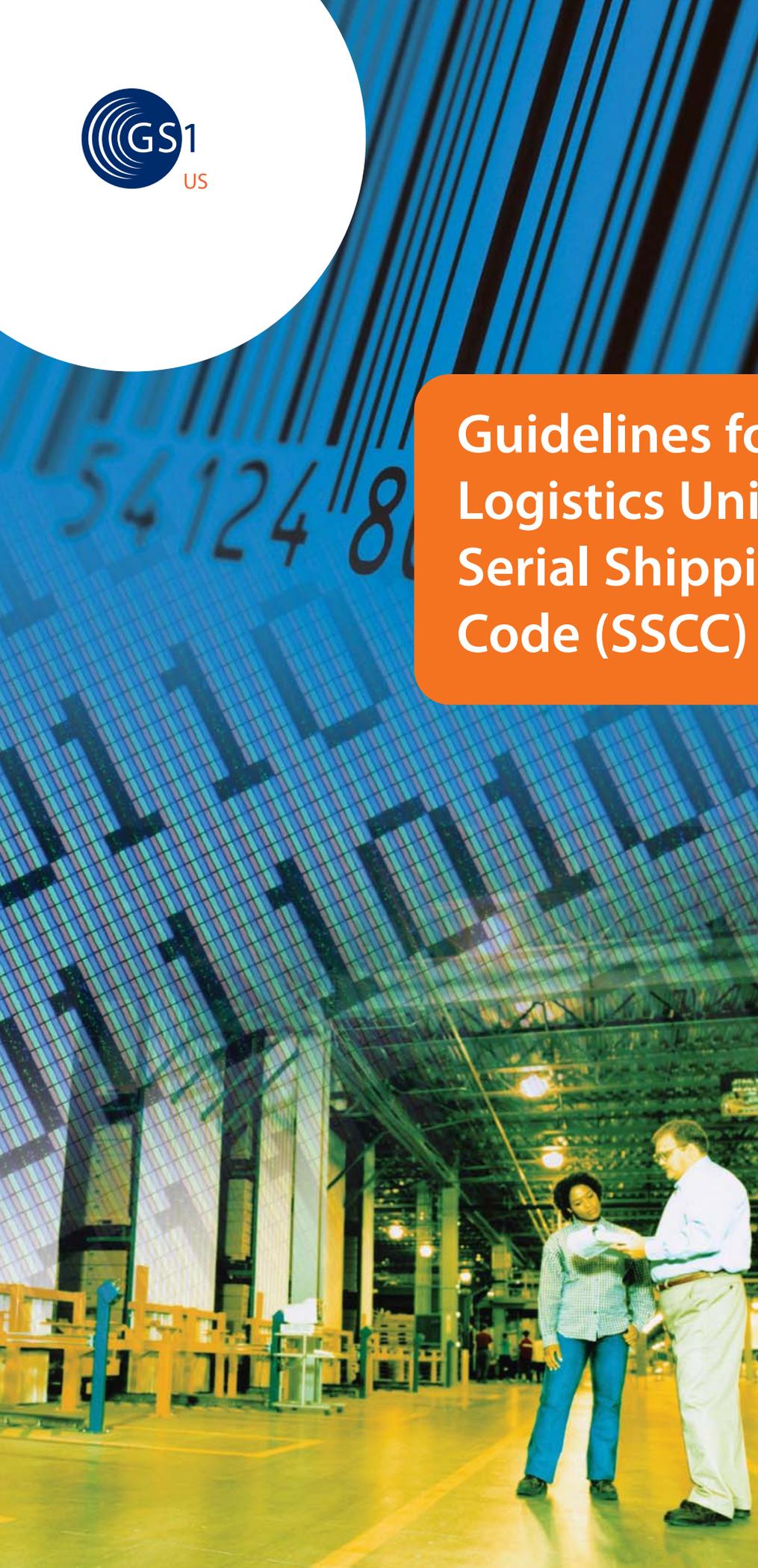




Guidelines for Marking Logistics Units Using the Serial Shipping Container Code (SSCC)



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IAPMO

In this publication, the letters "U.P.C." are used solely as an abbreviation for the "Universal Product Code" which is a product identification system. They do not refer to the UPC, which is a federally registered certification mark of the International Association of Plumbing and Mechanical Officials (IAPMO) to certify compliance with a Uniform Plumbing Code as authorized by IAPMO.

About GS1 US

GS1 US Inc. is a not-for-profit organization dedicated to the adoption and implementation of standards-based, global supply chain solutions. GS1 US operates subsidiaries EPCglobal North America™, RosettaNet, and 1SYNC™. GS1 US manages the United Nations Standard Products and Services Code® (UNSPSC®) for the UN Development Programme. EPCglobal Inc™ is a joint venture of GS1 US and GS1. GS1 US-based solutions, including business processes, XML standards, EDI transaction sets, and the bar code identification standards of the GS1 System are currently used by more than one million companies worldwide. For more information, visit www.gs1us.org

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1 Introduction

1.1 What is “*Guidelines for Marking Logistics Units Using the Serial Shipping Container Code*”?

This document is a voluntary application guideline published by GS1 US and provides a single source for the logistics (shipping) container identification and marking.

This is sub-divided into two separate and distinct sections:

- The identification number (the data)
- The bar code (the symbol)

Guidelines for Marking Logistics Units Using the Serial Shipping Container Code is intended to provide improved direction for the creation of identification numbers and for the application of bar codes to shipping containers. Shipping containers include cases, cartons, modules, pallets, ocean containers, air containers, trailers, and other handling units found in the supply chain.

1.2 What is the GS1 System?

The GS1 System is a unique system that combines the strengths of data carriers, identification numbers, and electronic communication working together to support and facilitate efficient supply chain management.

The GS1 System provides the platform for globally unique identification of trade items, logistics units, locations, assets, and service relationships.

The globally unique GS1 Company Prefix is a number assigned to member companies for the purpose of building the previously mentioned identification numbers.



Figure 1.1 – GS1 System

1.3 Normative references

- *GS1 General Specifications*
- *American National Standard for Material Handling ANSI MH10.8M -- Unit Loads and Transport Packages -- Bar code symbols*
- *ISO 15394: 2000 Packaging -- Bar code and two-dimensional symbols for shipping, transport, and receiving labels*
- *ISO/IEC 15459-1 Information technology -- Unique identifiers -- Part 1: Unique identifiers for transport units*

1.4 Explanation of Terms

GS1 Company Prefix	A globally unique number assigned to companies by GS1 Member Organizations to create the identification numbers of the GS1 System.
Logistic Unit/Shipping Container	An item of any composition established for transport and/or storage that needs to be managed through the supply chain.
X-dimension	Refers to the size of a bar code in terms of its print density. It is the width of the narrowest bar in a bar code when measured along the horizontal axis. Also called “Narrow Bar Width”. Expressed as “mils” or thousandths of an inch, as in “a 10mil X-dimension”.
SSCC	Serial Shipping Container Code.

2 The Number – Serial Shipping Container Code (SSCC)

2.1 What is SSCC?

Simply put, SSCC is the GS1 identification number used to identify logistic units. A logistic unit may simply be used for storage, for transport or for both. Logistic units may be non-orderable shipping containers of like items or a mixed-case or pallet of many different products. A logistic unit can be as small as a small case to as large as a shipload. The most common use appears to be cases and pallets.

It is a mistake to confuse Global Trade Item Number® (GTIN®) with SSCC. These are two different identification numbers, used for two separate purposes.

The SSCC provides the link between the data traded and stored through electronic commerce applications and the movement, delivery and storage of the actual physical product. While GTIN identifies the priced, orderable or invoiceable trade items, SSCC identifies logistics units that are not orderable. Typically, a logistic unit will contain a variety of trade items that are identified with GTINs and may never again be duplicated. Logistic units many times are characterized as mixed cases, or mixed pallets, for which an identification number holds true for only as long as the logistic unit remains intact. It is said that the SSCC is valid only until the logistic unit is opened or broken up. The data about a logistics unit is stored in a database, and then is referenced using the SSCC.

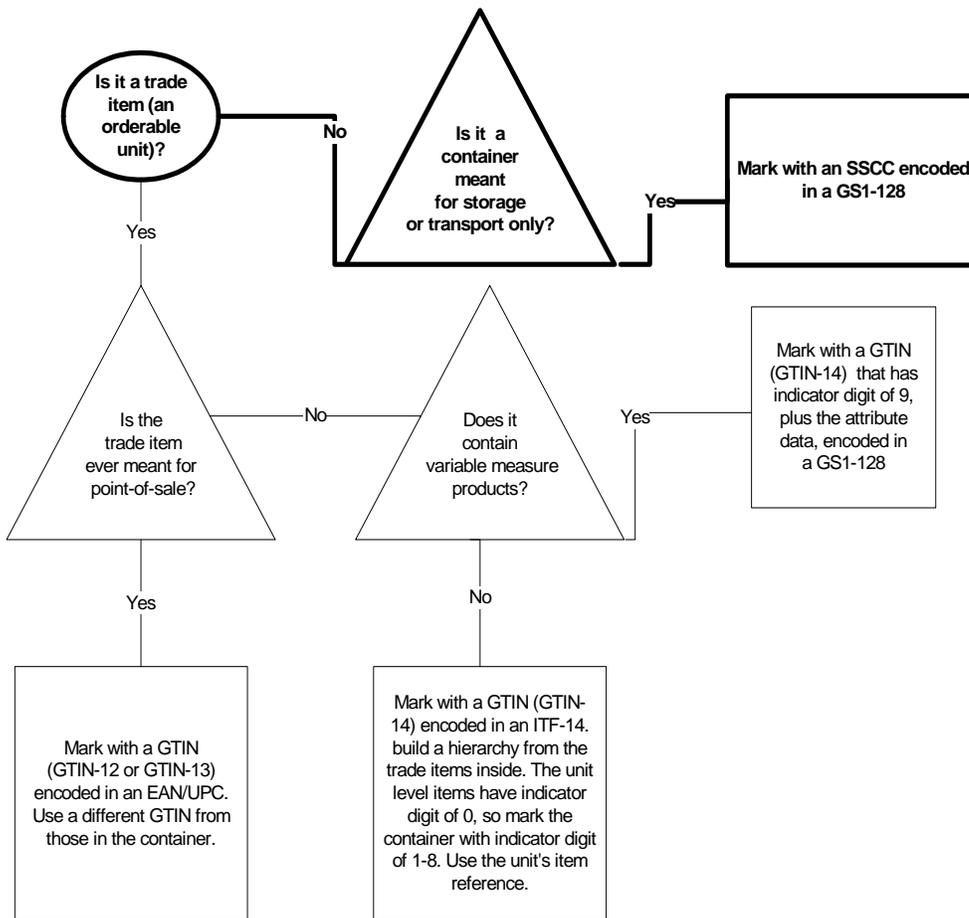
2.2 An SSCC Scenario

A typical scenario for an SSCC could be:

1. An order is placed with a manufacturer.
2. A Material Manager determines if there is inventory to fulfill the order.
3. An Order Picker receives an order to pick which has had an SSCC assigned to it.
4. The sales department transmits the SSCC in an Advance Ship Notice (ASN) message to the customer via an electronic commerce transaction such as Electronic Data Interchange (EDI).
5. The shipping department prepares a pallet with the picked product for the customer, stretch wraps the pallet, prepares a shipping label for it using the SSCC, encodes it into a bar code for the label, and affixes it to the pallet.
6. While this is going on the customer receives the ASN and notifies the receiving department, planning the receiving dock and the put-away locations for the product.
7. The pallet with the SSCC label is shipped by the manufacturer and received by the customer.
8. The receiving department scans the SSCC label, and by using the SSCC as a reference pulls up on the computer the expected disposition of this pallet load of product.

In this way, advance planning of inventory and resources, as well as many other factors, can be affected, creating previously untapped dollar savings by way of supply chain efficiencies.

2.3 Selection Decision Tree



3 The Serial Shipping Container Code (SSCC) - How Do You Build It?

3.1 Structure

The SSCC is an 18-digit, numeric data structure that becomes obsolete as soon as the container is opened in any way.

It is recommended that the Serial Reference be assigned consecutively, and not assign any significance to the number.

The 18-digit data structure is as follows:

- Extension digit (0-9)
- GS1 Company Prefix
- Serial Reference
- Modulo 10 Check Digit

SSCC	AI	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	(00)	E	GS1 Company Prefix and Serial Reference														C	

E= Extension Digit
C= Check Digit

3.1.1 Application Identifier (00)

Application Identifiers (AI's) are "flags" that signal scanner systems and related application software as to the type, length, and format of the data that is contained in a GS1 bar code. AI's are not part of the data string. Application Identifier (00) is an indicator that the 18-digits to follow are SSCC. This helps to "route" the data to the proper data base field.

3.1.2 Extension digit

The extension digit is designed to "extend" the use of the Serial Reference numbers. The shortest GS1 Company Prefix is seven-digits long. A seven-digit GS1 Company Prefix leaves nine-digits for Serial Reference allowing the identification of one billion logistic units. With the addition of the extension digit, there is the capability to identify 10 billion logistics units.

The extension digit is not the same as the indicator digit in the Global Trade Item Number (GTIN), which "indicates" a packaging level, where the extension digit simply "extends" the use of the Serial Reference number.

3.1.3 GS1 Company Prefix

GS1 Company Prefixes may be of varying length - from seven-digits long to 11-digits long. This variable length affects the available size of the Serial Reference number. The combination of GS1 Company Prefix and Serial Reference number must equal 16-digits.

Manufacturers, suppliers, and those selling private label products with labels affixed to products must become members of GS1 US Partner Connections. This involves completing an application form and paying a membership fee. Membership fees depend on sales volume and estimated trade item (products and services) numbering requirements at the time of application. To obtain a membership form, contact the GS1 US Customer Service Team or access the online form via the GS1 US website at www.gs1us.org/joinpc

GS1 US assigns each member company a globally unique GS1 Company Prefix. This globally unique company prefix is used to build primary identification numbers for such things as trade items, locations, assets, and for service relations. The use of this globally unique prefix, assures your company that by following the rules to build their identification numbers, that their identification numbers will not be duplicated anywhere in the world. Companies based outside the United States should visit the GS1 website at www.gs1.org to determine the GS1 Member Organization for their country. Contact GS1 US at:

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3.1.4 Serial Reference Number

This number is assigned by the Brand Owner or holder of the GS1 Company Prefix as a serial number to identify within a database and e-commerce transaction the logistics unit to which it is applied. The Serial Reference number may be from five-digits long to a maximum of nine-digits long. The length depends on the length of the GS1 Company Prefix; the combination of the two must equal 16-digits.

3.1.5 Check Digit

The Check Digit is a tool for data entry validation. The Check Digit used in SSCC is Modulo 10, and is calculated from the previous 17-digits of the data string.

The calculation is performed as follows: The left most digit (extension digit) is considered to be in "Position One" and therefore a digit in an "odd" position. Add all of the digits in "odd" positions together and multiply by three. Add, then, all of the digits in the "even" positions and add that sum to the result of the "odd" position digit calculation. Round up that result number to the nearest "10". The number that it takes to round to the nearest 10 is the Check Digit.

For example:

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SSCC	1	0	6	1	4	1	4	1	1	2	3	4	5	6	7	8	9	C

The SSCC for which a Check Digit (C) needs to be calculated is: 10614141123456789_.

The digits in the “odd” positions are: 1, 6, 4, 4, 1, 3, 5, 7, 9. When added together and multiplied by 3, the answer is 120.

The digits in the “even” positions are: 0, 1, 1, 1, 2, 4, 6, 8. When added together the answer is 23.

23 added to 120 equals 143. To round 143 up to 150 takes 7, therefore 7 is the Check Digit for this SSCC.

3.2 Concatenated Data

Concatenation is a method of joining the data from several AI's into a single string of data to encode in a single bar code. This allows you to produce a single bar code that contains multiple data strings for the purpose of optimizing scanning efficiency.

When using concatenation:

- For our purposes in this guideline, the first data element must be SSCC.
- Concatenating data with the SSCC on the shipping label is possible but not recommended. The bottom segment of the standard shipping label is reserved for the SSCC exclusively.
- The rules of Mandatory Association of Data Elements and Invalid Pairs of Data Elements must be followed.
- Be aware of the scanning/processing environment that the bar code/data will enter. For example: a manufacturer wants to make a bar code for a pallet containing SSCC (00), the GTINs contained on the pallet (02) and the count of those GTINs (37). However, the manufacturer's customer is unable to scan the bar code or process the data from a concatenated data string. This inability may cause the customer's system to reject the bar code/data as “invalid”.

3.2.1 Example of Concatenated Data String

Suppose you had the following data to encode in a bar code:

SSCC = 906141411234567893, GTIN contained on that logistic unit = 00614141999996, count of that GTIN contained on that logistic unit = 1035

The data to encode in the bar code would look like this:

009061414112345678930200614141999996371035

The Human Readable Interpretation would be printed as: (00) 906141411234567893 (02) 00614141999996 (37) 1035

The Application Identifier for SSCC is (00), for GTIN contained on a logistic unit (02), for the count of that GTIN on the logistic unit = (37). The count of GTINs contained on a logistic unit is a variable length field, and therefore should come last in the data string. The method for separating multiple variable length fields, when encoding the data is with a Function Code 1, normally abbreviated as FNC1.

4 The Bar Code: GS1-128

4.1 GS1-128

The GS1-128 is the only symbology in the GS1 System that may carry Serial Shipping Container Code (SSCC). GS1-128 is capable of carrying any of the Application Identifiers (AI's) in the system, therefore the Application Identifier (00) must be encoded prior to encoding the (AI's) 18-digits of SSCC.



Figure 4.1 – GS1-128 26 mil

4.2 Function 1 Character (FNC1)

The FNC1 uniquely identifies a generic code 128 symbol as conforming to GS1-128 specifications. The start character and the Function 1 Character (FNC1) together constitute the GS1-128 start code (except for Modulo 103 Symbol Check Character computation that treats them separately). This allows the scanner/decoder to securely interpret Application Identifiers and the meaning of the associated data. The possible start codes for GS1-128 symbols (combining the start character with the FNC1) are start code A/FNC1, start code B/FNC1, or start code C/FNC1. However, start code C/FNC1 is always the default start code for GS1-128.

4.3 Modulo 103 GS1-128 Symbol Check Character

At the end of the GS1-128 symbol, after all the included data elements, there is a Modulo 103 GS1-128 Symbol Check Character and a stop character. The Modulo 103 is a symbology element different from the Modulo 10, which is a data element. The stop character is the last encoded character in the GS1-128 symbol. Remember, the Modulo 103 GS1-128 Symbol Check Character is part of the symbol and the Modulo 10 data check character is part of the encoded data.

4.4 Field Separator

One other symbology element, a delimiter used to indicate the end of a variable length field, can apply to the GS1-128. FNC1 is the field separator for GS1-128. It is best practice to place variable length data fields at the end of the data string, a field separator would be used to separate two variable length fields, showing where one ended would also show where the next began.

4.5 GS1-128 Bar Code Dimensions

The nominal size symbol for use on shipping containers is as follows: Nominal bar and space widths:

Narrow elements (X) 0.020 inches (0.50 mm)

Bar height 1.25 inches (32 mm)

Each Quiet Zone (minimum) 0.20 inches (5.0 mm)

The X-dimension should be at or above 0.020 inch (0.50 mm) to provide optimal scanning in a conveyable environment. For variable measure product, where several data elements are concatenated into a single bar code, this may be reduced to 0.0148 inch (0.375 mm).

Minimum X-Dimension	Maximum X-Dimension	Symbol Height	Quiet Zones	Minimum Quality Spec
.0195"	.040"	1.25"	10X	1.5/10/670

4.6 Concatenation Considerations

In general, companies should not use concatenation in the same bar code as the SSCC for the following reasons:

- Due to its length and magnification factor, the four inches (101.6 mm) wide standard common label does not accommodate concatenation with the SSCC.
- High-speed sortation devices have difficulty capturing accurately a concatenated symbol. Concatenation is more suited for processes that require hand scanning.
- Field length of the data is variable depending on the data elements used. As a rule, field length is limited to 48 data characters. Use caution when "stringing together" data elements.
- When the first two characters of the AI correspond to a fixed length indicator, a field separator between data elements is not necessary. The next AI immediately follows the last character in the data field of the previous AI. For variable-length data fields, one must use a field separator character. This should appear immediately following the variable-length data field, unless it is the last field in the bar code. The FNC1 is the field separator.

5 Printing the Symbols

This section specifies the minimum quality of a printed bar code symbol and provides information on substrates and printing processes.

5.1 Substrates

GS1-128 symbols typically are printed on white labels. The label surface should be neither glossy, which causes mirror-like (specular) reflection, nor should it be prone to smearing or smudging. One can achieve optimal scanning results by using opaque black, dark blue, or dark green inks that produce uniform coverage.

Label degradation effects due to handling and abrasion during shipping warrant consideration. The company should address the durability of both the print process and of the actual labels. Select one that is strong or take protective measures, such as applying uniform, optically clear overlays over the symbol.

5.2 Printing Processes

A wide variety of printing processes are available for printing bar codes, provided they meet or exceed the verifiable quality specifications. Consult your equipment suppliers before purchasing a printer to ensure that compliance of GS1-128 applications is possible.

5.3 Film Masters

Some print processes require precise film masters to manufacture printing plates. Other processes use computer generated digital bar code files.

Film master processes require tight tolerances. Film master tolerances should equal less than + 0.0005 inches (0.013 mm) for bar and space widths. They should equal less than + 0.0002 inches (0.005 mm) for edge-to-similar-edge and pitch dimensions for a GS1-128.

5.4 Symbol Quality

For all printing processes the GS1 strongly recommends that the printer test the symbols to ensure that they meet specification requirements, as print quality can change over time. At first print, testing of the codes should include a thorough examination. Later, the company should continue to test the symbols intermittently and continue to follow through to end-use. It is the company's responsibility, however, to produce their own requirements for this process.

Today, bar code quality can be graded using an instrument called a verifier that uses the ISO grading method. *ISO/IEC 15416 Information Technology -- Automatic identification and data capture techniques -- Bar code print quality test specification -- Linear symbols* describes a method for looking at the quality of printed bar code symbols using an ISO-based verifier as a tool. The verifier is programmed to look at certain characteristics of the symbol, the way a scanner would, provide scan grades, and after 10 scans provide an ISO symbol grade.

The GS1 System utilizes the ISO method, but specifies the minimum grade necessary for every GS1 System symbol depending on which symbol is used, where it is used, or what data

structure it is carrying. In addition to the minimum grade, GS1 System also specifies the verifier aperture width and wavelength.

The table shown below provides you with a quick reference list of the minimum symbol quality parameters.

Symbology	Minimum ANSI Symbol Grade	Aperture	Wavelength
GS1-128	1.5 (GPA) or a "C"	10 mils	670 nm +/- 10

6 Shipping Label

6.1 Shipping Label Segments

Shipping labels are constructed in three basic segments, starting at the top: the carrier segment, the customer segment, and the supplier segment. Each segment is a combination of one or more building blocks that contain a specific piece of information. Those building blocks are called “zones”.

This label framework results from the outline in the *American National Standard for Material Handling ANSI MH10.8M -- Unit Loads and Transport Packages -- Bar Code Symbols*. This label layout is known as the *GS1 US Common Label* and is for use in North America. This label is four inches wide by six inches high, commonly with a radius cut on the corners.

It is important to note that there is an International label standard, *ISO 15394:2000 Packaging -- Bar code and two-dimensional symbols for shipping, transport and receiving labels*, for shipping labels outside of North America.

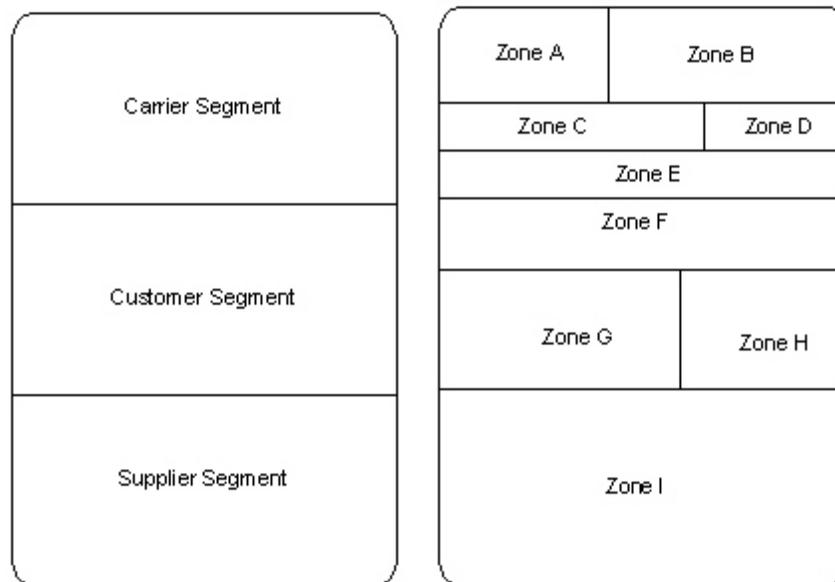


Figure 6.1 – Example - Segments and zones for *GS1 US Common Label*

NOTE: Text is positioned in the upper part of a segment. Bar codes are positioned in the lower part of a segment.

6.1.1 Carrier Segment (Zone A, B, C, D, E)

This segment contains information known at the time of shipment. The carrier primarily, but not exclusively, uses this data. Typical data for this segment could be: Ship-from, Ship-to, Delivery Postal Bar Code, Carrier Name, Shipment ID Number and Carrier Assigned Shipment Number.

From Supplier X 1010 Any street Anytown, State 008000	To Customer DC1500 5151 That Street Sometown, State 008005
Ship to Post  (420) 00805	Carrier Best Trucking PRO: 2895769860 B/L 853930

Figure 6.2 – Example of Layout within a Carrier Segment

6.1.2 Customer Segment (Zone F, G, H)

This segment contains information known at the time of order preparation. The customer primarily, but not exclusively, uses this information. Typical data includes: Purchase Order Number, Item Number, Quantity, Department Number, Mark-for, and Final Destination.

PO: 179347 CAT: 317 Back To School	
Dept.  (91) 1519	1519

Figure 6.3 – Example of Layout within a Customer Segment

6.1.3 Supplier Segment (Zone I)

This segment contains information known at the time of packaging. Supplier data is of equal importance to the supplier and the customer. Required data for this mandatory segment is the GS1-128, carrying the Serial Shipping Container Code (SSCC).

SSCC  (00) 9 0614141 123456789 3
--

Figure 6.4 – Example of Layout within a Supplier Segment

6.2 Label Building Blocks

Building blocks may contain text (including graphics) or bar codes.

6.2.1 Building Block Size

Each building block should measure one inch + 0.2 (25 mm + 5) in height as determined by the printing capability of the labeler. The width of the building block should measure the width of the label stock. A horizontal line that stretches the entire width of the label separates the building blocks. The labeler may combine two building blocks into one double height block to facilitate automated scanning of machine-readable symbols or bar codes. The height of this double high block should measure two inches + 0.4 (50 mm + 10).

6.2.2 Sub-Blocks

The labeler should divide building blocks into no more than four sub-blocks. The height of the sub-block is the height of the building block. The width of each sub-block is determined by the data content of that sub-block. A vertical line, the length of the height of the sub-block, separates the sub-blocks. A bar code sub-block should be the left-most sub-block.

6.2.3 Text Blocks

Text blocks are building blocks or sub-blocks that contain text, graphics, or both. The size and style of the text is a function of the block or sub-block size, amount of data, relative importance of the data, and the printing capability of the labeler.

6.2.4 Bar Code Blocks

Bar code blocks are building blocks or sub-blocks that contain a single bar code. When using GS1-128 bar code symbols with AI's, each block will contain a block title for the AI being used and the Human Readable Interpretation of the bar code.

6.3 GS1 US Common Label

Buyers, sellers, and transportation service providers who use the SSCC within their distribution channels developed the following recommended guidelines. These distribution channel partners identified the need to provide a more rigorous and uniform shipping container labeling specification. This allows, therefore, trading partners to design and implement automated scanning and application systems using the SSCC. This sub-section builds on the general labeling specifications as described earlier in this section.

6.3.1 Label Size

The recommended label size for the *GS1 US Common Label* is four inches (or 105 mm) wide by six inches (or 148 mm) tall. The 4x6 inches label generally supports most standard label formats. Although the 4x6 inches label will accommodate many transport packages, those that have a height that cannot accommodate the *GS1 US Common Label* require different label sizes. The number of building blocks included on the label determines the height of the label. Both the width of the label stock used and the placement of the label segments determine the label width. Therefore, the labeler determines the physical dimensions of the label.

Small transport packages may require that the labeler arrange the zones in a manner that will serve a variety of container styles and sizes. The labeler may increase the label widths to

accommodate side-by-side zone placement. Although zones can be placed side-by-side, avoid side-by-side placement of linear bar codes to minimize the potential for misreads by the scanner.

6.3.2 GS1 US Common Label Format

Because requirements and sizes of transport packages vary, one should place emphasis on consistency of information where possible. The *GS1 US Common Label* satisfies most processing requirements and accommodates heights of various transport containers.

6.3.3 Label Information Zone Concept

A modular structure simplifies label formatting. The information zone concept constitutes an overall framework for the presentation of information on the label. Information zones include the GS1-128 bar code symbol information and Human Readable Interpretation that is required among business partners involved in the distribution channel. Consistency in the presentation of all information, including the SSCC, is an integral part of the *GS1 US Common Label*.

Within the *GS1 US Common Label*, blocks and sub-blocks are information zones. Information that may appear on the label belongs in a particular zone. This specification enables consistent presentation and location of information on the label. If there is no information assigned to a particular zone, the zone use and contents are at the discretion of the labeler. If the information appears on the label, however, it must appear in the zone to which it belongs.

6.3.4 Label Information Zone Characteristics

Information zones, labeled A through I, comprise the *GS1 US Common Label*. Zones A through H are mandatory or optional depending on process requirements.

6.3.4.1 Mandatory Zones

Zone I is always mandatory.

Note: When shipping standard pallets in full trailers, the minimum requirement for identification is the SSCC. The manifest, bill of lading, or SSCC for the trailer will contain information needed to deliver the trailer. Therefore, zone A (Ship-from) and zone B (Ship-to) are optional for full trailer shipments and mandatory for all other shipments.

6.3.4.2 Optional Zones

Trading partners determine the data presentation and content for optional zones. Generally, customer related data should appear above supplier related data within optional zones or blocks.

Optional zones, if not used, need not appear on the label. The labeler may combine adjacent optional zones within a block and later divide them into sub-blocks. Optional zones that are above or below each other can merge to make one double high block.

6.3.4.3 Label Information Zone Titles

All zones, except for optional zones E, F, and H contain a zone title that denotes the information within the zone. Zone titles may appear in multiple languages as required. Zones containing bar codes have AI zone titles. All zone titles should be in uppercase letters in the upper-left corner of the zone and have a size of four to eight points.

6.3.4.4 Label Information Zone Specifications

If all information zones are shown at full size, the label will be seven inches (177.8 mm) high. However, a six-inch (152.4 mm) high label is more typical. Zone heights may be adjusted as long as the required information fits within the zone. Not all zones appear in all applications. For example, if zone F is not used, the labeler may enlarge zones B, C, D, G, and H for trading partner's data and the final destination bar code. The specifications are given in relation to the *GS1 US Common Label*. Zones A, B, C, D, or H may be half-height blocks for small packages.

6.3.5 GS1 US Common Label Specifications

Zone A	Ship-From
Zone Title	FROM
Height	1.0" (+0.2")
Width	1.25" (+0.2")
Characteristic	Mandatory (except for truckload shipments)
Data Content	Ship-from name + address (may include logo)
Text Size	8 -10 pts

Zone B	Ship-To
Zone Title	TO
Height	1.0" (+0.2")
Width	2.75" (+0.2")
Characteristic	Mandatory (except for truckload shipments)
Data Content	Ship-to name and address
Text Size	12 - 14 pts

Zone C	Carrier Routing Bar Code
Zone Title	SHORT TITLE OF AI USED
Height	1.0" (+0.2")
Width	2.5" (+0.2")
Characteristic	Optional (dependent on transportation mode)
Data Content	Ship-to Postal Bar Code, PRO Number Bar Code, or GS1 Consignment number. In some applications, a two-dimensional symbol or general carrier text may be placed to the left of the Ship-to Postal Bar Code, and the zone title shall appear above the Ship-to Postal Bar Code.
Bar Code Height	.5"
X-dimension	.010"

Zone D	Carrier
Zone Title	CARRIER
Height	1.0" (+0.2")
Width	1.5" (+0.2")
Characteristic	Optional (dependent on transportation mode)
Data Content	Carrier Name, SCAC Bill of Lading (BOL), PRO Number (PRO), Carrier Assigned Package ID (PKG ID), Carrier Assigned Shipper ID (SHPR ID). In some applications, carrier information may be encoded in a two-dimensional symbol.
Text Size	10 - 16 pts

Zone E	Trading Partner Data
Zone Title	N/A
Height	1.0" (+0.2")
Width	4.0" (+0.2")
Characteristic	Optional (depending on trading partner requirements)
Data Content	Agreed upon between trading partners. Both bar code and text data may appear in this zone (e.g. PO Number, Department Number, Product Serial Number or Part Number).

Zone F	Trading Partner Data
Zone Title	N/A
Height	1.0" (+0.2")
Width	4.0" (+0.2")
Characteristic	Optional (depending on trading partner requirements)
Data Content	Agreed upon between trading partners. May be combined with zone E to accommodate the size of the bar code.

Zone G	Final Destination Code
Zone Title	SHIP-FOR or MARK-FOR Number
Height	1.0" (+0.2") min 2.0" (+0.2") for automated systems
Width	2.5" (+0.2")
Characteristic	Optional (depending on trading partner requirements)
Data Content	Final Destination Code (GLN)
Bar Code Height	.5" or 1.25" for automated systems
X-dimension	.010" or .020" (for automated systems)

Zone H	Final Destination Text
Zone Title	N/A
Height	1.0" (+0.2")
Width	1.5" (+0.2")
Characteristic	Optional (depending on trading partner requirements)
Data Content	Final destination information: human-readable only, Ship-for, and product group
Text size	36 - 72 pts for Final Destination ID 12 pts for Name and Address 12 pts bold for product group

Zone I	SSCC
Zone Title	SSCC
Height	2.0" (+0.2")
Width	4.0" (+0.2")
Characteristic	Mandatory
Data Content	Serial Shipping Container Code
Bar Code Height	1.25"
X-dimension	.020"

NOTE: Bar code height may need to be higher than the recommended in this table for some automated sortation systems.

7 General Placement Guidelines for General Distribution

7.1 Introduction

General distribution 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.

Bar code scanning may be carried out manually or automatically and the recommended symbol location cannot be optimized 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.

7.2 General Rule

The bar codes on units intended for general distribution should be upright (i.e. in picket fence orientation) and placed on the sides of the unit. Each item shall have at least one bar code, and two are recommended when these symbols are pre-printed.

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 bar codes should be kept away from any vertical edges so that the bar codes are less likely to be accidentally damaged in transit.

7.3 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 bar code symbol is between 16 inches (400 mm) and 32 inches (800 mm) from the base of the pallet. For a pallet less than 16 inches (400 mm) high, the bar code symbol should be placed as high as possible while protecting the bar code. The symbol, including its Quiet Zones, should be at least 2.0 inches (50 mm) from any vertical edge to avoid damage.

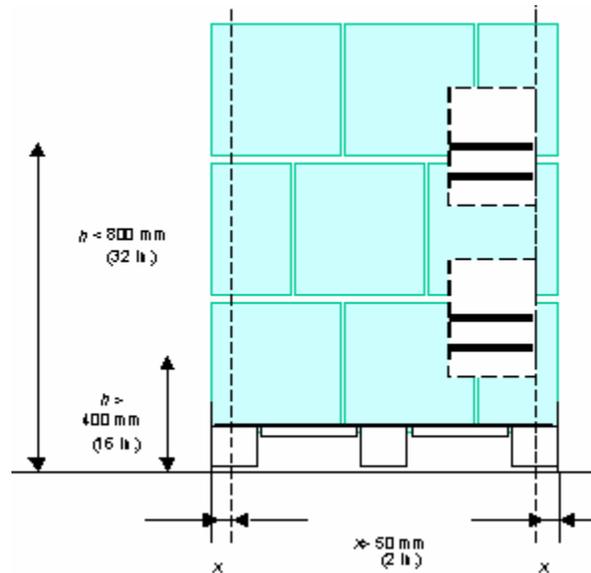


Figure 7.1

7.4 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 bar code symbol is at least 1.25 inches (32 mm) from the natural base of the item. The symbol, including its Quiet Zones, should be at least 0.75 inches (19 mm) from any vertical edge to avoid damage.

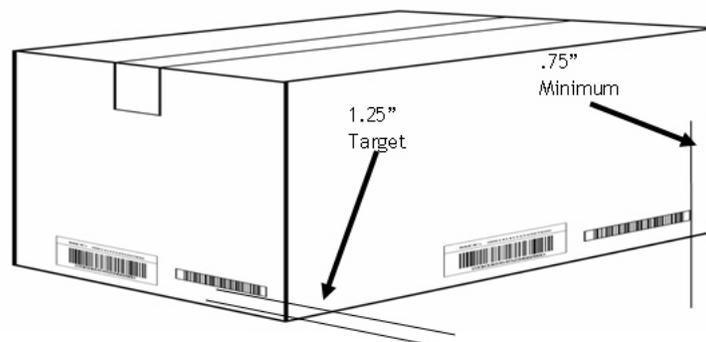


Figure 7.2

7.5 Symbol Location on Shallow Trays and Cases

If the height of a case or tray is less than 2.0 inches (50 mm), making it impossible to print a full height bar code with the Human Readable Interpretation below the bars, or if the construction of the unit is such that the full symbol height cannot be accommodated, the following options should be considered in this order of preference:

1. Place the Human Readable Interpretation to the left of the symbol, outside the compulsory Quiet Zones.
2. When the height of the unit is less than 1.25 inches (32 mm), the symbol may be placed on the top of the package. The symbol should be placed with the bars perpendicular to the shortest side, no closer than 0.75 inches (19 mm) from any edge.

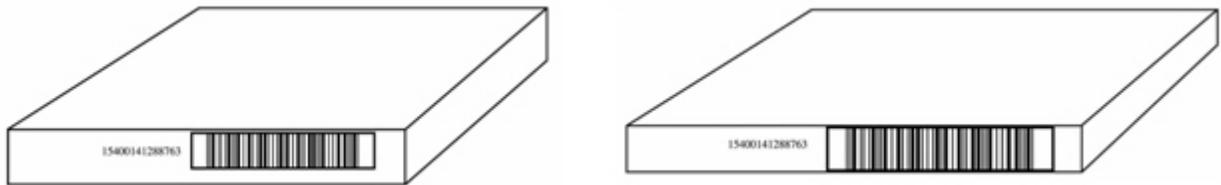


Figure 7.3

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

7.6 Recommendation to Bar Code Two Sides

Although at least one side of all general distribution items shall display the bar coded information, it is recommended that two (or more) sides of the item be bar coded with the exact same data when:

- The printing process makes this cost effective (e.g. pre-printed corrugated cartons).
- The supply chain requirement is that one symbol is always visible (e.g. pallets that are stored either long or short edge facing).

7.7 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 bar code symbol. The preferred location for the symbol in this case is to the side of the primary bar code symbol, so that a consistent horizontal location is maintained. Maintain Quiet Zones for both symbols.

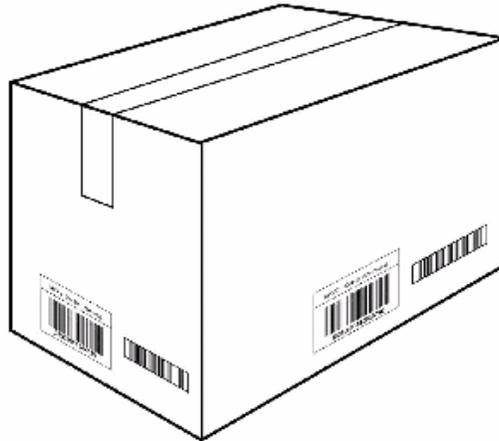


Figure 7.4

If there is the potential for both parts of the data content to be represented in a GS1-128 bar code symbol, they should be concatenated and one symbol produced [unless the standard shipping label is used, and in that case the bottom segment is reserved for the Serial Shipping Container Code (SSCC) exclusively].

7.8 Labeling Trailer-loads

When a truckload is considered a logistic unit, where the trailer doors are closed at the Ship-from location and are not opened until receipt at the Ship-to location, a single label that contains an SSCC is placed in a pouch to allow for automated receipt of the trailer-load. The pouch shall be visible when the trailer doors are opened. The SSCC shall be associated with the SSCCs and Global Item Trade Numbers (GTINs) of the contents of the trailer.

On trailers filled to full visible capacity the pouch should be placed no higher than five feet (1524 mm) and no lower than three feet (915 mm) from the trailer floor. It should be placed no further than 50 inches (1270 mm) from the right side of the trailer. On trailers not filled to full visible capacity, the pouch should be on the container closest to the rear of the trailer. Care should be taken to ensure that if cargo shifts in transit the pouch still would be visible when the doors are opened.

7.9 Truck Load Shipments

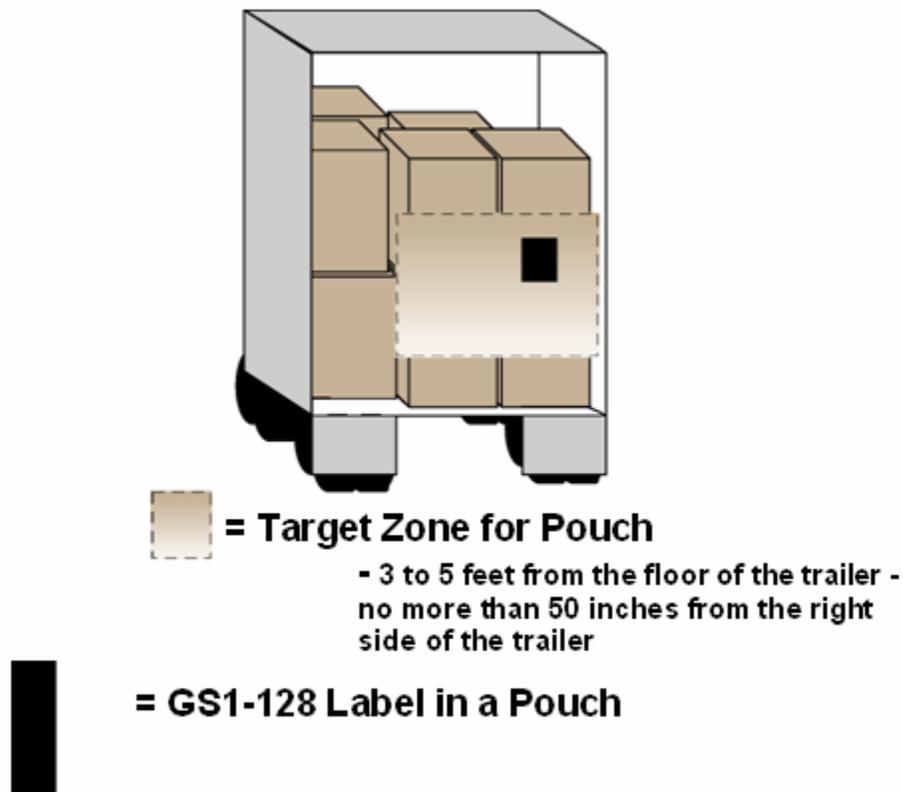


Figure 7.5

7.10 Other Transport Containers

Other transport packages have industry specific requirements. For example, garments sometimes are on hangers when shipped. Typically, these garments are on a rack or on bars within a trailer. When shipped on racks, the rack is the logical shipping container. The label may be affixed to the rack or on the leading garment. When the garments are on bars within a trailer, the label is affixed either to the leading garment or on a separate board in front of the leading garment. There may be several logical containers within the trailer. When this occurs the garments are ordered left to right and top to bottom with the label always immediately before or on the lead garment for each store.

Appendix A: Some Examples of Label Format

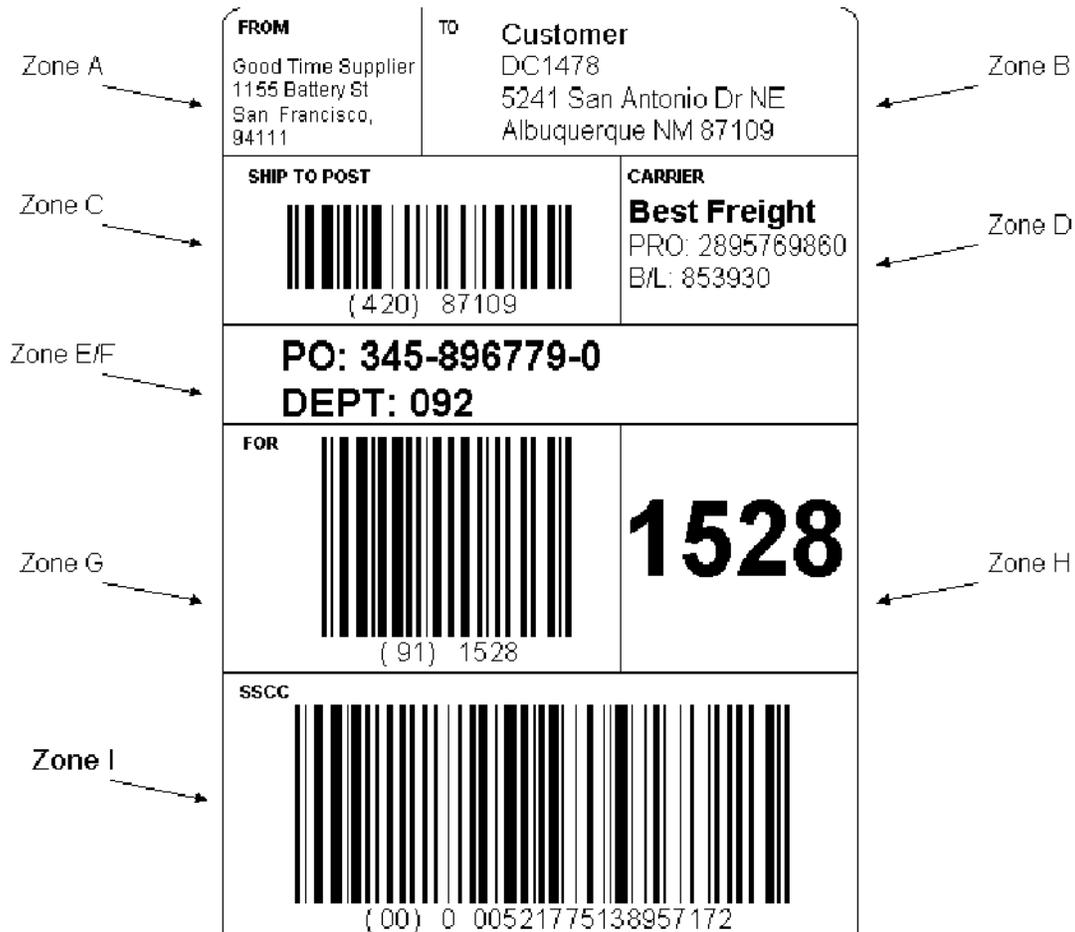


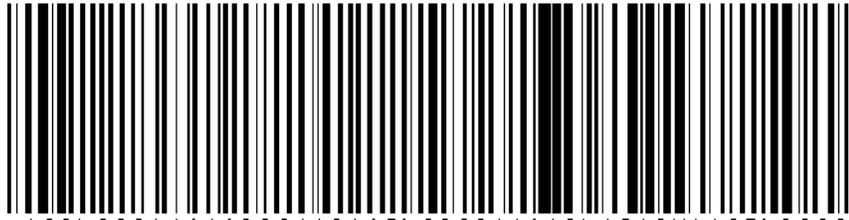
Figure A.1 – 4 inches x 6 inches Label

Example of a Ship-to/Mark-for common label typically used in a crossdocking environment. Zone F combined with zone E. Store number bar code is added for automatic sortation by the receiver. Serial Shipping Container Code (SSCC) is on the bottom.

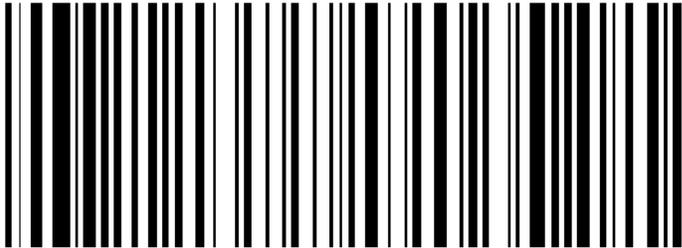
GRAND SUPPLIER COFFEE

SSCC
3 0614141 123456789 1

ITEM No	QUANTITY
00614141000418	20 Cases
BEST BEFORE (ddmmyy)	BATCH
14.02.00	4512XA



(02) 00614141000418 (15) 000214 (10) 4512XA (37) 0020



(00) 3 0614141 123456789 1

Figure A.2 – 6 inches x 8 inches Label

GS1 pallet label with supplier information only using bar code concatenation. The upper part of this label is a human translation of the data in the bar code symbols.



Figure A.3 – 4 inches x 4.5 inches Label

Example of label variation for use on small height package. This example illustrates information presentation and location that is, given the space constraints, consistent with the information zone concept.



Figure A.4 – 4 inches x 3 inches Label

Example of SSCC label supplied for pull-and-peel process that can be used to link SSCC labels applied to containers with shipper and carrier documentation. The top two symbols are applied to copies of the bill of lading, while the bottom symbol is applied to the shipping container.

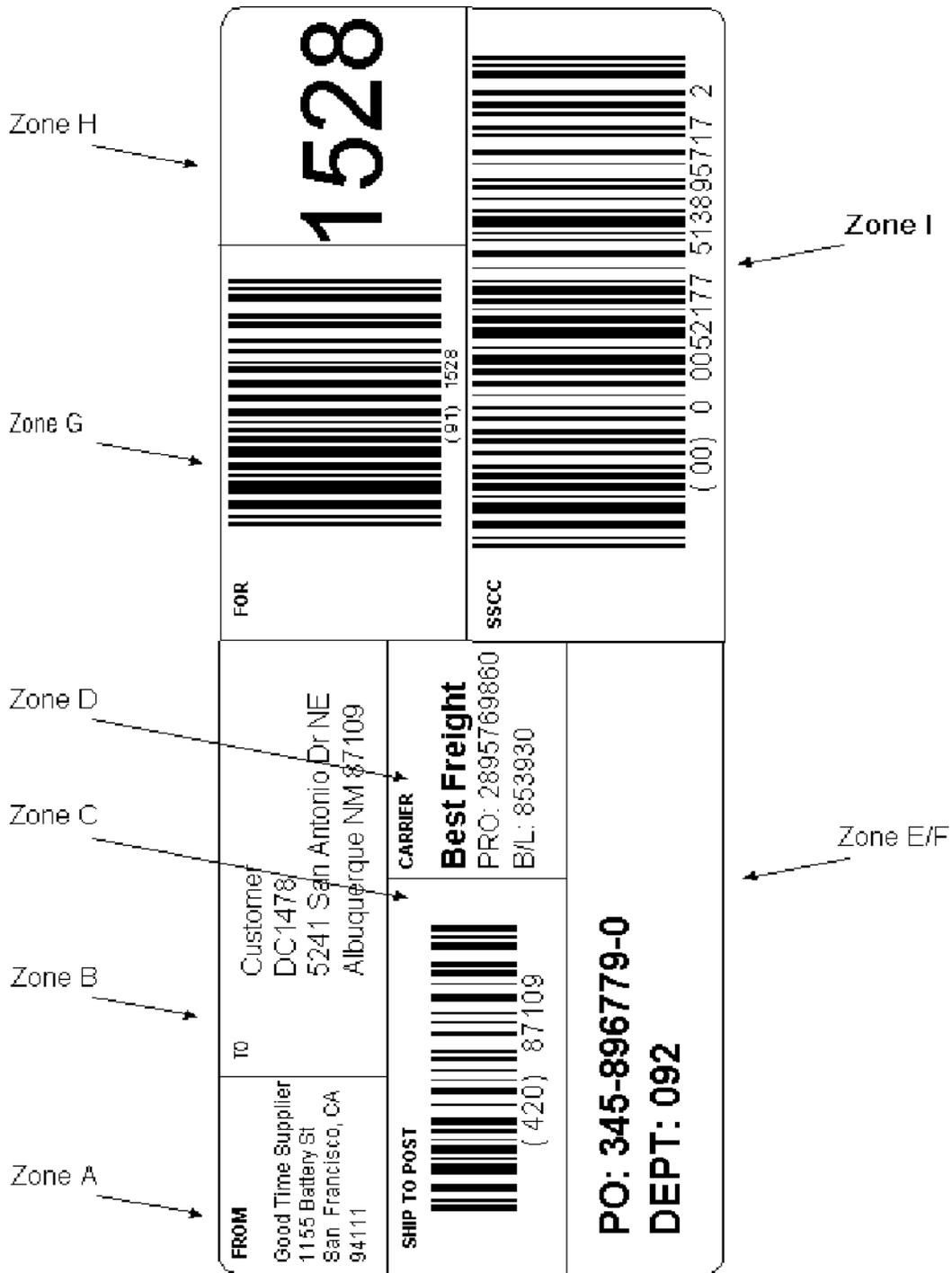


Figure A.5 – 3 inches x 8 inches Label

Example of label variation for use on small height package. This example illustrates information presentation and location that is, given the space constraints, consistent with the information zone concept.



Figure A.6 – 6 inches x 3 inches Label

Example of a basic container label. Typically used on pallets for truckload shipments. Larger SSCC allows for longer range of scanning in warehouse operations.



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