



The Global Language of Business

GS1 Logistics Label Guideline

Provides an overview of the normative rules and best practice recommendations based on GS1 Logistics Label implementations around the world.

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1 Introduction

The GS1 System is the most widely used supply chain standards system in the world and comprises the standards, guidelines, solutions and services created in formalised and collaborative processes.

The Transport & Logistics industry involves the movement of goods using multiple transport modes, including road, rail, air and maritime. T&L processes involve a wide variety of parties such as consignor and consignee, freight forwarders and carriers as well as official bodies like customs and port authorities. The often complex logistics flows and the variety of involved parties imply there is a need for easy physical identification of logistic units. GS1 offers a standard to help accomplish this: The GS1 Logistics Label.



This guideline provides guidance on how to physically identify logistic units using the GS1 Logistics Label. It is based on the GS1 Standards described in the GS1 General Specifications, and on best practices gathered in various implementation projects around the world.



Note: This guideline is the successor of the GS1 Standard International Logistics Label guideline [STILL].

1.1 Acknowledgements

These recommendations have been developed in collaboration with GS1 Member Organisations and the Transport & Logistics (T&L) Member Organisation Interest Group working closely with local communities on Transport & Logistics process efficiencies.

Special acknowledgements to GS1 in Europe, GS1 UK, GS1 Norway, GS1 Finland, GS1 Netherlands, GS1 Australia and GS1 US for providing their guidelines and deployment materials. These materials have served as a basis for this guideline, some of their texts and examples have directly been taken over into this guideline.

1.2 Scope of the guideline

1.2.1 Labelling logistic units

The main topic of this guideline is the labelling of logistic units. A logistic unit is an item of any composition established for transport and / or storage which needs to be managed throughout the supply chain.

The GS1 Logistics Label allows users to identify logistic units uniquely so that they can be tracked and traced throughout the supply chain. The only mandatory requirement is that each logistic unit must be identified with a unique serial number, the Serial Shipping Container Code (SSCC).

Scanning the SSCC barcoded on each logistic unit allows the physical movement of units to be matched with the electronic business messages that refer to them. Using the SSCC to identify individual units opens up the opportunity to implement a wide range of applications such as cross docking, shipment routing, and automated receiving. Besides the SSCC other information can be included on the GS1 Logistics Label.

1.2.2 Labelling trade items such as cartons and outer cases

Trade items such as cartons and outer cases will often have a barcode encoding the Global Trade Item Number (GTIN). The barcode may be an ITF-14, EAN/UPC or in case additional item data is needed a GS1-128 barcode. It is important to note that such labels, when not containing an SSCC, are not considered to be GS1 Logistics Labels. This guideline mainly addresses logistics labelling. However, at various places notes have been included to explain how information may be presented using the GS1-128 standard. These notes have been marked as follows:



Note: Carton / Outer Case Labels

1.2.3 Automatic Identification and Data Capture (AIDC) standards covered in this guideline

This version of the guideline covers the use of the GS1-128 barcode. It does not provide guidance on the use of 2D barcodes and EPC/RFID technologies.

1.3 Conventions applied in the guideline

1.3.1 References

References to documents, websites etc. are indicated as follows [REFERENCE, paragraph number (optional)]. The list of references with full details is included in section [11](#).

1.3.2 Rules and recommendations

Rules and recommendations are numbered per section. For example clause [\[2-3\]](#) is the 3rd clause in section [2](#). Clauses that are marked as '**normative**' are rules that are included in the [GS1 General Specifications](#), these must be adhered to in order to be compliant with the GS1 Standards. Clauses that are not marked as 'normative' are additional best practice recommendations.

1.3.3 Format of data elements

The following conventions are applied to indicate the format of GS1 Application Identifiers and data elements.

To indicate the allowed characters:

- N numeric digit
- X any character, see [GENSPECS, figure 7.11 – 1] for the allowed characters.

To indicate the length:

- Nn exact number of digits
- N..n maximum number of digits
- Xn exact number of characters
- X..n maximum number of characters

Examples:

- X3 exactly 3 characters
- N..18 up to 18 numeric digits

To indicate digit / character position:

- X_n
- N_n

Examples:

- N₃ numeric digit on position 3
- X₁₆ any character on position 16

2 Lay-out of the label


This chapter provides an introduction to the lay-out of the GS1 Logistics Label. For the technical rules see section [6](#).

2.1 Introduction

The information included on a GS1 Logistics Label comes in two basic forms.

1. Information to be used by people: This is comprised of Human Readable Interpretation (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.

 **Note:** HRI and Non-HRI Text.

For the purposes of interpreting this guideline, there are two types of text that appear on a label:

- HRI is the information below or beside a barcode which is encoded in the barcode and represents the same characters as carried in the barcode.
- Non-HRI Text is all other text on a label.

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 GS1 Application Identifiers.

2.2 Building blocks

On the GS1 Logistics Label a distinction is 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 building blocks:

1. The 'Free Format' building block may contain Non-HRI text and graphics.
2. 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).
3. The 'Barcodes and HRI' building block contains the barcode(s) including human readable interpretation (HRI).

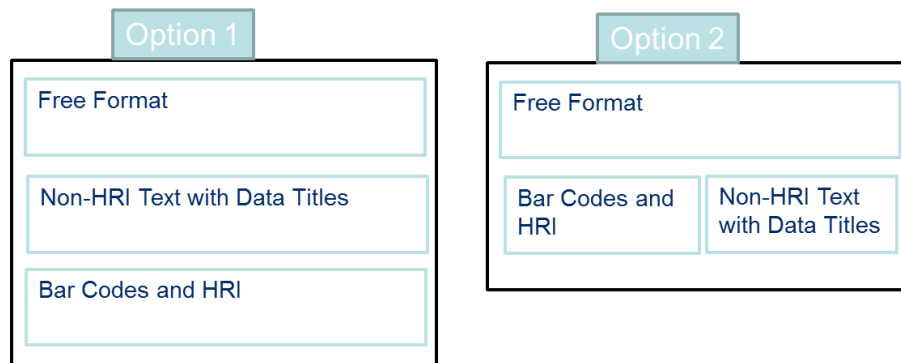
Figure 2-1 . Example of building blocks



Source: [GENSPECS]

On the label and within label segments these 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 below.

Figure 2-2 Placement of Building Blocks



2.3 Segments

The information to be included on the label may become available at separate stages. Also some information may need to be replaced during the lifetime of the logistic unit. Dividing the label into separate segments is a way to address this.

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.

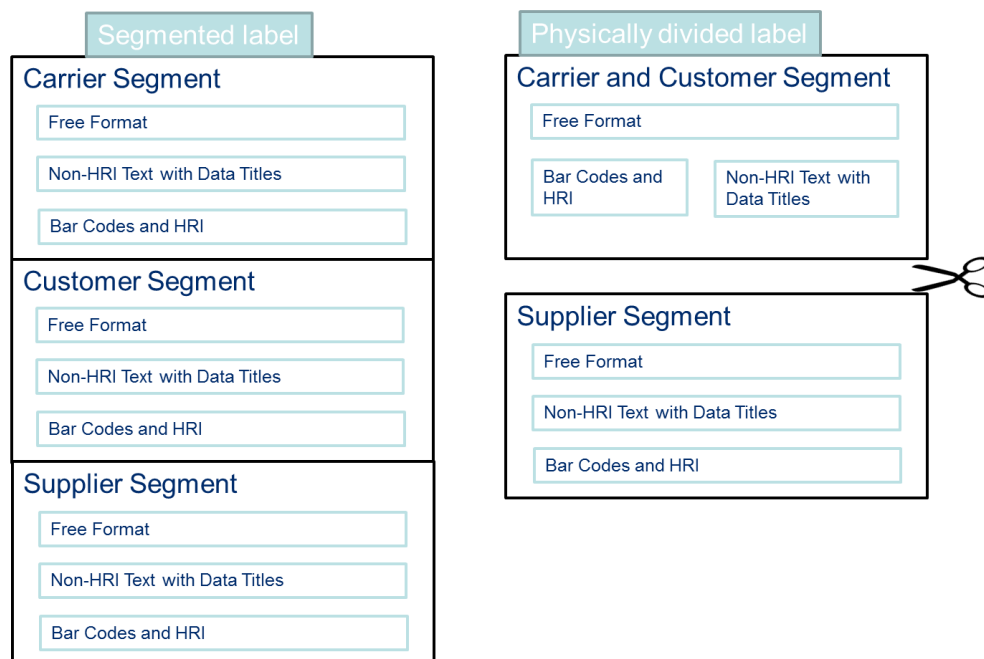
Segments may be printed separately in which case they must be placed vertically in close proximity of each other, with the segment containing the SSCC at the bottom. When segments are added separately, care should be taken not to obscure existing segments. The carrier segment may be replaced during the journey of the logistic unit, in which case special care should be taken to ensure the customer and supplier segments are preserved.



Important: When adding or replacing a segment an SSCC already present must never be replaced or changed.

When segments are used, within the segments the data still needs to be organised using building blocks as described in section 2.2. In that case segments are the primary grouping mechanism; building blocks are subordinate to that, see figure below for some examples.

Figure 2-3 Examples of label segmentation



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 unit identifier, along with the GTIN if used.

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.

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 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.

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.

3 How to include logistic unit information

3.1 SSCC

The format of the SSCC is as follows:

Extension Digit	GS1 Company Prefix	Serial Reference	Check Digit
N ₁	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

The Extension Digit can have any value from 0 to 9 and is used to increase the numbering capacity of the Serial Reference. Its use is at the discretion of the company allocating the SSCC.

The GS1 Company Prefix (GCP) is allocated by GS1 Member Organisations to the company that allocates the SSCC – here the physical builder or the brand owner of the logistic unit. It makes the SSCC unique worldwide but does not identify the origin of the unit. The length of a GS1 Company Prefix depends on each GS1 Member Organisation’s policy on number allocation.

The Serial Reference is a serial number created by the company allocating the SSCC. The simplest way to allocate the serial number is sequentially, for example00000, ...00001, ...00002.


The Check Digit is calculated using the algorithm defined by GS1. [GENSPECS, 7.10.1], also see [CHECK] for a calculator.

3.2 Including the SSCC on the label

[3-1] (Normative) The SSCC is the single mandatory element for all logistics labels. [GENSPECS 6.7.3].

[3-2] The SSCC should be assigned by the company that is creating the logistic unit, using its own company prefix.

If the logistic unit is not marked with an SSCC when it is received, the subsequent party in the supply chain may allocate the SSCC. This party can be a logistic service provider or the customer.

- 
Carton / Outer Case Labels: On product case labels where the GTIN is the primary identification key the SSCC is not included.

3.3 Extract of GS1 Application Identifiers for logistic unit information

AI	Full Title	Data Title	Format (*)
00	Serial Shipping Container Code	SSCC	N2 + N18

(*) *Format of the GS1 Application Identifier + Format of the data element*

4 How to include trade item information

4.1 When would I use this?

Items that are priced or ordered or invoiced are considered trade items and are identified by a GTIN. Typically, supply chains are most efficient when:

GTIN of ordered item = GTIN on the item being delivered = GTIN of invoiced item.

This is an important consideration in logistics label design.

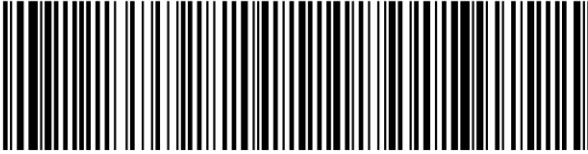

When it comes to including trade item information three types of logistic units can be distinguished:

- A homogeneous unit containing one type of trade item. All the items at the highest level of packaging are the same and are identified with the same GTIN. Example: a pallet containing 50 trade item groupings of shampoo.
- A heterogeneous logistic unit containing different types of trade items at the highest level of packaging that are identified with different GTINs. Example: a pallet containing 30 standard trade item groupings (e.g. boxes) of shampoo and 20 standard trade item groupings (e.g. boxes) of conditioner.
- A logistic unit that is also a traded unit that is priced or ordered or invoiced (that is part of the supplier's regular offer). Such logistic units can be homogeneous, for example goods in bulk, heterogeneous (for example display units), or a single product (for example a refrigerator, or a mobile phone transported as parcel).

For homogeneous logistic units and logistic units that are trade items it is possible to include information on the trade item(s) on the logistics label. This can be useful in situations where no despatch advice is used, or specific processes where the despatch advice information is not available, and for fail-safe reasons. For heterogeneous logistic units it is not possible to include trade item information on the logistics label and therefore the use of electronic messaging is strongly encouraged to support the exchange of data linked with the SSCC.

- ✔ **Carton / Outer Case Labels:** On heterogeneous logistic units it is possible to include trade item information on a product case label, using an EAN/UPC or ITF-14 symbol (GTIN only) or a GS1-128 symbol (GTIN and additional data).


Figure 4-1 Label including trade item information

GRAND SUPPLIER COFFEE	
SSCC 0 0614141 1234567890	
CONTENT 0061414100418	COUNT 20
BEST BEFORE 28.02.14	BATCH 451214
 (02) 0 0614141 00041 8 (15) 140228 (10) 451214 (37) 20	
 (00) 0 0614141 123456789 0	

Source [GENSPECS]

4.2 Trade item identification

[4-1] When the logistic unit is homogeneous, and is not a trade item, the contents of the pallet may be defined using AI (02) CONTENT, specifying the GTIN of the included trade items (the highest packaging level contained in the logistic unit).

 **Note:** Use of AI (02) is not the preferred option for regulated healthcare trade items.


[4-2] When the logistic unit is heterogeneous, and is not a trade item, no GTIN and related trade item information should be included.

[4-3] When the logistic unit is a trade item, the contents of the logistic unit may be defined using AI (01) GTIN, specifying the GTIN of the trade item.

[4-4] (Normative) AI (01) GTIN and AI (02) CONTENT must never be used together on a logistics label. [GENSPECS, 4.13.1]

[4-5] (Normative) AI (02) CONTENT may only be used in combination with AI (00) SSCC. [GENSPECS, 4.13.2]

[4-6] The trade item description may be included as free text.

 **Note:** Carton / Outer Case Labels: On GS1-128 product case labels where the GTIN is the primary key and the SSCC is not present, AI (01) must always be used to indicate the GTIN.

4.3 Identification of pieces of a trade item

When trade items are too large to be shipped as one logistic unit they will need to be split into separate pieces. This also occurs when some of the pieces have special packaging requirements, e.g. the glass door of a closet.

AI (8006) ITIP can be used for the identification of the individual pieces of a trade item. It consists of the GTIN, the piece number (2 digits) and the total number of pieces (2 digits). AI (8006) can be used on the product packaging on of the piece as well as on the GS1 Logistics Label.

The following rules address the main scenarios that have been identified:

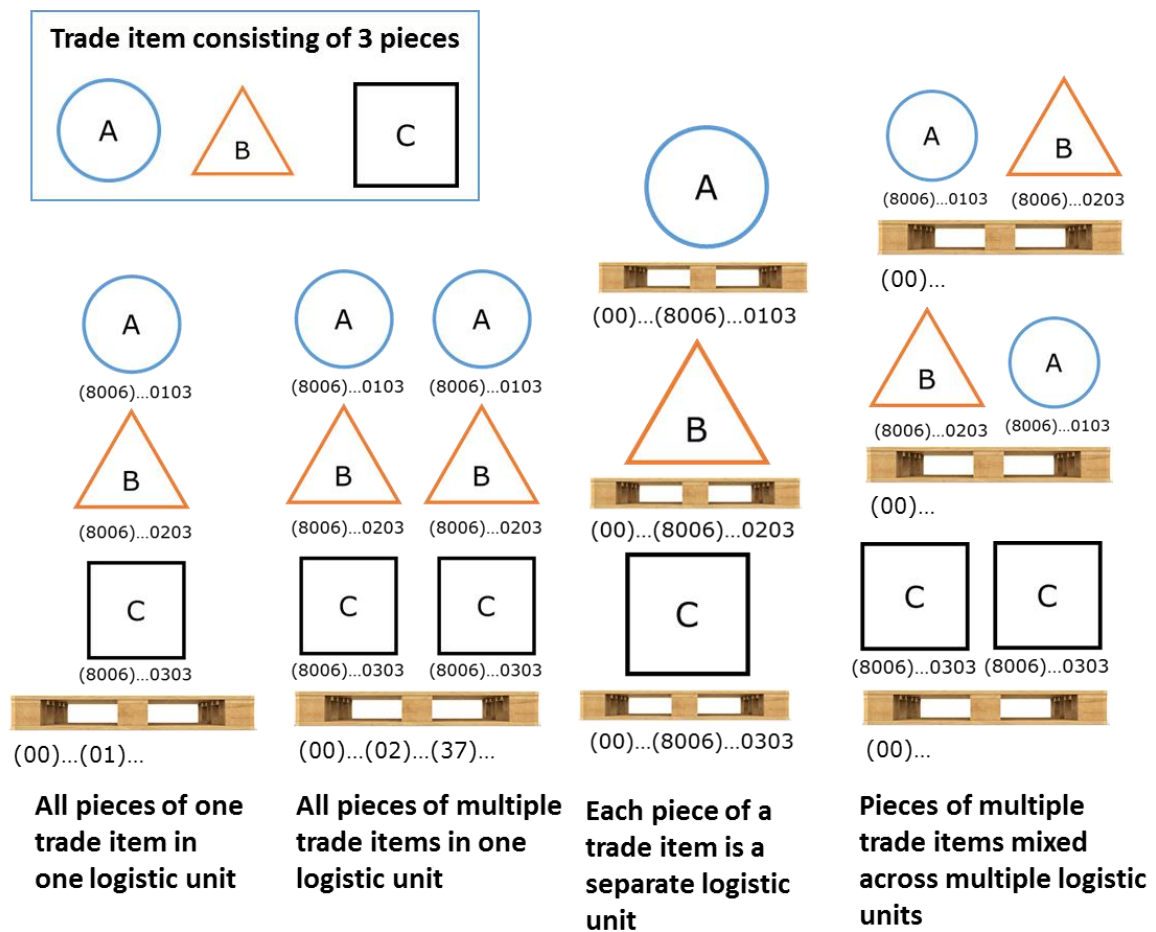
[4-7] All pieces of a single trade item are delivered together as one logistic unit: On the GS1 Logistic Label AI (01) may be used to identify the trade item, on the labels of the packages AI (8006) may be used for the identification of each individual piece.

[4-8] All pieces of multiple trade items are delivered together as one logistic unit: On the GS1 Logistic Label AI (02) and AI (37) may be used to identify the trade item, on the labels of the packages AI (8006) may be used for the identification of each individual piece.

[4-9] Each of the pieces of the trade item is delivered as a separate logistic unit: On the GS1 Logistic Label AI (8006) may be used to identify the trade item.

[4-10] The pieces of multiple trade items are mixed across several logistic units: On the GS1 Logistic Label no trade item information shall be included. On the labels of the packages AI (8006) should be used for the identification of each individual piece.

Figure 4-2 Identification of pieces of a trade item



4.4 Trade item quantity

[4-11] (Normative) When the identification of the contained trade items is provided by using AI (02) CONTENT, the number of trade items contained must be indicated using AI (37) COUNT. [GENSPECS, 4.13.2]

For example, a pallet of 12 cases of 4 bottles would be identified at the pallet level with AI (02) containing the GTIN of the case and AI (37) showing a quantity of 12 cases. If identified at the case level, AI (02) would contain the GTIN of the item inside the case, and AI (37) would show a quantity of 4. This identification tool may also be useful when communicating about broken quantities within a standard pallet or case.

[4-12] (Normative) The use of AI (37) COUNT is not allowed in combination with AI (01) GTIN. [GENSPECS, 4.13.1]

[4-13] When the logistic unit contains variable measure trade items, AI (30) may be used to specify the total number of items contained:

- When used in combination with AI (02) it denotes the total number of items across all contained trade items
- When used in combination with AI (01) it denotes the total number of items within the trade item itself.

4.5 Trade item measures

Trade (net) measures are used to complete the identification of a variable measure trade item. They contain information such as the weight, size, volume or dimension of a variable measure trade item and, therefore, should never be applied alone but with the GTIN (with leading '9').

[4-14] The use of one of the following metric measures is recommended depending on the nature of the product:

- net weight in kilograms – AI (310n*)
- length in meters – AI (311n*)
- area in square meters – AI (314n*)
- net volume in litres – AI (315n*)

* 'n' indicates the implied decimal point position

Depending on the method of production, some roll products cannot be numbered according to standard criteria that have been determined in advance. They are, therefore, classified as variable items. For those products where the standard trade measures are not sufficient, the following guidelines should be used.

[4-15] The GS1 Application Identifier (8001) indicates that the GS1 Application Identifier data fields contain the variable attributes of a roll product.

The variable values of a roll product, N₁ to N₁₄, consist of the following data:

- N₁ to N₄: slit width in millimetres (width of the roll)
- N₅ to N₉: actual length in metres
- N₁₀ to N₁₂: internal core diameter in millimetres
- N₁₃: winding direction (face out 0, face in 1, undefined 9)
- N₁₄: number of splices (0 to 8 = actual number, 9 = number unknown)

4.6 Trade item dates

Some products (e.g. skateboards, clothing) do not require any date. However, it is recommended to include dates on the GS1 Logistics Label whenever applicable.

Dates are important for inventory control systems, e.g. to realise First-in - First-out (FIFO) in a distribution centre. For many goods there are legal requirements for a date to be clearly

communicated to the end consumer. For example within Europe many of these rules are based upon European Commission Directives for specific product types.

[4-16] If applicable one of the following dates should be given, depending on the type of product (grocery or non-grocery):

- Production date: AI (11) PROD DATE
- Packaging date: AI (13) PACK DATE
- Best before date: AI (15) BEST BEFORE
- Sell by date: AI (16) SELL BY
- Expiry date: AI (17) EXPIRY

Figure 4-3 Logical sequence of date elements



The included date will normally be of the same type as the date indicated on the product itself (often for legal reasons). This allows for consistent tracking and tracing in the unlikely event of a product recall, as the date used on the logistics label will match the date marked on the product.

Traceability Systems will not work, and possibly legal requirements will not be met if the correct date is not used for example if AI (15) Best Before Date is used to encode an Expiry Date AI (17). AI (15) is a statement about quality (e.g. a bottle of drinking water past its best before date may have diminished quality but it should not be harmful). AI (16) indicates the date specified by the manufacturer as the last date the retailer is to offer the product for sale to the consumer. AI (17) is the date that determines the limit of consumption or use of a product (e.g. using a medical product after this date may pose a health risk).

The following general rules should be applied when using dates on the GS1 Logistics Label:

[4-17] (Normative) Dates always relate to the GTIN specified on the label as AI (01) GTIN or as AI (02) CONTENT or AI (8006) ITIP. [GENSPECS, 4.13.2]

[4-18] (Normative) For all of the date types mentioned in rule [4-12] only one date value can be specified on a logistics label. If the trade items contained in the logistic unit have various date values, these cannot be specified on the label. [GENSPECS, 4.13].

[4-19] Best practice for FIFO purposes: When trade items with multiple best before dates are loaded on the logistic unit, the date on the item first to reach expiration is used in both the despatch advice and on the label, to support the first in – first out process.



Carton / Outer Case Labels: On product cases the contained consumer units usually will have the same date value. This means such dates can be presented on a product case label.

[4-20] (Normative) When expressed in barcode form, the date format for each AI is always YYMMDD where:

- YY provides the tens and units of the year (e.g. 2006 = 06) and is mandatory
- MM provides the number of the month (e.g. January = 01) and is also mandatory
- Day provides the number of the day of the relevant month (e.g. second day = 02); For Best Before or Expiry Dates it may not be necessary to specify the day. In that case the field must be filled with two zeroes, and will be interpreted as the last day of the noted month.

4.7 Batch / lot number

The Batch or Lot number of the trade item(s) may be included as AI (10) BATCH/LOT, for example for tracking and tracing purposes.

[4-21] (Normative) The batch / lot number always relates to the GTIN specified on the label as AI (01) GTIN or as AI (02) CONTENT or AI (8006) ITIP. [GENSPECS, 4.13.2]

[4-22] (Normative) Only one batch number can be put on a logistics label. If a logistic unit contains products with different batch numbers (at the highest level of packaging), these batch numbers cannot be shown on the label. [GENSPECS, 4.13]

4.8 Serial numbers

A serial number may be included as AI (21) SERIAL, for example for tracking and tracing purposes.

[4-23] (Normative) The serial number always must be used in combination with a GTIN that is specified on the label as AI (01) GTIN or AI (8006) ITIP. [GENSPECS, 4.13.2]

4.9 Extract of main GS1 Application Identifiers for trade item information

AI	Full Title	Data Title	Format (**)
01	Global Trade Item Number	GTIN	N2 + N14
02	GTIN of trade items contained in a logistic unit	CONTENT	N2 + N14
10	Batch or Lot Number	BATCH/LOT	N2 + X..20
11	Production Date (YYMMDD)	PROD DATE	N2 + N6
13	Packaging Date (YYMMDD)	PACK DATE	N2 + N6
15	Best Before Date (YYMMDD)	BEST BEFORE or BEST BY	N2 + N6
16	Sell By Date (YYMMDD)	SELL BY	N2 + N6
17	Expiration Date (YYMMDD)	USE BY or EXPIRY	N2 + N6
21	Serial Number	SERIAL	N2 + X..20
30	Variable Count	VAR. COUNT	N2 + N..8
310n*	Net Weight, kilograms	NET WEIGHT (kg)	N4 + N6
311n*	Length or 1st dimension, metres	LENGTH (m)	N4 + N6
314n*	Area, square metres	AREA (m ²)	N4 + N6
315n*	Net volume, litres	NET VOLUME (l)	N4 + N6
320n*	Net Weight, pounds	NET WEIGHT (lb)	N4 + N6
37	Count of Trade Items contained in a logistic unit	COUNT	N2 + N..8
8001	Roll Products (Width, Length, Core Diameter, Direction, Splices)	DIMENSIONS	N4 + N14
8006	Identification of an individual trade item piece	ITIP	N4+N14+N2+N2

(*) 'n' is used to indicate the decimal point position.

(**) Format of the GS1 Application Identifier + Format of the data element

5 How to include transport and customer information

5.1 When would I use this?

Carriers (Logistic service providers) will often not have access to electronic information related to an SSCC. For them the inclusion of additional information is of the essence. Also customers / receivers may not always have access to all required information to properly process the logistic unit.

Typical information used for transport includes ship to postal code, consignment number, and carrier-specific routing and handling information such as a routing code. Typical customer information includes the ship to location, ultimate consignee address, purchase order number, shipment number, etc.

The label should facilitate automatic data capture of SSCCs when tracking packages and is also intended to be used for automatic sorting at transport terminals.

Transport information can be used for basic transport and delivery scenarios, but also in support of more advanced scenarios, such as order reconstruction.

Figure 5-1 Label including transport information

FROM BIG SUPPLIER 5th AVENUE NEW YORK USA	TO GREAT VALUE 8163 NEW CAJUN DAYTON, OHIO USA
SHIP TO POST  (420) 45458	CARRIER Best Freight B/L 853903 PRO 2895769860
SSCC  (00) 0 0614141 123456789 0	

Source [GENSPECS]

5.2 Customer (Receiver) name and address

The ship to address is necessary for carriers in order to know the delivery location and to be able to deliver the goods to the right destination.

[5-1] The ship to information must relate to the physical address where the goods need to be delivered, not to the postal address (except for postal transport).

[5-2] In case the goods are delivered via a cross-dock terminal the ship to information must relate to the physical address of the terminal. The final destination address must be specified separately, see paragraph 5.5 Ship for location / ultimate consignee.

[5-3] The exact Ship To location can be included using the Global Location Number (GLN) in AI (410) SHIP TO LOC.

[5-4] Partial identification of the Ship To location can be accomplished by including the postal code in AI (420) SHIP TO POST or AI (421) SHIP TO POST. The use of AI (421) is recommended, and has the following structure: Country code (ISO 3166-1 numeric 3 format) followed by postal code (alphanumeric maximum 9 characters).

[5-5] **(Normative)** AI (420) SHIP TO POST and AI (421) SHIP TO POST must never be used in combination. [GENSPECS, 4.13.1]

The customer name and address may be included as free text.

[5-6] Depending on the country, the address can be expressed by one or several lines.

[5-7] Inclusion of the postal code is strongly recommended.

[5-8] The country code in Non-HRI text should be based on ISO 3166 with alpha 2 code.

5.3 Supplier (Shipper) name and address

The supplier (shipper) name and address may be useful for carriers in order to know the origin of the logistic unit. The supplier (shipper) name and address may only be included as free text.

[5-9] The supplier (shipper) information may relate to the either the physical address where the goods came from or the business address of the supplier (shipper).

[5-10] Depending on the country, the address can be expressed by one or several lines.

[5-11] Inclusion of the postal code is strongly recommended.

[5-12] The country code in Non-HRI text should be based on ISO 3166 with alpha 2 code.

[5-13] It is recommended to depict the supplier (shipper) name and address in a smaller font than the customer (receiver) name and address.

5.4 Routing code

The routing code is a code used by the carrier to efficiently steer logistic units through its network. Its content and structure are at the discretion of the carrier issuing the code. The routing code is intended to provide carriers such as parcel networks with a migration path towards full adoption of the SSCC.

[5-14] The routing code can be included using AI (403) ROUTE.

[5-15] The routing code can also be included as free text information.

5.5 Ship for location / ultimate consignee

If the details of the ultimate consignee are known at the time when the logistic unit is constructed and labelled, it is strongly recommended to include the location number of the ultimate consignee using the AI (413) SHIP FOR LOC.

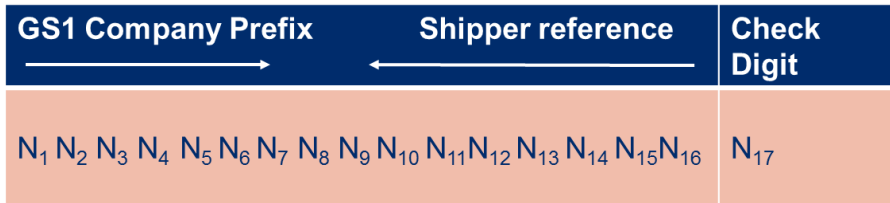
[5-16] The ultimate consignee location is included using the Global Location Number (GLN) in AI (413) SHIP FOR LOC.

[5-17] The ultimate consignee name and address may also be included as free text information.

5.6 Shipment identification

The shipment identification can be included on the label to ensure logistic units belonging to the same shipment will be delivered together. This can be important in cases where the goods are consolidated and deconsolidated during transport.

The GS1 Identification Key for shipments is the Global Shipment Identification Number (GSIN). The format of the GSIN is as follows:



The GS1 Company Prefix (GCP) is assigned by a GS1 Member Organisation to the company creating the shipment.

The Shipper Reference is a serial number created by the shipper. The simplest way to allocate the serial number is sequentially, for example00000, ...00001, ...00002.

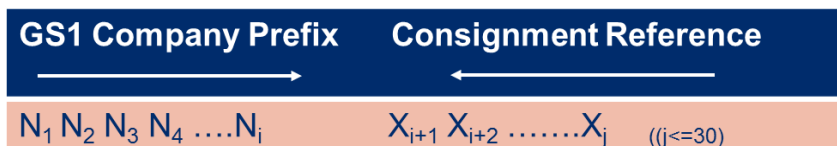
The Check Digit is calculated using the algorithm defined by GS1. [GENSPECS, 7.10.1], for a check digit calculator see [CHECK].

[5-18] The shipment identification should be included using the Global Shipment Identification Number (GSIN) in AI (402) GSIN.

5.7 Consignment identification

The consignment identification can be included on the label to ensure completeness of a group of logistic units being transported together under the same transport contract. This can be important in cases where the logistic units are transported by secondary transport operators, only responsible for part of the total journey (for example via rail or ocean).

The GS1 Identification Key for consignments is the Global Identification Number for Consignment (GINC). The format of the GINC is as follows:



The GS1 Company Prefix (GCP) is assigned by a GS1 Member Organisation to the company that allocates the GINC - here the freight forwarder or carrier of the transport units.

The Consignment Reference is a serial number created by the carrier or freight forwarder. Typically, the GINC is used by freight forwarders to instruct transport providers, and holds the Master Way Bill (MWB) Number, for example a Master Airway Bill (MAWB) or a Master Bill-of-lading (MBL).

[5-19] The consignment identification should be included using the Global Identification Number for Consignments (GINC) in AI (401) GINC.

5.8 Customer's purchase order number

The customer's purchase order number can be included on the label to ensure completeness of the receipt, and to expedite further processing (for example in case of rush orders).

[5-20] The customer's purchase order number can be included using AI (400) ORDER NUMBER.

5.9 Logistic measures

Weight information on the individual logistic unit as well as for the total shipment (for example in the form of nnn/nnn) can be useful information when transiting through intermediate warehouses. Depending on the situation, the label issuer may need to specify:

- Weight: 50 / 300 the parcel weight and the shipment weight are known.
- Weight: - / 300 only the total weight of the shipment is known.
- Weight: 50 / - only the weight of the parcel is known. Total weight is unknown.

Besides weight information also volume, area or dimensions may be of importance.

[5-21] The use of one or more of the following metric measures is recommended depending on the nature of the logistic unit:

- **logistic weight:** kilograms – AI (330n*), pounds – AI (340n*)
- **logistic volume:** litres – AI (335n*), cubic metres – AI (336n*), quarts – AI (362n*), gallons (US) – AI (363n*), cubic inches – AI (367n*), cubic feet – AI (368n*), cubic yards – AI (369n*)
- **area:** square metres – AI (334n*), square inches – AI (353n*), square feet – AI (354n*), square yards – AI (355n*)
- **kilograms per square metre** – AI (337n*)
- **length:** meters – AI (331n*), inches – AI (341n*), feet – AI (342n*), yards – AI (343n*)
- **width:** meters – AI (332n*), inches – AI (344n*), feet – AI (345n*), yards – AI (346n*)
- **height:** meters – AI (333n*), inches – AI (347n*), feet – AI (348n*), yards – AI (349n*)
- * 'n' indicates the implied decimal point position

5.10 Handling and processing instructions

Free Format

The label issuer can include text or symbols indicating manual handling instructions on the label as free text.

For example:

Symbol 1 (0 – 15 kg) **Symbol 2** (>15-25 kg) **Symbol 3** (>25 kg)



5.11 Extract of GS1 Application Identifiers for transport and customer information

AI	Full Title	Data Title	Format (**)
330n*	Logistic weight, kilograms	GROSS WEIGHT (kg)	N4+N6
331n*	Length or first dimension, metres	LENGTH (m), log	N4+N6
332n*	Width, diameter, or second dimension, metres	WIDTH (m), log	N4+N6
333n*	Depth, thickness, height, or third dimension, metres	HEIGHT (m), log	N4+N6
334n*	Area, square metres	AREA (m ²), log	N4+N6
335n*	Logistic volume, litres	VOLUME (l), log	N4+N6
336n*	Logistic volume, cubic metres	VOLUME (m ³), log	N4+N6
337n*	Kilograms per square metre	KG PER m ²	N4+N6
340n*	Logistic weight, pounds	GROSS WEIGHT (lb)	N4+N6
341n*	Length or first dimension, inches	LENGTH (i), log	N4+N6
342n*	Length or first dimension, feet	LENGTH (f), log	N4+N6
343n*	Length or first dimension, yards	LENGTH (y), log	N4+N6
344n*	Width, diameter, or second dimension, inches	WIDTH (i), log	N4+N6
345n*	Width, diameter, or second dimension, feet	WIDTH (f), log	N4+N6
346n*	Width, diameter, or second dimension, yard	WIDTH (y), log	N4+N6
347n*	Depth, thickness, height, or third dimension, inches	HEIGHT (i), log	N4+N6
348n*	Depth, thickness, height, or third dimension, feet	HEIGHT (f), log	N4+N6



AI	Full Title	Data Title	Format (**)
349n*	Depth, thickness, height, or third dimension, yards	HEIGHT (y), log	N4+N6
353n*	Area, square inches	AREA (i ²), log	N4+N6
354n*	Area, square feet	AREA (f ²), log	N4+N6
355n*	Area, square yards	AREA (y ²), log	N4+N6
362n*	Logistic volume, quarts	VOLUME (q), log	N4+N6
363n*	Logistic volume, gallons U.S.	VOLUME (g), log	N4+N6
367n*	Logistic volume, cubic inches	VOLUME (i ³), log	N4+N6
368n*	Logistic volume, cubic feet	VOLUME (f ³), log	N4+N6
369n*	Logistic volume, cubic yards	VOLUME (y ³), log	N4+N6
400	Customer's Purchase Order Number	ORDER NUMBER	N3 + X..30
401	Global Identification Number for Consignments (GINC)	GINC	N3+X..30
402	Global Shipment Identification Number (GSIN)	GSIN	N3+N17
403	Routing Code	ROUTE	N3+X..30
410	Ship To – Deliver To: GS1 Global Location Number (GLN)	SHIP TO LOC	N3+N13
413	Ship For – Deliver For – Forward To: GS1 Global Location Number (GLN)	SHIP FOR LOC	N3+N13
420	Ship To – Deliver To: Postal code within a single postal authority	SHIP TO POST	N3 + X..20
421	Ship To – Deliver To: Postal code with ISO 3166 country code	SHIP TO POST	N3+N3+X..9
(*) 'n' used to indicate the decimal point position. (**) Format of the GS1 Application Identifier + Format of the data element			

6 Label Lay-out rules

6.1 Free Format

The 'Free Format' building block may include any text or graphics not meant for automated processing. The name and address of the sender and receiver are typical examples. In many instances companies may also wish to add specific graphics to a label (e.g., company logos).

[6-1] (Normative) All text shall be clearly legible and no less than 3 millimetres / 0.118 inches high. [GENSPECS, 6.6.4.3]

6.2 Non-HRI Text with Data Titles

The 'Non-HRI Text with Data Titles' building block contains data elements with data titles. Text with data titles is text designed to support manual operations and to facilitate key entry in menu driven systems. It should at a minimum contain the text equivalent of all data elements represented in barcodes, and is comprised of data titles and data content.

[6-2] All barcoded data elements must also be included as text with data titles.

[6-3] (Normative) The data content should be at least 7 mm (0.28 inch) in height [GENSPECS, 6.6.4.2]

[6-4] (Normative) GS1 Application Identifiers (AIs) must not be included in the text with data titles. [GENSPECS, 6.6.4.2]

6.2.1 Data titles

Data titles are the standard abbreviated descriptions of element strings used to support the human 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.



Note: Data Titles may also be used adjacent to Barcodes and HRI.

[6-5] (Normative) For each included data field representing a barcoded data element the GS1 data title related to the AI must be included.

[6-6] (Normative) If there is no 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. For English data titles, the exact data titles as specified in the 'GS1 General Specifications' should be used. [GENSPECS, 6.6.4.2]

[6-7] Data titles should follow the format as specified in the 'GS1 General Specifications', in particular they should be presented in UPPERCASE when indicated.

[6-8] To avoid any ambiguity in the human interpretation of dates the data tag for dates may be followed by the chosen format. E.g. BEST BEFORE (dd.mm.yyyy): 24.12.2013. This is not to be confused with the format to be used within the barcoded data field which is always YYMMDD.

6.3 Barcodes and HRI

The 'Barcodes and HRI' building block contains the GS1-128 barcode(s) including their human readable interpretation (HRI).

The barcodes on the GS1 Logistics Label conform to the GS1-128 standard. The GS1-128 standard is a special version or subset of the Code 128 standard. GS1-128 barcodes can hold GS1 identification keys (GTIN, SSCC, GLN) and attribute data (batch/lot number, expiry date, etc.).

[6-9] (Normative) GS1-128 barcodes must be distinguished from Code 128 barcodes by the use of the special Function Code 1 immediately after the start character. If FNC1 is not included at the start of each symbol, the barcode will not meet the requirements of the GS1 System.

An enlarged section of the first part of a GS1-128 barcode showing the FNC1 in blue is shown below.

Figure 6-1 . FNC1 character in GS1-128 barcode.



Enlarged section of first part of a GS1-128 barcode showing the Function 1 character in blue

GS1 Application Identifiers

Each data field in a GS1-128 barcode is preceded by a GS1 Application Identifier (AI). GS1 Application Identifiers are internationally agreed numeric prefixes used within the GS1-128 barcode to identify the meaning and format of the data following each AI.

The data fields are either of fixed or variable length, depending on the AI. There is a range of AIs for additional data, such as weight, area or volume. Full details of all the GS1 Application Identifiers can be found in the 'GS1 General Specifications' [GENSPECS].

[6-10] All the data in each GS1-128 barcode is denoted by the use of the GS1 Application Identifiers, which specify the format of the data which follows them. This data may be numeric only, alphanumeric, fixed or variable in length.

Concatenation

A GS1 Application Identifier and the data that follows it are known as an element string, and several element strings may be shown in one GS1-128 barcode. This joining together of element strings is known as concatenation.

Concatenation is an effective means for encoding several AIs in a single barcode and should be used to save label space and optimise scanning operations.

[6-11] The best practice is to put data of fixed length before any variable data

[6-12] The order in which the element strings appear in GS1-128 barcodes is free. Good software contains optimisation procedures, which improves scanning and printing


[6-13] (Normative) The SSCC, defined by AI (00), shall always appear in the lowest barcode on the label [GENSPECS, 6.6.4.1.1].

[6-14] The SSCC can be alone or concatenated with other data in the same barcode. Concatenation shall not be used with SSCC on cartons and outer cases and on standard A6 / 4x6 labels.

X-dimension (Symbol size)

The X-dimension is the specified width of the narrowest element in a barcode symbol.

[6-15] (Normative) The allowed X-dimension range for the GS1-128 barcode symbol is between 0.495 mm (0.0195") and 0.94 mm (0.0370"). The target X-dimension recommended for the GS1-128 barcode symbol is 0.495 mm (0.0195"). [GENSPECS, 5.5.2.7, table 5].

 **Note:** If the item is too small to accommodate the minimum X-dimension, the minimum X-dimension is 0.250 millimetre (0.0098 inch). [GENSPECS, 5.5.2.7, table 5, note *]

[6-16] When multiple barcodes are used it is recommended to use similar X-dimensions. This helps scanning systems to work more effectively.

[6-17] Careful consideration should be given to the likely scanning environment (e.g., freezing can degrade print quality and using an X-dimension at the higher end of the permitted range can help to reduce this effect).

Barcode height

[6-18] (Normative) A minimum height of at least 31.75 mm (1.250") applies to all the GS1-128 barcodes on the label. The minimum symbol height indicated is for bar height only and does not include the Human Readable Interpretation. [GENSPECS, 5.5.2.7, table 5]



Note: If the item is too small to accommodate the minimum, the minimum bar height is the greater of 15 percent of the symbol width including Quiet Zones or 12.70 millimetres (0.500 inch). If the package is physically too small to accommodate this rule, further truncation is permitted, but in no case shall the bar height be less than 5.08 millimetres (0.200 inch). [GENSPECS, 5.5.2.7, table 5, note **]

Quiet zones / Light margins

[6-19] (Normative) Barcodes shall be printed with quiet zones (or light margins) at each side. The quiet zones must be at least 10 X-dimension (10 X) in width. Centred barcodes will help ensure the quiet zones are respected.

Orientation and placement

[6-20] (Normative) Horizontal orientation (picket fence orientation) of barcode symbols must be used on logistic units. In other words, the bars and spaces shall be perpendicular to the base on which the logistic unit stands.

Human readable interpretation

[6-21] All the data shown in each barcode should be provided below each symbol. Brackets (parentheses) are normally printed around each AI but these must not be encoded in the barcode. The data must be shown in characters at least 3 mm high and clearly legible.

[6-22] (Normative) The data must be shown in characters at least 3 mm high and clearly legible. [GENSPECS, 4.14]

AI uniqueness (no repetition)

[6-23] Each GS1 Application Identifier (AI) may only occur once on a logistics label.

6.4 Rules related to label segments

The order and top/down alignment of label segments may vary depending on the size of the logistic unit and the business process being served.

[6-24] (Normative) Within each separate label segment the building blocks must be placed according to the lay-out defined in section [2.2. Building blocks](#) [GENSPECS, 6.6.3.2]

[6-25] (Normative) A segment holding the SSCC shall always be present, and shall be positioned under any other segments. [GENSPECS, 6.6.3]

[6-26] Segments may be printed separately in which case they should be placed vertically in close proximity of each other, with the segment containing the SSCC at the bottom. When segments are added separately, care should be taken not to obscure existing segments.

[6-27] The carrier segment may be replaced during the journey of the logistic unit. The original SSCC should be preserved in that case, either by leaving the segment holding the SSCC intact, or by reproducing the original SSCC on the new label / label segment.

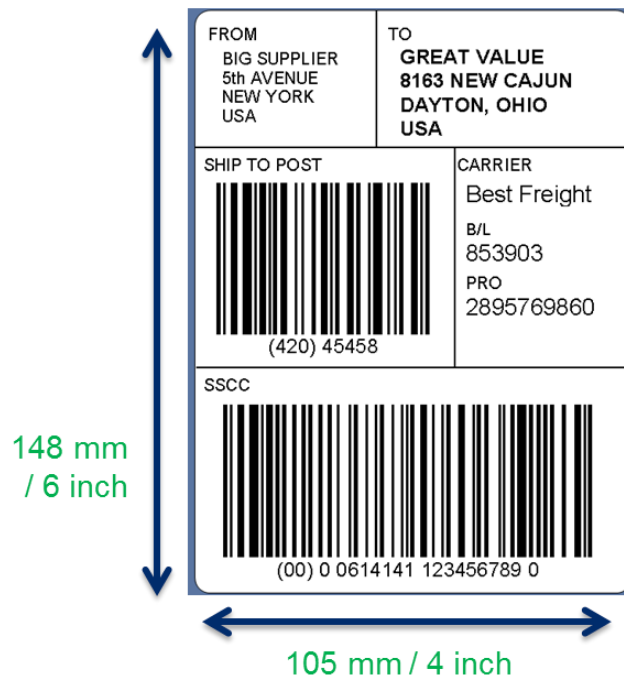
7 Size of the GS1 Logistics Label

The physical dimensions of the label are determined by the labeller, but the size of the label should be consistent with the data requirements for 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:

A. Compact label

- A6 (105 mm x 148 mm) or 4 x 6 inch, which is particularly suitable when only the SSCC, or the SSCC and limited additional data, is encoded. Applied for example on case labels.

Figure 7-1 dimensions A6 / 4 x 6 inch label



B. Large label

- A5 (148 mm x 210 mm) or 6 x 8 inch, suitable when additional data such as trade item data are needed. Applied for example on pallet labels.

Figure 7-2 dimensions of A5 / 6 x 8 inch label



C. Other size labels

- Other label dimensions are typically variations driven by data requirements or logistic unit size.

8 Label placement

8.1 Label placement on larger logistic units (pallets, roll cages, etc.)

[8-1] (Normative) 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. [GENSPECS, 6.7.1.1]

[8-2] (Normative) The symbol including its Quiet Zones, SHALL be at least 50 millimetres (2.0 inches) from any vertical edge to avoid damage. [GENSPECS, 6.7.1.1]

[8-3] Each logistic unit should at the minimum have one label. For pallets it is recommended that two sides of the item are labelled the exact same data, to ensure one label is always visible (e.g. pallets that are stored either long or short edge facing). On rolling logistic units a label on one side is usually sufficient.


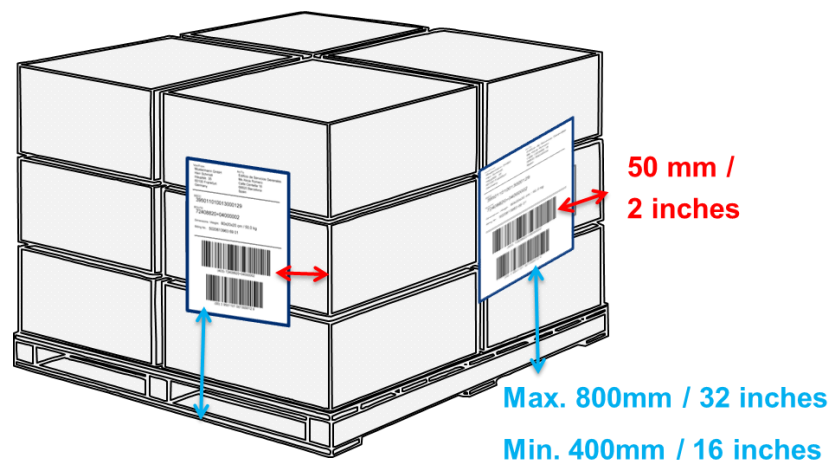

 **Note:** There is no regulation that specifies where the labels should be placed – to the left, in the middle, or to the right on these sides – but as most forklift operators are right-handed, the most ergonomically correct scanning is done when the labels are placed to the right of each side.

Figure 8-1 Example of label placement on pallets



 **Note:** This diagram is an example only and in some cases it may be necessary for two labels to be placed on opposite sides of the pallet.

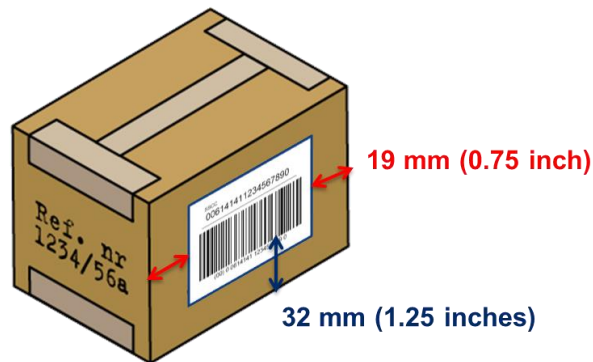
8.2 Label placement on smaller logistic units (including parcels)

[8-4] (Normative) 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. [GENSPECS, 6.7.1.2]

[8-5] (Normative) The symbol including its Quiet Zones, should be at least 19 millimetres (0.75 inch) from any vertical edge to avoid damage. [GENSPECS, 6.7.1.2]

[8-6] Each logistic unit should at the minimum have one label.

Figure 8-2 Label placement on cases



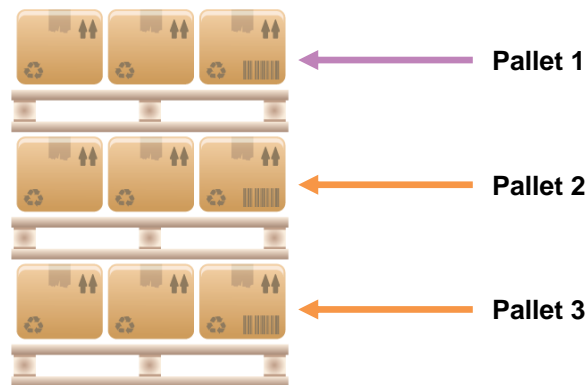
- ✔ **Carton / Outer Case Labels:** For Carton / Outer Case Labels the same guidelines apply. In situations where both a Carton / Outer Case Label as well as a Logistics Label need to be applied on the case, the recommendation is to place the GS1 Logistics Label to the left of the Carton / Outer Case Label, and to ensure that the information on the Carton / Outer Case Label remains visible.

8.3 Label placement on stacked pallets

Stacked pallets, also referred to as sandwich pallets, are groups of pallets that are stacked for shipment.

- [8-7] When pallets are stacked they should be considered independent logistic units (see Figure below), each pallet should be identified with a unique SSCC.

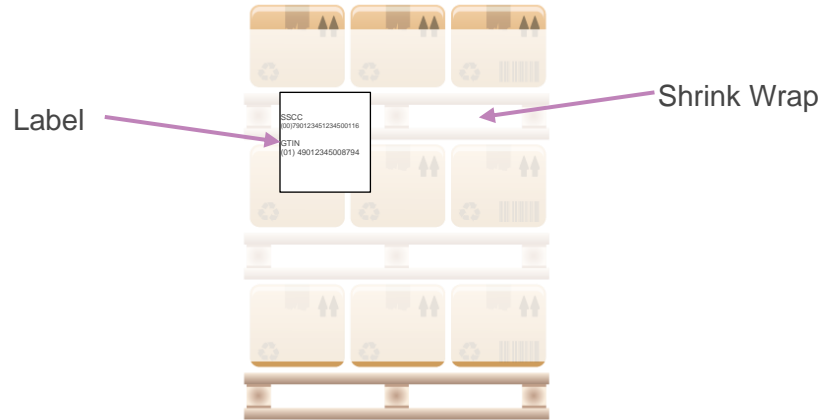
Figure 8-3 Stacked Pallets as Independent Logistic Units



- [8-8] If the group will be shipped as a unit and is physically joined using shrink-wrap, straps, or similar means (see Figure below), the group should be considered as a single logistic unit as well and an additional SSCC should be assigned to the stacked pallet group.

- ✔ **Note:** In cases where the stacked pallets are shipped as one single unit, the original labels should not be visible. A master label with the SSCC for the pallet group should be applied to the outside of the wrapping. The wrap and master label may be removed upon receipt and the labels for each stacked pallet will be used to identify each pallet for subsequent processing.

Figure 8-4 Stacked Pallets combined into a single logistic unit



9 Implementation considerations

9.1 Best practice processes by role

Usually the shipper of the goods will create the logistics label and apply it to the logistic unit. Responsibility for the correctness of all the information contained on the label is assumed to rest with the shipper.

If it is not the shipper but the carrier or receiver creating the label, or replacing the label, or adding additional information to the label, this party is responsible for content and quality its own data and its compliance with data already present.

The table below lists various parties and how they may use the label in their business processes depending on the role they play.

Role of party	Best practices
Raw Materials Supplier	Provides a pallet label on pallets of raw materials when shipping to a supplier.
Manufacturer/Supplier	<p>Receives raw materials by scanning pallet labels and stores raw materials using these labels to identify the raw materials and to provide traceability.</p> <p>When producing finished goods will produce a new pallet label and use this as the identifier for internal storage.</p> <p>The pallet label's SSCC will also be used to identify stock when loaded onto outbound transport for transfer between distribution centres and for customers.</p> <p>If building a new pallet for a business customer they will affix a new pallet label.</p>
Consolidator	<p>Scans the pallet label to record the stock received.</p> <p>If storing stock will use the pallet label's SSCC as the identifier.</p> <p>If sending out the received pallets they will scan the pallet labels again when loading outbound transport.</p> <p>If breaking down and rebuilding pallets they will remove the old pallet labels and replace them with new pallet labels.</p>
Distribution Centre (of customer retailer)	<p>Scans the pallet label to record the stock received.</p> <p>If storing stock will use the pallet label's SSCC as the identifier.</p> <p>If building a new pallet for a business customer they will affix a new pallet label.</p>
Customer (typically a business customer)	Scans the pallet label to record the stock received.
Warehouse Service Provider / Co-packer	<p>Receive the stock using the inbound pallet label.</p> <p>Add value to the stock then build stock onto new pallets and affix a new pallet label.</p> <p>Retain a record of the relationship between the stock in the old consignment and stock in the new consignment.</p>
Cross-docking between DCs	If dispatching or transferring the pallets between distribution centres, sending DC will scan the pallet labels when loading internal and outbound transport and scan them again to acknowledge receipt.
Transport Service Provider	<p>Scans the goods upon loading to record the logistic units.</p> <p>Scans the goods upon unloading to record the logistic units.</p> <p>Provides status information on logistic unit level.</p>

9.2 Label implementation scenarios

Depending on the business scenario various label formats may be implemented. Some typical variants are:

- A pre-printed SSCC-only label is a good option when there is no 'print and apply capability'. Pre-printed SSCC labels are applied to a logistics unit, scanned and then electronically associated to the GTINs and all related data. A pre-printed label can be applied anywhere in the supply chain (from when the pallet is produced to when it is received by a customer).

- A production label containing supplier and trade item information can be printed and applied at the time the pallet (logistics unit) is manufactured. This label can stay with the pallet/logistics unit through the supply chain if it is delivered in a full pallet quantity to the customer.
- A picked pallet label is printed and applied at the time the pallet (logistics unit) is picked for a customer, and may contain supplier, customer and carrier information.
- An existing SSCC label (e.g. pre-printed SSCC-only label or production label) is already applied, and the carrier or customer data is added by applying an additional label segment.

9.3 Shipper / Supplier

The shipper may be the supplier or a logistic service provider acting on behalf of the supplier.

If the LSP acts as the shipper, after the supplier receives an order an Instruction to Despatch will be sent to the LSP. The LSP should be able to pick and load the shipment according to the instructions, this could include a reconfiguration of existing logistic units.

9.3.1 Pre-requisites

- [9-1] The shipper / supplier should have the ability to communicate electronically.
- [9-2] Trade item data alignment is a prerequisite in order to enable efficient shipping and receiving process. The shipper / supplier should ensure that master data have been communicated to the receiver / customer.
- [9-3] Each warehouse should have scanners to read the GS1-128 barcode(s) printed on the labels

9.3.2 Creating the SSCC

- [9-4] SSCC numbers should be generated out of the logistics management system, e.g. the warehouse management system (WMS) or ERP.
- [9-5] The shipper should use its own GS1 company prefix to generate the SSCC.

Note: If the shipper uses a cloud service to generate labels, SSCCs are usually generated from the IT solution provider's GS1 company prefix. This may lead to weaker traceability, and is an incorrect use of the GS1 standards.
- [9-6] SSCCs that have been created should be archived for traceability purposes.

Figure 9-1 Examples of system integration issues



9.3.3 Printing the label

Preparation

- [9-7] Standard size of pallet labels are recommend, e.g. A5 or A6 sizes.
- [9-8] Label material and ink have to be compatible. Material or ink which is sensitive for heat is not acceptable, e.g. avoid thermal paper that changes colour when exposed to heat or sun, and inks that can be easily smudged.
- [9-9] It is recommended to print black barcodes on a white background.
- [9-10] Recycling of packaging materials is becoming increasingly important. Implementers should be aware of the recycling characteristics of the applied the label material. E.g. aligning shrink-

wrap material and label materials (for example by using plastic labels) may help to improve the recycling rate of pallet materials.

[9-11] The label printer should be checked regularly to ensure it is up and running, and serviced and calibrated correctly.

Label verification

[9-12] Label verification during implementation should include three different levels (see appendix A for a detailed implementation verification procedure):

- Visual check of a label
- Relevant information on a label
- Technical parameters = barcode symbol verification.

[9-13] After implementation, in the operational phase, regular verifications should be performed to maintain label quality.

Figure 9-2 Examples of printing-related issues



9.3.4 Attaching the label

It is important the right label(s) is / are attached to the right logistic unit and the labels are scannable.

[9-14] When not attached automatically, an option is to print labels for each logistic unit one at the time in order to limit risk of applying the wrong label.

[9-15] Other common problems to avoid are:

- Wrinkling when applying the label.
- Incorrect placement of the label.
- Obscured label (over wrapping / seal).

Figure 9-3 Examples of placement issues



9.3.5 Sending the transport instruction

[9-16] If available at the time that the transport instruction is sent to the LSP, the transport instruction should specify the SSCCs of the logistic units to be transported.

9.3.6 Staging / Loading the logistic units

[9-17] Only loaded pallets should be scanned. This ensures correct delivery information for despatch advice / ASN and transport documents.

9.3.7 Sending the Despatch Advice / ASN

[9-18] The Despatch Advice / ASN should be sent upon staging / loading of the goods, in order to maximise the chance that the information matches the actual shipment.

[9-19] The Despatch Advice / ASN should specify for each logistic unit the SSCC and the contained trade items.

[9-20] The variable data related to the trade item must match the information of the actual goods present on the logistic unit.

9.4 Carrier

The optimal collaboration between a supplier (shipper) – carrier – customer (receiver) is crucial for an efficient shipping and receiving process, and the carrier plays a central role.

9.4.1 Pre-requisites

[9-21] The carrier should have the ability to communicate electronically

[9-22] Each truck should have a scanner to read the barcode(s) printed on the labels

9.4.2 Processing the Transport Instruction

[9-23] In the Transport Instruction information on the logistic units that need to be transported may be included. If that is the case the carrier should ensure that this information is communicated to the person in charge of the transport execution, for example the driver.

9.4.3 Loading the logistic units

[9-24] The carrier may scan the label in order to register which logistic units were loaded.

[9-25] When a label is already present additional transport data is best added on an extra label, attached adjacent to and preferably above the already present label. When a label is added

separately, care should be taken not to obscure the existing label. The extra label should only contain data not yet present on the other label.

Any additional labels that contain information already present on other labels pose a potential risk for non-scans/confusion.

Figure 9-4 Example of issues occurring during transport

**Transport label
hiding the original**



Damaged label



When no label is present

[9-26] When no label is present upon collecting of the goods the carrier may generate the SSCC based on its own GS1 company prefix and for example create an SSCC-only label or a transport label.

9.4.4 Unloading the logistic units

[9-27] The carrier may scan the label in order to register which logistic units were unloaded.

9.4.5 Sending the Transport Status Notification / Information on Delivery (IOD)

[9-28] Upon completion of the delivery the carrier should send a Transport Status Notification informing his client on the completion of the transport order and on any discrepancies that occurred.

9.5 Receiver / Customer

The receiver may be the customer, for example a retailer, or a logistic service provider receiving the goods on behalf of the customer.

9.5.1 Pre-requisites

[9-29] The receiver / customer should have the ability to communicate electronically

[9-30] Master data of the trade item need to be in place. Unknown items cannot be received efficiently.

[9-31] Each warehouse should have scanners to read the barcode(s) printed on the labels

[9-32] Each warehouse should have a warehouse management system to support the receiving process

[9-33] Rejection of delivery (or otherwise) without Despatch Advice / ASN should be included in the contract

9.5.2 Processing the Despatch Advice / ASN

[9-34] The Despatch Advice / ASN should be received and processed into the receivers' system before the goods arrive.

9.5.3 Inspecting and registering the received logistic units

Depending on the agreement between the supplier and receiver the SSCC may be scanned and the goods accepted as complete as indicated in the Despatch Advice / ASN. Alternatively, the receiver may wish to check the logistics units to confirm that the contents are as agreed in the Despatch Advice / ASN and also to check for any damage. This would apply particularly where the logistics unit contains multiple products. Checks will depend on the contract between the receiver and their supplier.

[9-35] Labels should not be removed before put away is complete, and preferably kept to assist traceability if necessary

[9-36] When the SSCC is scanned it should match the information in the Despatch Advice / ASN, and the received amount should be automatically added to the Warehouse system and update the stock level.

Figure 9-5 . Example of issues occurring at receipt

No label



9.5.4 Sending the receiving advice

The receiver can use the Receiving Advice message to notify the supplier that the goods have been received. He may confirm receipt of all products or only those where there may be an issue e.g. damaged or missing goods. This will allow the supplier to replace the missing or damaged goods promptly. For maximum benefit, the supplier should have an automated process to efficiently recognise and action any errors as notified by the customer.

9.5.5 Storing the goods

[9-37] Where possible, the goods should be stored preserving the SSCC relationship so that they can be traced when necessary.

9.5.6 Handling quality issues found after goods receipt

If there is damage to the goods, or any other product issues, then the supplier (and haulier if not managed or owned by the supplier) should be notified so that they can make adjustment to their invoice before sending to the customer.

10 Practical examples

10.1 SSCC-only label



Source: [GENSPECS]

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):

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

10.2 GS1 Logistics Label for homogeneous logistic unit

Mandatory data	SSCC with AI (00)
Optional data	GTIN2 with AI (02) + count of trade items contained with AI (37) batch / lot number with AI (10) one of the following dates if applicable: production date with AI (11), packaging date with AI (13), best before date with AI (15), expiry date with AI (17)

FREE INFORMATION
e.g. Company Name of Sender, Address, Product Description, ...

SSCC:
164000011234567886

CONTENT: 6400001111196	COUNT: 36
BEST BEFORE (DD.MM.YYYY): 31.12.2020	BATCH/LOT: 122208

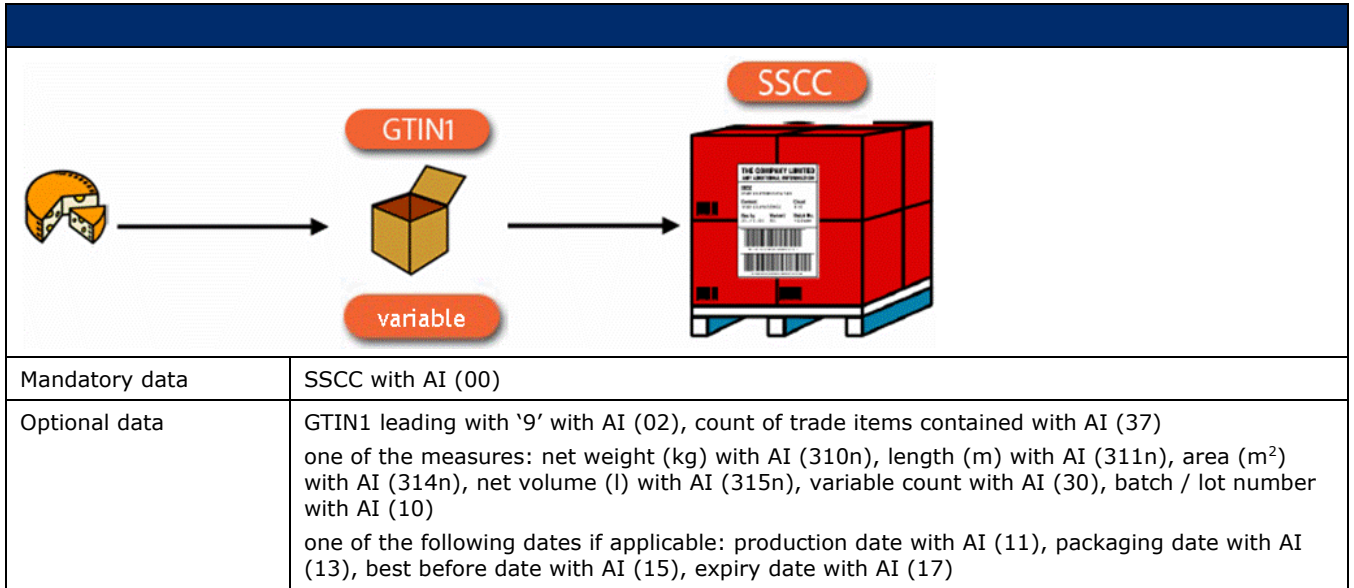
(02) 0 6400001 11119 6 (37) 36

(15) 201231 (10) 122208

(00) 1 6400001 123456788 6


Based on [ELL] example

10.3 GS1 Logistics Label for homogeneous logistic unit with variable measure items




FREE INFORMATION
e.g. Company Name of Sender, Address, Product Description, ...


SSCC: 164000010000517889	COUNT: 36
CONTENT: 9640000111212	BATCH/LOT: 122208
USE BY (DD.MM.YYYY): 31.12.2020	NET WEIGHT (kg) 523,50



(02) 9 6400001 1121 2 (37) 36



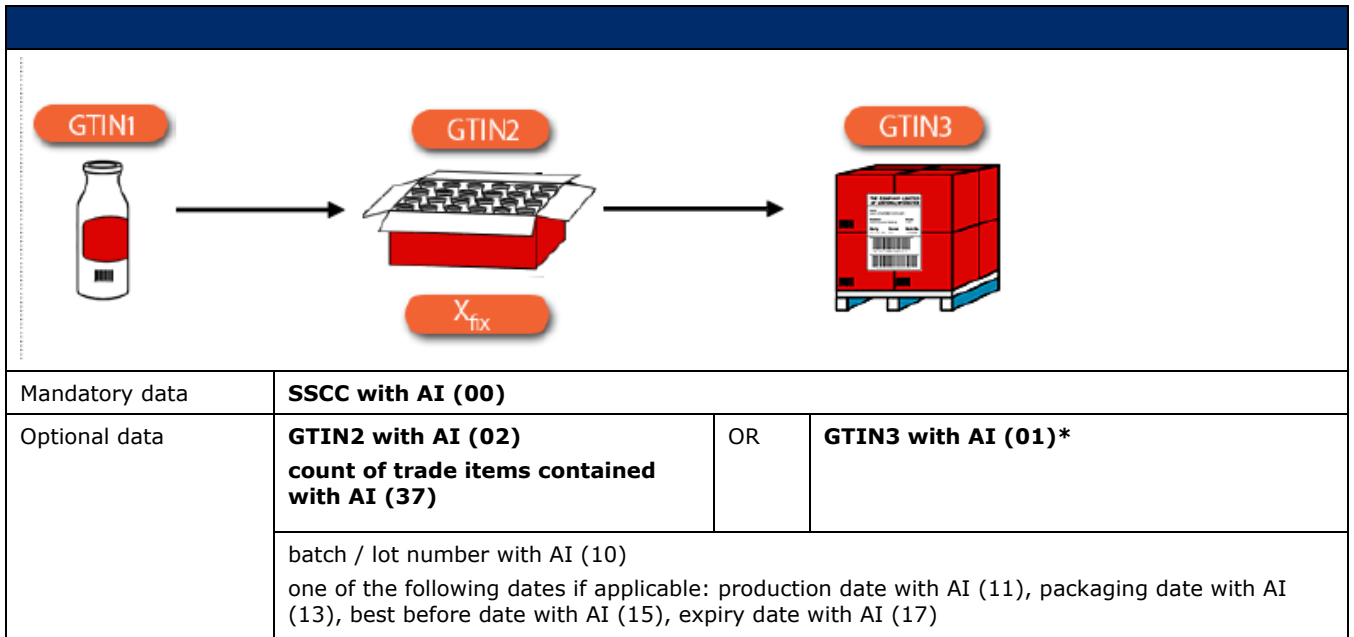
(3102) 052350 (17) 201231 (10) 122208



(00) 1 6400001 000051788 9

Based on [ELL] example

10.4 GS1 Logistics Label for orderable pallet



FREE INFORMATION
e.g. Company Name of Sender, Address, Product Description, ...

SSCC:
164000010000236599

CONTENT: **6400001111325** BATCH/LOT: **6412**

BEST BEFORE (DD.MM.YYYY):
31.12.2020



(01) 0 6400001 11132 5 (15) 201231 (10) 6412




(00) 1 6400001 000023659 9

Based on [ELL] example

10.5 GS1 Logistics Label for logistic unit that is a single trade item

If a logistic unit includes only one trade item, a logistics label should contain the following data:


	
<p>Mandatory data</p>	<p>SSCC with AI (00)</p>
<p>Optional data</p>	<p>GTIN with AI (01) batch / lot number with AI (10) – if applicable serial number with AI (21) – if applicable one of the following dates if applicable: production date with AI (11), packaging date with AI (13), best before date with AI (15), expiry date with AI (17)</p>

FREE INFORMATION
 e.g. Company Name of Sender, Address, Product Description, ...


SSCC:
064000011234567872

GTIN:
6400001111547


PROD DATE (DD.MM.YYYY): **28.02.2014** SERIAL: **90540007**



(01) 0 6400001 11154 7 (11) 140228



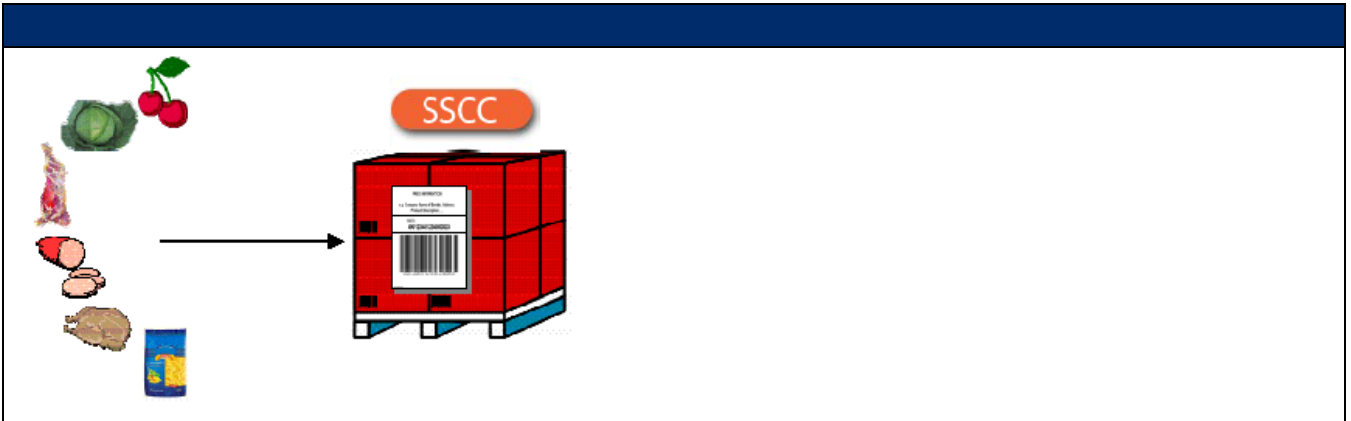
(21) 90540007



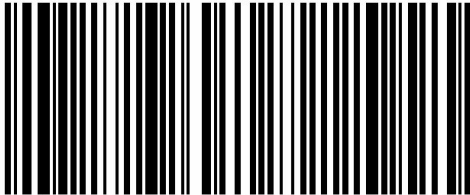
(00) 0 6400001 123456787 2

Based on [ELL] example

10.6 GS1 Logistics Label for mixed pallet



Mandatory data	SSCC with AI (00)
Optional data	none

<p>FREE INFORMATION</p> <p>e.g. Company Name of Sender, Address, Product Description, ...</p>
<p>SSCC: 059076543210000091</p>
 <p>(00)059076543210000091</p>

131_PL

Source [ELL]

10.7 GS1 Logistics Label with logistic unit and transport information in separate segments



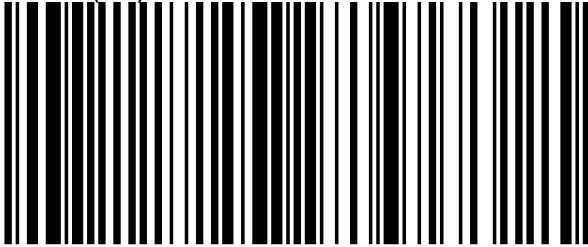
Source [GENSPECS]

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)

10.8 GS1 Logistics Label with supplier, customer and transport segments

FROM Good Time Supplier 1155 Battery St San Francisco CA 94111	TO Customer DC 1478 5241 San Antonio Dr Albuquerque, NM 87109
SHIP TO POST (420) 87109 	CARRIER Best Freight PRO: 2895769860 B/L: 853930
PO: 345-896779-0 DEPT: 092	
Store Number (90) 1528 	Customer Store 1528 1815 N Main Roswell NM 87109
SSCC (00) 0 0052177 513895717 2 	

Source [GENSPECS]

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)

10.9 GS1 Logistics Label with transport information including postal code

In this example, the postal code is used with the GS1 Application Identifier (421).

From	DE40219	
E Dantès	135, rue du général Leclerc	
	FR-92131 Issy les Moulineaux	
To	Mustermann Gmbh	
	Immermannstrasse 156	
	DE-40219 Düsseldorf	
Carrier	Speed Transport Ltd	Fresh Service
Delivery Date(YYYY-MM-DD)	Order number	Gross Weight (kg)
2007-05-22	AC 239	430
Ship to post	27640219	
SSCC	034531200000002527	
 (421) 27640219		
 (00) 034531200000002527		

Source: STILL

10.10 GS1 Logistics Label with transport information including routing code and GINC

In this example, the routing code is used with the GS1 Application Identifier (403)

Von/From Mustermann GmbH Herr Schmidt Hauptstr. 35 60100 Frankfurt Germany	An/To Edificio de Servicios Generales Ms Alicia Romero Calle Centella 18 08820 Barcelona Spain
SSCC 395011015300000011	
ROUTE 402621	GINC 950110153B01001
Dimensions / Weight: 80x20x20 cm / 50,0 kg Billing No.: 5020613963 69 01	
 <p>(403) 402621 (401) 950110153B01001</p>	
 <p>(00) 3 9501101 530000001 1</p>	

Source [GENSPECS]



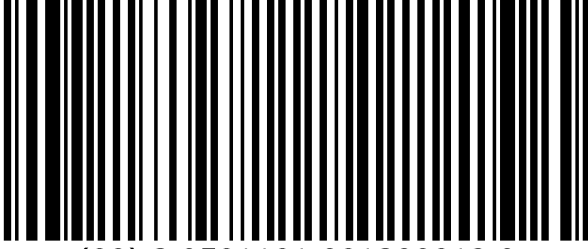
This example shows a pallet label that may be applied at the time of transport. Besides information on the logistic unit it contains information on the route and destination.

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)

10.11 GS1 Logistics Label for parcel (SSCC-only)

This example shows a parcel label that only contains name and address information and an SSCC. This shipper-assigned label would be suitable for any parcel carrier network since it does not contain carrier-specific information.

FJP CARRIERS	
FROM	GS1 Avenue Louise 326 1050 BE BRUXELLES BE - Belgique GLN: 9501101100015  +32 123456789
TO	Hr. J. Voorspuij Groen van Prinstererstraat 13 1021 JK Kampen NL - Nederland
	
SSCC	 (00) 3 9501101 001300012 9

Building blocks (top-down):

- Free Format: Carrier info ;From ; To ; Symbol indicating the recipient needs to sign upon receipt.
- Barcodes and HRI: AI (00)



Note: This example of the GS1 Logistics Label for parcels is compliant with the CEN Harmonised Parcel Label, see [HPARCEL]. It uses the SSCC as the only parcel ID on the label.

10.12 GS1 Logistics Label for parcel (including routing code)

This example shows a parcel label that contains name and address information, an SSCC and a carrier-specific routing code. The routing code is carrier-specific and intended to aid migration to a fully generic parcel label (see section 5.4). The other information is generic and suitable for any parcel carrier.

FJP CARRIERS	
FROM	GS1 Avenue Louise 326 1050 BE BRUXELLES BE - Belgique GLN: 9501101100015 <div style="float: right; text-align: right;">  +32 123456789 </div>
TO	Hr. F. van den Bos Kerkstraat 319 1500 KM Wormerveer NL - Nederland
	
ROUTE	 (403) 123+1021JK+0320+12
SSCC	 (00) 3 9501101 001300012 9

Building blocks (top-down):

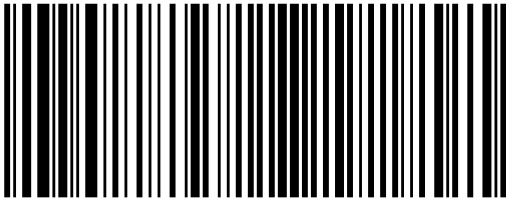
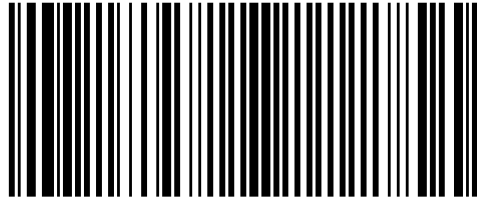
- Free Format: Carrier info ; From ; To ; Symbol indicating the recipient needs to sign upon receipt.
- Text with Data Titles: SSCC; ROUTE
- Barcodes and HRI: AI (403); AI (00)

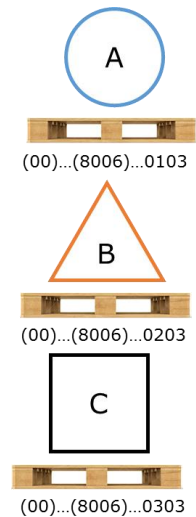


Note: This example of the GS1 Logistics Label for parcels is compliant with the CEN Harmonised Parcel Label, see [HPARCEL]. It uses the SSCC as the shipper-assigned parcel ID on the label, and in addition an optional carrier specific or UPU parcel ID, represented using AI (403).

10.13 GS1 Logistics Label with identification of individual trade item piece - AI (8006)

This example shows a label that contains the identifier of a piece of a trade item, using AI (8006). It corresponds with item B in the scenario (see section 4.3) in which each piece of a trade item is a separate logistic unit.


Von/From Mustermann GmbH Herr Schmidt Hauptstr. 35 60100 Frankfurt Germany	An/To GS1 Polska ul. E. Estkowskiego 6 61-755 Poznań Poland
SSCC 395011015300000011	
ITIP 095011015300270203	
Dimensions / Weight: 80x20x20 cm / 50,0 kg	
Item: 9501101530027 (2nd of 3 pieces)	
 <p>(8006) 095011015300270203</p>  <p>(00)395011015300000011</p>	



Building blocks (top-down):

- Free Format: From ; To
- Text with Data Titles: SSCC; ITIP; (as free text also) Dimensions / Weight, Item
- Barcodes and HRI: AI (8006); AI (00)

11 References

- [CHECK] <https://www.gs1.org/check-digit-calculator>
 - [GENSPECS] GS1 General Specifications – version 17.1, GS1 2017
<https://www.gs1.org/genspecs/>
 - [TLKEYS] GS1 Identification Keys in Transport & Logistics, GS1 2013
https://www.gs1.org/docs/tl/T_L_Keys_Implementation_Guideline.pdf
 - [1DVER] GS1 Barcode Verification Process (implementation guide), GS1 2015
 - [HPARCEL] Postal services - Interfaces for cross border parcels, CEN 2017
 - [ELL] GS1 in Europe Logistic Label version 14, GS1 in Europe 2007
 - [STILL] Standard International Logistics Label (STILL), GS1 2007
-  **Important:** The information contained in the STILL guideline has been incorporated in the new GS1 Logistics Label Guideline. The STILL guideline will no longer be updated.

A Appendix A - GS1 Logistics Label verification

This section provides a brief summary of the GS1 Logistics Label verification procedures as applied by GS1 Member Organisations in order to assess the quality of logistics labels.



Note: Verification of the GS1-128 symbol is not described in this section. Please refer to the Barcode Verification Process – Implementation Guide [1DVER] for guidance on this topic.

A.1 Basic principles

Logistics label verification aims at checking the label's compatibility with the GS1 standards and guidelines. Verification helps to ensure that GS1 Logistics Label implementations comply with the GS1 System, and result in logistics labels that can be used by all supply chain partners.

Verification should be an integral part of quality control processes. It should be performed during initial implementation and repeated at regular intervals once operational.

Verification can be performed by GS1 Member Organisations or by companies authorised by GS1 to issue such verification. In case of a problem, standard verification reports should be used to communicate the source of the problem.

A.2 Common verification approach

To ensure a common logistics label verification approach a standard verification procedure is needed. This will guarantee similar results regardless of where the symbols are tested. This section aims at highlighting critical issues relating to verification.

A.2.1 Visual appearance

The visual assessment includes:

- the dimension of the label
- the correct placement of segments and building blocks
- correct languages of data titles applied
- correct data titles in the middle part for encoded information
- Are there any lines through the barcodes or speckles?
- Is the barcode at least 31.75 mm / 1.250" high?
- Is there sufficient space on either side of the barcode?

A.2.2 Data content

Data content verification includes:

- company prefix (or prefixes applied)
- GS1 identification keys applied (e.g. GTIN, SSCC)
- check digits of all GS1 identification keys applied (e.g. GTIN, SSCC)
- Applied GS1 Application Identifiers and their structure

A.2.3 Technical parameters

Verification of technical parameters includes all the checks for GS1-128 symbols as defined in the [1DVER] guide, and additionally:

- correct combinations of data elements, mandatory association of data elements (e.g. AI (02) and AI (37))
- correct structure of data elements

- correct check digits of GS1 identification keys (e.g. GTIN, SSCC) presented in the barcode symbol.
- ✓ **Note:** In case barcode symbols other than GS1-128 are present on the label, in addition to GS1-128 symbols holding the SSCC and other attributes, the verification report will only address the correctness of the GS1-128 symbols and data contained therein. The verification report SHOULD include a warning that non-allowed GS1 symbols or non-GS1 symbols have been detected.

A.2.4 Verification report

Verification reports should include:

- the list of parameters that were verified
- information on whether a given parameter complies with GS1 requirements
- in case of a negative assessment – information on correct data and recommendations on how to avoid mistakes
- A copy of the verified label should be attached to the report.

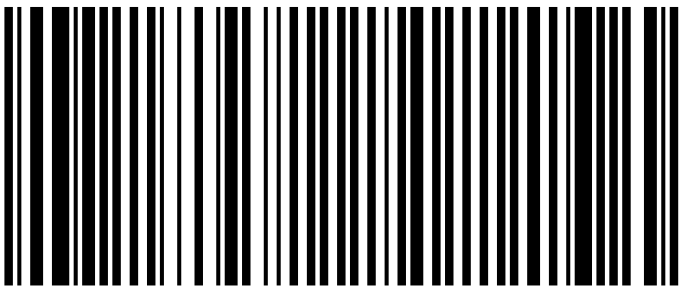
B Appendix B – Label, symbol and text sizes

B.1 A6 / 4.1 x 5.8 inch

minimum free format text size: 3.2 mm / 0.13 in (Arial 7)

minimum size of data field:
7.1 mm / 0.28 in (Arial 18)

height 31.75 mm / 1.26 in width 77 mm / 3.05 in



(00) 3 9501101 001300012 9

HRI: 4.8 mm / 0.19 in (Arial 12)

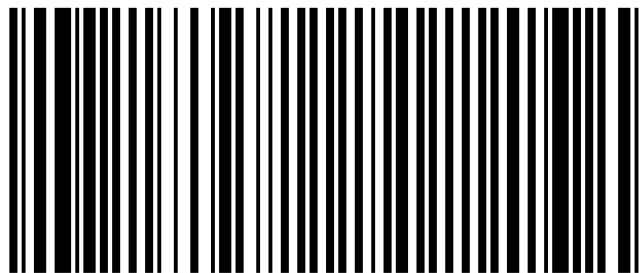
B.2 A5 / 5.8 x 8.3 inch

minimum free format text size: 3.2 mm / 0.13 in (Arial 7)

minimum size of data field:
7.1 mm / 0.28 in (Arial 18)

height 31.75 mm / 1.26 in

width 77 mm / 3.05 in



(00) 3 9501101 001300012 9

HRI: 4.8 mm / 0.19 in (Arial 12)