



3.1 Introduction

A logistic unit is an item of any composition established for transport and/or storage which needs to be managed through the supply chain.

Tracking and tracing logistic units in the supply chain is a major application of the GS1 System. Scanning the GS1 Identification number, marked on each logistic unit, allows the physical movement of units to be individually tracked and traced by providing a link between the physical movement of items and the associated information flow. It also opens up the opportunity to implement a wide range of applications such as cross docking, shipment routing and automated receiving.

Logistic units are identified with a GS1 Identification Key called the Serial Shipping Container Code (SSCC). The SSCC provides functionality to support the management (tracking, tracing, storage, etc.) of logistic units through the supply chain. To ensure global uniqueness and traceability, the physical builder of the logistic unit or the brand owner of the logistic unit is responsible for the allocation of the SSCC.

If, in addition to being a logistic unit, the item is regarded as a trade item by the brand owner, it may additionally be identified with a GTIN. The combination of a GTIN and a serial number must not replace the SSCC as the identifier of a logistic unit.

If, in addition to being a logistic unit, the item is part of a consignment and or a shipment, it may also be associated with the GINC and or the GSIN.





3.2 Identification of Individual Logistic Units

Serial Shipping Container Code (SSCC)

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

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

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

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

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



3.3 Allocating An SSCC

The SSCC is a unique, non-significant, eighteen-digit number which is assigned by the brand owner or physical builder of the logistic unit. It remains the same for the life of the logistic unit. The SSCC is encoded in a GS1-128 Bar Code and is represented by the Application Identifier (AI) 00. For more information on AI (00) refer to chapter 8, AI (00) - Identification of a Logistic Unit on page 134.

When assigning an SSCC, an individual SSCC number must not be reallocated within one year of the shipment date from the SSCC assignor to a trading partner however, prevailing regulatory or industry organisation specific requirements may extend this period.

How you allocate an SSCC depends on the length of your assigned GS1 Company Prefix. Currently GS1 Australia allocates seven- to nine-digit GS1 Company Prefixes to its membership, however GS1 Company Prefixes of other lengths may be allocated in the future to further conserve numbers. Please note that other GS1 Member Organisations may allocate GS1 Company Prefixes of different lengths.

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

TABLE 40 Serial Shipping Container Code (SSCC) Structure

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

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

The GS1 Company Prefix used should belong to the brand owner or physical builder the logistic unit. It makes the SSCC unique worldwide but does not identify the origin of the unit.

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

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

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

A Check Digit calculator program which will automatically calculate the Check Digit can be obtained from the GS1 Australia web site at www.gs1au.org. For instruction on manually calculating the Check Digit please refer to chapter 2, section 2.4 Manual Check Digit Calculation on page 60.

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

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





3.4 Labelling the Logistic Unit

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

The information included on a GS1 logistics label comes in two basic forms. Human Readable Interpretation is used by people and is comprised of text and graphics. Machine readable information is designed for data capture by a machine. Bar codes are machine readable and are a secure and efficient method for conveying structured data, while Human Readable Interpretation allows 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.

The GS1 logistics label has three sections. The top section of the label contains free format information. The middle section contains text information and the Human Readable Interpretation of the bar code(s). The lowest section contains the bar code(s).

Label Design

The layout of the GS1 logistics label accounts for the supply chain process by grouping information into three logical sections for the supplier, customer and carrier, generally in this order. Each label section may be applied at a different point in time as relevant information becomes known. Additionally, within each section, bar codes are segregated from text information to facilitate interpretation by both machines and people.

The labeller, the organisation responsible for printing and applying the label, determines the content, format, and dimensions of the label. The SSCC is the single mandatory element for all GS1 logistics labels. Other information, when required, should comply with the specifications of this document and with the proper use of Application Identifiers. In a trading relationship, different elements of information are generally known and applied by the supplier, carrier, and customer. For example, the physical content of the unit is typically defined at finished goods distribution. At this point the identification of the logistic unit as an entity is possible. However, other elements of information, such as final destination or the composition of a mixed shipment are not typically known until further in the supply chain.

Supplier, Customer, Carrier Sections

A section is a logical grouping of information that is generally known at a particular time. There are three label sections on a GS1 logistics label, each representing a group of information. Generally, the order of the sections, from top to bottom, is: carrier, 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.

Supplier section

The supplier section contains information that is generally known at the time of packaging by the supplier. It is mandatory that the SSCC is applied at this point to identify the unit. If a GTIN is also used at this point it can be applied at the same time. If several logistics or transport units are assembled to be transported under one despatch advice or BOL to one customer the GSIN, AI (402) may also be applied in this supplier section.

Other attribute information that may be required or useful by the supplier, customers, and carrier(s) can also be applied. This includes product-related information such as product variant; dates such as production, packaging, expiration, and best before dates; and lot, batch, and serial numbers.



Customer section

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

Carrier section

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

Examples of GS1 Logistics Labels can be found under “GS1 Logistics Label Examples” on page 74

Label Dimensions

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

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

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



3.5 Bar Code Specifications

3.5.1 Bar Code

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

3.5.1.1 Concatenation

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

3.5.1.2 Magnification

The magnification range for the GS1-128 Bar Code containing the SSCC is 48.7% to 92.5% (X-dimension 0.495mm – 0.94mm).

Selecting a magnification factor at the higher end of the specified range will always enhance the reliability of scanning. However, if the information required cannot be accommodated in the space available, a lower magnification factor may be used for other bar codes on the logistics label that do not contain the SSCC. In any case, the magnification factor shall not be lower than 25% (X-dimension 0.25mm). Quality of the printed bar codes should be carefully checked, especially at lower magnification factors. If a magnification factor of less than 48.7% (X-dimension 0.495mm) is used it is likely that the reading distance will be reduced.

3.5.1.3 Height of Bars

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





3.5.1.4 Human Readable Interpretation

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

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

3.5.1.5 Bar Code Orientation and Placement

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

3.5.1.6 Number of Bar Codes on Unit

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

3.5.2 Text

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

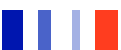
There are three types of text which can appear on a logistics label:

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

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

Data Titles are the standard abbreviated descriptions of data fields used to denote the Human Readable Interpretation of encoded data. They are prefixes of the Human Readable Interpretation to support manual interpretation of data fields. They can also be used adjacent to other text or bar codes to clarify content, such as "From" adjacent to a sender's address.

For a full list of relevant data titles refer to chapter 8, TABLE 53 List of Application Identifiers on page 130.





3.6 Label Location

3.6.1 Cartons and Outer Cases

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

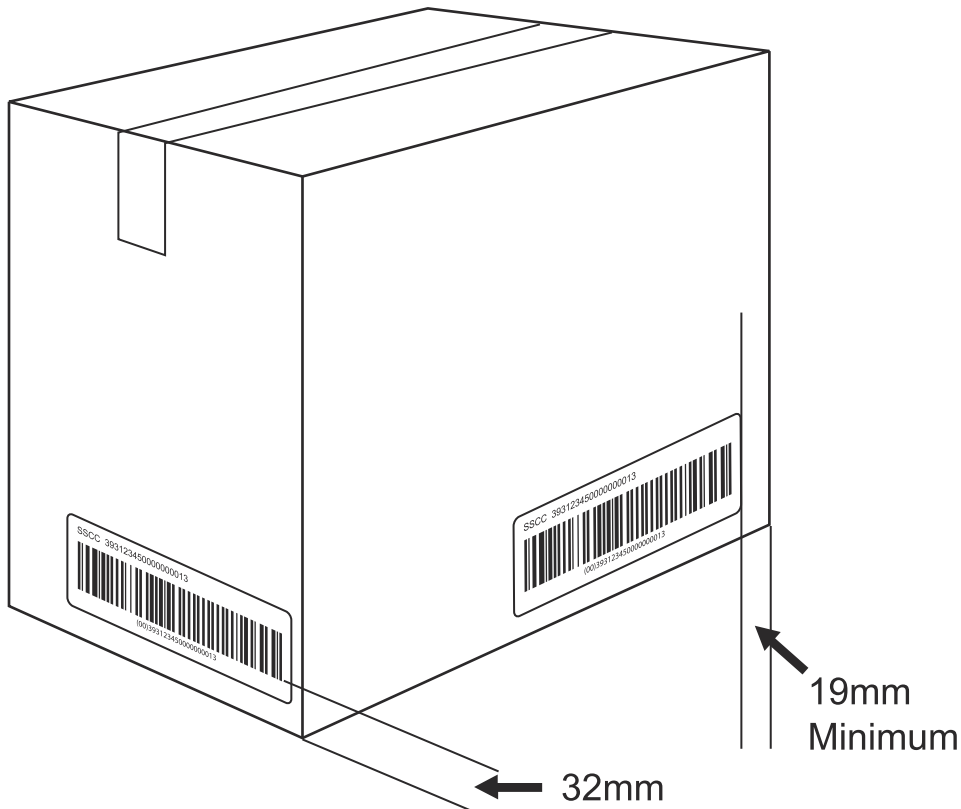


Figure 12 Logistics Label Location on a Carton

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



3.6.2 Pallets

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

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

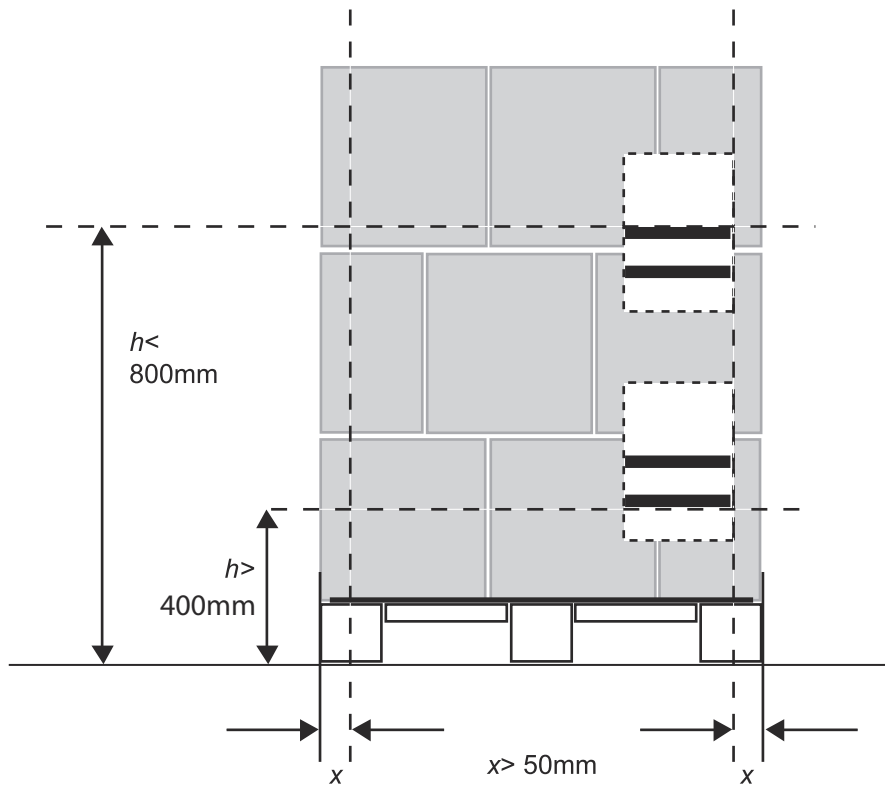


Figure 13 Logistics Label Location on a Pallet



3.7 GS1 Logistics Label Examples



Figure 14 The Basic Logistics Label: An SSCC



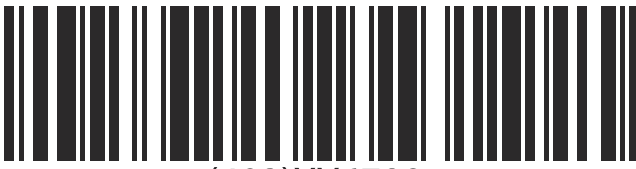
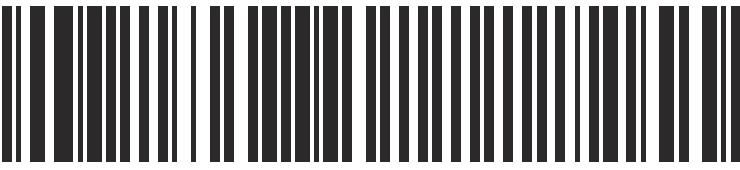
FROM GS1 Australia Unit 100/45 Gilby Road Mount Waverley Vic 3149 Australia	TO GS1 Global Office Blue Tower Avenue Louise 326, Bte 10 B1050 Brussels, Belgium
SSCC: 393123450000000013 Route: XY6789 Dimensions/Weight: 80x20x20cm / 50.0kg Billing No.: 5020613963 69 01 001/999	
 (403)XY6789  (00)393123450000000013	

Figure 15 Logistics Label with Supplier and Carrier Sections Example 1



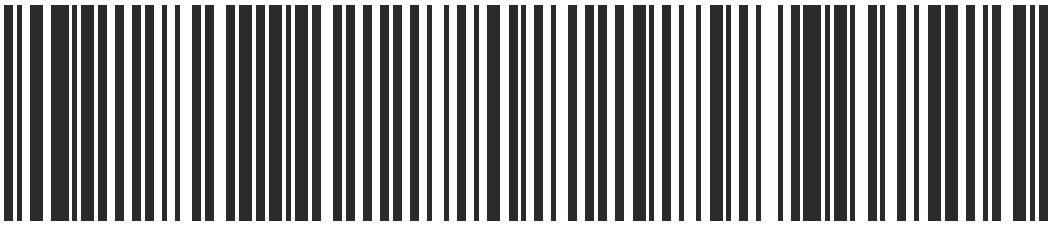
<p>FROM GS1 Global Office Blue Tower Avenue Louise 326, Bte 10 B1050 Brussels, Belgium</p>	<p>TO GS1 Australia Axxess Corporate Park Bldg 4B, 2-4 Lord Street Botany, NSW, 2019</p>
 <p>(421)0363149</p>	<p>SHIP TO POST 0363149</p> <p>B/L 853930</p> <p>PRO 2895769860</p>
<p>SSCC 393123450000000020</p> 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

Figure 16 Logistics Label with Supplier and Carrier Sections Example 2

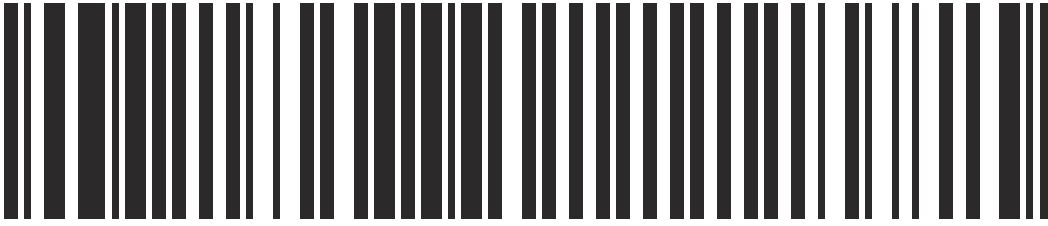


GS1 BEAN FACTORY

SSCC	
393123450000000037	
CONTENT	COUNT
09312345000005	20 Cases
USE BY (ddmmyy)	BATCH
22/01/06	2468



(02)09312345000005(17)060122(10)2468(37)20



(00)39312345000000037

Figure 17 Logistics Label with Supplier Section with Concatenated Data



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

Figure 18 Logistics Label with Supplier, Customer and Carrier Sections



3.8 Identification of Multiple Logistic Units

One or more logistic units can be identified as either a shipment or a consignment. Shipment and consignment are terms which may be used interchangeably within the transport and logistics sector however for the purposes of clarity, when referring to multiple logistic unit identification for trade, GS1 uses the term shipment and when referring to multiple logistic unit identification for transport, GS1 uses the term consignment

3.8.1 Global Identification Number for Consignment (GINC)

Consignments can comprise one or many logistic units but if the consignment comprises more than one physical object there is no requirement that they are attached together.

The GS1 Identification Key known as the Global Identification Number for Consignment (GINC) identifies a logical grouping of physical units in a consignment. When a GINC is read the message is that this physical unit should be associated with any other physical units carrying the same GINC. Individual physical units carry the SSCC as described on 67.

The GINC is assigned by the freight forwarder or carrier of the transport units and is referenced in the relevant transport messages and documents HWB (house waybill) etc. It may be used as a communication reference by all parties in the transport chain, such as in Electronic Data Interchange (EDI) messages where it can be used as a consignment reference and/or freight forwarders or carriers loading list. For information on the structure of the GINC see "AI (401) - Global Identification Number for Consignment (GINC)" on page 163.

An individual GINC is a unique number, which remains the same for the life of a grouping of logistics or transport units to which it is assigned. When assigning a GINC, the rule is that an individual GINC must not be reallocated within one year of the shipment date from the freight forwarder assigning the GINC to a transport unit(s). However, prevailing regulatory or industry organisation specific requirements may extend this period..

Note: If a new consignment is created, previous consignment data must be removed from the physical units.

The data carrier used to represent the GINC is the GS1-128 Bar Code.

3.8.2 Global Shipment Identification Number (GSIN)

Shipments can comprise one or many logistic units but if the shipment comprises more than one physical object there is no requirement that they are attached together.

The GS1 Identification Key known as the Global Shipment Identification Number (GSIN) identifies a logical grouping of physical units in a transport shipment. When a GSIN is read the message is that this physical unit should be associated with any other physical units carrying the same GSIN. Individual physical units carry the SSCC as described on 67.

The GSIN is assigned by a seller (sender) of the goods and is referenced in the despatch advice and bill of lading, etc. It may be used as a communication reference by all parties in the transport chain, such as in Electronic Data Interchange (EDI)



messages where it can be used as a shipment reference and/or a consignor's loading list. For information on the structure of the GSIN see "AI (402) - Global Shipment Identification Number (GSIN)" on page 164.

An individual Global Shipment Identification Number (GSIN) is a unique number, which remains the same for the life of the grouping of logistics or transport units to which it is assigned. When assigning a GSIN, the rule is that an individual GSIN must not be reallocated within ten years of the shipment date from the seller or third party logistics provider (sender) of the GSIN to a trading partner buyer (recipient) to comply with the regulations of the World Customs Organisation (WCO). For goods that circulate within one country (domestic transport), the period of re-use is based on either governmental, industry or the discretion of the seller (sender) of the goods.

The data carrier used to represent the GSIN is the GS1-128 Bar Code.