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The Global Language of Business

Symbology Placement Guidelines

An Extract from the GS1 General Specifications Version 15(i2): Section 6 Symbology Placement Guidelines

August 2015

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Instruction Note:
The sections below are an extract from the GS1 General Specifications Version 15 Issue 2 and will commence with 6.1. A full copy of the GS1 General Specification is available on the GS1 Canada website:
Link: http://www.gs1ca.org/pages/n/standards/Barcode_Standards.asp

6.1 Introduction

This section includes guidelines for the placement of barcodes on packages and containers. It gives the general principles that apply mandatory rules, and recommendations for symbol placement on specific packaging and container types (see table of content).
Consistency of symbol placement is critical to successful scanning. With manual scanning, variation of symbol placement makes it difficult for the scanning operator to predict where the symbol is located, and this reduces efficiency. With automated scanning, the symbol must be positioned so that it will pass through the field of vision of a fixed scanner as it travels past. Respecting the guidance in this section will result in the consistency and predictability required.
The guidelines in this global specification replace previous local recommendations; however, manufacturers should not scrap packaging that has been printed according to previous guidelines. When packaging is redesigned, the global specifications in this document SHALL be observed. If government regulatory guidelines are inconsistent with those in this manual, the government guidelines should always take precedence.

Note: Barcodes in this guideline that are used as examples are For Position Only and are not intended to denote correct symbol type, size, colour, or quality.

6.2 General Placement Principles

The following general principles for barcode placement SHALL be considered for any package type, whether it is scanned at the Point-of-Sale or elsewhere in the supply chain. Trade items intended to be scanned at a Point-of-Sale must be marked with an EAN-13, UPC-A, EAN-8, UPC-E, GS1 DataBar Omnidirectional, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Expanded or GS1 DataBar Expanded Stacked barcode. The barcodes that are scanned elsewhere are the EAN-13, UPC-A, ITF-14, GS1 DataBar and GS1-128 barcodes
EAN-8 and UPC-E barcodes are intended for use on very small trade items sold at the Point-of-Sale.

6.2.1 Number of Symbols

Barcodes representing different Global Trade Item Numbers (GTINs) must never be visible on any one item. Although a minimum of one symbol is required, two symbols representing the same GTIN are recommended on trade items for scanning in warehousing or General Distribution Scanning environments (see Section 6.7). Two or more symbols representing the same GTIN are recommended on large, heavy, or bulky items for Point-of-Sale (see Section 6.4.9) and are permissible on random wraps intended for Point-of-Sale (see Section 6.3.3.7). Two symbols, EAN/UPC encoding GTIN and another encoding GTIN plus attributes may be required during migration periods to new data carriers (see Section 4.15).

6.2.2 Scanning Environment

Before considering the package type, determine whether the item will be scanned in a Point-of-Sale or a General Distribution Scanning environment. If the item is scanned at a Point-of-Sale only, the barcode placement guidelines in Sections 6.3, 6.4, and 6.5, and 6.5.5 apply. However, if the item is scanned in both a Point-of-Sale and General Distribution Scanning environment or in a General Distribution Scanning environment only, the requirements (see Section 6.7) take precedence.

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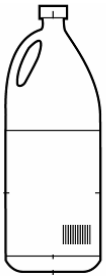
6.2.3 Orientation

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. For Human-Readable Interpretation Rules see GS1 General Specifications Section 4.14. Empirical data has demonstrated that it makes no difference to the scanning process one way or the other. Rules for positioning barcodes on curved surfaces are given in Section 6.2.3.2.

Figure 6.2.3-1 Barcode orientation

Barcode orientation



Picket Fence Orientation

Ladder Orientation

6.2.3.1 Printing Direction

Barcode orientation is often determined by the printing process. Some printing processes give much higher quality results if the bars of the symbol run in the direction of the print, also known as the web direction. The printing company should always be consulted.

6.2.3.2 Trade Items with Curved Surfaces

When a barcode is printed onto a curved surface it is sometimes possible for the extremes of the symbol to disappear around the curve, so that both ends cannot be visible to the scanner at the same time. This is more likely to occur the bigger the symbol and the tighter the curve of the packaging. In these situations, bars must be printed using certain combinations of the X-dimension and diameter of the curved surface (e.g., in ladder orientation on a can, in picket fence orientation on a cylindrical packet of biscuits). This helps ensure that the curve results in an apparent loss of height of the bars rather than the more serious apparent loss of complete bars.

Figure 6.2.3.2-1 Barcode placement on curved surfaces

Ladder orientation
(Preferred for all curve surfaces)

Picket Fence orientation (avoid on tightly curved surfaces)

The angle between the tangent to the centre of the curved symbol and the tangent to the extremity of the curved symbol (outer edge of the guard bars for symbols in the EAN/UPC Symbology) must be less than 30 degrees. If this angle is more than 30 degrees, the symbol must be oriented such that the bars are perpendicular to the generating lines of the surface of the item.

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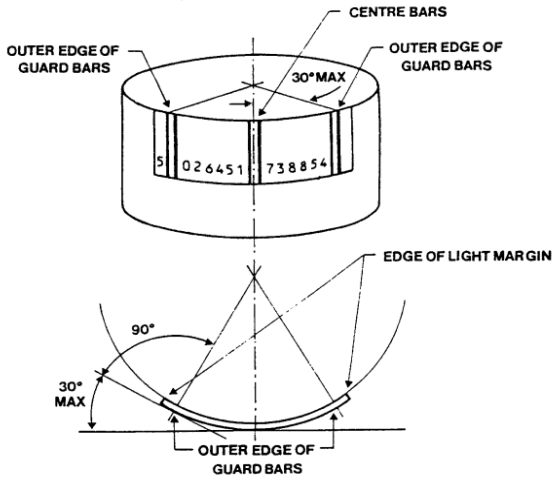
Figure 6.2.3.2-2 Relationship between symbol and curvature



Figures 6.2.3.2 - 3 and 6.2.3.2 - 4 show the relationship between acceptable X-dimensions (narrow element width) for units of different diameters and the minimum diameters for different X-dimensions for barcodes printed in the picket fence orientation. Please refer to GS1 General Specifications Section 5.5 for the minimum, target, and maximum X-dimension for the symbol, based on the scanning environment.

Figure 6.2.3.2-3 Relationship between diameter and the X-dimension

Diameter of Container		Maximum Value of X-dimension			
		EAN-13 or UPC-A Barcode		EAN-8 Barcode	
mm	Inches	mm	Inches	Mm	Inches
30 or below	1.18 or below	*	*	*	*
35	1.38	*	*	*(0.274)*	*(0.0108)*
40	1.57	*	*	*(0.314)*	*(0.0124)*
45	1.77	*	*	0.353	0.0139
50	1.97	*(0.274)*	*(0.0108)*	0.389	0.0153
55	2.16	*(0.304)*	*(0.0120)*	0.429	0.0169
60	2.36	0.330	0.0130	0.469	0.0185
65	2.56	0.356	0.0140	0.508	0.0200
70	2.75	0.386	0.0152	0.549	0.0216
75	2.95	0.413	0.0163	0.587	0.0232
80	3.25	0.446	0.0174	0.627	0.0247
85	3.35	0.469	0.0185	0.660	0.0260
90	3.54	0.495	0.0195	0.660	0.0260
95	3.74	0.525	0.0207	0.660	0.0260
100	3.94	0.551	0.0217	0.660	0.0260
105	4.13	0.578	0.0228	N/A	N/A
110	4.33	0.607	0.0239	N/A	N/A
115	4.53	0.634	0.0250	N/A	N/A
120 or above	4.72	0.660	0.0260	N/A	N/A

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Note: An asterisk (*) indicates that the package diameter is too small to permit a picket fence orientation barcode, and the symbol must be rotated 90 degrees to a ladder orientation (see Section 5.5) The barcode is printed perpendicular to the generating lines of the surface of the container.

Note: *Italics* indicate X-dimensions that are permissible, but are not recommended on curved surfaces.

Note: EAN-8 barcodes are reserved for very small items (See GS1 General Specification Section 2.1).

Figure 6.2.3.2-4 Relationship between the X-dimension and diameter

X-dimension		Minimum Diameter of Container					
		EAN-13 or UPC-A Barcode		EAN-8 Barcode		UPC-E Barcode	
mm	inches	mm	inches	mm	Inches	Mm	inches
0.264	0.0104	48	1.33	34	1.89	26	1.01
0.300	0.0118	55	1.51	38	2.14	29	1.51
0.350	0.0138	64	1.76	45	2.50	34	1.53
0.400	0.0157	73	2.02	51	2.86	39	1.54
0.450	0.0177	82	2.27	58	3.21	44	1.73
0.500	0.0197	91	2.52	64	3.57	49	1.92
0.550	0.0217	100	2.77	70	3.93	54	2.11
0.600	0.0236	109	3.02	77	4.29	59	2.31
0.650	0.0256	118	3.27	83	4.64	63	2.50
0.660	0.0260	120	3.35	85	4.72	64	2.54

6.2.3.3 Avoiding Scanning Obstacles

Anything that will obscure or damage a barcode will reduce scanning performance and SHALL be avoided. For example:

- Never position the barcode on the item in an area with inadequate space. Do not let the other graphics encroach on the space for the barcode.
- Never place barcodes, including Quiet Zones, on perforations, die-cuts, seams, ridges, edges, tight curves, folds, flaps, overlaps, and rough textures.
- Never put staples through a barcode or its Quiet Zones.
- Never fold a symbol around a corner.
- Never place a symbol under a package flap.
- Barcodes used for production control purposes should be obstructed wherever possible before entering general distribution (See GS1 General Specification Section 4.15)

6.3 General Placement Guidelines for Point-of-Sale

This section outlines the guidelines for barcode placement on trade items that will be scanned at the Point-of-Sale. For detailed information on specific package types, see Sections 6.4, 6.5, and 6.5.5. Section 6.7 outlines guidelines for barcode placement on trade items that will be scanned in warehousing or General Distribution Scanning environments.

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6.3.1 Number of Symbols

At least one barcode is needed on a trade item intended for the Point-of-Sale. Exceptions include large, heavy, or bulky items (see Section 6.4.9) and random or unregistered wrapping (see Sections 6.3.3.7) where two or more symbols with the same Global Trade Item Number (GTIN) may be required.

Trade items SHALL never have two or more barcodes encoding different Global Trade Item Numbers (GTINs). At the Point-of-Sale, 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 the Point-of-Sale system. (see Section 6.3.3.7 for over-wrap special considerations.)

6.3.2 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.

6.3.3 Symbol Placement

Information in this section is provided to guide symbol placement when developing packaging for new products and should be adopted when changing the graphics of existing products.

6.3.3.1 Preferred Placement

Preferred barcode placement is on the lower right quadrant of the back, respecting the proper Quiet Zone areas around the barcode and the edge rule (see the Edge Rule in Section 6.3.3.3 and special considerations in Section 6.3.3.7).

6.3.3.2 Undesirable Alternative

The undesirable alternative placement for a barcode is the lower right quadrant of a side of the container other than the back.

6.3.3.3 Edge Rule

When possible, the barcode must not be closer than 8 mm (0.3 in.) or farther than 100 mm (4 inch) from the nearest edge of the package/container. Previous guidelines suggested a distance of 5 millimetres (0.2 inch) as a minimum. 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 Point-of-Sale.

6.3.3.4 Avoid Truncated Symbols

Truncation of a barcode is the reduction of the height of a barcode relative to its length. Truncation is not recommended because it destroys the ability of a symbol to be scanned omnidirectionally at the Point-of-Sale. A truncated symbol can only be scanned when the trade item is oriented 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 SHALL be avoided unless absolutely necessary (e.g., when printing on a tightly curved surface), and then the maximum height possible SHALL be printed. See Section 6.2.3.2 for rules on the relationship between the diameter of the item and the X-dimension.

6.3.3.5 Bottom Marking

Bottom marking of the trade item with the barcode continues to be acceptable, except for large, heavy, or bulky trade items. However, back (side) marking is preferred.

6.3.3.6 Exceptions to the General Placement Guidelines

Some trade items require special considerations for barcode placement.

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- Bags

When bag contents settle, the bag edges can bulge 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. (See Section 6.4.1 for more details on bags.)

- 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 items, the distance between the scanner window and the barcode on the container or item must be considered. The barcode must not be closer than 8 millimetres (0.3 inch) or farther than 100 millimetres (4 inches) from any edge of the package/container. (See Sections 6.4.2 and 6.4.16 for more details on blister packs and unpackaged items.)

- Large, heavy, or bulky items

Any package/container weighing more than 13 kilograms (28 pounds) or having two dimensions greater than 450 millimetres (18 inches) (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 may require two or more symbols with the same Global Trade Item Number (GTIN) ideally one on top and one on the bottom of the opposite quadrant' (See Section 6.4.9 for more details on large, heavy, or bulky items.)

- Thin items or containers

Thin items or containers are packages/containers with a dimension less than 25 millimetres (1 inch) (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. (Refer to Section 6.4.12 for more details on thin items or containers.)

6.3.3.7 Special Packaging Considerations for Barcode Placement

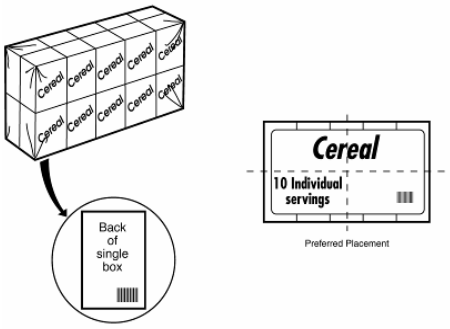
Some packaging methods require special considerations for barcode placement.

Over-wrap

Trade items 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. (See Section 6.4 for details on symbol placement for specific package types.)

Figure 6.3.3.7-1 Barcode placement on over-wrapped item



Random (Unregistered) Wrap

Some wrappers, like those used on sandpaper or margarine, 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 symbol will appear on one face of the package when the wrapper is placed on the product.

The presence of more than one barcode on a package can have a detrimental effect on scanning productivity and, more importantly, can lead to a double read. For this reason, the use of registered packaging is preferred. If random wrap must be used, the minimum requirement is to print the symbol with sufficient frequency so that a full symbol will appear on one package face.

Double reads are more likely when the gaps between the symbols are larger. Repeating symbols should never be more than 150 millimetres (6 inches) apart.

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

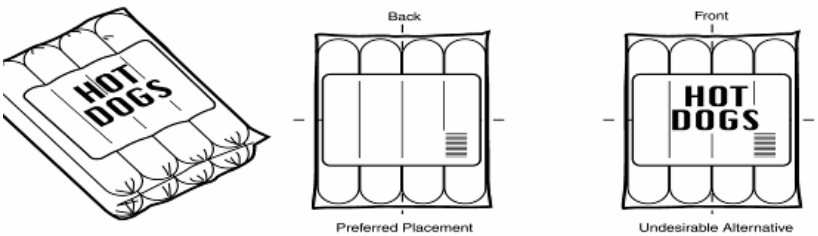
Figure 6.3.3.7-2 Barcode placement on random-wrapped item

Shrink film/vacuum-formed packages

The barcode on an item packaged in shrink film or that is vacuum-formed SHALL be located on a flat surface and in an area free of creases, wrinkles, or other types of distortions. Refer to Figure 6.3.3.7 – 3, which shows barcode placement on hot dogs. Since the curvature of the hot dogs was greater than the diameter shown within the Section 6.2.3.2 figures, a ladder orientation symbol was used.

To determine proper barcode placement for shrink film/vacuum-formed packaging, follow the guidelines specific to the applicable package type/shape. (Refer to Section 6.4 for details on symbol placement for specific package types/shapes.)

Figure 6.3.3.7-3 Barcode placement on shrink film/vacuum-formed item



Spot labels

Barcodes printed on spot labels that are applied to the trade item are acceptable alternatives that incorporate symbols 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 label is one that cannot be removed from the item without destroying the symbol. Labels that are applied directly to the

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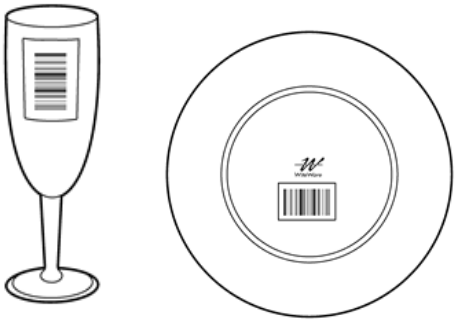
product should use an adhesive that is strong enough to adhere to the label for an extended shelf life, but which also allows the label to be removed without the use of solvents or abrasives.
To determine proper barcode placement on items bearing spot barcode labels, follow the guidelines specific to the applicable package type/shape. (Refer to Section 6.4 for details on symbol placement for specific package types.)

Figure 6.3.3.7-4 Barcode placement with a spot label

Figure 6.3.3.7-5 Tableware items using barcode spot labels



6.3.3.8 Operational Considerations of Barcode Placement

Speed, efficiency, and effectiveness in scanning operations are the ultimate goals of proper barcode placement. To ensure that scanning performance will not be compromised, consider the following matters before deciding on final barcode placement:

- Consistent symbol location
- Compare your package/container to packaging for like products to ensure equivalent symbol placement. The ease with which barcodes are located by a cashier from product to product essentially relies on consistent symbol placement.
- Scan simulation (hand motion effectiveness)
- Pass the barcode across the scanner with your hand to test the initial barcode placement. This test is intended to confirm that the barcode placement does not necessitate unnatural hand motions while you are scanning the symbol.

6.3.3.9 Security Tag Placement

When a visible security tag is used, the preferred placement is within a 75 millimetres (3 inches) diameter of the barcode placement. Consistent security tag placement makes it easier for the operator to predict security tag location and, thus, improves scanning efficiency.

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6.4 Placement Guidelines for Specific Package Types

The following barcode placement guidelines apply to specific package types. Section 6.5 contains diagrams illustrating symbol placement for clothing and fashion accessories. Figure 6.4 - 1, Package Type Reference, describes the main packaging categories and products. This figure can be used to determine correct barcode placement by product or packaging. For example, according to the figure below, a package of flower seeds in a 50 millimetres (2 inches) by 75 millimetres (3 inches) envelope is classified as a thin item or container. The example given of this type of package is powdered soft drink mix. According to the first column of the Package Type Reference, the correct barcode placement for this package type is determined by looking at Section 6.4.12.

Figure 6.4-1 Package type reference

Section	Package Type	Package Characteristics	Product Examples
6.4.1	Bags	Sealed cylindrical or rounded-corner wrapped units	Potato chips, flour, sugar, bird seed
6.4.2	Blister packs	Flat card backing a formed clear plastic bubble placed over product	Toys, hardware parts
6.4.3	Bottles and jars	Small or large-mouth vessels sealed with removable lids	Barbecue sauce, fruit jelly
6.4.4	Boxes	Folded, sealed, heavy paper or corrugated cardboard cartons	Crackers, cereal, detergent
6.4.5	Cans and cylinders	Cylindrical-shaped units sealed at each end	Soups, drinks, cheese, biscuits
6.4.6	Carded items	Items mounted or sealed on flat cards	Hammers, parcels of candy, kitchen utensils
6.4.7	Egg cartons	Irregular hexahedrons of plastic or moulded pulp with hinged lids	Eggs
6.4.8	Jugs	Glass or plastic vessel with built-in handle(s) and removable lid(s)	Household cleaners, cooking oil
6.4.9	Large, heavy, bulky items	Items having physical dimension of 450 mm (18 in.) or more in any two dimensions and/or weight in excess of 13 kg (28 lbs.)	Pet food, unassembled furniture, sledge hammers
6.4.10	Multipacks	Multiple items mechanically bound to create one package	Soft drink cans
6.4.11	Publishing items	Printed paper media that is bound, stapled, or folded	Books, magazines, newspapers, tabloids
6.4.12	Thin items or containers	Items or containers with one dimension less than 25 mm (1 in.)	Boxes of pizza, CD jewel boxes, powdered soft drink mix packages, writing pads
6.4.13	Trays	Flat, formed receptacles holding product covered with over-wrap	Prepared meats, pastries, snacks, pies, pie crusts
6.4.14	Tubes	Firmly packed cylinders sealed at both ends, or sealed at one end with a cap or valve on the other end	Toothpaste, sausage, caulk

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Section	Package Type	Package Characteristics	Product Examples
6.4.15	Tubs	Deep vessels with removable lids	Margarine, butter, ice cream, whipped cream
6.4.16	Unpackaged	Trade items that have no packaging, are often of an unusual shape, and are hard to label and scan	Frying pans, mixing bowls, cooking pots, giftware
6.4.17	Sets	Trade items that can be sold individually or as part of a boxed set.	Table and giftware
6.4.18	Sporting goods	Unpackaged items of specific size and shape.	Racquets, skis, skateboards

6.4.1 Bags

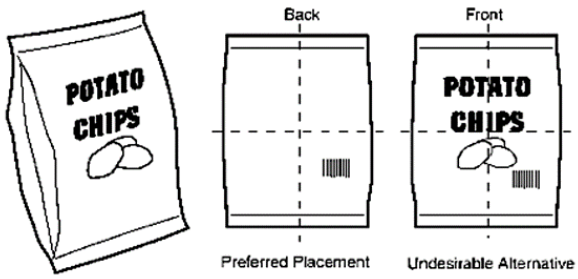
Although this category is referred to as "bags," these packages/containers are often called sacks or pouches. This category includes paper or plastic containers that are:

- Fold-sealed on both ends (e.g., flour, sugar)
- Fold-sealed on one end and pinched sealed at the other end (e.g., 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 items are not considered bags but fall into the carded items category. (See Section 6.4.6 for details on carded items.)Package characteristics: Sealed cylindrical or rounded-corner wrapped units

- Unique considerations: Bags have a tendency to have contents that shift and bulge. Consequently, barcode placement must be on an area of the bag that is most likely to remain flat.
- Barcode placement: Identify the front of the package/container. (See Section 6.3.2 for instructions on how to identify the package front.)
  - Preferred placement: On the lower right quadrant of the back and away from the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: On the lower right quadrant of the front, and away from the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3.

Figure 6.4.1-1 Symbol placement on bags

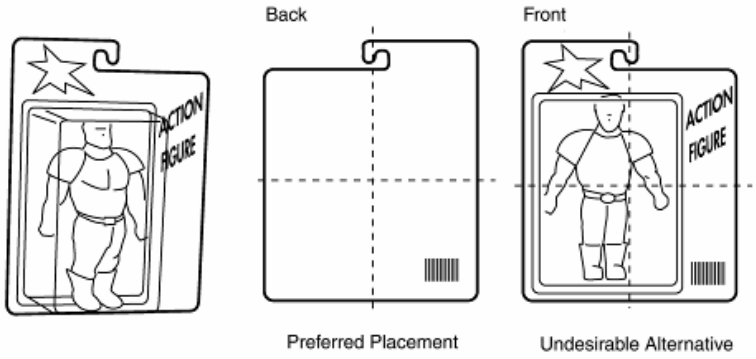


6.4.2 Blister Packs

Blister packs are pre-formed clear plastic bubbles, or blisters, containing a product and backed or topped with card stock.

- Package characteristics: flat card, backing a formed clear plastic bubble placed over the product
- Unique considerations: to ensure quality scanning, the barcode must be clear of the blister edges. Avoid placing the symbol under the blister pack or placing the symbol over any perforations on the back of the package.
- Barcode placement: identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: on the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: on the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3.

Figure 6.4.2-1 Symbol placement on blister packs



6.4.3 Bottles and Jars

Bottles and jars normally carry spot labels applied to confined areas of the package, not covering the entire surface or wrapping around the entire perimeter.

- Package characteristics: Small or large-mouth containers sealed with removable lids
- Unique considerations: Application of the barcode to the neck of a bottle is not allowed. Symbol placement on the neck of the bottle necessitates additional handling at the Point-of-Sale, and space limitations on this area of the bottle usually result in symbol truncation.
- When a barcode is printed onto a curved surface it is sometimes possible for the extremes of the symbol to disappear around the curve. See Section 6.2.3.2 for rules on the relationship between the diameter of the item and the X-dimension.
- Barcode placement: Identify the front of the package/container. (Refer to Section 0: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: On the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: On the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3.

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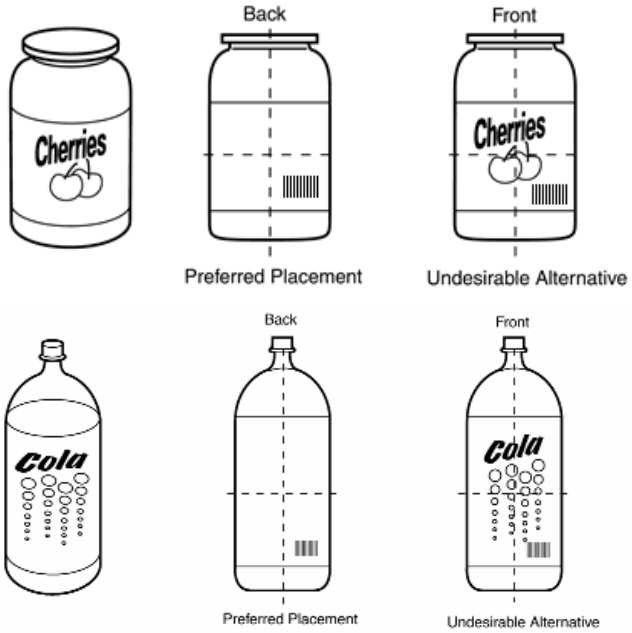
Figure 6.4.3-1 Symbol placement on bottles and jars

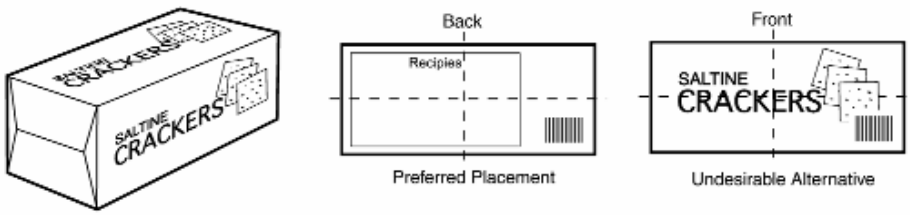


6.4.4 Boxes

This package type includes cuboid or cylindrical card or plastic cartons, as well as rectangular sleeves (used for products such as light bulbs). These packages might contain anything from crackers or cereal to detergent.

- Package characteristics: Folded, sealed, heavy paper or corrugated cardboard cartons
- Unique considerations: There are no unique considerations that apply to this package type.
- Barcode placement: Identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: On the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: On the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3

Figure 6.4.4-1 Symbol placement on boxes



6.4.5 Cans and Cylinders

This category includes cylindrical shaped containers (usually made of plastic or metal) that are sealed at each end. Some containers have removable lids or openings. Common examples are canned fruit and vegetables, paints, and adhesives.

- Package characteristics: Cylindrical-shaped units sealed at each end

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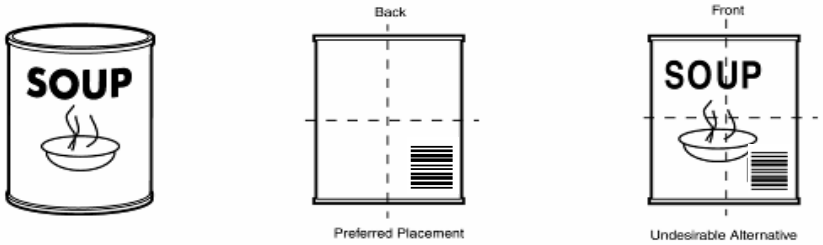
- Unique considerations: Obstacles, such as beading, seams, and/or ridges on the package/container SHALL be avoided, because they will reduce scanning performance. When a barcode is printed onto a curved surface it is sometimes possible for the extremes of the symbol to disappear around the curve. See Section 6.2.3.2 for rules on the relationship between the diameter of the item and the X-dimension.
- Barcode placement: Identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: On the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: On the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3.

Figure 6.4.5-1 Placement on cans and cylinders



6.4.6 Carded Items

Small, loose, or non-packaged items that are difficult to label are placed on cards that are marked with a barcode. Examples include hammers, toys, and kitchen utensils.

- Package characteristics: Items mounted or sealed on flat cards
- Unique considerations: When placing barcodes on carded items, it is important to take into consideration the proximity of the barcode to the product. Be sure to allow adequate space for the symbol, avoiding any obstructions that might be caused by placing the symbol too close to the product. In addition, do not place the symbol over any perforations or other obstructions on the package.
- Barcode placement: Identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: On the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: On the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3.

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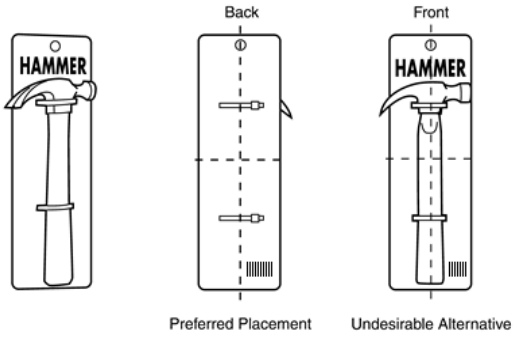
Figure 6.4.6-1 Symbol placement on carded items

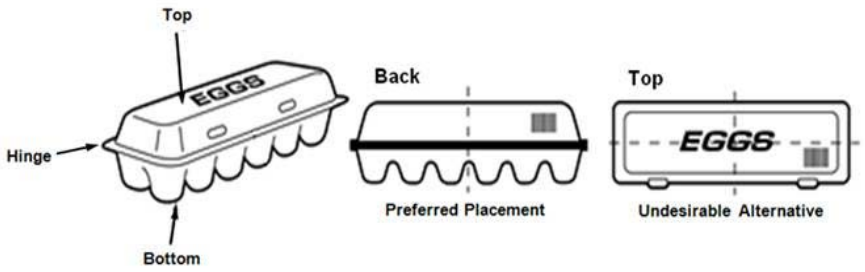


6.4.7 Egg Cartons

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

- Package characteristics: Irregular shaped hexahedrons of plastic or moulded pulp with a hinged lid
- Unique considerations: The recommended symbol placement is on the side of the lid portion of the egg carton that opens and closes to cover the eggs. The uneven surface of the moulded bottom of an egg carton prevents barcode placement in this area.
- Barcode placement: To determine barcode placement on an egg carton, first identify the top of the carton by locating the primary trading/advertising area, which is marked with the product name and the company's logo. The bottom of the egg carton is the moulded area directly opposite the top in which the eggs sit. The sides are divided horizontally by a hinged lid. The front of the carton is the long side containing the opening/closing mechanism. The back of the carton is directly opposite the front, on the long side with the hinge.
  - Preferred placement: Near the edge, on the right half of the back, above the hinge on the lid, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: On the lower right quadrant of the top, on the lid adjacent to the opening/closing mechanism, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3.

Figure 6.4.7-1 Symbol Placement on Egg Cartons



6.4.8 Jugs

Jugs are glass or plastic containers with a built-in handle(s) that aids in pouring of contents. Jugs normally carry spot labels applied to defined areas of the package, not covering the entire surface of the trade item or wrapping around the entire perimeter of the item.

- Package characteristics: Glass or plastic vessels with built-in handles and removable lids

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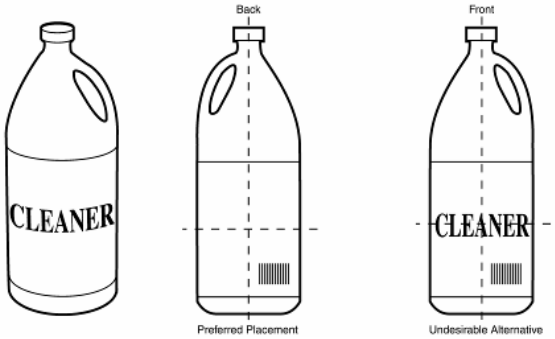
- Unique considerations: Application of the symbol to the neck of the jug is not allowed. Placement of the symbol on the neck of the jug necessitates additional handling at the Point-of-Sale, and space limitations on the neck usually result in symbol truncation.
- When a barcode is printed onto a curved surface it is sometimes possible for the extremes of the symbol to disappear around the curve. See Section 6.2.3.2 for the rules on the relationship between the diameter of the item and the X-dimension.
- Barcode placement: Identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: On the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: On the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3

Figure 6.4.8-1 Symbol placement on jugs



6.4.9 Large, Heavy, or Bulky Items

- Package characteristics: Items considered large, heavy, or bulky have a physical dimension of 450 millimetres (18 inches) or more in any two dimensions (width/height, width/depth, or height/depth), and/or weigh in excess of 13 kilograms (28 pounds).
- Unique considerations:
  - Number of symbols: Large, heavy, or bulky items may require two or more symbols with the same Global Trade Item Number (GTIN) ideally one on top and one on the bottom of the opposite quadrant'.
  - Special labels: A special double label with a tear-out barcode may be applied to large, heavy, or bulky items that are too heavy or awkward to pick up and pass over a fixed scanner. This label has one section that is permanently adhered to the item's box (or to a hang-tag or card if the item is not boxed). This section has a Non-HRI text (number and item description) printed above a full-size barcode. Beneath a perforation, a second section contains exactly the same Non-HRI text and an identical full-size barcode. The two sections are virtually identical except that the section below the perforation has no adhesive on its back.

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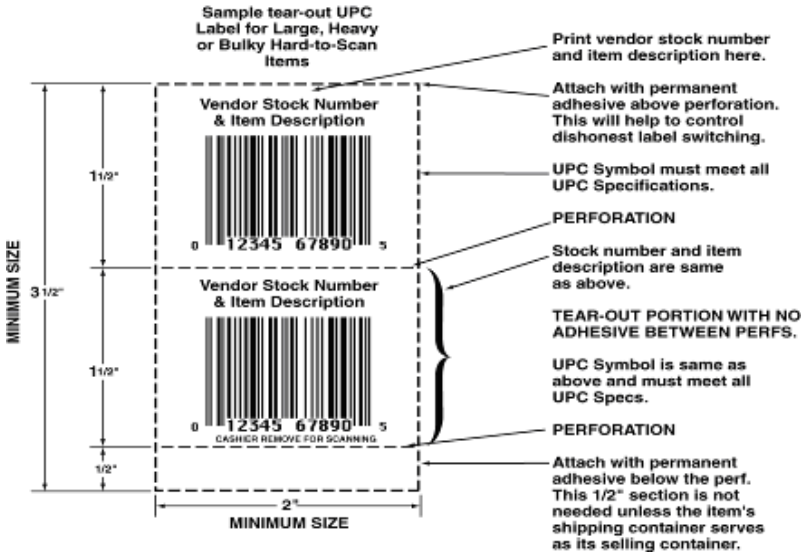
Figure 6.4.9-1

SAMPLE ILLUSTRATION OF THE DOUBLE LABEL WITH TEAR-OUT UPC



- When the item is brought to the Point-of-Sale, the lower half of the label below the perforation is removed. The cashier then either scans the label or, if the symbol cannot be scanned, the cashier key-enters the human readable interpretation beneath the symbol. The top label remains attached to the item or its box.

In instances where the large, heavy, or bulky item is displayed and sold in its shipping container, a third section of label is recommended. Beneath the tear-out label, a second perforation and a 12 millimetres (0.50 inch) section with permanent adhesive SHALL be added. This provides a more secure vehicle for the tear-out section and makes it less likely to tear off in transit.

- Human Readable Interpretation: Human readable interpretation on large, heavy, or bulky items should be a minimum of 16 millimetres (5/8 inch) high. This facilitates easier capture of the number by the cashier without having to pick up the product and move it across the scanner.
- Barcode placement: Identify the front of the package/container (See Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front).
  - Preferred placement:
    - Bags: Two barcodes are required, one on the front of the bag, at the top of the upper right quadrant, near the edge, and the other on the back of the bag, centred in the lower right quadrant, near the edge (to accommodate settling of contents).

Figure 6.4.9-2 Symbol placement on large, heavy, or bulky bags

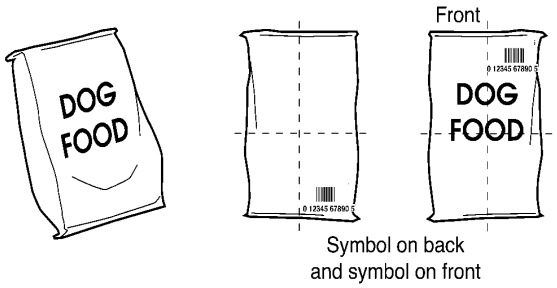
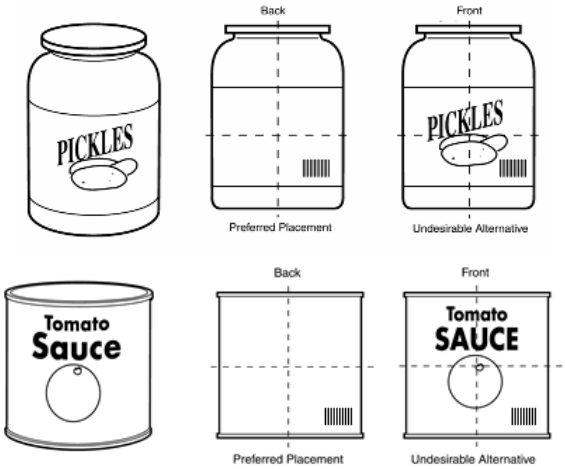


Figure 6.4.9-3 Symbol placement on large, heavy, or bulky jars, cans, jugs, or tubs



- Undesirable alternative: On the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
- Edge rule: See Section 6.3.3.3.

6.4.10 Multipacks

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

- Package characteristics: multiple single items bound together to create one package
- Unique considerations: as a general rule, a barcode MUST be placed on every consumer package traded through the supply chain. Consequently, 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 Point-of-Sale, the multipack barcode SHALL be the only visible symbol when both the multipack and individual items are symbol-marked. The binder of the multipack acts as a screen to obscure the symbols on the individual items.
  - Special note for can multipacks: Avoid placing the symbol on the top or bottom of the container, since cans have a tendency to cause impressions in the corrugated cardboard and distort the symbol. These can impressions in the symbol may reduce scannability.
- Barcode placement: identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: on the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: on the lower right quadrant of another side, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: see Section 6.3.3.3

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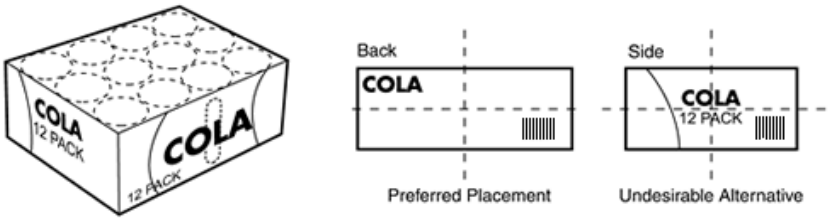
Figure 6.4.10-1 Symbol placement on multipacks

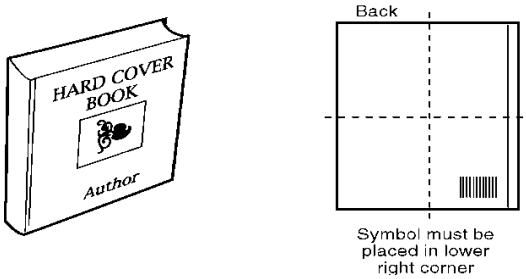


6.4.11 Publishing Items

Publishing items represent printed materials sold individually for consumer use including books, magazines, newspapers, and tabloids. Barcode placement on published items varies depending on type. In addition, the main barcodes on books and paperbacks must appear on the outside cover of the book (to facilitate payment).

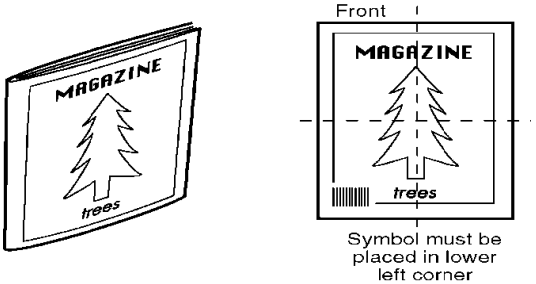
- Package characteristics: printed paper media that is bound, stapled, or folded
- Unique considerations: in addition to the regular barcode, some publishing items have Add-On Symbols that carry supplementary information such as an Issue Code. Barcode placement on published items varies depending on the media type. If an Add-On Symbol is used, it must be located to the right of the regular barcode and parallel to it.
- Barcode placement: identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement:
    - Books: on the lower right quadrant of the back, near the spine, respecting the proper Quiet Zone areas around the barcode

Figure 6.4.11-1 Symbol placement on books



    - Magazines: On the lower left quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode

Figure 6.4.11-2 Symbol placement on magazines



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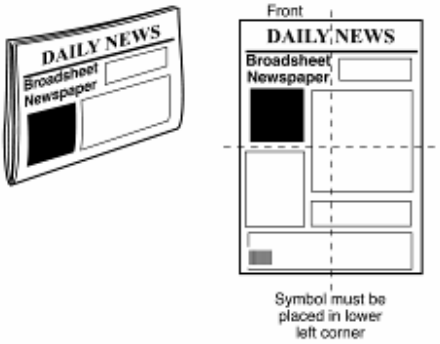
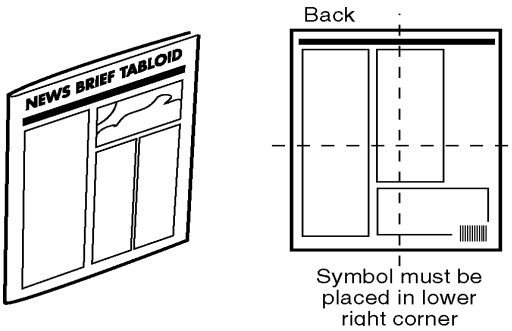
- Newspapers: when displayed for sale as shown on the left in Figure 6.4.11 - 3, place the symbol on the lower left quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode. If an Add-On Symbol is used, it must be located to the right of the regular barcode and parallel to it.

Figure 6.4.11-3 Symbol placement on newspapers



When displayed for sale as shown in Figure 6.4.11 - 4, place the symbol on the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode. If an Add-On Symbol is used, it must be located to the right of the regular barcode and parallel to it.

Figure 6.4.11-4 Symbol placement on newspapers



- Undesirable alternative: The undesirable alternative is not feasible for this package type.
- Edge rule: See Section 6.3.3.3.

6.4.12 Thin Items or Containers

This package type is so named because items and containers in this category have one physical dimension less than 25 millimetres (1 inch). Items such as these, particularly those without a significant bottom surface, should be marked on the lower right quadrant of the back side. Boxes of pizza, compact disk boxes, packages of powdered drink mix, and writing pads are examples.

- Package characteristics: items or containers with one dimension less than 25 millimetres (1 inch)
- Unique considerations: there are no unique considerations that apply to this package type.
- Barcode placement: identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: on the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode

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- Undesirable alternative: on the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
- Edge rule: See Section 6.3.3.3.

Figure 6.4.12-1 Symbol placement on thin items or containers

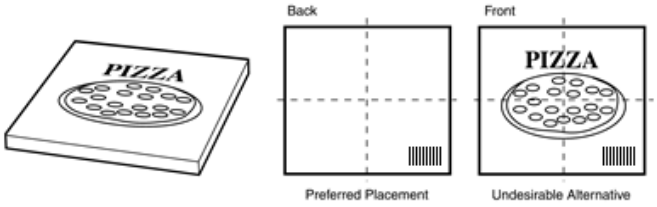
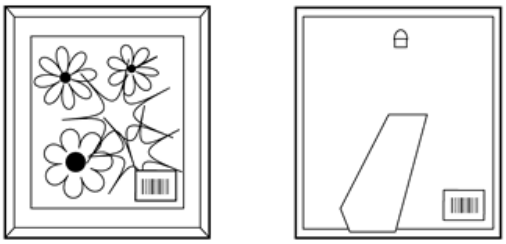


Figure 6.4.12-2 Unpackaged item without room for bottom marking

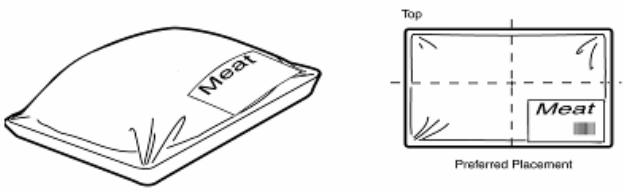


6.4.13 Trays

This package type includes thin square, rectangular, or circular trays holding items that are covered with over-wrap of clear shrink-film or that are vacuum-sealed. Examples include meats, pastries, snacks, and pies or piecrusts.

- Package characteristics: Flat, formed receptacles holding product covered with over-wrap
- Unique considerations: When placing barcodes on trays, it is important to ensure that the barcode is placed on a flat surface. In addition, do not place the symbol over any perforations or other obstructions on the package.
- Barcode placement: Identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: On the lower right corner of the top, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3.

Figure 6.4.13-1 Symbol placement on trays



6.4.14 Tubes

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

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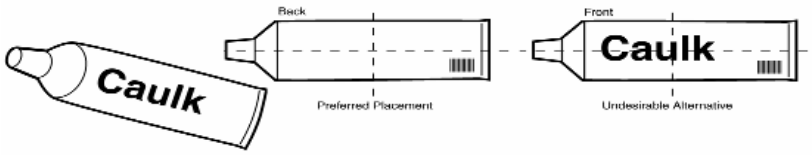
- Package characteristics: Firmly packed cylinders sealed at both ends, or sealed at one end with a cap or valve on the other end
- Unique considerations: When a barcode is printed onto a curved surface it is sometimes possible for the extremes of the symbol to disappear around the curve. See Section 6.2.3.2 for the rules on the relationship between the diameter of the item and the X-dimension.
- Barcode placement: Identify the front of the package/container. (Refer to Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: On the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: On the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3.

Figure 6.4.14-1 Symbol placement on tubes

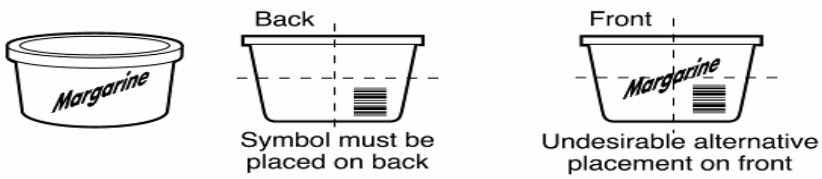


6.4.15 Tubs

Tubs are circular containers (usually made of paper, plastic, or metal) that have removable lids. In most cases, they have spot labels that do not cover the entire surface of the container. Examples include margarine, butter, ice cream, and whipped topping.

- Package characteristics: Deep vessels with removable lids
- Unique considerations: When a barcode is printed onto a curved surface it is sometimes possible for the extremes of the symbol to disappear around the curve. See Section 6.2.3.2 for the rules on the relationship between the diameter of the item and the X-dimension.
- Barcode placement: Identify the front of the package/container. (See Section 6.3.2: Identifying the Back of the Trade Item, for instructions on how to identify the package front.)
  - Preferred placement: On the lower right quadrant of the back, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Undesirable alternative: On the lower right quadrant of the front, near the edge, respecting the proper Quiet Zone areas around the barcode
  - Edge rule: See Section 6.3.3.3.

Figure 6.4.15-1 Symbol placement on tubs



6.4.16 Unpackaged Items

These are square, rectangular, circular, concave, or convex shaped items, including bowls, pots, pans, skillets, cups, vases, and other products (with or without contents), that lack an upright surface suitable for symbol placement.

- Package characteristics: These are items that are unpackaged and sold with spot labels, hangtags or carded sleeves.
- Unique considerations: When selecting symbol placement, consider the product's concave shape on the inside or irregular curvature on the outside while respecting the scanning distances defined in the edge rule below.
- The general marking guideline for table and giftware items is to use a hangtag. This avoids any damage to the item that could be caused by the spot label adhesive. If this is not practical, the spot label SHALL be applied to the bottom of the item and below the backstamp (where present).
- Barcode placement: Barcode placement on unpackaged items depends on the shape and type of the item. The following examples illustrate symbol placements appropriate to specific item types.
  - Preferred placement: The figures that follow indicate acceptable placement locations for other shaped items.
  - Undesirable alternative: The undesirable alternative is not applicable.
  - Edge rule: See Section 6.3.3.3.

Figure 6.4.16-1 Example barcode location on unpackaged item

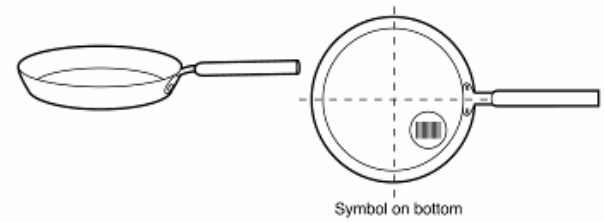


Figure 6.4.16-2 Example barcode location on unpackaged item

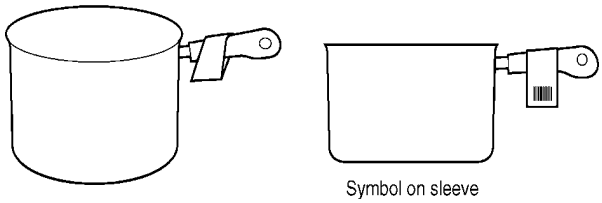


Figure 6.4.16-3 Example barcode location on unpackaged item

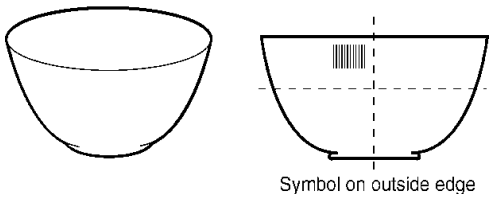


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Figure 6.4.16-4 Example barcode location on unpackaged item

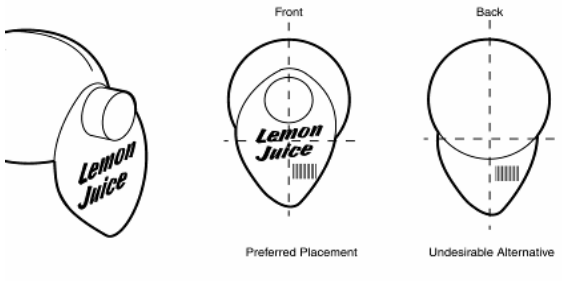


Figure 6.4.16-5 Giftware using hangtag: Option 5

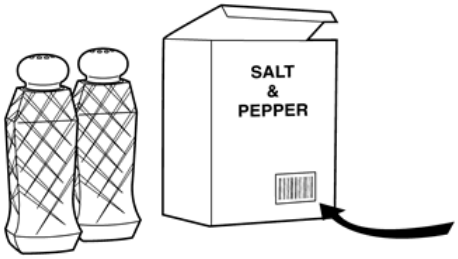
Figure 6.4.16-6 Tableware using spot label below backstamp: Option 6

6.4.17 Sets (Grouping of Individually Barcoded Items)

For barcoding purposes, sets are defined as two or more items that are packaged and sold together as one unit, regardless of whether those items can be sold separately as well. If the items are packaged together for shipping purposes but are not intended to be sold as a single unit, they do not qualify as a set. Examples of sets include a pair of candlesticks, a set of four soup bowls, and a five-piece dinner place setting.

If a set is not intended to be sold as individual components, only the package for the set needs to include a barcode.

Figure 6.4.17-1 Example of a set where individual components are not sold separately



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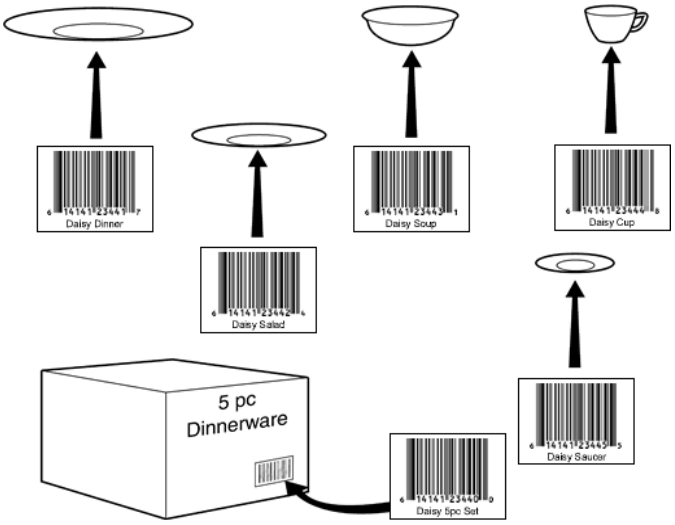
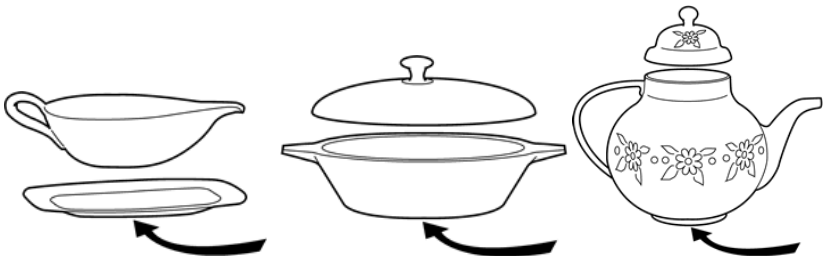
If the set is made up of components that can be ordered as separate trade items, then the components of the set must be marked. If the set can be sold as individual components or as the set, then both the package and the components need to be marked with unique symbols. The barcodes on the inner products must be totally obscured so that they cannot be read by the Point-of-Sale system when sold as a set. (See Section 6.3.3.7 for over-wrap special considerations.)

Figure 6.4.17-2 Example of a multi-piece set sold as a set or as individual components



If an item is made up of multiple components that cannot be sold separately, such as a teapot with lid, the main piece only SHALL be marked with one symbol. Such items are not considered sets.

Figure 6.4.17-3 Items with multiple pieces that are not sold separately (these are not considered sets)



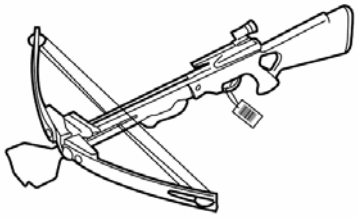
6.4.18 Sporting Goods

Sporting goods is a category composed of many irregular sized and shaped goods. An understanding of each product type, the logistics involved in the supply chain, and the sales floor presentation are key to improving the overall Point-of-Sale efficiency. Of particular importance is consistent barcode placement for sporting goods as presented at the retail Point-of-Sale. This enables the Point-of-Sale operator to accurately predict the symbol location and thereby improve efficiency. The following examples, while not exhaustive, provide the general principles that are applied to similar product types.

6.4.18.1 Archery Bows, Arrows

- Preferred placement:
  - If packaged in boxes, see Section 6.4.4.
  - If packaged using a hangtag, see Section 6.5.2.
- Edge rule: See Section 6.3.3.3.

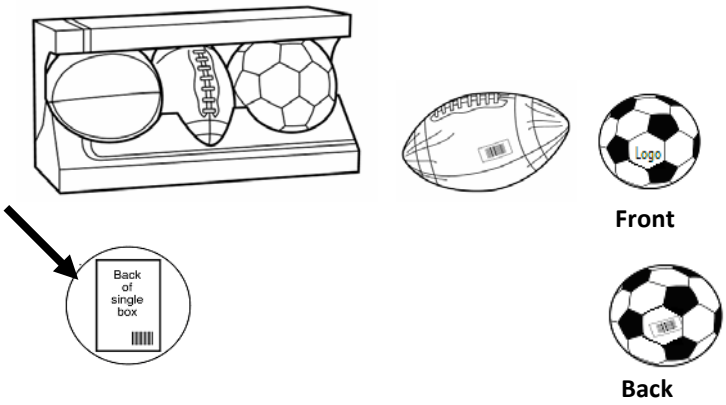
Figure 6.4.18.1-1 Example barcode location on an archery bow



6.4.18.2 Balls, Team Sports

- Preferred placement:
  - If packaged individually, placement on the shrink wrap.
  - If packaged in boxes or boxed sets, see Section 6.4.4 and Section 6.4.17. If a master SKU is not utilized for a boxed set of balls or a pack set of ball and pump, each product type within the pack set SHALL have a screened barcode.
  - If not packaged, screen the barcode on the opposite side of the logo on the ball.
- Edge rule: See Section 6.3.3.3

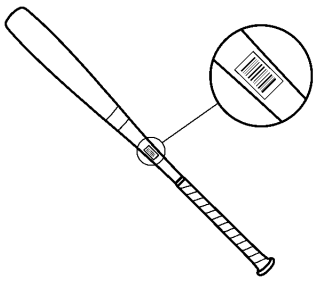
Figure 0-1 Example barcode locations on a box of balls & separate balls



6.4.18.3 Bats, Team Sports

- Preferred placement: On the barrel handle of the bat, respecting the proper Quiet Zone areas around the barcode.
- Edge rule: See Section 6.3.3.3.

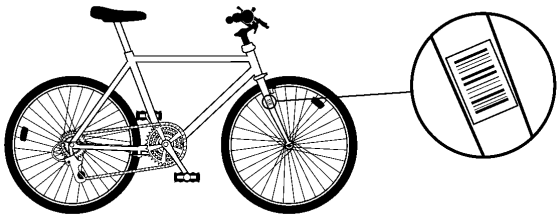
Figure 6.4.18.3-1 Example barcode location on a baseball bat



6.4.18.4 Bicycles

- Preferred placement: On the right hand fork of the bike, respecting the proper Quiet Zone areas around the barcode.
- Undesirable alternative: On a hangtag around the right hand brake cable, respecting the proper Quiet Zone areas around the barcode.
- Edge rule: See Section 6.3.3.3.

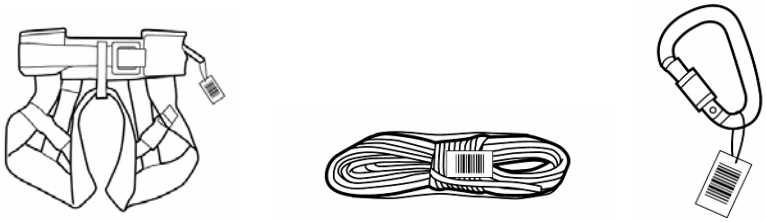
Figure 6.4.18.4-1 Example barcode location on a bicycle



6.4.18.5 Climbing Gear

- Preferred placement:
  - If packaged in boxes, see Section 6.4.4
  - If packaged using a hangtag, see Section 6.5.2
  - If packaged as carded items, see Section 6.4.6
- Edge rule: See Section 6.3.3.3

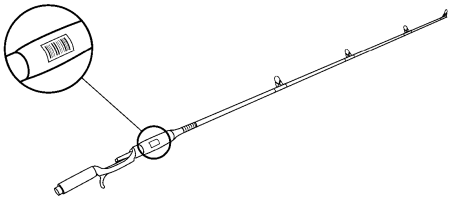
Figure 6.4.18.5-1 Example barcode locations on climbing gear



6.4.18.6 Fishing Rods:

- **Preferred placement**: On the grip of the fishing rod near the sealed end, respecting the proper Quiet Zone areas around the barcode. When a barcode is printed onto a curved surface, it is sometimes possible for the extremes of the symbol to disappear around the curve. See Section 6.2.3.2 for the rules on the relationship between the diameter of the item and the X-dimension.
- **Undesirable alternative**: On a cardboard wrap or a hangtag on the shaft of the fishing rod, respecting the proper Quiet Zone areas around the barcode.
- **Edge rule**: See Section 6.3.3.3

Figure 6.4.18.6 Barcode location on a fishing rod



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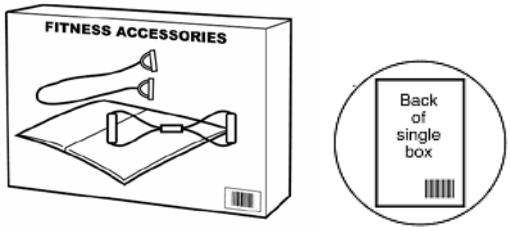
6.4.18.7 Fitness Accessories

- Preferred placement:
  - If packaged in boxes, see Section 6.4.4
  - If packaged using a hangtag, see Section 6.5.2
  - If packaged as carded items, see Section 6.4.6
- Edge rule: See Section 6.3.3.3

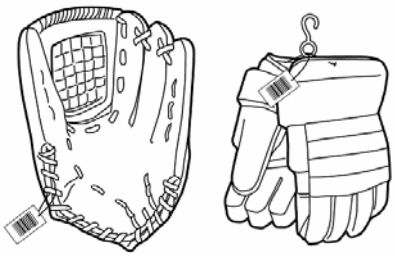
Figure 6.4.18.7-1 Example barcode location on a box of fitness accessories



6.4.18.8 Gloves, Mitts (Sports)

- Preferred placement:
  - If packaged in boxes, see Section 6.4.4
  - If packaged using a hangtag, see Section 6.5.2
  - If packaged in bags, see Section 6.4.1
  - If not packaged, see Section 6.4.9
- Edge rule: See Section 6.3.3.3

Figure 6.4.18.8-1 Example barcode locations on gloves



6.4.18.9 Golf Club:

- Preferred placement: On the shaft of the club located near the club head, respecting the proper Quiet Zone areas around the barcode. When a barcode is printed onto a curved surface, it is sometimes possible for the extremes of the symbol to disappear around the curve. See Section 6.2.3.2 for the rules on the relationship between the diameter of the item and the X-dimension. Symbols SHALL not be located on the head of the golf club as symbols located on this flat area (normally preferable to locating barcodes on a curved surface) are easily damaged due to customer trials.
- Undesirable alternative: On the grip of the club near the sealed end, respecting the proper Quiet Zone areas around the barcode.
- Edge rule: See Section 6.3.3.3

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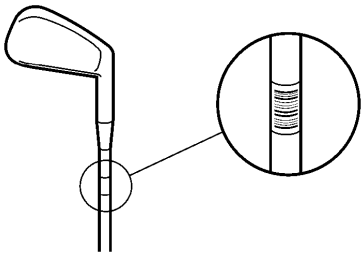
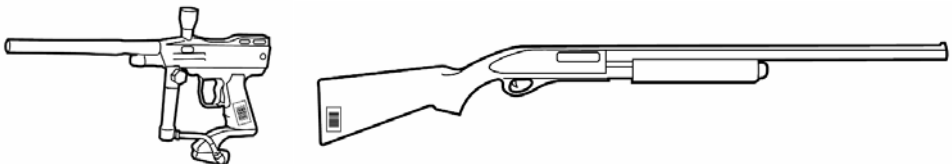
Figure 6.4.18.9-1 Example barcode location on a golf club



6.4.18.10 Guns

- Preferred placement:
  - If packaged using a hangtag, see Section 6.5.2
  - If packaged as a blister pack, see Section 6.4.2
  - If not packaged, placement near serial number
- Edge rule: See Section 6.3.3.3

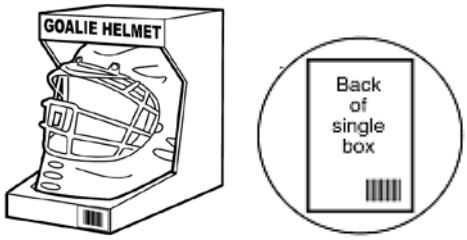
Figure 6.4.18.10-1 Example barcode locations on a rifle and paint ball gun



6.4.18.11 Helmets, Masks (Sports)

- Preferred placement:
  - If packaged in boxes, see Section 6.4.4
  - If packaged using a hangtag, see Section 6.5.2
  - If not packaged, see Section 6.4.9
- Edge rule: See Section 6.3.3.3

Figure 6.4.18.11-1 Example barcode location on a helmet



6.4.18.12 Ice-Hockey and Field Hockey:

- Preferred placement: On the flat blade of the stick, respecting the proper Quiet Zone areas around the barcode.
- Undesirable alternative: At the very top of the shaft of the stick, respecting the proper Quiet Zone areas around the barcode. When a barcode is printed onto a curved surface, it is sometimes possible for the extremes of the symbol to disappear around the curve. See Section 6.2.3.2 for the rules on the relationship between the diameter of the item and the X-dimension.
- Edge rule: See Section 6.3.3.3

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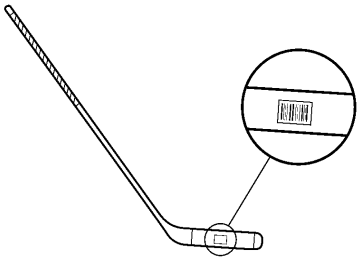
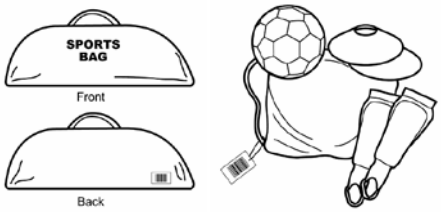
Figure 6.4.18.12-1 Example barcode location on an ice-hockey stick



6.4.18.13 Multi-Sports-Product Pack Sets

- Preferred placement:
  - For placement on bags, see Section 6.4.1
  - For placement on hangtags, see Section 6.5.2
- Edge rule: See Section 6.3.3.3

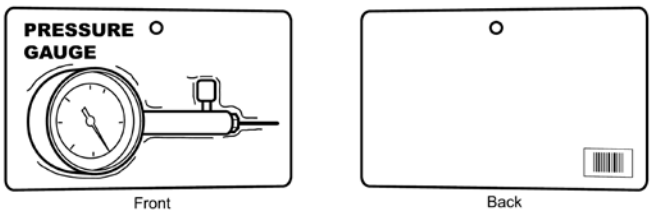
Figure 6.4.18.13-1-2 Example barcode location on a product pack



6.4.18.14 Pressure Gauges and Sports Pumps

- Preferred placement:
  - If packaged as carded items, see Section 6.4.6
  - If packaged in bags, see Section 6.4.1
  - If not packaged, placement on the wrap band securing the tip/needles, etc.
- Edge rule: See Section 6.3.3.3

Figure 6.4.18.14-1 Example barcode location on a carded item



6.4.18.15 Protective Gear, Guards, Vests

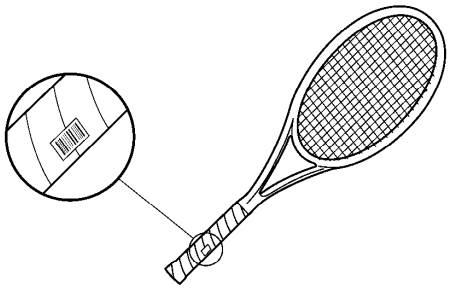
- Preferred placement:
  - If packaged as a carded item, see Section 6.4.6
  - If not packaged, see Section 6.4.9
- Edge rule: See Section 6.3.3.3

Figure 6.4.18.15-1 Example barcode location on guards

6.4.18.16 Racquets:

- Preferred placement: On the grip of the racquet near the sealed end, respecting the proper Quiet Zone areas around the barcode. When a barcode is printed onto a curved surface it is sometimes possible for the extremes of the symbol to disappear around the curve. See Section 6.2.3.2 for the rules on the relationship between the diameter of the item and the X-dimension.
- Undesirable alternative: On the cardboard wrap placed over the head of the racquet near the edge of the racquet head, respecting the proper Quiet Zone areas around the barcode.
- Edge rule: See Section 6.3.3.3

Figure 6.4.18.16-1 Example barcode location on a racquet

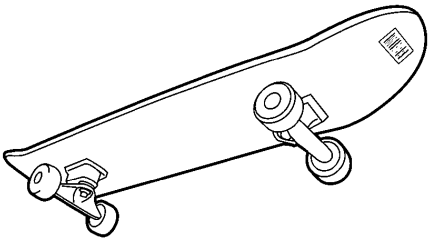


6.4.18.17 Skateboards:

Skateboards are often displayed in their packages. See Section 6.2.3, Orientation, to determine the back of the package. For unpackaged items:

- Preferred placement: On the bottom side of the skateboard on the top above the wheels, respecting the proper Quiet Zone areas around the barcode.
- Edge rule: See Section 6.3.3.3

Figure 6.4.18.17-1 Example barcode location on a skateboard



6.4.18.18 Skates

- Preferred placement:
  - If packaged in boxes, see Section 6.4.4
  - If packaged using hangtags, see Section 6.5.2.
- Edge rule: See Section 6.3.3.3

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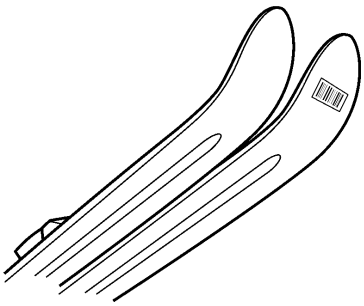
Figure 6.4.18.18-1 Example barcode location on a box of skates

6.4.18.19 Skis

Skis are displayed without their packaging. The front of the ski is the side where the ski boots are placed and the back of the ski is the opposite side.

- Preferred placement: One barcode is placed on the back of the ski near the top of the ski, respecting the proper Quiet Zone areas around the barcode. Only one barcode is required per pair.
- Edge rule: See Section 6.3.3.3

Figure 6.4.18.19-1 Example barcode location on a ski



6.4.18.20 Water Bottles (Sports)

- Preferred placement:
  - If packaged in boxes, see Section 6.4.4
  - If packaged using hangtags, see Section 6.5.2
  - If not packaged, placement on the side of the bottle.
- Edge rule: See Section 6.3.3.3

Figure 6.4.18.20-1 example barcode location on a water bottle

6.4.18.21 Water Sports Crafts

- Preferred placement:
  - If packaged in boxes, see Section 6.4.4
  - If packaged using hangtags, see Section 6.5.2
  - If not packaged, see Section 6.4.9, Large, Heavy, or Bulky Items

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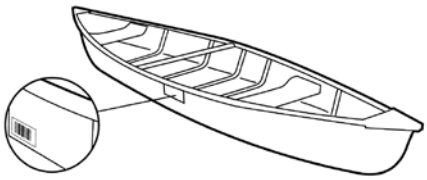
- Edge rule: See Section 6.3.3.3

Figure 6.4.18.21-1 Example barcode location on a canoe



6.4.19 Textured Surfaces

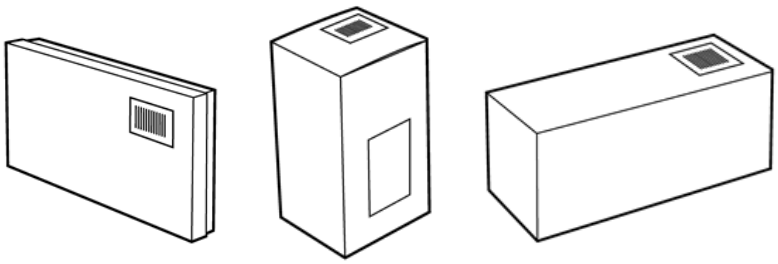
Some merchandise may not allow for application of barcode labels due to rough or textured surfaces. These surfaces can distort the label and thus the barcode. Alternative labelling options such as hang tags or loop tags may be necessary.

6.5 Symbol Placement for Clothing and Fashion Accessories

The following examples show recommended placement of symbols on clothing and fashion accessories. To view illustrative images, please copy and paste on your browser the following link: http://www.gs1.org/docs/barcodes/GenSpec_Fashion_symbol_location.pdf

Clothing is displayed in a variety of ways, such as loose (e.g., hanging garments), in boxes, or in bags. In many cases, a relatively small label must carry all the pertinent information relevant to the product. A retail label normally carries not only product-specific information important to the retailer (e.g., die lot, batch) and consumer related information (e.g., style, size, colour), but also the barcode itself.

Figure 6.5-1 Example barcode location on boxes



The correct general layout for a retail label is indicated below. Because there are many clothing types on the retail market, detailed label formats are presented at:

- **Layout of label:** The label is divided into three portions:
  - Manufacturer/retailer information: The upper portion of the format is the preferred location for Non-HRI product information. This information is important to manufacturers and retailers, but usually not to the consumer.
  - Barcode: The centre portion of the format is the best location for the barcode. Symbols in this location are the least likely to present obstructions to scanners because a natural boundary exists between the manufacturer/retailer information (upper portion) and the consumer information (lower portion).
  - Consumer information: The lower portion of the format is the preferred location for information that is provided for the consumer, such as price, size, and fabric content.

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Label placement on clothing and fashion accessories: To determine the placement of the printed label on clothing and fashion accessories, please copy and paste in your browser the following link: http://www.gs1.org/docs/barcodes/GenSpec_Fashion_symbol_location.pdf

6.5.1 Information Zones Concept

There are seven information zones that carry product information needed for the vendor, retailer, and consumer. Some information is optional based upon the type of label.

6.5.1.1 General Label Information Zones

Zones	Information Type	Description	Status: Required/Optional
Zone 1	Merchandise identification	This is the primary human readable merchandise identifier, usually the style number, although it may be pattern, model, or garment type. The merchandise identifier is located in the upper left-hand portion of Zone 1.	Always required (see Note)
Zone 2	Vendor information	This includes optional vendor production information, such as vendor Stock Keeping Unit (SKU), cut number, dye lot, colour, and pattern. (Vendor information helps ensure that the correct barcode is attached to the product.)	Optional
Zone 3	Data structure (GTIN-13, GTIN-12, GTIN-8)	Barcode	Always required
Zone 4	Consumer information	This includes optional product information for the consumer, such as fibre content, fire retardancy, and country of origin.	Optional
Zone 5	Size/dimension	Size/dimension is a key requirement for the consumer. Size information can be emphasised in large bold print and is located in the right-hand portion of Zone 5. Vendors may optionally include a style name as a selection aid for the consumer.	Usually required unless defined by the product (e.g., towels)

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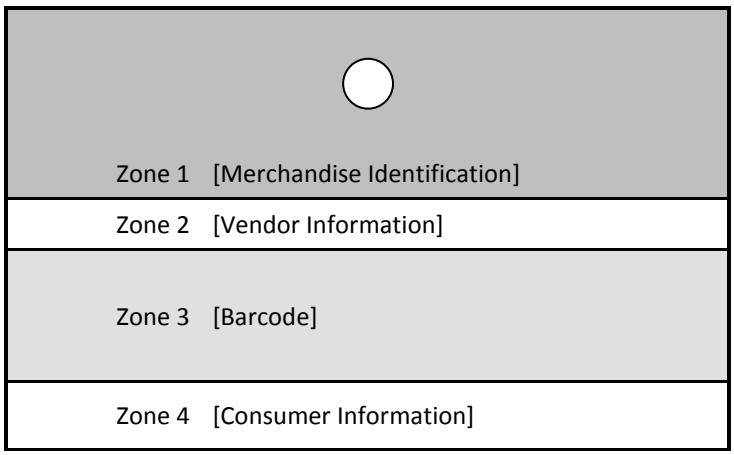
Zones	Information Type	Description	Status: Required/Optional
Zone 6	Retail price	Allow space to print the price with minimum dimension characters of 25 mm (1 in.) x 32 mm (1.25 in.). For plastic packaged, boxed, and banded products, the required space for price can be provided by several methods: For barcode marking on an adhesive label, the space for price can be included as part of the label. For barcode marking designed into the packaging, the space for price can be included on the package artwork. Providing package space adjacent to Zone 5 that is reserved for retail item pricing creates an implied space for price. Implied space replaces the requirement for actual space on labels or package artwork. If implied space for price is used, no information of importance SHALL be printed in the area that might be covered by adhesive item price labels.	Usually required unless defined by the ticket format (e.g., sewn-in tickets)
Zone 7	Manufacturer's suggested retail price	This is for use only if merchandise is pre-priced or the suggested retail price is printed on the tag. If provided, the area must be perforated for optional removal.	Optional

Note: Size and colour are optional in Zone 1 if vendor usage requires this information to define the product.

6.5.1.2 General Label Format

See the Figures 6.5.1.2 - 1 and 6.5.1.2 - 2 for examples of how the zones appear in a typical vertical and horizontal label format.

Figure 6.5.1.2-1 Vertical label format



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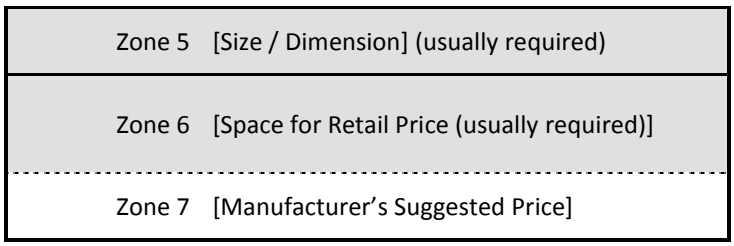
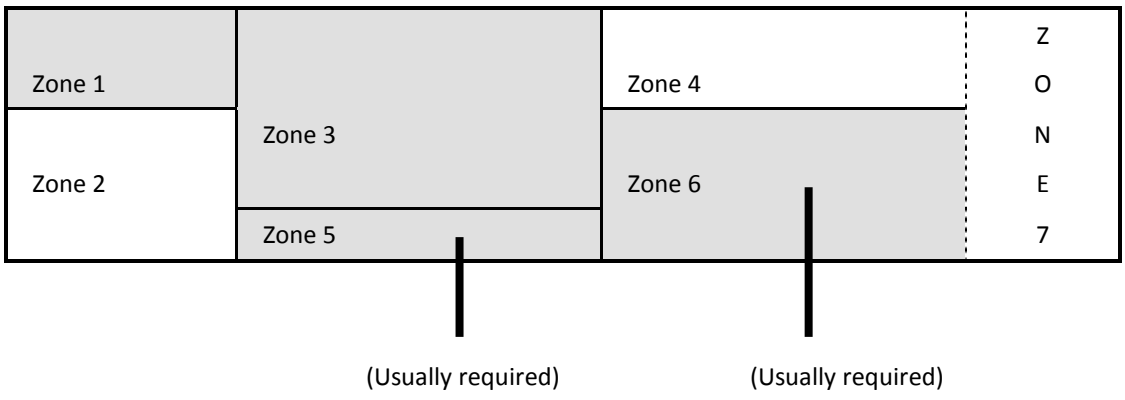


Figure 6.5.1.2-2 Horizontal label format



6.5.2 Hangtag (Hanging Label) Format

Although hangtags (hanging labels) are primarily associated with hanging ready-to-wear apparel, a wide variety of products are identified with hangtags. Flat-folded apparel, jewellery, belts, handbags, lamps, and furniture are all identified by some form of hangtag. Therefore, the voluntary hangtag format guidelines outlined in this section provide for flexibility in hangtag design while maintaining the overall concept of the information zones.

Hangtags serve a dual purpose. First, they provide brand identification to the consumer. Second, because the back of a hangtag is frequently used for product information and product identification codes, it SHALL carry the barcode that identifies the product.

The typical hangtag layout features the vendor's logo on the front and product identification codes and the barcode on the back. Vendors may optionally include an additional logo on the back of the hangtags. However, a logo SHALL NOT appear at the bottom because a retail price label may obscure it or it could be torn off if a manufacturer's suggested retail price is removed. Background printing of logos SHALL be avoided, because this may obscure required information or important consumer information. Logos must never obscure the barcode.

6.5.2.1 Hangtag Label Information Zones

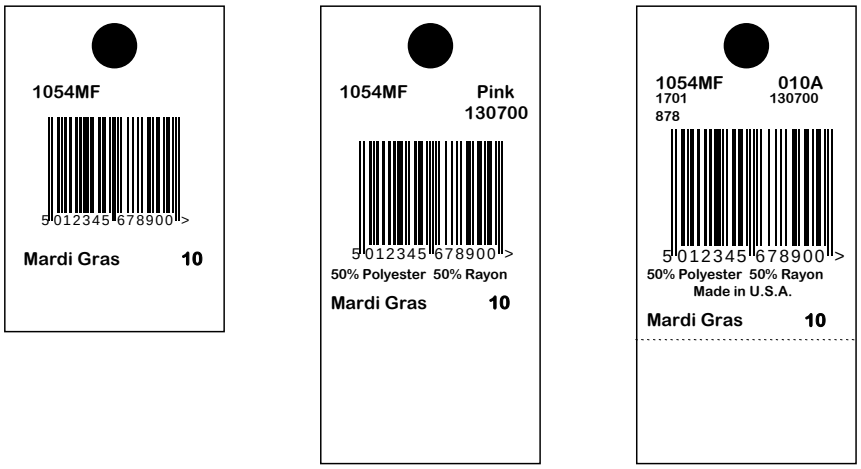
Zones	Information Type	Description	Status: Required/ Optional
Zone 1	Merchandise identification	This is the primary human readable merchandise identifier, usually the style number, although it may be pattern, model, or garment type. The merchandise identifier SHALL be located in the upper left-hand portion of Zone 1.	Always required (see Note)

Zones	Information Type	Description	Status: Required/ Optional
Zone 2	Vendor information	This includes optional vendor production information, such as vendor Stock Keeping Unit (SKU), cut number, dye lot, colour, and pattern. (Vendor information helps ensure that the correct barcode is attached to the product.)	Optional
Zone 3	Data structure (GTIN-13, GTIN-12, GTIN-8)	Barcode	Always required
Zone 4	Consumer information	This includes optional product information for the consumer, such as fibre content, fire retardancy, and country of origin.	Optional
Zone 5	Size/dimension	Size/dimension is a key requirement for the consumer. Size information can be emphasised in large bold print and is located in the right-hand portion of Zone 5. Vendors may optionally include a style name as a selection aid for the consumer.	Usually required unless defined by the product (e.g., towels)
Zone 6	Retail price	Allow space to print the price with minimum dimension characters of 25 mm (1 in.) x 32 mm (1.25 in.).	Usually required unless defined by the ticket format (e.g., sewn-in tickets)
Zone 7	Manufacturer's suggested retail price	This is for use only if merchandise is pre-priced or the suggested retail price is printed on the tag. If provided, the area must be perforated for optional removal.	Optional

Note: Size and colour are optional in Zone 1 if vendor usage requires this information to define the product.

6.5.2.2 Hanging Tag Label Examples

Figure 6.5.2.2-1. Hanging Tag examples



6.5.2.3 Sewn-On (Joker) Label Format

Used almost exclusively for apparel merchandise, joker labels are similar in format to hangtags, but differ in one important respect: They are sewn directly onto the product instead of hung from the product. Because it is sewn on, only one side of the label is available for the vendor's logo, the barcode, and merchandise identification information.

Inclusion of a vendor logo on the label is optional. If it is included, it SHALL not appear at the bottom, because it may be obscured by a retail price label, or it could be torn off by the removal of a manufacturer's suggested retail price. Background printing of logos SHALL be avoided, because this may obscure required information or important consumer information. Logos must never obscure the barcode.

6.5.2.4 Sewn-On (Joker) Label Information Zones

Zones	Information Type	Description	Status: Required / Optional
Zone 1	Merchandise identification	This is the primary human readable merchandise identifier, usually the style number, although it may be pattern, model, or garment type. The merchandise identifier is located in the upper left-hand portion of Zone 1.	Always required (see Note)
Zone 2	Vendor information	This includes optional vendor production information, such as vendor Stock Keeping Unit (SKU), cut number, dye lot, colour, and pattern. (Vendor information helps ensure that the correct barcode is attached to the product.)	Optional
Zone 3	Data structure (GTIN-13, GTIN-12, GTIN-8)	Barcode	Always required
Zone 4	Consumer information	This includes optional product information for the consumer, such as fibre content, fire retardancy, and country of origin.	Optional
Zone 5	Size/dimension	Size/dimension is a key requirement for the consumer. Size information can be emphasised in large bold print and SHALL be located in the right-hand portion of Zone 5. Vendors may optionally include a plain language style name on the size line as a selection aid for the consumer.	Usually required unless defined by the product (e.g., towels)
Zone 6	Retail price	Allow space to print the price with minimum dimension characters of 25 mm (1 in.) x 32 mm (1.25 in.).	Usually required unless defined by the ticket format (e.g., sewn-in tickets)

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Zones	Information Type	Description	Status: Required / Optional
Zone 7	Manufacturer's suggested retail price	This is for use only if merchandise is pre-priced or the suggested retail price is printed on the tag. If provided, the area must be perforated for optional removal.	Optional

Note: Size and colour are optional in Zone 1 if vendor usage requires this information to define the product.

6.5.2.5 Sewn-On (Joker) Label Examples

Figure 6.5.3.2-1 Vertical layout

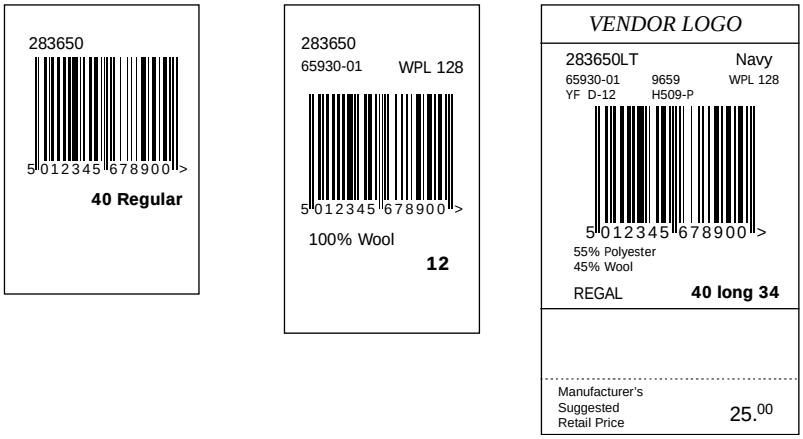
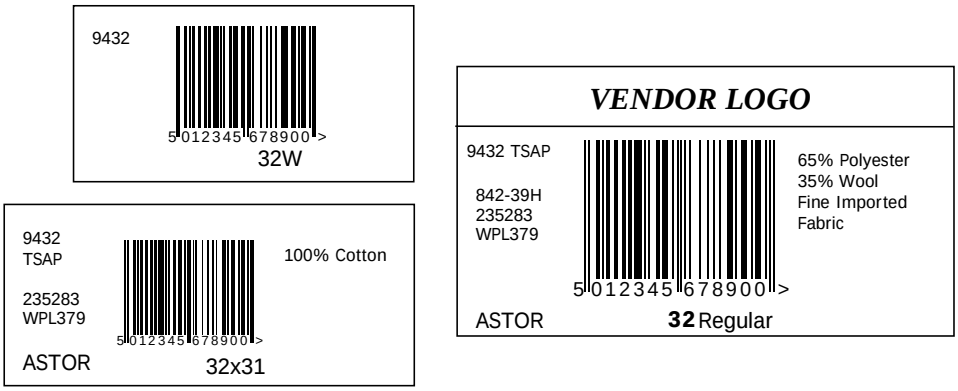


Figure 6.5.3.2-2 Horizontal layout



6.5.3 Sewn-In Label Formats

Sewn-in labels are often used for towel products. Sewn-in labels may be paper based, for removal by the consumer, or cloth based and more permanent.

Because a portion of the sewn-in label is normally covered by a hem, the label SHALL be designed with sufficient blank space on the end that will be attached to the product. Care must be taken to ensure that the product identification information on the label is not obscured by the hem and that it does not interfere with the readability of the barcode at the Point-of-Sale.

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6.5.3.1 Sewn-In Label Information Zones

Zones	Information Type	Description	Status: Required/Optional
Zone 1	Merchandise identification	This is the primary human readable merchandise identifier, usually the style number, although it may be pattern, model, or garment type. The merchandise identifier is located in the upper left-hand portion of Zone 1.	Always required (see Note)
Zone 2	Vendor information	This includes optional vendor production information, such as vendor Stock Keeping Unit (SKU), cut number, dye lot, colour, and pattern. (Vendor information helps ensure that the correct barcode is attached to the product.)	Optional
Zone 3	Data structure (GTIN-13, GTIN-12, GTIN-8)	Barcode	Always required
Zone 4	Consumer information	This includes optional product information for the consumer, such as fibre content, fire retardancy, and country of origin.	Optional
Zone 5	Size/dimension	Size or dimension is optional for sewn-in labels. Size or dimension may assist the consumer with product selection or may help the vendor ensure that the correct label and barcode are attached to the product.	Usually required unless defined by the product (e.g., towels) and readily apparent to the consumer.
Zone 6	Retail price	Allow space to print the price with minimum dimension characters of 25 mm (1 in.) x 32 mm (1.25 in.).	Usually required unless defined by the ticket format (e.g., sewn-in tickets)
Zone 7	Manufacturer's suggested retail price	This is for use only if merchandise is pre-priced or the suggested retail price is printed on the tag. If provided, the area must be perforated for optional removal.	Optional

Note: Size and colour are optional in Zone 1 if vendor usage requires this information to define the product.

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6.5.4 Plastic Packaged Products Label Location Guidelines

The plastic packaged category covers a wide assortment of merchandise, including sheets, pillowcases, table linens, pantyhose, underwear, stationery supplies, pillows, bedspreads, and numerous types of flat-folded apparel that are plastic packaged. There are two methods of marking plastic packaged products with barcodes:

- Incorporate the barcode and other merchandise identification information into the packaging's artwork.
- Print the barcode and other merchandise identification information on an adhesive label that can be press-applied to the product.

Inclusion of a vendor logo on the label is optional. If it is included, the logo SHALL NOT appear at the bottom, because it may be obscured by a retail price label, or it could be torn off by the removal of a manufacturer's suggested retail price. Background printing of logos SHALL be avoided, because this may obscure required information or important consumer information. Logos must never obscure the barcode.

6.5.4.1 Plastic Packaged Products Label Information Zones

Zones	Information Type	Description	Status: Required/ Optional
Zone 1	Merchandise identification	This is the primary human readable merchandise identifier, usually the style number, although it may be pattern, model, or garment type. The merchandise identifier is located in the upper left-hand portion of Zone 1.	Always required (see Note 1)
Zone 2	Vendor information	This includes optional vendor production information, such as vendor Stock Keeping Unit (SKU), cut number, dye lot, colour, and pattern. (Vendor information helps to ensure that the appropriate barcode is attached to the product.)	Optional
Zone 3	Data structure (GTIN-13, GTIN-12, GTIN-8)	Barcode	Always required
Zone 4	Consumer information	This includes optional product information for the consumer, such as fibre content, fire retardancy, and country of origin.	Optional (see Note 2)
Zone 5	Size/dimension	Size/dimension is a key requirement for the consumer. Size information can be emphasised in large bold print and is located in the right-hand portion of Zone 5. Vendors may optionally include a style name as a selection aid for the consumer.	Usually required (see Note 3)

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Zones	Information Type	Description	Status: Required/ Optional
Zone 6	Retail price	Allow space to print the price with 25 mm (1 in.) x 32 mm (1.25 in.) minimum dimension characters. For plastic packaged products, this required space for price can be provided by several methods: For barcode marking on an adhesive label, the space for price can be included as part of the label. For barcode marking designed into the packaging, the space for price can be included on the package artwork. Providing package space adjacent to Zone 5 that is reserved for retail item pricing creates an implied space for price. Implied space replaces the requirement for actual space on labels or package artwork. If implied space for price is used, no information of importance SHALL be printed in the area that might be covered by adhesive item price labels.	Usually required
Zone 7	Manufacturer's suggested retail price	This is for use only if merchandise is pre-priced or the suggested retail price is printed on the tag. If provided, the area must be perforated for optional removal.	Optional

Note 1: Size and colour are optional in Zone 1 if vendor usage requires this information to define the product.

Note 2: Some jurisdictions require that certain products include a permanently affixed statement of information of this type in Zone 4 that may not be satisfied by inclusion on the package.

Note 3: Size may be omitted from Zone 5 if the size information is readily available on the product packaging.

6.5.4.2 Plastic Packaged Products Label Placement Guidelines

Consistent barcode placement is required for successful scanning at the Point-of-Sale. The symbol placement guidelines for plastic packaged products have been designed with the flexibility to accommodate differences that may arise from industry to industry:

- On plastic packaged products, the front top right-hand corner is the preferred placement for the barcode and other product identification information.
- The barcode and other product identification information may be located on the front or back of plastic packaged products. However, all products within a particular merchandise category must have their barcodes placed on the same side of the package.

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Caution: Placement of the barcode on the back of a product may result in the presentation of the product on the display counter in a backside up orientation by some retailers so that the barcode and retail price appear together in full view by the customer.

- The orientation of the barcode and other product identification information SHALL be consistent with any graphics or descriptive data on the plastic package.
- Where possible, the symbol and other product identification information, whether built into the package artwork or an adhesive label, must not be closer than 8 millimetres (0.3 inch) or farther than 100 millimetres (4 inches) from the nearest edge of the package. Experience has shown that the previously recommended minimum distance of 5 millimetres (0.2 inch) is inadequate. Also, cashiers often grab packages on the edge with their thumbs. Avoid placing the barcode too close to the edge. Such placement reduces Point-of-Sale efficiency and may cause distortion of the symbol. (See Section 6.3.3.3: Edge Rule)
- The barcode and other product identification information on plastic packaged products is normally to be located on the front top right-hand corner. However, for very large, bulky, or unusually shaped products, this may be impractical or inappropriate. See Section 6.4.9 for information on large, heavy, and bulky items.

Note: Section 6.4 specifies the lower right quadrant of the back of the package or container as the recommended location for the barcode. This recommendation applies to plastic packaged products that are sold in a grocery store environment.

6.5.4.3 Plastic Packaged Products Label Example

Figure 6.5.5.3-1 Plastic Packaged Products Label Example

6.5.5 Boxed Products Label Formats

Some boxed products may be sold in or out of the box. Other boxed products are actually sets that may also be sold as individual items. Some boxes carry significant amounts of design graphics, while others are plain boxes containing the product.

Box size can range from very small, as in jewellery or cosmetics, to very large, as in home furnishings. For extremely large boxed products, consider using a two-part tear-off barcode label to facilitate scanning at the Point-of-Sale while leaving one label on the box.

There are two methods of marking boxed products with barcodes:

- Incorporate the barcode and other merchandise identification information the box's artwork.
- Print the barcode and other merchandise identification information on an adhesive label that can be affixed to the box.

Inclusion of a vendor logo in the box marking format is optional. If the logo is included, it SHALL not appear at the bottom, because it may be obscured by a retail price label, or it could be torn off if a

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manufacturer's suggested retail price is removed. Background printing of logos SHALL be avoided, because this may obscure required information or important consumer information.

6.5.5.1 Boxed Products Label Information Zones

Zones	Information Type	Description	Status: Required/Optional
Zone 1	Merchandise identification	This is the primary human readable merchandise identifier, usually the style number, although it may be pattern, model, or garment type. The merchandise identifier is located in the upper left-hand portion of Zone 1.	Always required (see Note 1)
Zone 2	Vendor information	This includes optional vendor production information, such as vendor Stock Keeping Unit (SKU), cut number, dye lot, colour, and pattern. (Vendor information helps ensure that the correct barcode is attached to the product.)	Optional
Zone 3	Data structure (GTIN-13, GTIN-12, GTIN-8)	Barcode	Always required
Zone 4	Consumer information	This includes optional product information for the consumer, such as fibre content, fire retardancy, and country of origin.	Optional (see Note 2)
Zone 5	Size/dimension	Size/dimension is a key requirement for the consumer. Size information can be emphasised in large bold print and is located in the right-hand portion of Zone 5. Vendors may optionally include a style name as a selection aid for the consumer.	Usually required (see Note 3)

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Zones	Information Type	Description	Status: Required/Optional
Zone 6	Retail price	Allow space to print the price with minimum dimension characters of 25 mm (1 in.) x 32 mm (1.25 in.). For boxed products, this required space for price can be provided by several methods: For barcode marking on an adhesive label, the space for price can be included as part of the label. For barcode marking designed into the packaging, the space for price can be included on the package artwork. Providing package space adjacent to Zone 5 that is reserved for retail item pricing creates an implied space for price. Implied space replaces the requirement for actual space on labels or package artwork. If implied space for price is used, no information of importance is printed in the area that might be covered by adhesive item price labels.	Usually required
Zone 7	Manufacturer's suggested retail price	For use only if merchandise is pre-priced or the suggested retail price is printed on the tag. If provided, the area must be perforated for optional removal.	Optional

Note 1: Size and colour are optional in Zone 1 if vendor usage requires this information to define the product.

Note 2: Some jurisdictions require that certain products include a permanently affixed statement of information of this type in Zone 4 that may not be satisfied by inclusion on the package.

Note 3: Size may be omitted from Zone 5 if the size information is readily available on the product packaging.

6.5.5.2 Packaged Versus Freestanding Single Selling Units

Certain single selling units (trade items) may be sold as freestanding items, or they may be sold in a package. This creates a dilemma for the supplier: to mark the item or mark the package? For GTIN Allocation Rules pertaining to this scenario, see GS1 General Specification Section 2.1.

6.5.5.3 Boxed Products Label Placement Guidelines

Consistent barcode placement within an industry or product category is required if merchandise carrying a barcode is to successfully scan at the Point-of-Sale. Since the category of boxed products includes a diverse merchandise group, location guidelines have been designed with considerable flexibility to accommodate differences that may arise from industry to industry:

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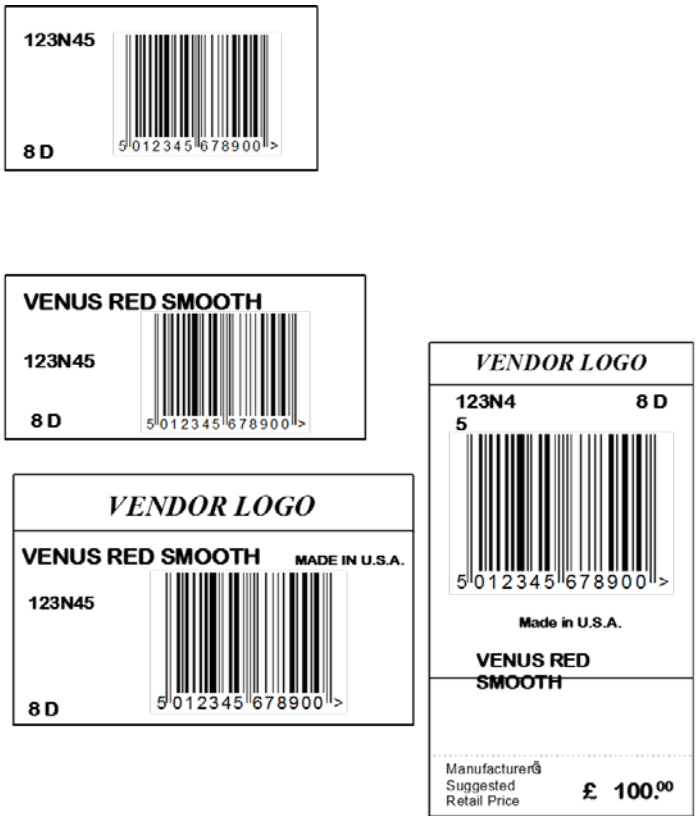
- The exposed surface of the box is the preferred location for barcodes and other product identification information on boxed products sold primarily in the department or specialty store environment.
- The orientation of the barcode and other product identification information SHALL be consistent with any graphics or descriptive data on the box.
- Where possible, the symbol and other product identification information, whether built into the package artwork or an adhesive label, must not be closer than 8 millimetres (0.3 inch) or farther than 100 millimetres (4 inches) from the nearest edge of the package. Experience has shown that the previously recommended minimum distance of 5 millimetres (0.2 inch) is inadequate. Also, cashiers often grab packages on the edge with their thumbs. Avoid placing the barcode too close to the edge. Such placement reduces Point-of-Sale efficiency and may cause distortion of the symbol. (See Section 6.3.3.3, Edge Rule.)
- The barcode and other product identification information on plastic packaged products is normally to be located on the front top right-hand corner. However, for very large, bulky, or unusually shaped products, this may be impractical or inappropriate. See Section 6.4.9 for information on large, heavy, and bulky items.

Note: Section 6.4 specifies the lower right quadrant of the back of the package or container as the recommended location of the barcode. This recommendation applies to plastic packaged products that are sold in a grocery store environment.

6.5.5.4 Boxed Products Label Examples

Figure 0-1 Label examples for boxed products



6.5.6 Banded Products Label Formats

Banded packaging involves a specialised group of products. This type of packaging is most commonly associated with hosiery (socks) or yarn products. There are the two methods of marking banded products with barcodes:

- Incorporate the barcode and other merchandise identification information into the band's artwork.
- Print the barcode and other merchandise identification information on an adhesive label that can be applied to the band.

The typical banded product label has the vendor's logo on the front and the product identification codes, consumer information, and barcode on the back. The vendor's logo can also be printed on the back of the band as part of the band marking format. However, care MUST be taken to ensure that there is no obstruction of the barcode or other important product identification information. Background printing of logos SHALL be avoided.

6.5.6.1 Banded Products Label Information Zones

Zones	Information Type	Description	Status: Required/Optional
Zone 1	Merchandise identification	This is the primary human readable merchandise identifier, usually the style number, although it may be pattern, model, or garment type. The merchandise identifier is located in the upper left-hand portion of Zone 1.	Always required (see Note 1)
Zone 2	Vendor information	This includes optional vendor production information, such as vendor Stock Keeping Unit (SKU), cut number, dye lot, colour, and pattern. (Vendor information helps ensure that the correct barcode is attached to the product.)	Optional
Zone 3	Data structure (GTIN-13, GTIN-12, GTIN-8)	Barcode	Always required
Zone 4	Consumer information	This includes optional product information for the consumer, such as fibre content, fire retardancy, and country of origin.	Optional (see Note 2)
Zone 5	Size/dimension	Size/dimension is a key requirement for the consumer. Size information can be emphasised in large bold print and is located in the right-hand portion of Zone 5. Vendors may optionally include a style name as an aid to the consumer in selection.	Usually required (see Note 3)

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Zones	Information Type	Description	Status: Required/Optional
Zone 6	Retail price	Allow space to print the price with minimum dimension characters of 25 mm (1 in.) x 32 mm (1.25 in.). For banded products, this required space for price can be provided by several methods: For barcode marking on an adhesive label, the space for price can be included as part of the label. For barcode marking designed into the packaging, the space for price can be included on the package artwork. Providing package space adjacent to Zone 5 that is reserved for retail item pricing creates an implied space for price. Implied space replaces the requirement for actual space on labels or package artwork. If implied space for price is used, no information of importance is printed in the area that might be covered by adhesive item price labels.	Usually required
Zone 7	Manufacturer's suggested retail price	This is for use only if merchandise is pre-priced or the suggested retail price is printed on the tag. If provided, the area must be perforated for optional removal.	Optional

Note 1: Size and colour are optional in Zone 1 if vendor usage requires this information to define the product.

Note 2: Some jurisdictions require that certain products include a permanently affixed statement of information of this type in Zone 4 that may not be satisfied by inclusion on the package.

Note 3: Size may be omitted from Zone 5 if the size information is readily available on the product packaging.

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6.6 GS1 Logistics Label Design

These specifications constitute the basis for all GS1 logistics labels. Other sections, most notably Section 3, GS1 Application Identifier Definitions, and GS1 General Specification Section 5.4, GS1-128 Symbology Specifications, MUST be read in conjunction with the following sub-sections.

6.6.1 Scope

These specifications detail the structure and layout of GS1 logistics labels. Emphasis is given to the basic requirements for practical application in an open trade environment. Primary topics include:

- The unambiguous identification of logistic units
- The efficient presentation of text and machine readable data
- The information requirements of the key partners in the supply chain: suppliers, customers, and carriers
- Technical parameters to ensure systematic and stable interpretation of labels

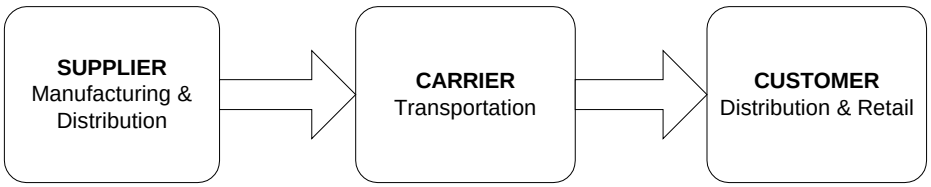
6.6.2 Concepts

6.6.2.1 Logistics Information Flow

As a logistic unit moves through the supply chain, a series of events occurs that defines the information related to the unit. The whole supply chain process of manufacturing, finished goods distribution, transportation, and deployment into the marketplace adds layers of information related to the logistic unit.

For example, the physical content of the unit is typically defined at finished goods distribution. At that point in time the identification of the logistic unit as an entity is possible. Other elements of information, such as final destination or the composition of a multi-unit shipment, are not typically known until later in the supply chain process. In a trading relationship, different elements of information are generally known and applied by the supplier, carrier, and customer.

Figure 6.6.2.1-1 Logistics Information Flow



6.6.2.2 Representation of Information

The information included on a GS1 logistics label comes in two basic forms.

1. Information to be used by people: This is comprised of HRI, Non-HRI text and graphics.
2. Information designed for data capture by a machine: Barcodes.

Barcodes are machine readable and are a secure and efficient method for conveying structured data, while HRI, Non-HRI text and graphics allow people general access to basic information at any point in the supply chain. Both methods add value to GS1 logistics labels, and often co-exist on the same label.

6.6.3 GS1 Logistics Label Design

The GS1 logistics label information may be grouped into logical segments for the supplier, customer, and carrier. Each label segment may be applied to the logistic unit at a different point in time as the relevant information becomes known.

In addition to this, on the GS1 Logistics Label a distinction can be made between the types of data communicated on the GS1 Logistics label, in order to facilitate interpretation by machines and people. For this purpose the data can be expressed in three types of building blocks: 1. Free Format, 2. Non-HRI Text Including Data Titles, 3. Barcodes and HRI.

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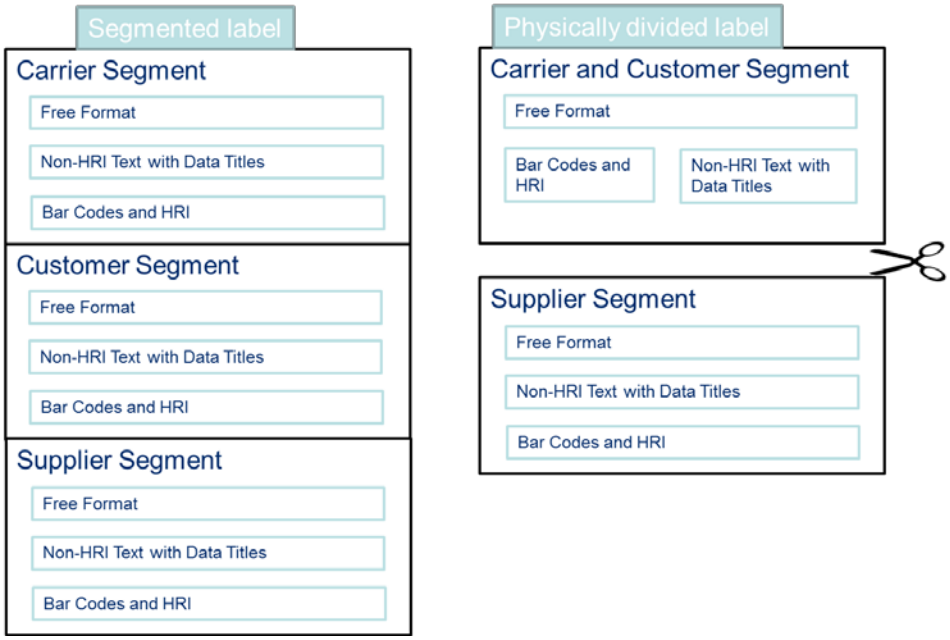
When segments are used, within the segments the data still need to be organized using building blocks. In that case segments are the primary grouping mechanism; building blocks are subordinate to that.
The SSCC is the single mandatory element for all GS1 logistics labels. Other information, when required, shall comply with the specifications in this document and with the proper use of Application Identifiers.

6.6.3.1 Segments

A segment is a logical grouping of information that is generally known at a particular time. There may be up to three label segments on a GS1 logistics label, each representing a group of information. Generally, the order of the segments, from top to bottom, is: carrier (transport), customer, and supplier. However, this order and top/down alignment may vary depending on the size of the logistic unit and the business process being served.
Segments may be printed separately in which case they must be placed vertically in close proximity of each other, with the segment containing the SSCC at the bottom. The carrier segment may be replaced during the journey of the logistic unit, in which case special care should be taken to ensure the customer and supplier segments are preserved.

Figure 6.7.3.2 – 1 Examples of segmented label structures



6.6.3.1.1 Supplier Segment

The supplier segment of the label contains information that is generally known at the time of packaging by the supplier. The SSCC is applied here as the logistic unit identifier, along with the Global Trade Item Number (GTIN) if included on the label.
Other information that may be of interest to the supplier but might also be useful for customers and carriers can be applied. This includes product-related information such as product variant; dates such as production, packaging, expiration, and best-before dates; and lot, batch, and serial numbers.

6.6.3.1.2 Customer Segment

The customer segment of the label contains information that is generally known at the time of order and order processing by the supplier. Typical information includes the ship to location, purchase

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order number, and customer-specific routing and handling information. If several logistic units are assembled to be transported under one despatch advice or Bill of Lading (BOL) to one customer the GSIN, AI (402) may also be applied in this customer segment.

6.6.3.1.3 Carrier (Transport) Segment

The carrier (transport) segment of the label contains information that is generally known at the time of shipment and is typically related to transport. Typical information includes ship to postal codes, AI (420), Global Identification Number for Consignment, AI (401), and carrier-specific routing and handling information.

6.6.3.2 Building Blocks

On the GS1 Logistics Label a distinction is made between the type of data communicated using three types of building blocks:

3. The 'Free Format' building block may contain Non-HRI text and graphics.
4. The 'Non-HRI Text Including Data Titles' building block contains Non-HRI text reflecting the information represented in the barcode(s) using data titles rather than AIs, and optionally additional information not represented in barcodes (preferably including data titles).
5. The 'Barcodes and HRI' building block contains the barcode(s) including human readable interpretation (HRI).

On the label and within label segments the building blocks are usually placed top down: Free Format (top), Non-HRI text including Data Titles (middle), Barcodes and HRI (bottom). If space permits it, and providing the barcodes conform to the size specifications for the application, the lower two building blocks may be placed side by side. See figure 6.7.3.1 – 1.

Figure 6.7.3.2 – 1 Placement of building blocks

6.6.4 Technical Specifications

6.6.4.1 Barcodes and Human Readable Interpretation

6.6.4.1.1 Barcode Orientation and Placement

Barcodes must be placed in a picket fence orientation relative to the base of a logistic unit, this means, the bars and spaces are perpendicular to the base on which the logistic unit stands. In all cases, the GS1-128 barcode encoding the SSCC shall be placed in the lowest portion of the label.

6.6.4.1.2 Human Readable Interpretation

As a back-up key entry and diagnostic aid, a Human Readable Interpretation (HRI) of each barcode shall be provided. HRI rules for barcodes are maintained in GS1 General Specification Section 4.14.

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6.6.4.2 Non-HRI Text Including Data Titles

Text with data titles is Non-HRI text designed to support manual operations and to facilitate key entry in menu driven systems. It may be used to specify the text equivalent of the data elements represented in barcodes, and is comprised of data titles and data content. The data content should be at least 7 millimetres / 0.275 inches in height. If there is no other language agreed between trading partners, data titles must be printed in English. As an option left at the discretion of the labeller, a second language can be added. Application Identifiers are not included in the data content.

6.6.4.3 Data Titles

Data titles are the standard abbreviated descriptions of element strings, used to support the manual interpretation of encoded data. Data titles should be used adjacent to all data fields included in the 'Non-HRI text Including Data Titles' building block. Data Titles may also be used adjacent to barcodes and HRI.
All data titles are shown in Section 3.2.

6.6.4.4 Free Format

Free format information may be comprised of Non-HRI text and graphics. The name and address of the sender and receiver are typical examples of Non-HRI text. Company logos and instruction pictograms are examples of graphics. All Non-HRI text included in the Free Format building block shall be clearly legible and no less than 3 millimetres / 0.118 inches high.

6.6.4.5 Label Dimensions

The physical dimensions of the label are determined by the labeller, but the size of the label should be consistent with the data requirements of the label. Factors influencing label dimensions include the amount of data required, the content and X-dimension of the barcodes used, and the dimensions of the logistic unit to be labelled. The business requirements for most users of GS1 Logistics Labels are met by using one of following:

- A6 (105 mm x 148 mm), which is particularly suitable when only the SSCC, or the SSCC and limited additional data, is encoded
- 4 x 6 inch, which is particularly suitable when only the SSCC, or the SSCC and limited additional data, is encoded

-or-

- A5 (148 mm x 210 mm)
- 6 x 8 inch

6.6.4.6 Label Location

Label placement specifications are maintained in Section 6.7.

6.6.5 Label Examples

Figure 6.6.5-1 The basic label: an SSCC

Notes:
This example shows a label containing only an SSCC. Such labels can be applied at production time, but also during transport or receipt in case no label is present on the logistic unit.
Building blocks (top-down):

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- Text with Data Titles: SSCC
- Barcodes + HRI: AI (00)

Figure 6.6.5-2 Label with combined supplier and carrier information

Notes:
This example shows a pallet label that may be applied at the time of transport. Besides information on the logistic unit it contains information on the route and destination.
Building blocks (top-down):

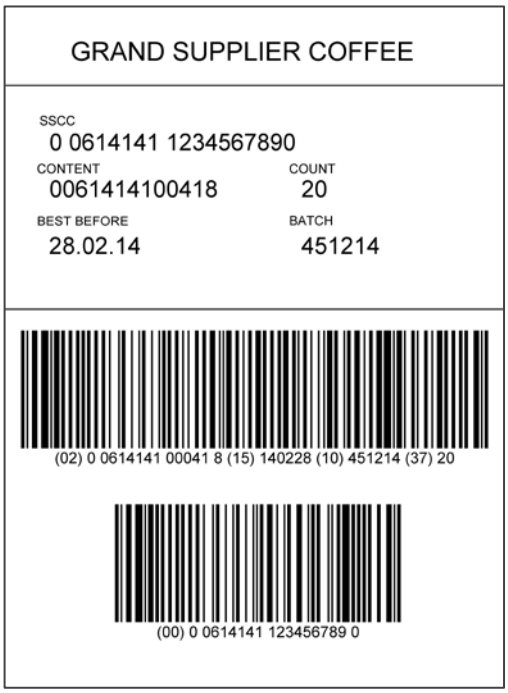
- Free Format: Von/From ; An/To
- Text with Data Titles: SSCC; ROUTE; Dimensions / Weight; Billing No.
- Barcodes and HRI: AI (403); AI (401); AI (00)

Figure 6.6.5-3 Label with supplier and carrier segments

Notes:
This example shows a case label that may be applied at the time of transport. Besides the SSCC it contains information on the route and destination.
Segments and building blocks (top-down):

- Carrier Segment
  - Free Format: FROM ; TO
  - Barcodes and HRI: SHIP TO POST
- Text with Data Titles: CARRIER; B/L ; PRO
- Supplier Segment
  - Barcodes and HRI: SSCC; AI (00)

Figure 6.6.5-4 Label with supplier information



Notes:
This example shows a pallet label that may be applied at the time of production. It contains information on the supplier and the trade item, but no information on the transport and customer.
Building blocks (top-down):

- Free Format: SUPPLIER NAME
- Text with Data Titles: SSCC; CONTENT; COUNT; BEST BEFORE; BATCH
- Barcodes and HRI: AI (02); AI (15); AI (10); AI (37); AI (00)

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Figure 6.6.5-5 Label with supplier, customer, and carrier segments

Notes:
This example shows a case label that may be applied in a cross-docking scenario. Besides the SSCC it contains transport information and information on the final customer destination.
Segments and building blocks (top-down):

- Carrier segment:
  - Free Format: FROM ; TO
  - Barcodes and HRI: SHIP TO POST
  - Text with Data Titles: Carrier ; B/L ; PRO
- Customer segment
  - Free Format: PO ; DEPT
  - Barcodes and HRI: Store Number
  - Text with Data Titles: Customer
- Supplier segment
  - Barcodes and HRI: SSCC; AI (00)

6.6.6 EPCglobal Seal Application Guidelines

If using EPC Tags on products it is important to make supply chain partners aware of their presence. This is achieved by using the latest version of the EPCglobal Seal that can be found on: http://www.gs1.org/gsmp/kc/epcglobal

6.7 Symbol Placement Used in General Distribution

General Distribution Scanning items include any item handled as a single unit in the transport and distribution process. This definition covers a wide variety of package types, such as pallets, cartons, cases, bins, and totes. These items can be trade items and/or logistic units.
Barcode scanning may be carried out manually or automatically, and the recommended symbol location cannot be optimised for one or the other in an open supply chain scenario. These guidelines have been prepared with the objective to reduce overall supply chain cost but in the full knowledge that implementation will only be driven by a proven (supply chain) business-case.

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6.7.1 General Rule

The barcodes on units intended for General Distribution SHALL be upright (i.e. in picket fence orientation) and placed on the sides of the unit. Each item shall have at least one barcode, and two are recommended when these symbols are pre-printed (see Section 6.7.3).

As not all products are packed in an identical way, this general rule may not apply to unusual packaging types (e.g., low height items, display cases, bags).

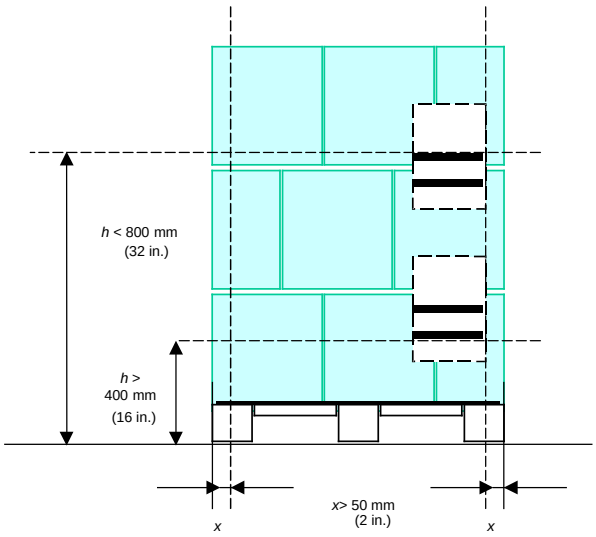
The barcodes SHALL be kept away from any vertical edges so that the barcodes are less likely to be accidentally damaged in transit.

6.7.1.1 Symbol Placement on Pallets

For all types of pallets, including full pallets containing individual trade items and single trade items, (such as a refrigerator or washing machine), the target height for the bottom of the barcode is between 400 millimetres (16 inches) and 800 millimetres (32 inches) from the base of the pallet. For pallet less than 400 millimetres (16 inches) high, the barcode SHALL be placed as high as possible while protecting the barcode.

The symbol including, its Quiet Zones, SHALL be at least 50 millimetres (2.0 inches) from any vertical edge to avoid damage.

Figure 6.7.1.1-1 Symbol placement on pallets



6.7.1.2 Symbol Placement on Cartons and Outer Cases

For cartons and outer cases, symbol placement will vary slightly in practice, however the target placement for the bottom of the barcode is 32 millimetres (1.25 inches) from the natural base of the item. The symbol including, its Quiet Zones, should be at least 19 millimetres (0.75 inch) from any vertical edge to avoid damage.

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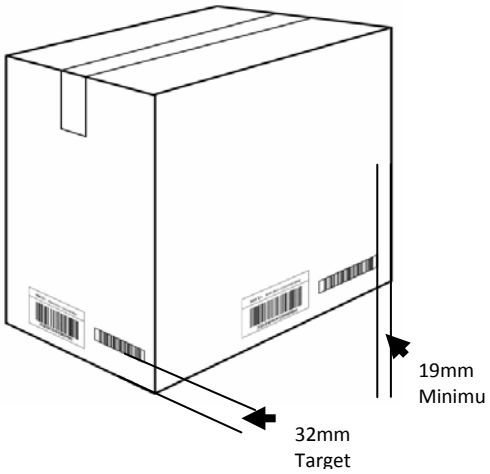
Figure 6.7.1.2-1 Symbol placement on cartons and outer cases

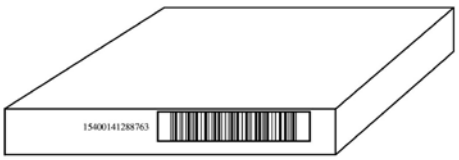


6.7.1.3 Symbol Location on Shallow Trays and Cases

If the height of a case or tray is less than 50 millimetres (2.0 inches), making it impossible to print a full height barcode with the Human Readable Interpretation below the bars (see GS1 General Specification Section 4.12 for HRI Rules), or if the construction of the unit is such that the full symbol height cannot be accommodated, the following options SHALL be considered in this order of preference:

- Place the Human Readable Interpretation adjacent to the symbol, outside the compulsory Quiet Zones.

Figure 6.7.1.3-1 Human readable interpretation to left of symbol



- When the height of the unit is less than 32 millimetres, the symbol may be placed on the top of the package. The symbol SHALL be placed with the bars perpendicular to the shortest side, no closer than 19 millimetres (0.75 inch) from any edge.

Figure 6.7.1.3-2

Sometimes two barcodes are used on variable measure units. If it is necessary to remove the Human Readable Interpretation from beneath the unit, the human readable interpretation of the main symbols SHALL be placed to the left of the bars of the main symbol. The Human Readable Interpretation of the Add-On Symbol SHALL be placed to the right of the bars of the Add-On Symbol.

6.7.2 Recommendation to Include a Barcode on Two Sides

Although at least one side of all General Distribution Scanning items shall display the barcode information, it is recommended that two (or more) sides of the item carry a barcode with the exact same data when:

- The printing process makes this cost effective (e.g. pre-printed corrugated cartons).

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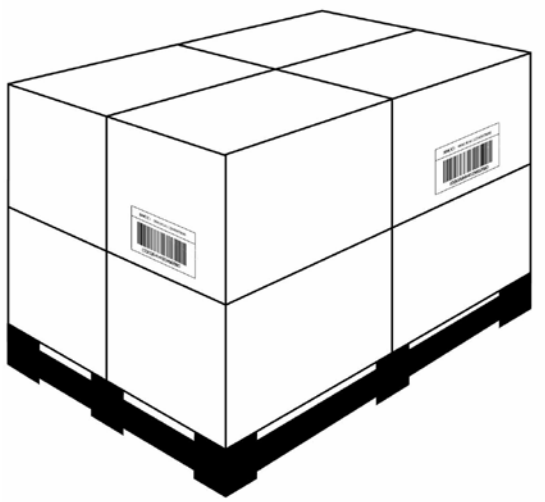
- The supply chain requirement is that one symbol is always visible (e.g., pallets that are stored either long or short edge facing).

Figure 6.7.2-1 Two (or more) identical barcodes

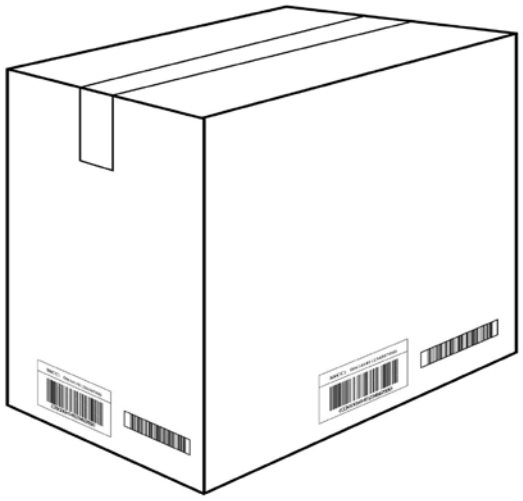
Two identical labels improves scanning performance



6.7.3 Add-On Symbols

If the unit is already marked with a symbol, any Add-On Symbol shall be placed so as not to obscure the primary barcode. The preferred location for the symbol in this case is to the side of the primary barcode so that a consistent horizontal location is maintained. Maintain Quiet Zones for both symbols.

Figure 6.7.3-1 Placement of Add-On Symbols



When it is possible for both parts of the data content to be represented in a GS1-128 barcode, concatenation into one symbol MUST be considered. Barcodes for General Distribution scanning containing data essential for complete product identification (e.g., trade measurements) SHALL always be aligned with and to the right of the other barcode.

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6.8 Symbol Placement for Regulated Healthcare Trade Items

In addition to the general rules in Section 6, the following symbol placement rules SHALL be added for regulated healthcare products.

6.8.1 Blister Cells

Blister cells are pre-formed clear plastic bubbles, or blisters, containing a product.

6.8.1.1 Perforated Blister Cells

- Placement:
  - At the primary packaging level for pharmaceutical products packaged with perforated blister cells, a barcode shall be placed on each blister cell.

6.8.1.2 Non-Perforated Blister Cells

- Placement:
  - At the primary packaging level for pharmaceutical products packaged with non-perforated blister cells, a barcode shall be placed once on the grouping of blister cells (e.g. blister card). The barcode may be placed anywhere on the blister card.
  - If random printing (e.g. no one to one correlation between printing impression and blister cell position) is used, the symbol may be placed multiple times to ensure that the symbol remains scannable until each blister has been used.

6.8.2 Products Requiring Variable Data On Primary and Secondary Packaging

Where such marking is feasible from a production and marking standpoint, the barcode carrying variable data (e.g. batch/lot number or expiry date) shall be marked on the primary and secondary packaging.

- Placement:
  - The barcode shall be placed only on one side of the packaging , which may be either the face, side or end panel.

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GS1 Canada - Toronto
1500 Don Mills Road, Suite 800
Toronto, Ontario, M3B 3K4
T 416.510.8039
T 1.800.567.7084
F 416.510.1916
E info@gs1ca.org

www.gs1.org

GS1 Canada Images - Montreal
9200 boul. du Golf
Montréal (Anjou), QC H1J 3A1
T 514.355.8929
F 514.356.3235
E images@gs1ca.org

www.gs1.org