GS1 Logistics Label

GS1 Guideline

Issue 1.0.1, Ratified, Feb-2015

Document Summary

Document Item	Current Value
Document Title	GS1 Logistics Label - GS1 Guideline
Date Last Modified	Feb-2015
Document Issue	Issue 1.0.1
Document Status	Ratified
Document Description	The GS1 Logistics Label guideline provides an overview and clarifications of the relevant rules as contained in the GS1 General Specifications. It also provides best practice recommendations based on implementation experiences around the world.

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Log of Changes in Issue 1.0.1

Issue No.	Date of Change	Changed By	Summary of Change
1	30-Apr-2014	Coen Janssen	▪ Initial version
1.0.1	27-Feb-2015	Coen Janssen	▪ Errata: corrected the list of contributors and example in section 10.10.

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Table of Contents

1. Introduction 8
- 1.1. Acknowledgements 8
- 1.2. Scope of the guideline 8
  - 1.2.1. Labelling Logistic Units 8
  - 1.2.2. Labelling trade items such as cartons and outer cases 8
  - 1.2.3. Automatic Identification and Data Capture (AIDC) standards covered in this guideline 9
- 1.3. Conventions applied in the guideline 9
  - 1.3.1. References 9
  - 1.3.2. Rules and recommendations 9
  - 1.3.3. Format of data elements 9

2. Lay-out of the label 10
- 2.1. Introduction 10
- 2.2. Building Blocks 10
- 2.3. Segments 12

3. How to include logistic unit information 14
- 3.1. SSCC 14
- 3.2. Including the SSCC on the label 14
- 3.3. Extract of Application Identifiers for logistic unit information 14

4. How to include trade item information 15
- 4.1. When would I use this? 15
- 4.2. Trade item identification 16
- 4.3. Trade item quantity 17
- 4.4. Trade item measures 17
- 4.5. Trade item dates 18
- 4.6. Batch / lot number 19
- 4.7. Serial numbers 19
- 4.8. Extract of main Application Identifiers for trade item information 19

5. How to include transport and customer information 20
- 5.1. When would I use this? 20
- 5.2. Customer (Receiver) name and address 21
- 5.3. Supplier (Shipper) name and address 21
- 5.4. Routing code 21
- 5.5. Ship for location / ultimate consignee 22
- 5.6. Shipment identification 22
- 5.7. Consignment identification 22
- 5.8. Customer's purchase order number 23
- 5.9. Logistic measures 23
- 5.10. Handling and processing instructions 23
- 5.11. Extract of Application Identifiers for transport and customer information 24

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6. Label Lay-out Rules 25
6.1. Free Format 25
6.2. Non-HRI Text with Data Titles 25
6.2.1. Data titles 25
6.3. Bar Codes and HRI 26
6.4. Rules related to label segments 28

7. Size of the GS1 Logistics Label 28

8. Label Placement 29
8.1. Label placement on larger logistic units (pallets, roll cages, etc.) 29
8.2. Label placement on smaller logistic units (including parcels) 30
8.3. Label placement on stacked pallets 31

9. Implementation Considerations 32
9.1. Best practice processes by role 32
9.2. Label implementation scenarios 33
9.3. Shipper / Supplier 33
9.3.1. Pre-requisites 33
9.3.2. Creating the SSCC 34
9.3.3. Printing the label 34
9.3.4. Attaching the label 35
9.3.5. Sending the transport instruction 35
9.3.6. Staging / Loading the logistic units 35
9.3.7. Sending the Despatch Advice / ASN 36
9.4. Carrier 36
9.4.1. Pre-requisites 36
9.4.2. Processing the Transport Instruction 36
9.4.3. Loading the logistic units 36
9.4.4. Unloading the logistic units 37
9.4.5. Sending the Transport Status Notification / Information on Delivery (IOD) 37
9.5. Receiver / Customer 37
9.5.1. Pre-requisites 37
9.5.2. Processing the Despatch Advice / ASN 38
9.5.3. Inspecting and registering the received logistic units 38
9.5.4. Sending the receiving advice 38
9.5.5. Storing the goods 38
9.5.6. Handling quality issues found after goods receipt 39

10. Practical Examples 39
10.1. SSCC-only label 39
10.2. GS1 Logistics Label for homogeneous logistic unit 40
10.3. GS1 Logistics Label for homogeneous logistic unit with variable measure items 41
10.4. GS1 Logistics Label for orderable pallet 42
10.5. GS1 Logistics Label for logistic unit that is a single trade item 43
10.6. GS1 Logistics Label for mixed pallet 44

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10.7. GS1 Logistics Label with logistic unit and transport information in separate segments 45
10.8. GS1 Logistics Label with supplier, customer and transport segments 46
10.9. GS1 Logistics Label with transport information including postal code 47
10.10. GS1 Logistics Label with transport information including routing code and GINC 48

11. References 49

12. Appendix A - GS1 Logistics Label Verification 50
12.1. Basic principles 50
12.2. Common verification approach 50
12.2.1. Visual appearance 50
12.2.2. Data content 50
12.2.3. Technical parameters 51
12.2.4. Verification report 51

13. Appendix B – Label, symbol and text sizes 52
13.1. A6 / 4.1 x 5.8 inch 52
13.2. A5 / 5.8 x 8.3 inch 53

List of Figures

FIGURE 2-1. EXAMPLE 11
FIGURE 2-2. PLACEMENT OF BUILDING BLOCKS 12
FIGURE 2-3. EXAMPLES OF LABEL SEGMENTATION 13
FIGURE 4-1 LABEL INCLUDING TRADE ITEM INFORMATION 16
FIGURE 4-2 LOGICAL SEQUENCE OF DATE ELEMENTS 18
FIGURE 5-1 LABEL INCLUDING TRANSPORT INFORMATION 20
FIGURE 6-1. FNC1 CHARACTER IN GS1-128 BAR CODE. 26
FIGURE 7-1 DIMENSIONS A6 / 4 X 6 INCH LABEL 28
FIGURE 7-2 DIMENSIONS OF A5 / 6 X 8 INCH LABEL 29
FIGURE 8-1 EXAMPLE OF LABEL PLACEMENT ON PALLETS 30
FIGURE 8-2 LABEL PLACEMENT ON CASES 31
FIGURE 8-3. STACKED PALLETS AS INDEPENDENT LOGISTIC UNITS 31
FIGURE 8-4. STACKED PALLETS COMBINED INTO A SINGLE LOGISTIC UNIT 32
FIGURE 9-1 EXAMPLES OF SYSTEM INTEGRATION ISSUES 34
FIGURE 9-2 EXAMPLES OF PRINTING-RELATED ISSUES 35
FIGURE 9-3 EXAMPLES OF PLACEMENT ISSUES 35
FIGURE 9-4 EXAMPLE OF ISSUES OCCURRING DURING TRANSPORT 37
FIGURE 9-5. EXAMPLE OF ISSUES OCCURRING AT RECEIPT 38

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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 bar coded 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 bar code encoding the Global Trade Item Number (GTIN). The bar code may be an ITF-14, EAN/UPC or in case additional item data is needed a GS1-128 bar code. It is important to note that such labels, when not containing an SSCC, are not

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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 bar code. It does not provide guidance on the use of 2D bar codes 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 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

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Examples:

- N_3 numeric digit on position 3
- X_{16} 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: Bar codes.

Bar codes 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 bar code which is encoded in the bar code and represents the same characters as carried in the bar code.
- 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 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 bar code(s) using data titles rather than AIs, and optionally additional information not represented in bar codes (preferably including data titles).
3. The 'Bar Codes and HRI' building block contains the bar code(s) including human readable interpretation (HRI).

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Figure 2-1. Example

(source GS1 UK)

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), Bar Codes and HRI (bottom). If space permits it, and providing the bar codes conform to the size specifications for the application, the lower two building blocks may be placed side by side. See Figure 2-2.

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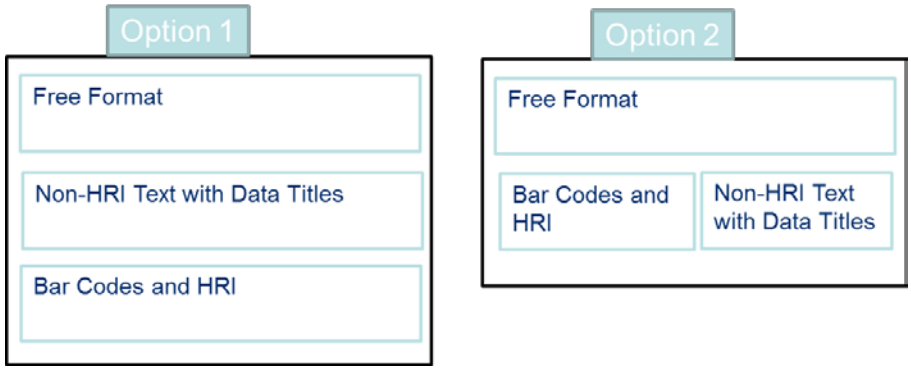
Figure 2-2. Placement of Building Blocks



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 organized 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 2-3 for some examples.

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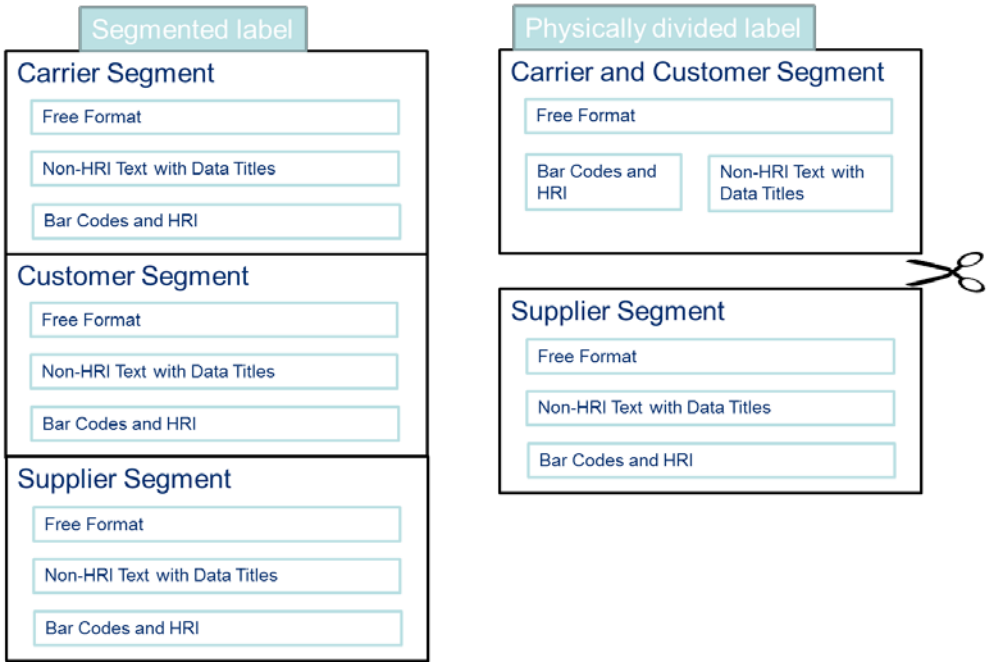
Figure 2-3. Examples of label segmentation



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.

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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 example ….00000, …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 Application Identifiers for logistic unit information

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

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

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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).

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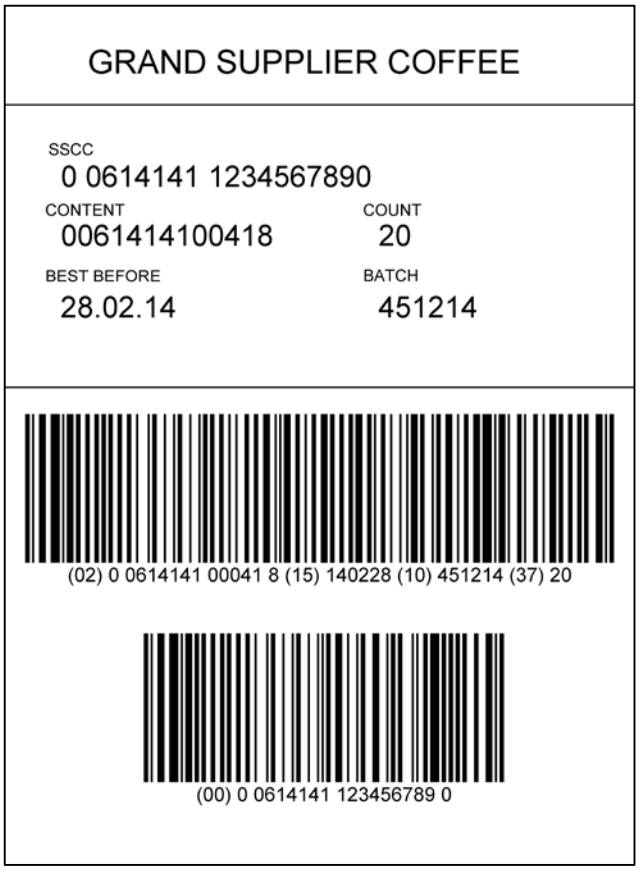
Figure 4-1 Label including trade item information



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.

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.

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4.3. Trade item quantity

[4-7] ***(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.

[4-8] ***(Normative)*** The use of AI (37) COUNT is not allowed in combination with AI (01) GTIN. [GENSPECS, 4.13.1]

[4-9] 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.

4.4. 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').

[4-10] 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.

[4-11] The 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, N_1 to N_{14}, consist of the following data:

- N_1 to N_4: slit width in millimetres (width of the roll)
- N_5 to N_9: actual length in metres
- N_{10} to N_{12}: internal core diameter in millimetres
- N_{13}: winding direction (face out 0, face in 1, undefined 9)
- N_{14}: number of splices (0 to 8 = actual number, 9 = number unknown)

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4.5. 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 realize 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.

[4-12] 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 4-2 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:

[4-13] ***(Normative)*** Dates always relate to the GTIN specified on the label as AI (01) GTIN or as AI (02) CONTENT. [GENSPECS, 4.13.2]

[4-14] ***(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]

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.

[4-15] ***(Normative)*** When expressed in bar code 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

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- 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.

4.6. 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.

[4-16] ***(Normative)*** The batch / lot number always relates to the GTIN specified on the label as AI (01) GTIN or as AI (02) CONTENT. [GENSPECS, 4.13.2]

[4-17] ***(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]

4.7. Serial numbers

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

[4-18] ***(Normative)*** The serial number always must be used in combination with a GTIN that is specified on the label as AI (01) GTIN. [GENSPECS, 4.13.2]

4.8. Extract of main 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

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

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(**) Format of the 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, ..

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

source [GENSPECS]

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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 and the postal code of the ship to location (see previous paragraph) represent the same functional need. They can be linked to the route network of the carrier. Generally the routing code is the more precise: It is defined by the carrier, and sent to the shipper in order to enable inclusion on the label.

[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.

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5.5. Ship for location / ultimate consignee

In case the logistic unit needs to be cross-docked it can be important to include the ultimate consignee on the label.

[5-16] The ultimate consignee location can be 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:

GS1 Company Prefix →	← Shipper 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}

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 example ….00000, …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:

GS1 Company Prefix →	← Consignment Reference
$N_1 N_2 N_3 N_4 \ldots N_i$	$X_{i+1} X_{i+2} \ldots\ldots X_j$ ((j<=30))

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.

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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)

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5.11. Extract of 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
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

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AI	Full Title	Data Title	Format (**)
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 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, 6.7.4.3]

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 bar codes, and is comprised of data titles and data content.

[6-2] All bar coded 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, 6.7.4.2.2]

[6-4] ***(Normative)*** Application Identifiers (AIs) must not be included in the text with data titles. [GENSPECS, 6.7.4.2.2]

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 Bar Codes and HRI.

[6-5] ***(Normative)*** For each included data field representing a bar coded 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, 6.7.4.2.2]

[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.

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[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 bar coded data field which is always YYMMDD.

6.3. Bar Codes and HRI

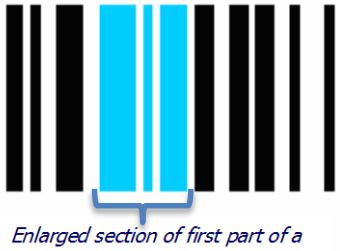
The 'Bar Codes and HRI' building block contains the GS1-128 bar code(s) including their human readable interpretation (HRI).

The bar codes 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 bar codes can hold GS1 identification keys (GTIN, SSCC, GLN) and attribute data (batch/lot number, expiry date, etc.).

[6-9] ***(Normative)*** GS1-128 bar codes must be distinguished from Code 128 bar codes 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 bar code will not meet the requirements of the GS1 System.

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

Figure 6-1. FNC1 character in GS1-128 bar code.



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

Application Identifiers

Each data field in a GS1-128 bar code is preceded by an Application Identifier (AI). Application Identifiers (AIs) are internationally agreed numeric prefixes used within the GS1-128 bar code 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 bar code 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

An 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 bar code. This joining together of element strings is known as concatenation.

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

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

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

[6-13] ***(Normative)*** The SSCC, defined by AI (00), shall always appear in the lowest bar code on the label [GENSPECS, 6.7.4.1.1].

[6-14] The SSCC can be alone or concatenated with other data in the same bar code. 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 bar code symbol.

[6-15] ***(Normative)*** The allowed X-dimension range for the GS1-128 bar code symbol is between 0.495 mm (0.0195") and 0.94 mm (0.0370"). The target X-dimension recommended for the GS1-128 bar code 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 bar codes 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).

Bar code height

[6-18] ***(Normative)*** A minimum height of at least 31.75 mm (1.250") applies to all the GS1-128 bar codes 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)*** Bar codes 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 bar codes will help ensure the quiet zones are respected.

Orientation and placement

[6-20] ***(Normative)*** Horizontal orientation (picket fence orientation) of bar code 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 bar code should be provided below each symbol. Brackets (parentheses) are normally printed around each AI but these must not be encoded in the bar code. The data must be shown in characters at least 3 mm high and clearly legible.

AI uniqueness (no repetition)

[6-22] Each Application Identifier (AI) may only occur once on a logistics label.

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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.

[6-23] ***(Normative)*** Within each separate label segment the building blocks must be placed according to the lay-out defined in section 2, Figure 2-2. [GENSPECS, 6.7.3.2]

[6-24] ***(Normative)*** A segment holding the SSCC shall always be present, and shall be positioned under any other segments. [GENSPECS, 6.7.3]

[6-25] 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.

[6-26] 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.

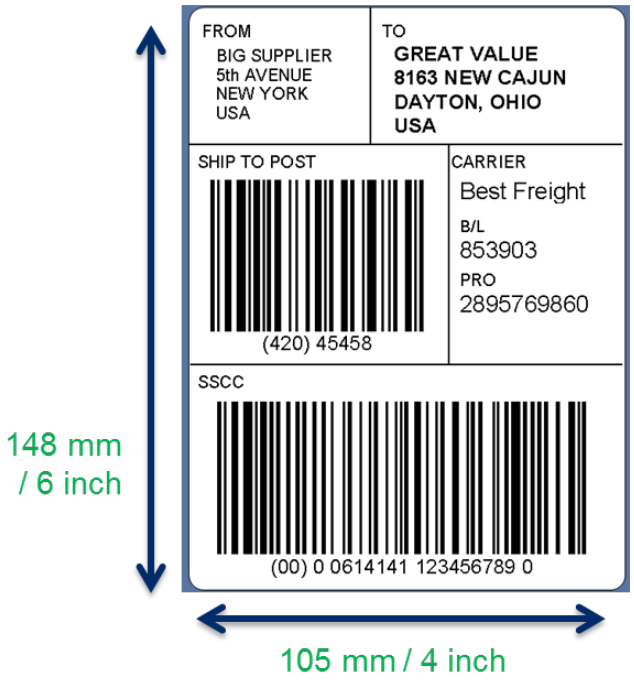
7. Size of the GS1 Logistics Label

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 bar codes 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



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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 bar code 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 bar code SHALL be placed as high as possible while protecting the bar code. [GENSPECS, 6.8.1.1]

[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, 6.8.1.1]

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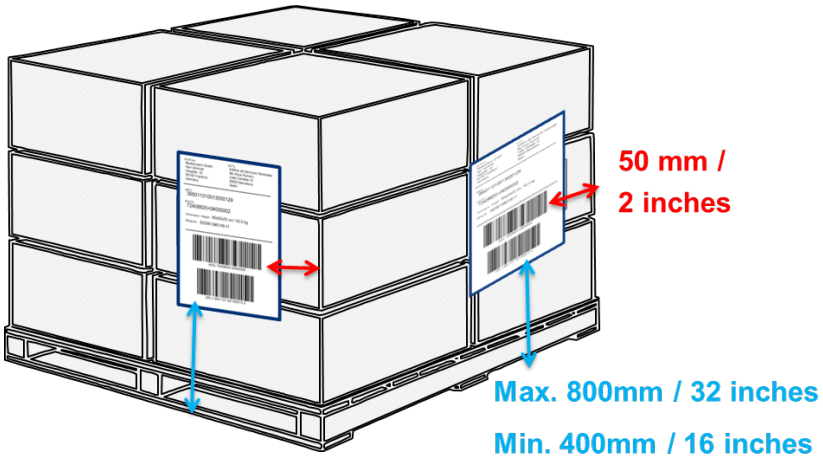
[8-3] Each logistic unit should at the minimum have one label. For pallets it is recommended that two sides of the item are labelled the exact same data, to ensure one label is always visible (e.g. pallets that are stored either long or short edge facing). On rolling logistic units a label on one side 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 bar code is 32 millimetres (1.25 inches) from the natural base of the item. [GENSPECS, 6.8.1.2]

[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, 6.8.1.2]

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

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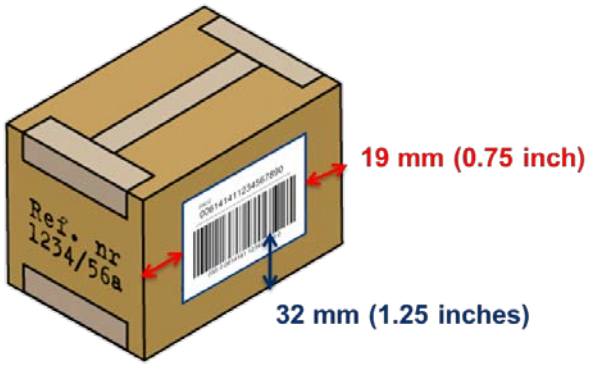
Figure 8-2 Label placement on cases



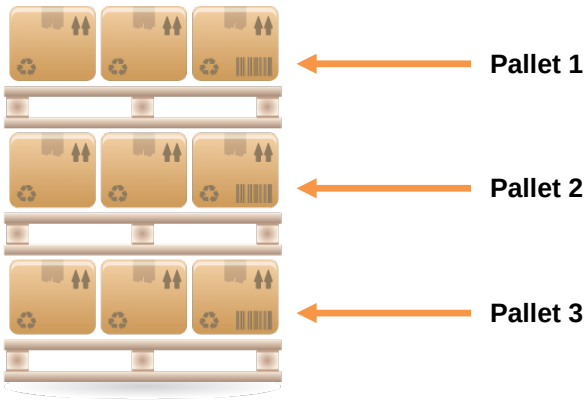
Carton / Outer Case Labels: For Carton / Outer Case Labels the same guidelines apply. In situations where both a Carton / Outer Case Label as well as a Logistics Label need to be applied on the case, the recommendation is to place the GS1 Logistics Label to the left of the Carton / Outer Case Label, 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 (Figure 8-3), 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 (Figure 8-4), 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.

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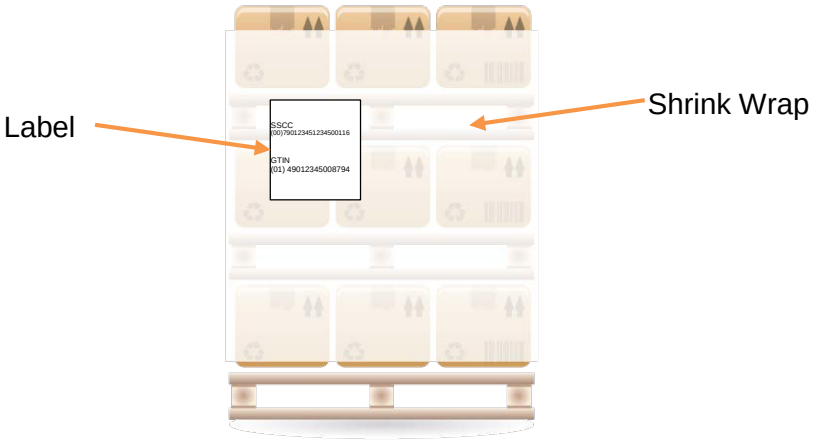
Figure 8-4. Stacked Pallets combined into a single logistic unit



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	Receives raw materials by scanning pallet labels and stores raw materials using these labels to identify the raw materials and to provide traceability. When producing finished goods will produce a new pallet label and use this as the identifier for internal storage. 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. If building a new pallet for a business customer they will affix a new pallet label.
Consolidator	Scans the pallet label to record the stock received. If storing stock will use the pallet label's SSCC as the identifier. If sending out the received pallets they will scan the pallet labels again when loading outbound transport. If breaking down and rebuilding pallets they will remove the old pallet labels and replace them with new pallet labels.

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Role of party	Best practices
Distribution Centre (of customer retailer)	Scans the pallet label to record the stock received. If storing stock will use the pallet label's SSCC as the identifier. If building a new pallet for a business customer they will affix a new pallet label.
Customer (typically a business customer)	Scans the pallet label to record the stock received.
Warehouse Service Provider / Co-packer	Receive the stock using the inbound pallet label. Add value to the stock then build stock onto new pallets and affix a new pallet label. Retain a record of the relationship between the stock in the old consignment and stock in the new consignment.
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	Scans the goods upon loading to record the logistic units. Scans the goods upon unloading to record the logistic units. Provides status information on logistic unit level.

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.

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[9-3] Each warehouse should have scanners to read the GS1-128 bar code(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 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 bar codes 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 = bar code symbol verification.

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

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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.

[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.

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.

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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 maximize 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 bar code(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.

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Figure 9-4 Example of issues occurring during transport

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 bar code(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

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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

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.

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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
- Bar Codes + HRI: AI (00)

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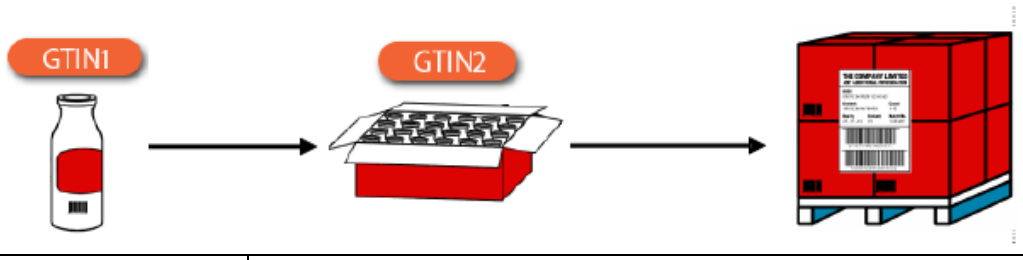
10.2. GS1 Logistics Label for homogeneous logistic unit



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)

based on [ELL] example

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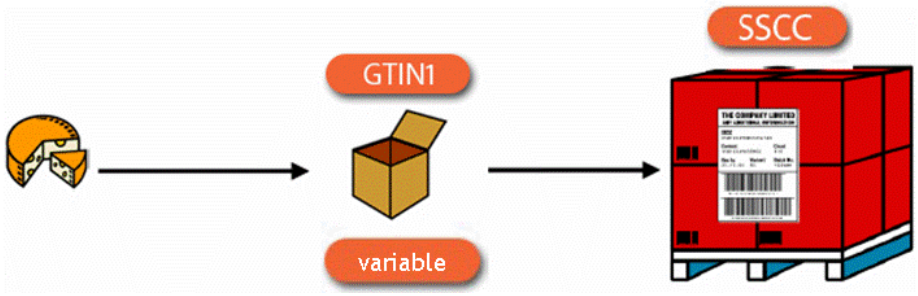
10.3. GS1 Logistics Label for homogeneous logistic unit with variable measure items



Mandatory data	**SSCC with AI (00)**
Optional data	▪ GTIN1 leading with '9' with AI (02), count of trade items contained with AI (37) ▪ one of the measures: net weight (kg) with AI (310n), length (m) with AI (311n), area (m^2) with AI (314n), net volume (l) with AI (315n), variable count with AI (30), 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)

based on [ELL] example

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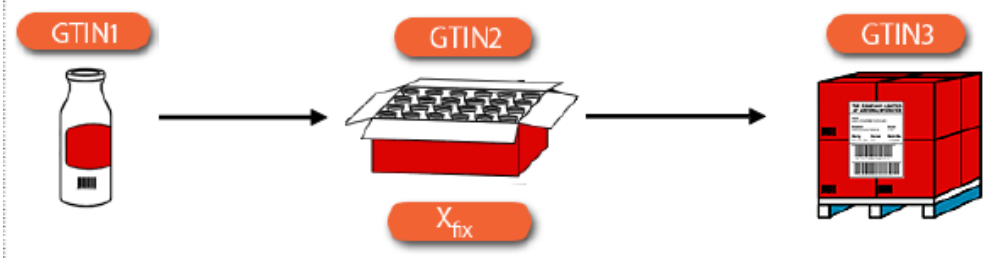
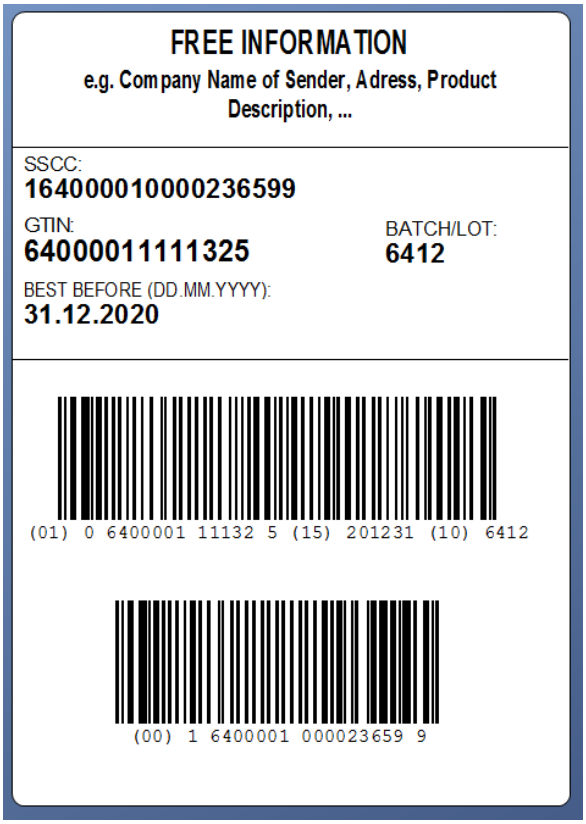
10.4. GS1 Logistics Label for orderable pallet



Mandatory data	**SSCC with AI (00)**		
Optional data	**GTIN2 with AI (02)** **count of trade items contained with AI (37)**	OR	**GTIN3 with AI (01)***
	▪ 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)		



based on [ELL] example

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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:

Mandatory data	**SSCC with AI (00)**
Optional data	▪ 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)

based on [ELL] example

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10.6. GS1 Logistics Label for mixed pallet

Mandatory data	**SSCC with AI (00)**
Optional data	none

source [ELL]

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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
  - Bar Codes and HRI: SHIP TO POST
  - Text with Data Titles: CARRIER; B/L ; PRO
- Supplier Segment
  - Bar Codes and HRI: SSCC; AI (00)

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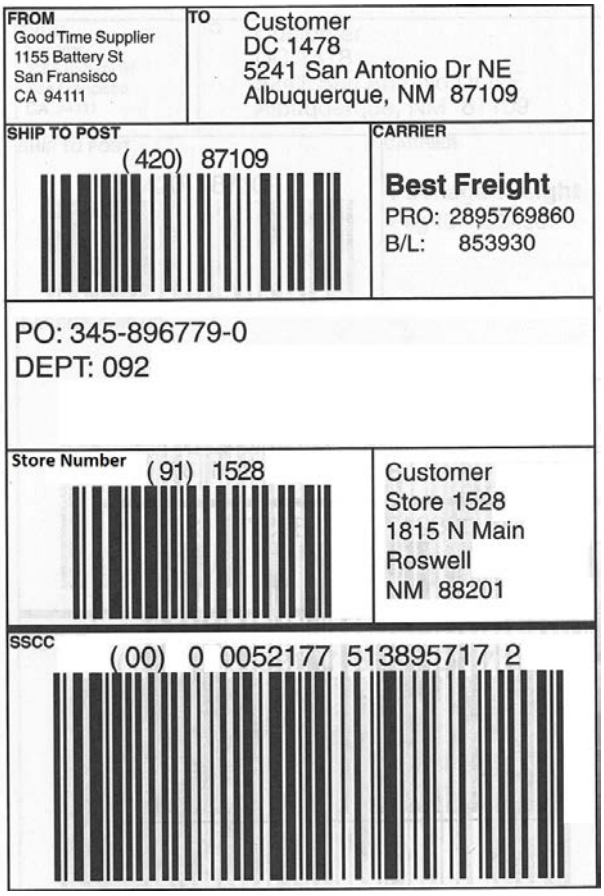
10.8. GS1 Logistics Label with supplier, customer and transport segments



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

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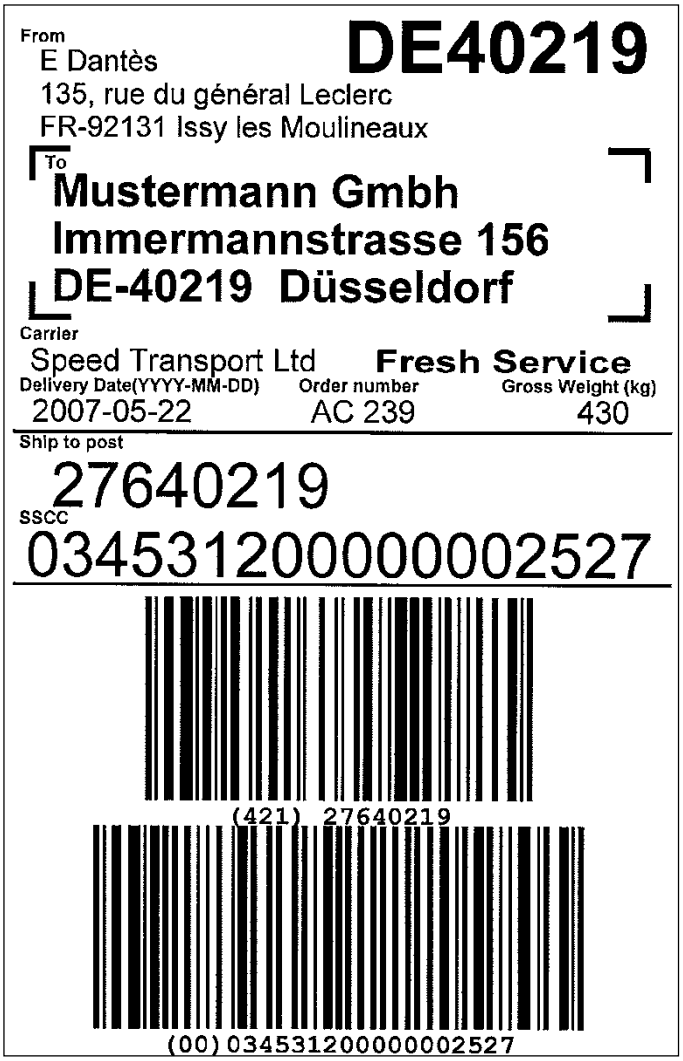
10.9. GS1 Logistics Label with transport information including postal code

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



source: STILL

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

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

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.
- Bar Codes and HRI: AI (403); AI (401); AI (00)

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11. References

- [GENSPECS] GS1 General Specifications – version 14, GS1 2014

  http://www.gs1.org/docs/gsmp/barcodes/GS1_General_Specifications.pdf

  Important: Changes to paragraph 6.7 as specified in the GSCN for Work Request 14-000005 have also been taken into account. These changes will be incorporated in version 15 of the GS1 General Specifications.

- [TLKEYS] GS1 Identification Keys in Transport & Logistics, GS1 2013

  http://www.gs1.org/sites/default/files/docs/gsmp/TandL/T_L%20Keys%20Implementation%20Guidelinei1.pdf

- [GDD] Global Data Dictionary

  Repository of all data elements and terms used across all GS1 Standards

  http://apps.gs1.org/GDD

- [1DVER] GS1 Bar Code Verification Process, GS1 2012
- [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.

- [CHECK] http://www.gs1.org/barcodes/support/check_digit_calculator

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12. 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 Bar Code Verification Process – Implementation Guide [1DVER] for guidance on this topic.

12.1. 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.

12.2. 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.

12.2.1. 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 bar codes or speckles?
- Is the bar code at least 31.75 mm / 1.250" high?
- Is there sufficient space on either side of the bar code?

12.2.2. 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

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12.2.3. 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 bar code symbol

12.2.4. 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.

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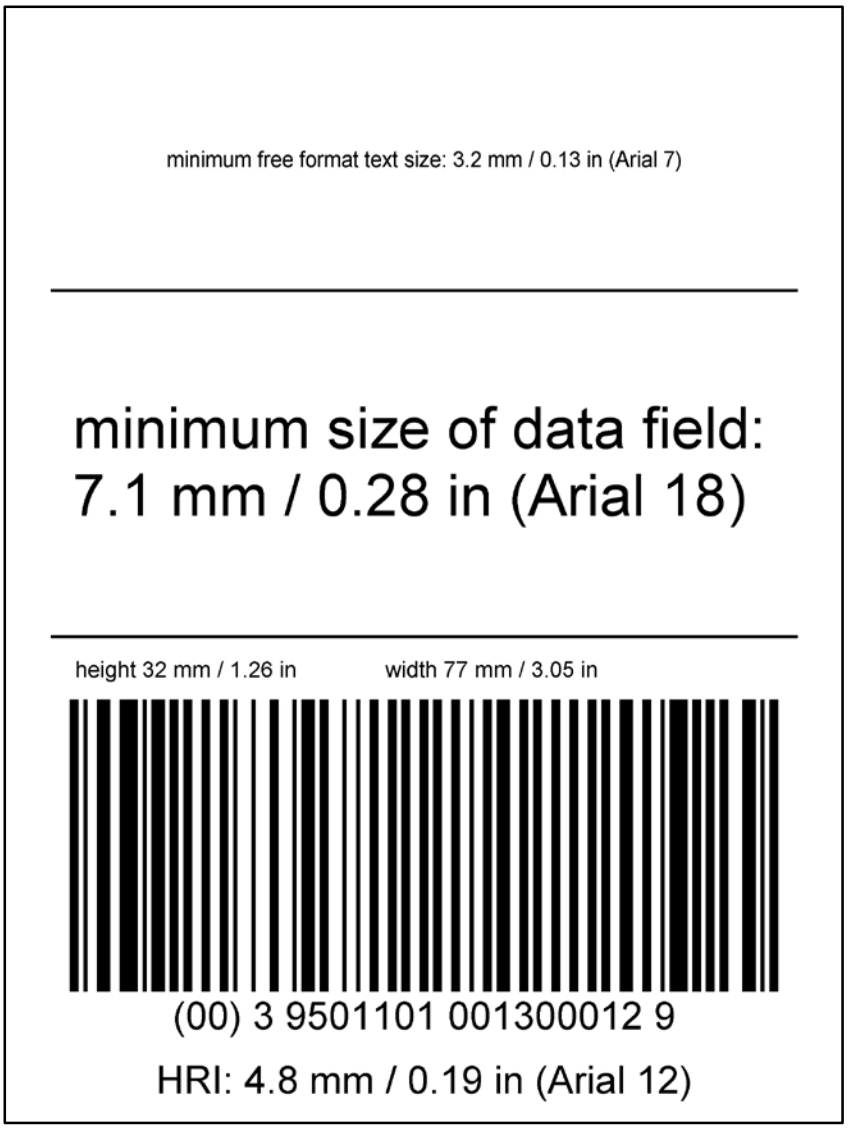
13. Appendix B – Label, symbol and text sizes

13.1. A6 / 4.1 x 5.8 inch



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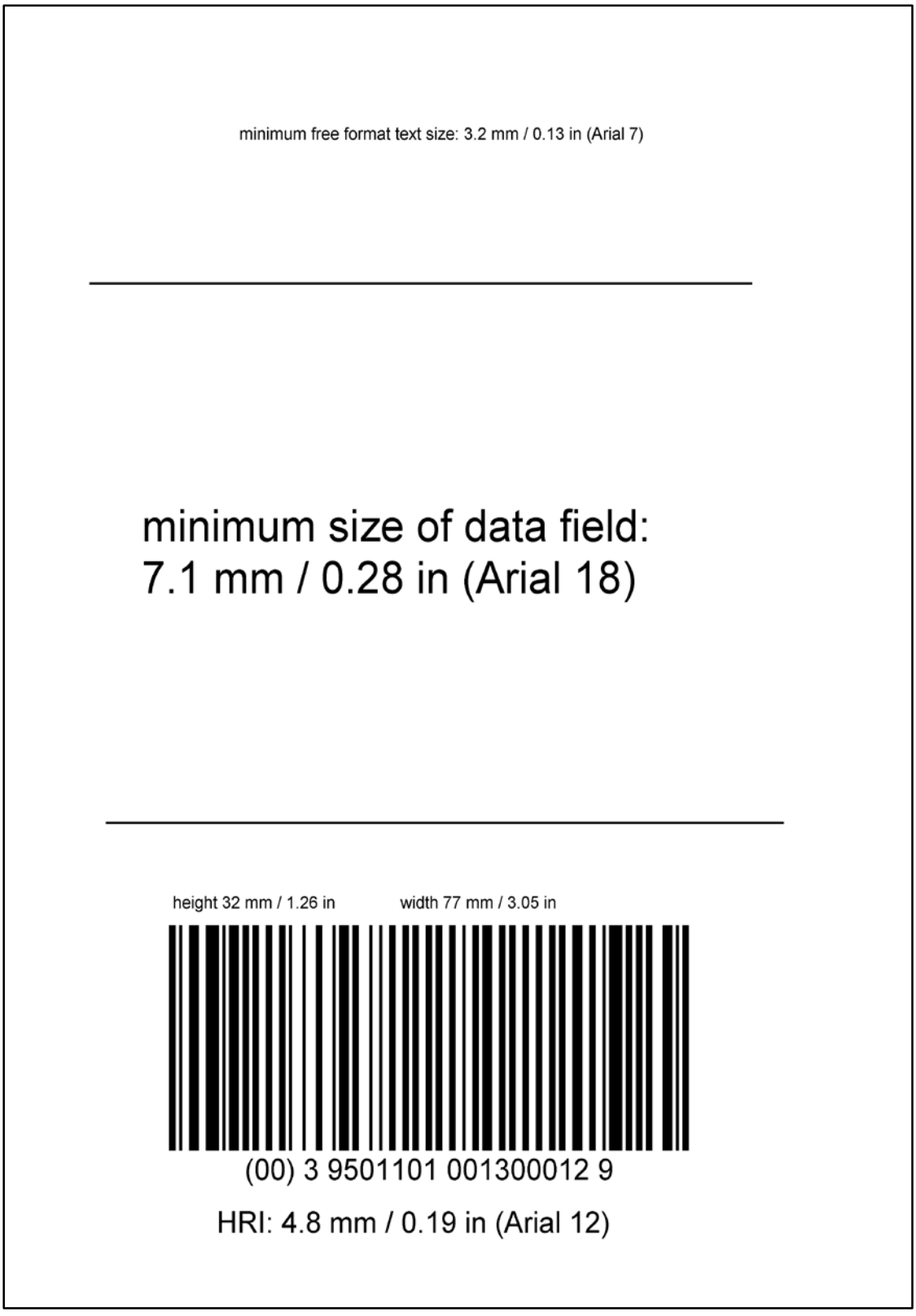
13.2. A5 / 5.8 x 8.3 inch



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