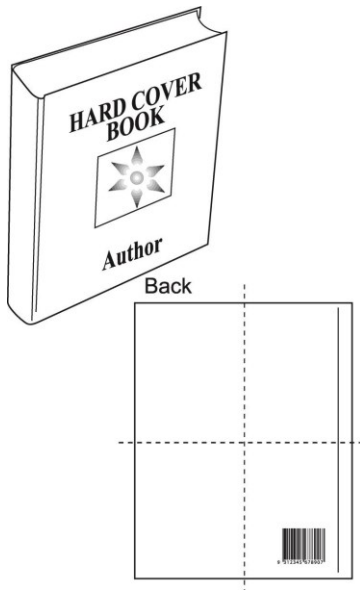
Figure 13: Barcode placement on multipacks



Books

The preferred location for the barcode on a book is on the lower right quadrant of the back, near the spine, respecting the proper Quiet Zones and the edge rule. If an Add-On barcode is used it should be placed just to the right of the main barcode so that there is a consistent horizontal location and Quiet Zones are maintained for both barcodes.

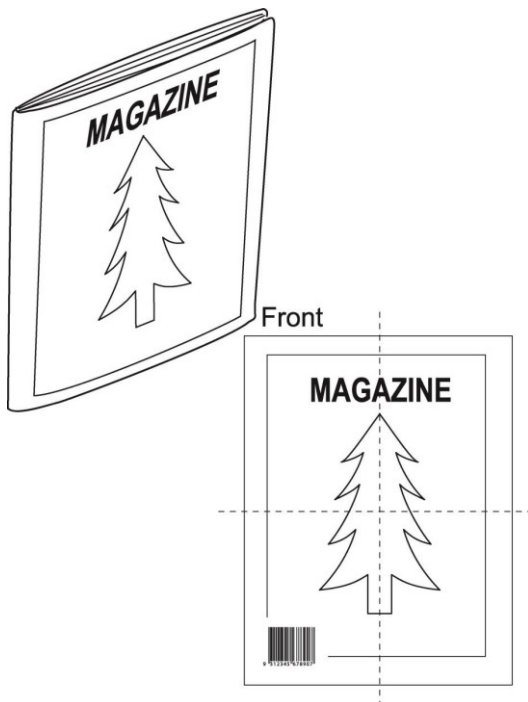
Figure 14: Barcode placement on books



Magazines

The preferred location for the barcode on a magazine is on the lower left quadrant of the front, near the edge, respecting the Quiet Zones and the edge rule.

Figure 15: Barcode placement on magazines

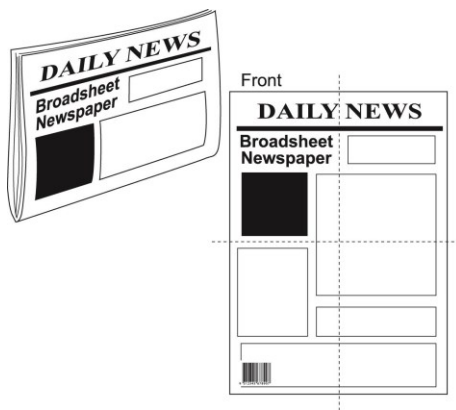


Newspapers

The preferred location when displayed for sale folded is on the lower left quadrant of the front, near the edge, respecting the proper Quiet Zones and the edge rule.

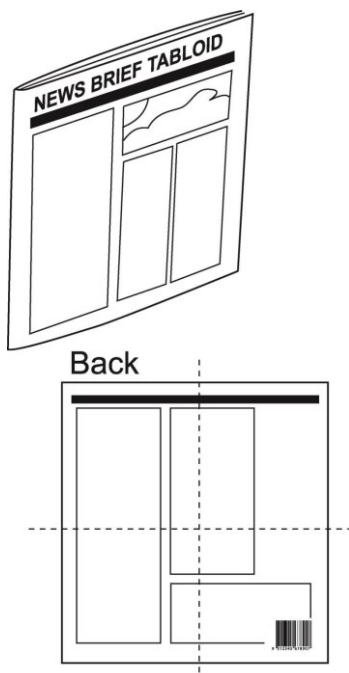
If an Add-On barcode is used it should be placed just to the right of the main barcode so that there is a consistent horizontal location and Quiet Zones are maintained for both barcodes.

Figure 16: Barcode placement on newspapers displayed for sale folded



The preferred location when displayed for sale as open/flat is on the lower right quadrant of the back, near the edge, respecting the proper Quiet Zones and the edge rule.

Figure 17: Barcode placement on newspapers displayed for sale open/flat



If an Add-On barcode is used it should be placed just to the right of the main barcode so that there is a consistent horizontal location and Quiet Zones are maintained for both barcodes.

Hi-cone packs

Hi-cones are plastic rings used to attach cans together. When using hi-cone packaging, it is not possible to obscure the barcodes on the individual trade items. Each can in the pack should carry an individual barcode. Do not attempt to barcode the multipack separately.

Horticultural items

Firmly attach the label to the trade item, for example, using a lock-in rigid label. This is also preferable for security reasons.

Lock-in rigid labels. Suitable positions for the barcode (in order of preference) are on the:

- Lower part of the front of the label
- Upper part of the back of the label

Pre-printed self-adhesive labels for punnets. The preferred location for the barcode is as high as possible on one of the narrow sides of the punnet. For all other trade items, the preferred location for the barcode is towards the lower part of the pot, avoiding any areas of excessive moisture.

Pre-printed pots or punnets. The preferred location is on the lower part of the punnet.

Trays for carrying punnets or tubs are a separate retail trade item. They must carry a separate barcode.

Pictorial tie-on labels. Suitable positions for the barcode (in order of preference) are on the:

- Removable perforated section
- Area left clear on the label for the addition of a barcode

Other Retail Trade Items

For more information on location of specific packaging types for items not mentioned in this section, such as apparel, please contact us.

Support for implementing 2D barcodes:

[GS1 New Zealand's 2D Starter Workshop](#)

The Starter Workshop is perfect for organisations ready to implement a pilot programme. Work with our 2D Barcodes Lead to identify key benefits and opportunities and lay the foundations for your pilot programme. You'll receive a post-workshop summary, framework for pilot planning and a high level roadmap to get you started.

Contact GS1 New Zealand

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