



3.1 Introduction

A logistic unit is an item of any composition established for transport and/or storage which needs to be managed through the supply chain. Tracking and tracing logistic units in the supply chain is a major application of the GS1 System.

Each day, hundreds of thousands of companies sell millions of products. The products can be transported in a multitude of configurations and packaging types. Shipments may consist of single pieces, cases or cartons, part or whole pallets, containers, etc., and each packaging type itself may be composed of a homogeneous product or products, or may involve a non-standard mix of products picked to meet individual customer orders.

In addition, the goods may be transported by a number of different means, for example truck or rail, couriers, airlines or shipping lines, and through different modes, for example road, sea or air.

At various points in the supply chain, different parties will require information in order to receive, track, sort, store, pick or pack products before the goods are finally reshipped to another destination or consumed. This physical goods flow is therefore accompanied by a supporting information flow. As a result of increased global competition and prevailing lower margins, the organisational, data processing, and personnel costs, as well as the accuracy, reliability and speed with which this information is made available, has acquired an increasing importance.





3.2 Identification of Logistic Units using the Serial Shipping Container Code (SSCC)

Within the GS1 System the unique non-significant number which is used to identify logistic units is the Serial Shipping Container Code (SSCC). It provides the link between the physical logistic unit and information pertaining to the logistic unit that is communicated between trading partners using Electronic Data Interchange (EDI).

In principle, the SSCC provides a unique reference number that can be used as the key to access information regarding the logistic unit in computer files.

In an environment where EDI is used to transmit the detailed information pertaining to each logistic unit, or where the information is already within a database, the SSCC acts as the reference point to information.

For example, the sender communicates to the recipient, in advance via EDI, the SSCCs of each logistic unit and all the relevant shipment and container information. The shipment information will usually include shipment date and time, expected arrival date and time, carrier identification, references to a customer purchase order number or contract, etc. Container information will include the product or products and the relevant quantities contained in each shipping container identified by a SSCC, along with such additional information as a final delivery location(s), best before date, expiry date, batch number, etc. The recipient stores this information in a computer database. Upon receipt of a shipment the receiver scans the bar coded SSCC. All the relevant information stored on file for that particular shipping container is transmitted from the data base to the application for further processing.

When EDI is not available in all points in the supply chain, or when it is simply impossible to send an EDI despatch advice message due to extremely short delivery lead times, bar coding variable data on the shipping container itself may be appropriate.



3.3 Allocating An SSCC

The SSCC is a unique, non-significant, eighteen-digit number which is assigned by the company constructing the logistic unit. It remains the same for the life of the logistic unit. The SSCC is encoded in a GS1-128 Bar Code and is represented by the Application Identifier (AI) 00. For more information on AI (00) refer to chapter 5, AI (00) - Identification of a Logistic Unit on page 92.

When assigning an SSCC, an individual SSCC number must not be reallocated within one year of the shipment date from the SSCC assignor to a trading partner.

How you allocate an SSCC depends on the length of your assigned GS1 Company Prefix. For GS1 Australia members this depends on whether you joined GS1 Australia prior to May 1996, in which case you were allocated a seven-digit GS1 Company Prefix or after May 1996 and were allocated a seven- to nine-digit GS1 Company Prefix.

	AI	Ext. Digit	GS1 Company Prefix	Serial Reference	Check Digit
Nine-Digit GS1 Company Prefix	00	0-9	n ₂ n ₃ n ₄ n ₅ n ₆ n ₇ n ₈ n ₉ n ₁₀	n ₁₁ n ₁₂ n ₁₃ n ₁₄ n ₁₅ n ₁₆ n ₁₇	n ₁₈
Seven-Digit GS1 Company Prefix	00	0-9	n ₂ n ₃ n ₄ n ₅ n ₆ n ₇ n ₈	n ₉ n ₁₀ n ₁₁ n ₁₂ n ₁₃ n ₁₄ n ₁₅ n ₁₆ n ₁₇	n ₁₈

TABLE 38 Serial Shipping Container Code (SSCC) Structure

The Application Identifier (AI) is used to indicate that the data following is an 18-digit SSCC.

The Extension Digit is used to increase the capacity of the Serial Reference within the SSCC. It is assigned by the company that constructs the SSCC.

The GS1 Company Prefix used should belong to the company originating the logistic unit, which is not always the brand owner. It makes the SSCC unique worldwide but does not identify the origin of the unit.

If you have obtained a prefix to allocate twelve-digit GTINs either directly from GS1 US, GS1 Canada or via GS1 Australia, you must add a leading zero to this prefix after the Extension Digit.

The Serial Reference is structured at the discretion of the company responsible for its assignment to uniquely identify each transport package. The method used to allocate the Serial Reference is at the discretion of the company bar coding the unit.

The Check Digit is mathematically calculated and ensures the whole number is correct. Correct calculation is essential for successful scanning of the bar code.

A Check Digit calculator program which will automatically calculate the Check Digit can be obtained from the GS1 Australia web site at www.gs1au.org.

For instruction on manually calculating the Check Digit please refer to chapter 2, section 2.4 Manual Check Digit Calculation on page 53.

Note: The AI (00) is not part of the Check Digit calculation.,

For either method of calculating the Check Digit use the SSCC option.





3.4 Labelling the Logistic Unit

The organisation responsible for the printing and application of the label determines content, format and the dimensions of the label. However, the SSCC is the minimum requirement in the logistics label. Any other information over and above the SSCC should comply with the specification of this section and with the proper use of AIs.

Label Layout

The layout of the logistics label accounts for the supply chain process by grouping information into three logical sections for the supplier, customer and carrier, generally in this order. Each label section may be applied at a different point in time as relevant information becomes known. For example, the physical content of the unit is typically defined at finished goods distribution. At this point the identification of the logistic unit as an entity is possible. However, other elements of information, such as final destination or the composition of a mixed shipment are not typically known until further in the supply chain. In a trading relationship, different elements of information are generally known and applied by the supplier, carrier, and customer.

Supplier section

The supplier section contains information that is generally known at the time of packaging by the supplier. It is mandatory that the SSCC is applied at this point to identify the unit. If a GTIN is also used at this point it can be applied at the same time.

Other attribute information that may be required or useful by the supplier, customers, and carrier(s) can also 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.

Customer section

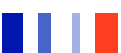
The customer section contains information that is generally known at the time of order and order processing by the supplier. This information can include ship-to location, purchase order number and customer-specific routing and handling information.

Carrier section

The carrier section contains information that is generally known at the time of shipment and is typically related to the transport of the goods. Information may include ship-to postal codes, consignment numbers and carrier specific routing and handling information.

For each label applied to the logistic unit, the top section of the label contains free format information, the middle section contains text information and the Human Readable Interpretation of the bar code(s) and the lowest section contains the bar codes.

Examples of GS1 Logistics Labels can be found under “GS1 Logistics Label Examples” on page 67





Label Dimensions

The physical dimensions of the label are determined by the company applying the label to the logistic unit. However, the size of the label should be consistent with the information required in all sections of the label. Factors affecting label dimensions include the amount of information required, content and magnification of the bar codes used, and the dimensions of the logistic unit itself.

The business requirements for most users of the GS1 Logistic Labels are met by using one of the following:

- A6 format (105mm x 148mm) which is particularly suitable when only the SSCC, or the SSCC and limited additional data is encoded
- A5 format (148mm x 210 mm)



3.5 Bar Code Specifications

3.5.1 Bar Code

The GS1-128 Bar Code Symbology is used for GS1 Logistics Labels. This symbology enables not only the GTIN to be encoded, but by using Application Identifiers (AIs) it also allows attribute data to be encoded. Each AI is a two-, three- or four-digit prefix that defines the meaning of the data that follows. AIs allow data to be represented in bar codes in a form that is unambiguously and securely interpreted when scanned.

3.5.1.1 Concatenation

Concatenation (stringing data elements together) is an effective means for presenting multiple element strings in a single bar code and should be used to conserve label space and optimise scanning operations. However, concatenation shall not be used with the GS1-128 Bar Code containing the SSCC on cartons or outer cases due to the scanning environment. To help maintain the required symbol height and magnification SSCC concatenation is not recommended on pallets when using the standard A6 format.

3.5.1.2 Magnification

The magnification range for the GS1-128 Bar Code containing the SSCC is 48.7% to 92.5% (X-dimension 0.50mm – 0.94mm).

Selecting a magnification factor at the higher end of the specified range will always enhance the reliability of scanning. However, if the information required cannot be accommodated in the space available, a lower magnification factor may be used for other bar codes on the logistics label that do not contain the SSCC. In any case, the magnification factor shall not be lower than 25% (X-dimension 0.25mm). Quality of the printed bar codes should be carefully checked, especially at lower magnification factors. If a magnification factor of less than 48.7% (X-dimension 0.50mm) is used it is likely that the reading distance will be reduced.

3.5.1.3 Height of Bars

The minimum bar height for the GS1-128 Bar Code containing the SSCC and for other bar codes on the Logistics Label is 32mm. There is no maximum for the bar height.



3.5.1.4 Human Readable Interpretation

This is the Human Readable Interpretation of the information represented in the bar code. This Human Readable Interpretation shall be no less than 3mm high, clearly legible, and preferably located below the bar code. It includes AIs and data content, but no representation of special bar code characters or Symbol Check Digits (but includes data Check Digits). It is used as a diagnostic check or, as a last resort, as back up in the event of the bar code failing to scan.

To facilitate key entry AIs should be set apart from the data by the use of parenthesis (brackets).

3.5.1.5 Bar Code Orientation and Placement

Bar codes shall be in picket fence orientation on logistic units. The bars and spaces shall be perpendicular to the base on which the logistic unit stands. In all cases, the SSCC shall be placed in the lowest portion of the label.

3.5.1.6 Number of Bar Codes on Unit

Whilst the absolute minimum requirement for pallets/logistic units is one bar code, for efficiency of scanning it is strongly recommended that at least two sides of the item be bar coded with the same data.

3.5.2 Text

Text facilitates operations which do not make use of bar code technology.

There are three types of text which can appear on a logistics label:

Plain text is text that has no bar code equivalent but is often required on a label. The name and address of the sender and receiver are typical examples. In many instances companies may also wish to add specific text to a label, e.g. company logos. All text shall be clearly legible and no less than 3mm high.

Human translation is text designed to support manual operations and to facilitate key entry in menu driven systems. It is the equivalent of information represented in a bar code, and is comprised of data titles and data content. Application Identifiers (AIs) are not included in human translation. Human translation should be at least 7mm in height.

Data titles are the standard abbreviated descriptions of data fields. They are used as prefixes in human translation to support manual interpretation of data fields. They can also be used adjacent to other text or bar codes to clarify content, such as "From" adjacent to a sender's address.

For a full list of relevant data titles refer to chapter 5, TABLE 42 List of Application Identifiers on page 89 .



3.6 Label Location

3.6.1 Cartons and Outer Cases

For cartons and outer cases, logistics labels should be placed so that the lowest edge of the bars of the GS1-128 Bar Code containing the SSCC are exactly 32mm from the base of the unit. Ensure that no part of the bar code (including Quiet Zones) is closer than 19mm from any vertical edge.

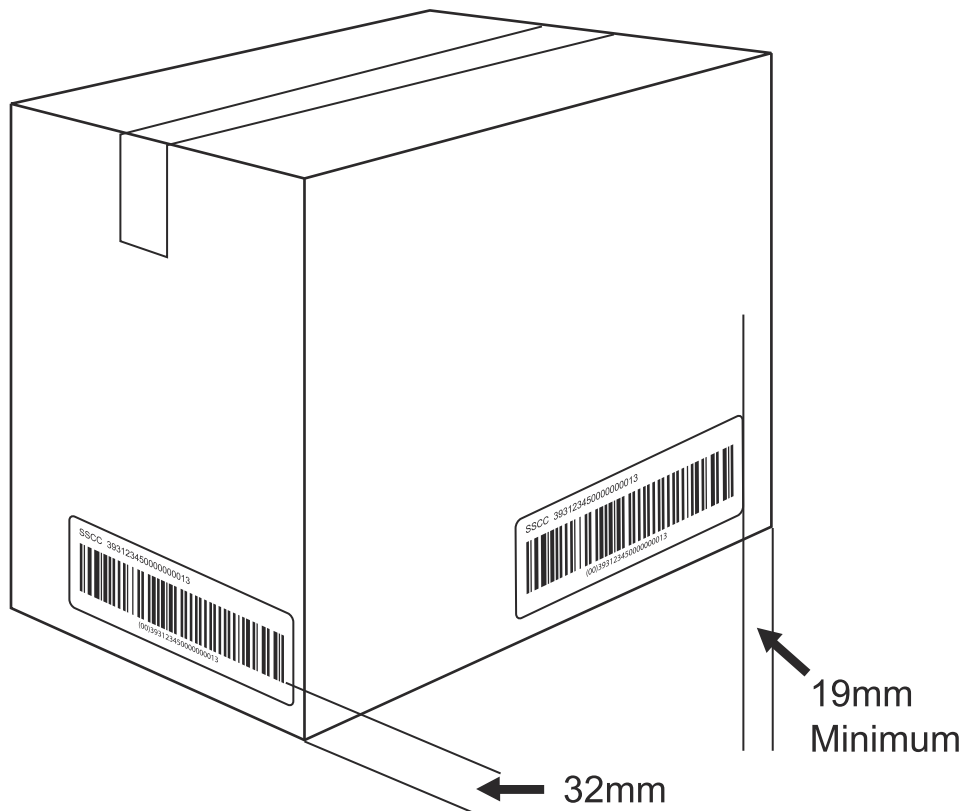


Figure 10 Logistics Label Location on a Carton

If the unit is already marked with an EAN-13, UPC-A, ITF-14 or GS1-128 Bar Code for trade item identification purposes, the logistics label shall be placed so as not to obscure the pre-existing bar code. The preferred location for the labels in this case is to the side of the pre-existing bar code, so that a consistent horizontal location is maintained.



3.6.2 Pallets

For all types of pallets, including full pallets containing individual trade items and single trade items, (such as a fridge or washing machine), bar codes should be placed at a height between 400mm and 800mm from the base of the unit. Including Quiet Zones, the bar codes should be no closer than 50mm from any vertical edge to avoid damage.

For pallets less than 400mm high, the bar code should be placed as high as possible while protecting the logistics label.

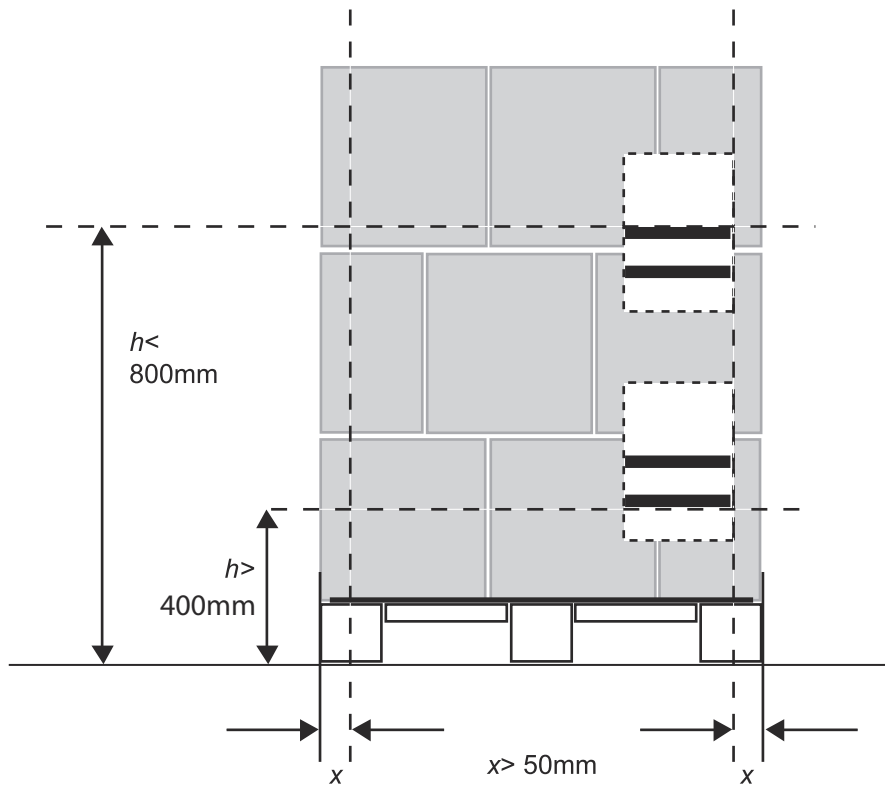


Figure 11 Logistics Label Location on a Pallet



3.7 GS1 Logistics Label Examples



Figure 12 The Basic Logistics Label : An SSCC





FROM GS1 Australia Unit 100/45 Gilby Road Mount Waverley Vic 3149 Australia	TO GS1 Global Office Blue Tower Avenue Louise 326, Bte 10 B1050 Brussels, Belgium
SSCC: 393123450000000013 Route: XY6789 Dimensions/Weight: 80x20x20cm / 50.0kg Billing No.: 5020613963 69 01 001/999	
 (403)XY6789  (00)393123450000000013	

Figure 13 Logistics Label with Supplier and Carrier Sections Example 1



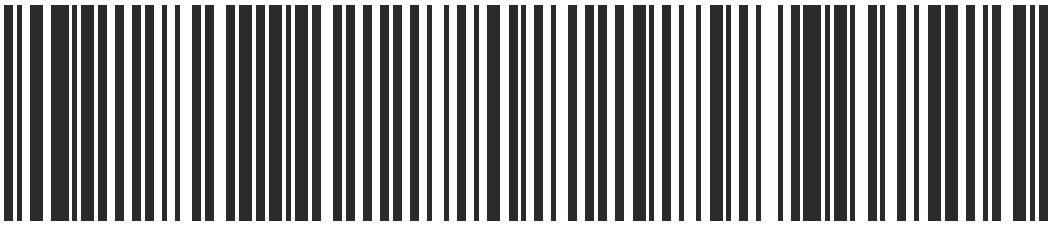
FROM GS1 Global Office Blue Tower Avenue Louise 326, Bte 10 B1050 Brussels, Belgium	TO GS1 Australia Axxess Corporate Park Bldg 4B, 2-4 Lord Street Botany, NSW, 2019
 (421)0363149	SHIP TO POST 0363149 B/L 853930 PRO 2895769860
SSCC 393123450000000020	
 (00)393123450000000020	

Figure 14 Logistics Label with Supplier and Carrier Sections Example 2

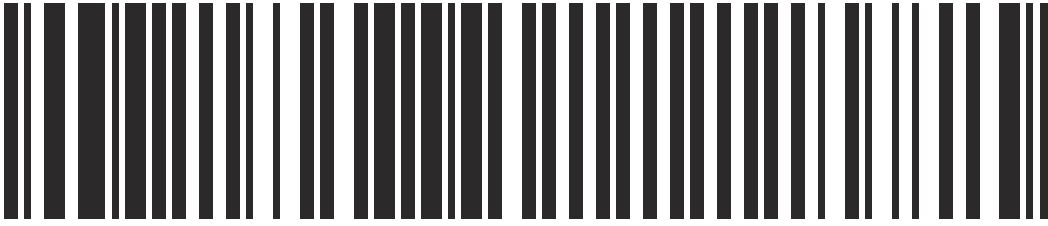


GS1 BEAN FACTORY

<p>SSCC 393123450000000037</p> <p>CONTENT 09312345000005</p> <p>USE BY (ddmmyy) 22/01/06</p>	<p>COUNT 20 Cases</p> <p>BATCH 2468</p>
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(02)09312345000005(17)060122(10)2468(37)20



(00)393123450000000037

Figure 15 Logistics Label with Supplier Section with Concatenated Data



<p>FROM GS1 Global Office Blue Tower Avenue Louise 326, Bte 10 B1050 Brussels, Belgium</p>	<p>TO GS1 Australia Axxess Corporate Park Unit 100/45 Gilby Road Mount Waverley Vic 3149</p>
<p>SHIP TO POST 0363149 B/L 853930 CONSIGNMENT 931234500002468135790</p>	
 <p>(421)0363149(401)931234500002468135790</p>	
<p>PO: 345-896779-0 Zone: 4</p>	<p>DWCP: 9684584-23 STORE #49</p>
 <p>(410)9312345000258</p>	<p>SHIP TO LOC 9312345000258</p>
<p>SSCC 393123450000000044</p>	
 <p>(00)393123450000000044</p>	

Figure 16 Logistics Label with Supplier, Customer and Carrier Sections