Australian Freight Labelling Guideline

Based on GS1 Open Global Standards

Implementation Guideline for the Automatic Identification and Data Capture (AIDC) of transport units in the Australian Transport & Logistics Industry.

Version 1.2, August 2016

Document purpose

This guideline provides guidance on how to physically identify logistic and transport units using the ALC Harmonised Transport & Logistics Label developed to improve efficiency, productivity and visibility across the supply chain.

The guideline is based on the GS1 standards described in the GS1 General Specifications, and on best practices gathered via the ALC Transport & Logistics Labelling Work Group and in various implementation projects.

The main topic of this guideline is the labelling of logistic units for Transport Purposes.

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Approval decision

Steering Team Member(s)	Company	Title	Date Approved
Australian Logistics Council Supply Chain Standards Working Group	See page ii	Work Group participants	5 November 2015
Michael Kilgariff	Australian Logistics Council	Managing Director	26 November 2015

Contributors

Name	Company
Adam Crawford	Coles
Andrew Mitchell	OpenText / GXS
Andy Kim	Toll Customised Solutions
Bonnie Ryan	GS1 Australia
Brad Jeavons	Winson Group
Cate Hull	FreightExchange
Chris Orford	BagTrans Pty Ltd
Dale Paul	DB Schenker
David McNeil	OneSteel
Ian Veysie	GS1 Australia
Kieren James	messageXchanage
Mandeep Sodhi	Nestle
Mark Brown	Toll Global Forwarding
Michael Romanous	Woolworths
Michiel Ruighaver	GS1 Australia
Neil Temperley	Data61 (NICTA)
Renato Landayan	DB Schenker Australia Pty Ltd
Richard O'Brien	Toll Global Express
Rob Simpson	K&S Freighters
Sareth Suon	Tigers International Solutions Pty Ltd
Timothy Harris	Border Express Pty Ltd

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1.0 Background

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 to aid end to end interoperability and visibility along the value chain from point of origin to final destination. GS1 offers a solution to help accomplish this by providing a standard approach to identifying and labelling freight using a common GS1 Logistics Label

2.0 Scope of the guideline

The focus of this guideline is to provide Australian standard recommendations as to what is the most effective way for industry to identify and label transport units to enable improved interoperability, visibility and productivity in the transportation value chain.

Where applicable, this guideline leverages the existence of shipper applied logistics labels that follow standard principles outlined in the GS1 Logistics Label Guideline but with added supplementary information (i.e. consignment number, ship-to location, etc.) to enable transport service providers to execute the physical transportation of the goods.

It caters for both manual transport processes and automated transport processes (i.e. scanning, EDI transport instructions & transport status notifications).

Note:

- A transport unit is an item of any composition (e.g. a single carton or pallet containing many cartons or a bundle of steel) established for transport which needs to be managed throughout the supply chain.
- For more information about the GS1 XML EDI transport messages that enable electronic data exchange between a shipper of goods and a transport service provider, please refer to the guidelines available at www.gs1au.org.

Scenarios covered in this guideline include:

- Single leg/carrier transport process
- Multiple leg/carrier transport process
- Transport buyer allocates SSCC[1] to logistics unit containing the transport buyer's GS1 Company Prefix[2]
- Transport provider allocates SSCC to logistics unit using the transport provider's GS1 Company Prefix (i.e. where transport buyer is not a GS1 member).

[1] Serial Shipping Container Code (SSCC) is a GS1 Identification Key used to identify logistics units. The key comprises an Extension digit, GS1 Company Prefix, Serial Reference, and Check Digit (see section 3.3.1, GS1 General Specifications)

[2] To obtain a GS1 Company Prefix you will need to apply for a GS1 Australia Full Membership.

3.0 Label design

3.1 Mandatory data on Transport Label

A mandatory requirement within the Freight labelling Guideline is that each logistic/transport unit is identified with a unique **Serial Shipping Container Code (SSCC)**.

The SSCC is a crucial key for traceability as it allows all parties in the supply chain to uniquely identify each logistic unit and its content.

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

Other mandatory data elements include:

- Destination State
- Destination Suburb
- Gross weight of transport unit
- Consignment ID (GINC[3]) - mandatory in human readable format & optional as barcode (see section 7.1.2)
- Item Count
- Full Name of Receiver (Include Ship-to GLN[4] where possible – see section 7.1.3)
- Full Address of Receiver
- Receiver contact phone
- Shipper details (Name & Location)
- Serial Shipping Container Code (SSCC) in human readable & barcode format (see section 7.1.1)

[3] Global Identification Number for Consignments (GINC) is a GS1 Identification Key used to identify a logical grouping of logistic or transport units that are assembled to be transported. The key comprises a GS1 Company Prefix and the Freight Forwarder's or Carrier's transport reference. (see section 3.7.2, GS1 General Specifications)

[4] Global Location Number (GLN) is a GS1 Identification Key used to identify physical locations or parties. The key comprises a GS1 Company Prefix, Location Reference, and Check Digit. (see section 2.4, GS1 General Specifications)

3.2 Optional data on Transport Label

- Carrier name (initial pick up)
- Customer Order Number
- Dangerous Goods (Basic flag only)[5]
- Delivery date
- Additional/Special Instructions
- Sales Order Number/Internal reference
- Despatch Zone/Staging Area
- Despatch/Pick details
    - Date
    - Time
    - Device
- Operator
- Transport Unit type (Standard Pallet, Carton, etc.)

To cater for various scenarios, there are three transport label design options outlined in this guideline:

- Consolidated Transport & Logistics Label - Combines the labelling needs of both the goods receiver and the carrier of the goods in one label. It is applied when the cargo owner knows the transport details and labelling requirements of the goods receiver at the time the freight is constructed. (see section 4)
- Two part Transport & Logistics Label - Used when the freight already has a Serial Shipping Container Code (SSCC) label affixed by the cargo owner prior to knowing its final destination (i.e. goods picked from a finished goods warehouse). The Transport information is applied as an additional label to facilitate the transport process. (see section 5)
- Transport only label - Used to uniquely identify the logistics units when the goods receiver does not require a logistics/Serial Shipping Container Code (SSCC) label. This label may also be used when the freight owner is not a GS1 Member and the earliest Transport & Logistics Provider in the supply chain allocates a unique SSCC using their GS1 number range. (see section 6)

3.3 Human Readable Data

The Human Readable data on the label is designed to support manual operations and to facilitate key entry in menu driven systems. At a minimum, all data encoded in the barcode symbology/ies is to be represented in the Human Readable Segment of the label.

[5] This guideline does not replace standard operating procedures for meeting dangerous goods regulatory requirements.

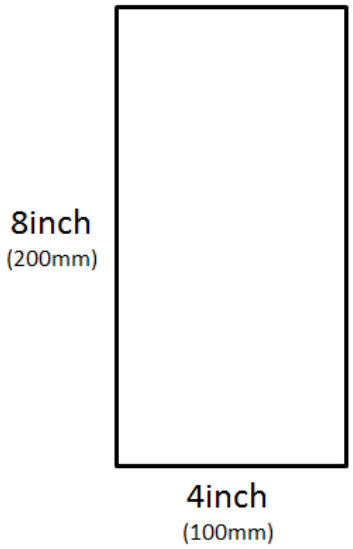
3.4 Label size

The physical dimensions of the label are determined by the party applying the label, however 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/transport unit to be labelled.

3.4.1 Minimum label size - Consolidated Transport & logistics label

The Consolidated Transport label combines the needs of both the goods receiver and the carrier of the goods.

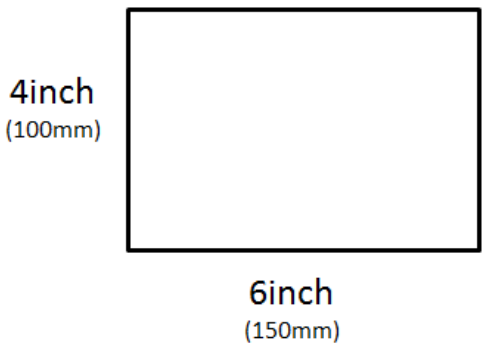
Minimum size recommended is 200mm (8”) long x 100mm (4”) wide



3.4.2 Minimum label size - Two part transport & logistics label

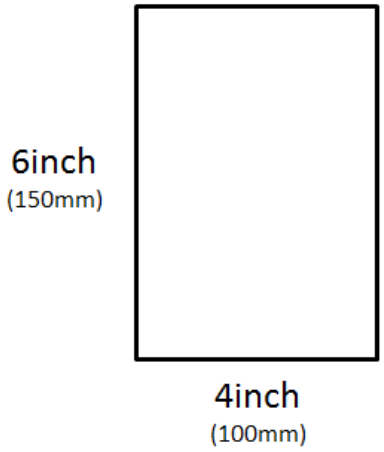
Transport Label -Minimum size recommended is 100mm (4”) long x 150mm (6”) wide

Logistics Label - Minimum size recommended is 100mm (4”) long x 150mm (6”) wide

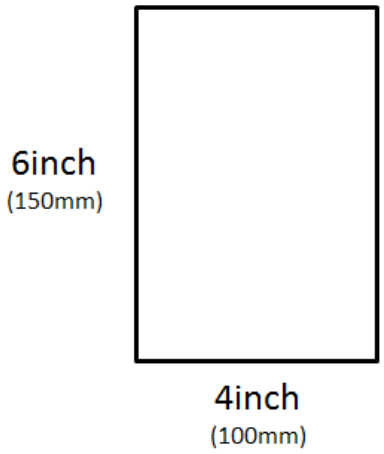


3.4.3 Minimum label size - Transport Only label

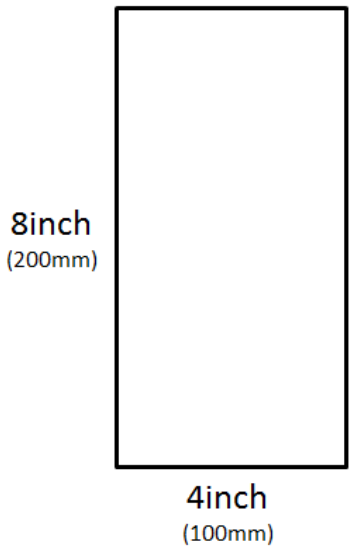
Transport Only Label (SSCC + Ship-to GLN + Postcode) - Minimum size recommended is 150mm (6”) long x 100mm (4”) wide



Transport Only Label (SSCC + GINC) - Minimum size recommended is 150mm (6”) long x 100mm (4”) wide



Transport Only Label (SSCC + Ship-to GLN + Postcode + GINC + Optional data) - Minimum size recommended is 200mm (8”) long x 100mm (4”) wide



4.0 Consolidated Transport & Logistics Label

4.1 When to use the Consolidated Transport & Logistics Label

The Consolidated Transport label combines the needs of both the goods receiver and the carrier of the goods. It can be applied when the delivery destination is known at the time the freight is constructed and the cargo owner is able to produce both components in one label.

4.2 Consolidated Transport & Logistics Label Portrait Design

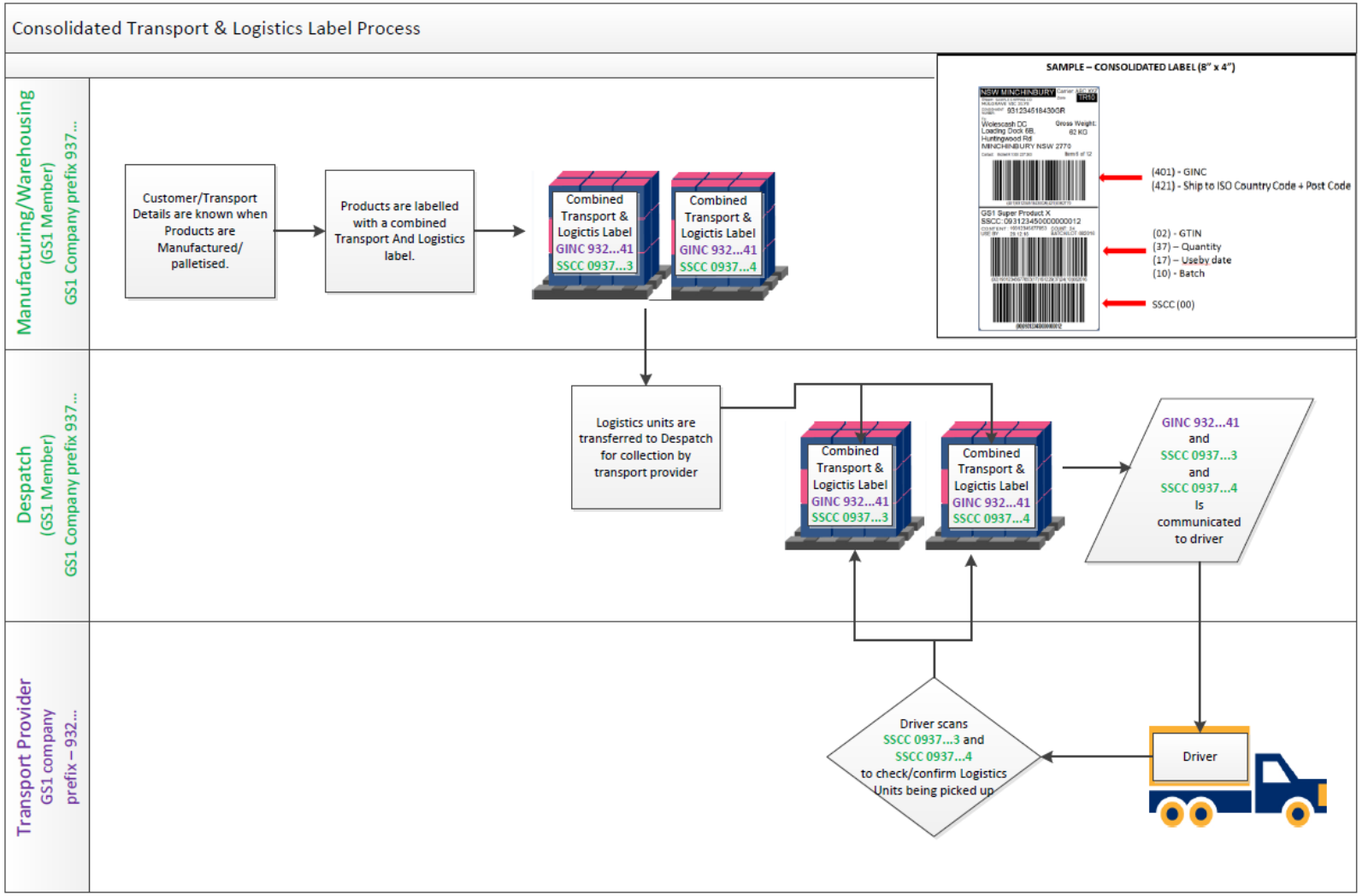
The top half of the label contains the Transport information and the bottom half contains information for the freight receiver.

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(401) Global Identification Number for Consignments
(421) Ship to ISO Country Code + Post Code

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(02) Global Trade Item Number
(17) Useby Date
(37) Quantity
(10) Batch

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(00) Serial Shipping Container Code

4.3 Typical Allocation Process for Consolidated Transport & Logistics Label



5.0 Two-part Transport & Logistics Label

5.1 When to use the Two-part Transport & Logistics Label

The Two-part Transport & Logistics Label is used when the freight already has a Serial Shipping Container Code (SSCC) label affixed by the cargo owner prior to knowing its final destination (i.e. goods picked from a finished goods warehouse). The Transport label is applied as an additional label containing the information required in the transport process.

5.2 Two-part Transport & Logistics Label Landscape Design

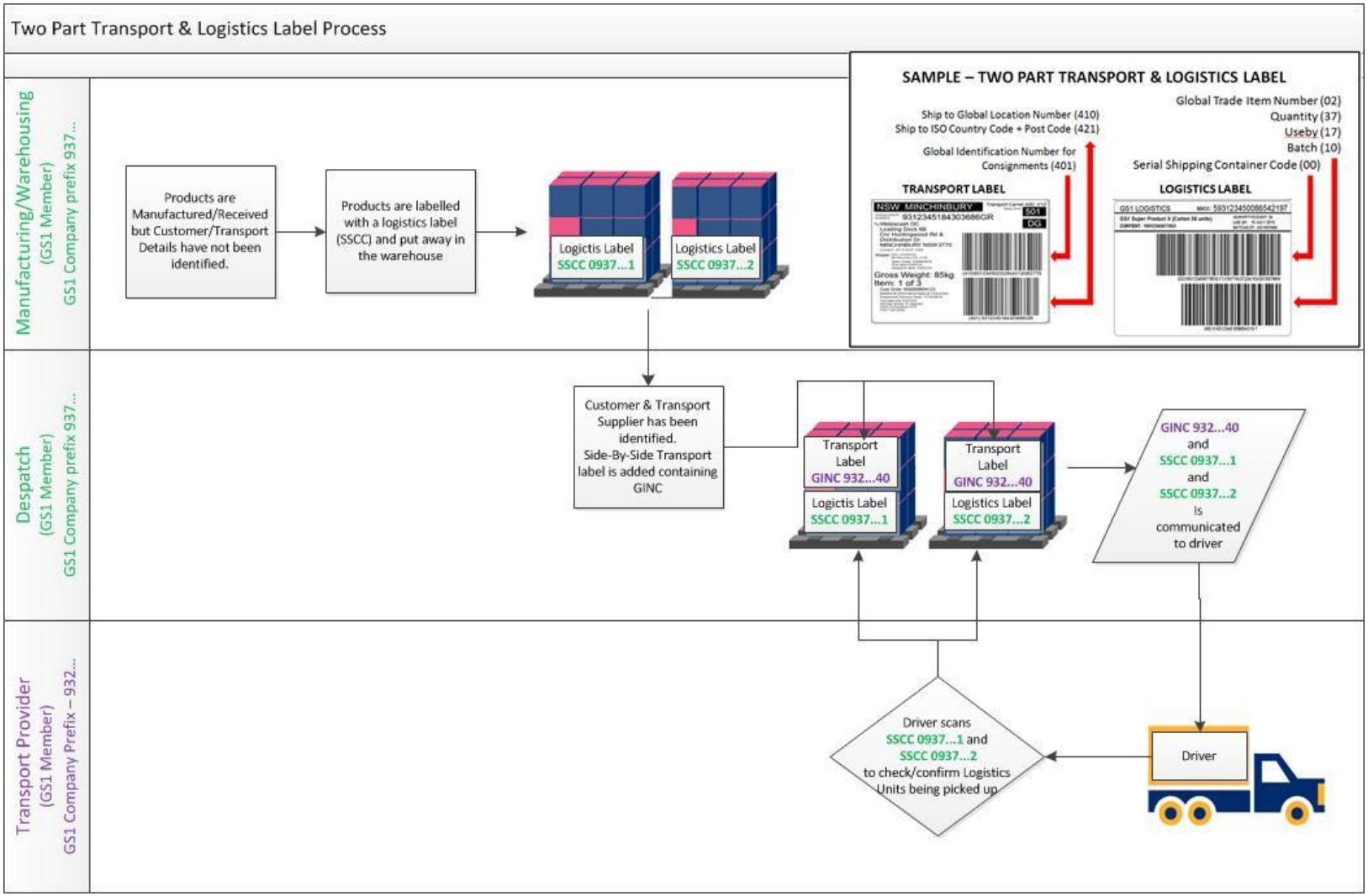
GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(410) Ship to Global Location Number
(421) Ship to ISO Country Code + Post Code

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(401) Global Identification Number for Consignments

GS1-128 Barcode Symbology
Minimum 25% magnification (0.25 x dimension)
Minimum Bar height is 32mm
(02) Global Trade Item Number
(17) Useby Date
(37) Quantity
(10) Batch

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(00) Serial Shipping Container Code

5.3 Typical Allocation Process for Two-part Transport & Logistics Label



6.0 Transport Only Label

6.1 When to use the Transport Only Label

The Transport Only Label is used when the freight does not have a Serial Shipping Container Code (SSCC) label applied and the receiver of the freight does not require a logistics label. This label may also be used when the freight owner is not a GS1 Member. The earliest Transport & Logistics Provider in the chain uses their GS1 number range to add a unique SSCC to the transport label.

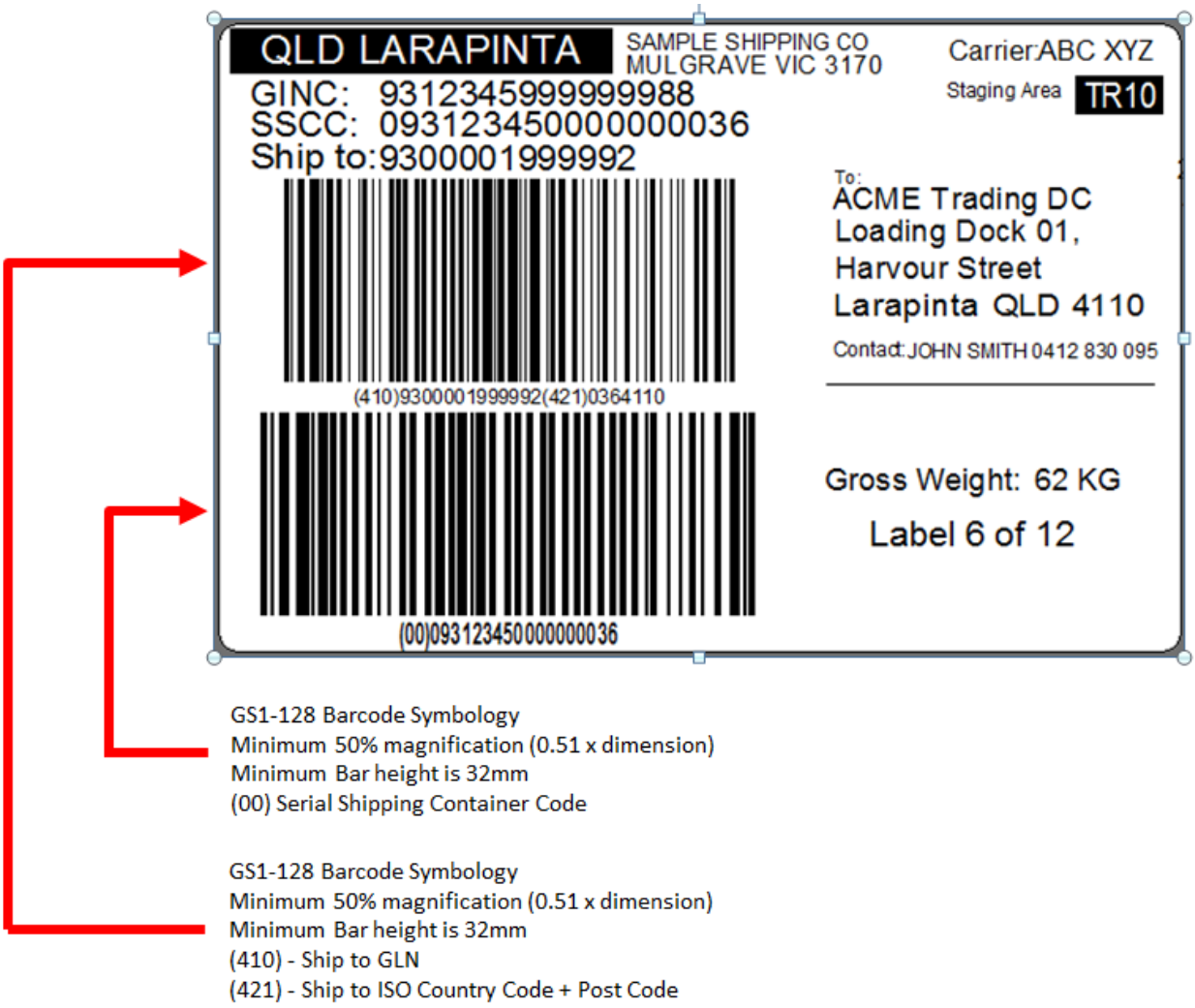
6.2 Transport Only Label Designs

6.2.1 Transport Only Label Portrait Design 1 (SSCC + Ship-to GLN + Postcode)

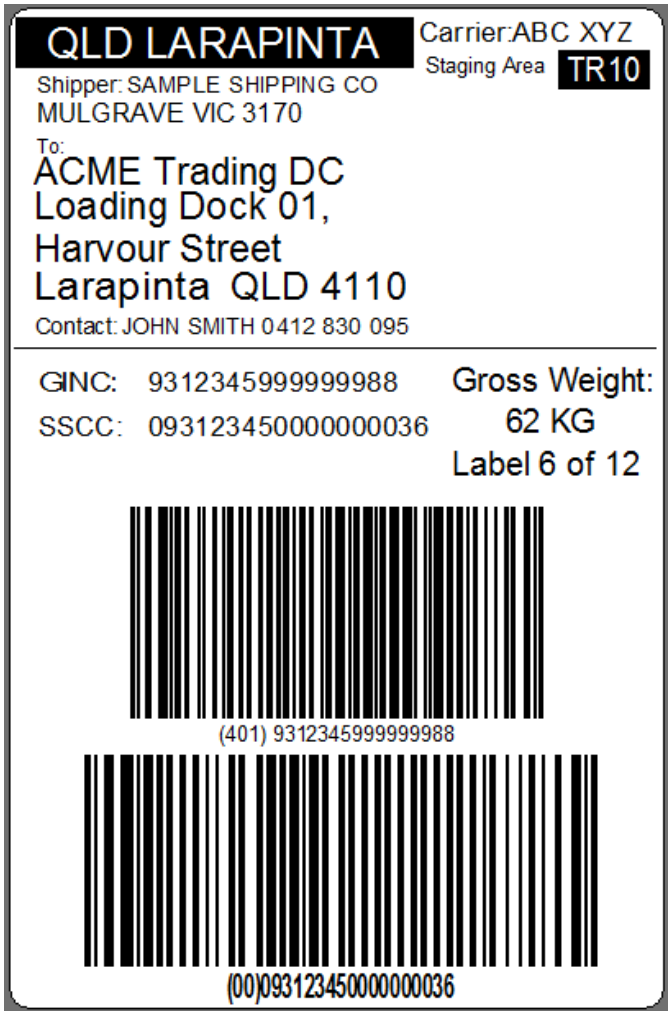
GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(410) Ship to Global Location Number
(421) Ship to ISO Country Code + Post Code

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(00) Serial Shipping Container Code

6.2.2 Transport Only Label Landscape Design 1 (SSCC + Ship-to GLN + Postcode)



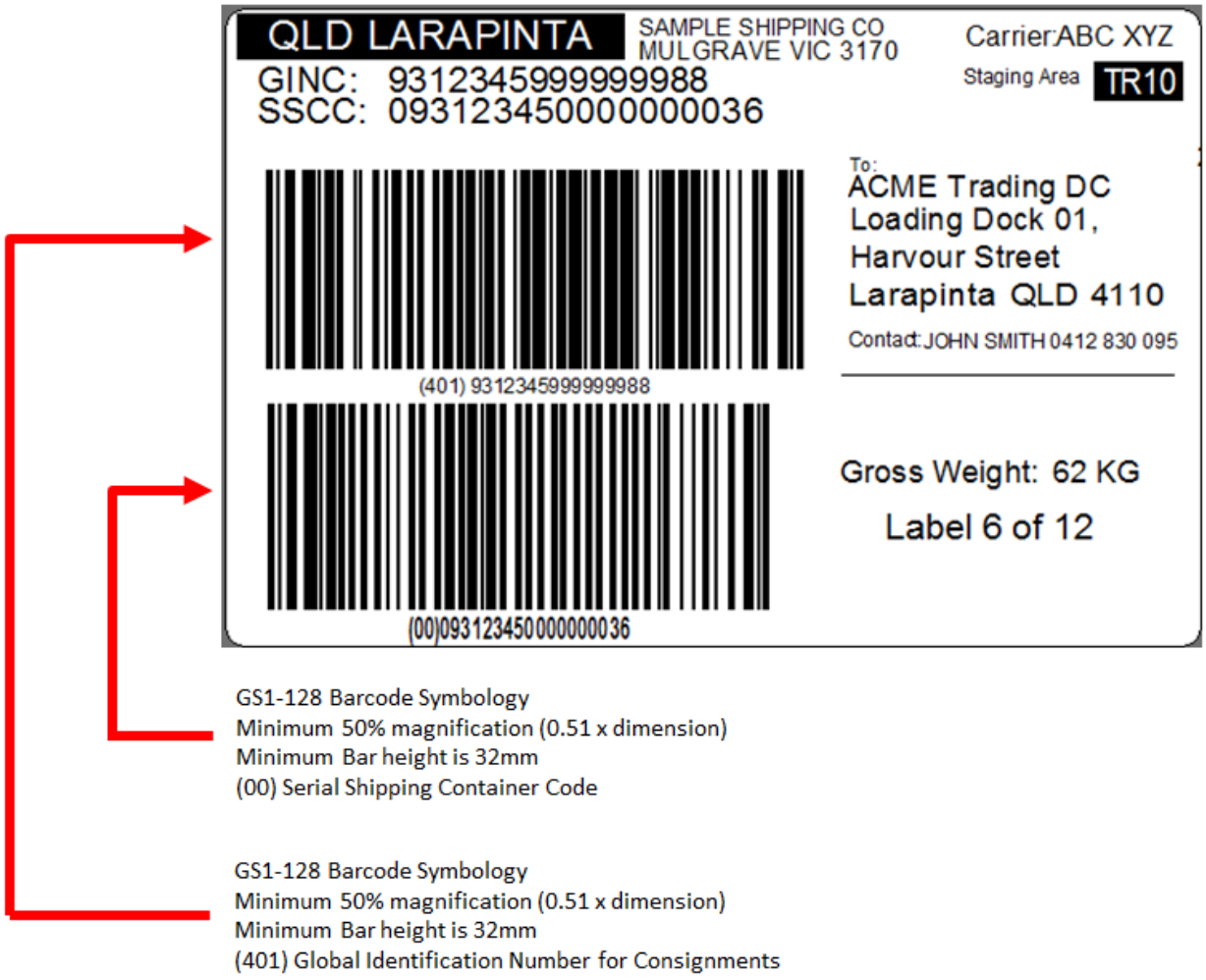
6.2.3 Transport Only Label Portrait Design 2 (SSCC + GINC)



GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(401) Global Identification Number for Consignments

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(00) Serial Shipping Container Code

6.2.4 Transport Only Label Landscape Design 2 (SSCC + GINC)



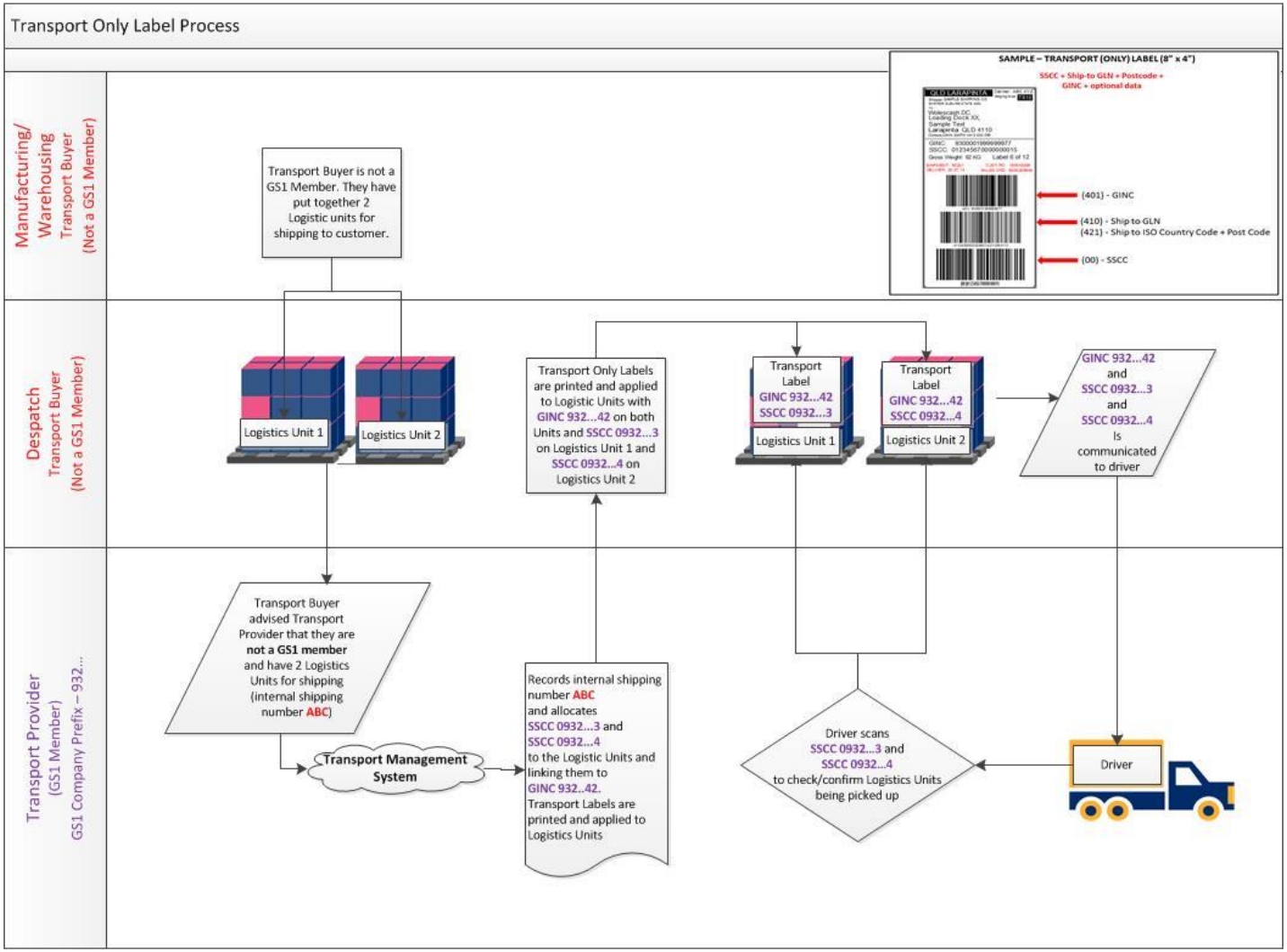
6.2.5 Transport Only Label Portrait Design 3 (SSCC + Ship-to GLN + Postcode + GINC + Optional Data)

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(401) Global Identification Number for Consignments

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(410) Ship to Global Location Number
(421) Ship to ISO Country Code + Post Code

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(00) Serial Shipping Container Code

6.3 Typical Allocation Process for Transport Only Label



7.0 GS1 Application Identifiers

7.1 Application Identifier Specifications

The Element Strings encoded in any GS1 Symbology that uses GS1 Application Identifiers (such as GS1-128, GS1 DataMatrix and GS1 QR Code) are composed of one or more GS1 Application Identifiers and one or several data fields. The Application Identifier denotes the contents and structure of the respective data fields.

7.1.1 AI (00) - Serial Shipping Container Code (SSCC)

Data Encoded N2+N18

Example:

(00)593123450000000017

Figure 3.3.1-1. Format of the Element String

Format of the Element String			
	SSCC (Serial Shipping Container Code)		
Application Identifier	Extension Digit	GS1 Company Prefix → ← Serial Reference	Check Digit
0 0	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}

For more information, see section 3.3.1 of the GS1 General Specifications:

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

7.1.2 AI (401) - Global Identification Number for Consignments (GINC)

Data Encoded N3+X..30

Example:

(401)9312345184303686GR

Figure 3.7.2-1. Format of the Element String

Format of the Element String					
Application Identifier	Global Identification Number for Consignment (GINC)				
	GS1 Company Prefix →		Consignment Reference →		
4 0 1	N_1 ...	N_i	X_{i+1} ...	variable length	$X_{j\ (j<=30)}$

For more information, see section 3.7.2 of the GS1 General Specifications:
http://www.gs1.org/docs/barcodes/GS1_General_Specifications.pdf

7.1.3 AI (410) – Ship to – Deliver to Global Location Number (GLN)

Data Encoded N3+N13

Example:

(410)9312345023226

Figure 3.7.5-1. Format of the Element String

Format of the Element String													
Application Identifier	GS1 Company Prefix →						← Location Reference						Check Digit
4 1 0	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}

For more information, see section 2.4.5 of the GS1 General Specifications:
http://www.gs1.org/docs/barcodes/GS1_General_Specifications.pdf

7.1.4 AI (421) – Ship to – Deliver to Postal Code with Three-Digit ISO Country Code

Data Encoded N3+N3+X..9

Example:

(421)0362770

Figure 3.7.12-1. Format of the Element String

Format of the Element String													
Application Identifier	ISO Country Code			Postal Code									
4 2 1	N_1	N_2	N_3	X_4	← variable length →								X_{12}

For more information, see section 3.7.12 of the GS1 General Specifications:
http://www.gs1.org/docs/barcodes/GS1_General_Specifications.pdf

7.2 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:

- Nn
- Xn

Examples:

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

8.0 GS1 Barcode Symbologies

8.1 GS1-128 Barcode Symbol

The GS1-128 Bar Code is a 1D symbology suitable for scanning in the General Distribution environment. This guideline has used the GS1-128 Bar Code symbol to encode the data (i.e. SSCC, GINC) using the relevant Application Identifiers (AIs).

Concatenation (stringing data elements together) is an effective means for presenting multiple element strings in a single GS1-128 Bar Code and is used to conserve label space and optimise scanning operations when permitted by the application standard.

The length of the GS1-128 Bar Code must never exceed 165mm in length, including the Quiet Zones.

When concatenating data strings the maximum number of characters in the GS1-128 Bar Code must not exceed 48 characters.

The size of the GS1-128 Bar Code depends on:

- the X-dimension (module width) chosen
- the number of characters encoded
- the number of non-numeric characters in the data

8.2 2D GS1 DataMatrix Barcode Position Statement

With the emergence of 2D/Matrix barcode symbologies more compact combined representations of the SSCC and other data attributes are possible.

At the time these guidelines were created, Australian Supply Chains had limited ability to scan 2D barcodes.

GS1 does not expect an immediate switch from 1D/Linear to 2D/Matrix data carrier use, but expects over time 2D/Matrix data carriers will be phased in at least as additional symbols next to the already existing 1D/Linear symbol.

GS1 recommends companies that need to replace printing or scanning equipment invest in equipment capable of producing and scanning 2D/Matrix symbols as well as 1D/Linear symbols. GS1 will also investigate whether changes to the standards are needed in order to facilitate the phase-in and use of 2D/Matrix data carriers.

The 2D Transport Label design below contains multiple symbols (1D & 2D) to enable interoperability as 1D scanners are replaced with 2D scanners across the supply chain.

Note: The GS1 DataMatrix 2D Bar Code has been used in the example below. The GS1 QR Code is an alternative 2D Bar Code symbology. 2D scanners are able to scan multiple barcodes (1D & 2D) at the same time and will need to be setup accordingly to process labels containing the same data encoded into multiple symbologies.

8.2.1 Example Transport label design incorporating 2D Barcode Symbology

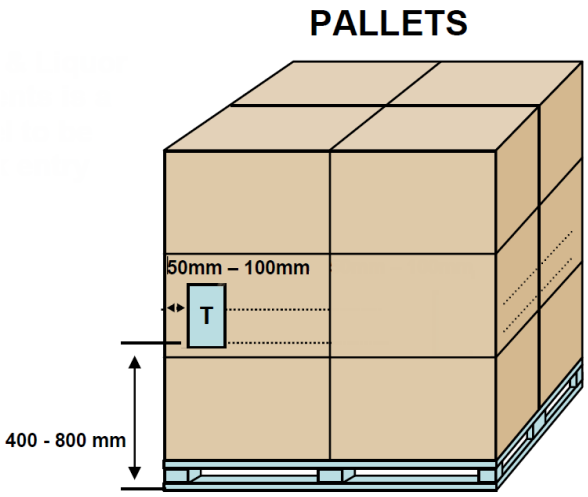
GS1-DataMatrix Barcode Symbology
Minimum 100% magnification (1.0 x dimension)
(00) Serial Shipping Container Code
(401) Global Identification Number for consignments
(410) Ship to Global Location Number
(421) Ship to ISO Country Code + Post Code

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(401) Global Identification Number for Consignments

GS1-128 Barcode Symbology
Minimum 50% magnification (0.51 x dimension)
Minimum Bar height is 32mm
(00) Serial Shipping Container Code

9.0 Label Positioning

9.1 Transport Label Positioning



LEGEND:

T = Transport Label

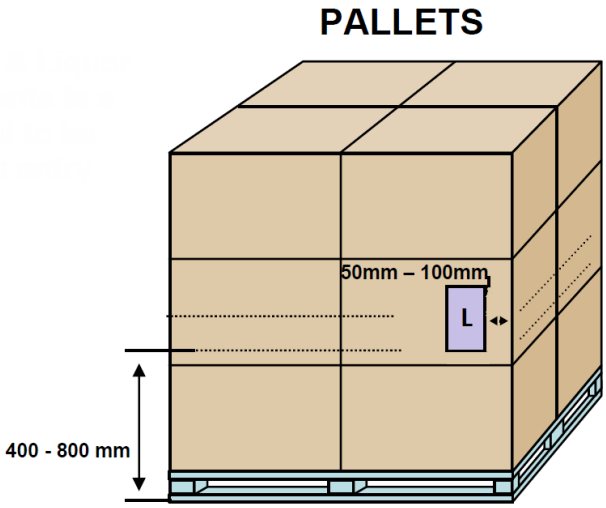
L = Logistics Label

C = Consolidated Label

The Transport label is to be positioned on the far left of the pallet between 400-800mm from the floor (where possible) and 50-100mm from the edge of the pallet.

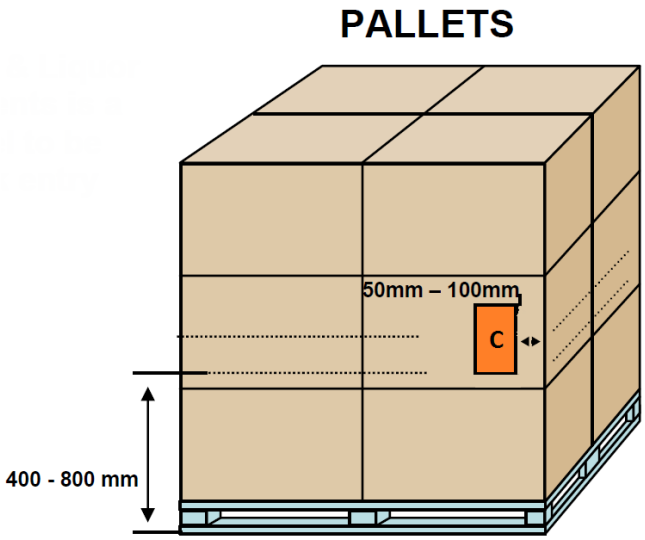
Note: The Transport label is **not to be put over the top of the logistics label**. When a logistics unit moves from one transport leg to another, a new transport label can be put over the top of the old transport label.

9.2 Logistics Label Positioning



The Logistics Label is to be positioned on the far right of the pallet between 400-800mm from the floor (where possible) and 50-100mm from the edge of the pallet.

9.3 Consolidated Transport & Logistic Label Positioning



The Consolidated Transport & Logistics Label is to be positioned on the far right of the pallet between 400-800mm from the floor (where possible) and 50-100mm from the edge of the pallet.

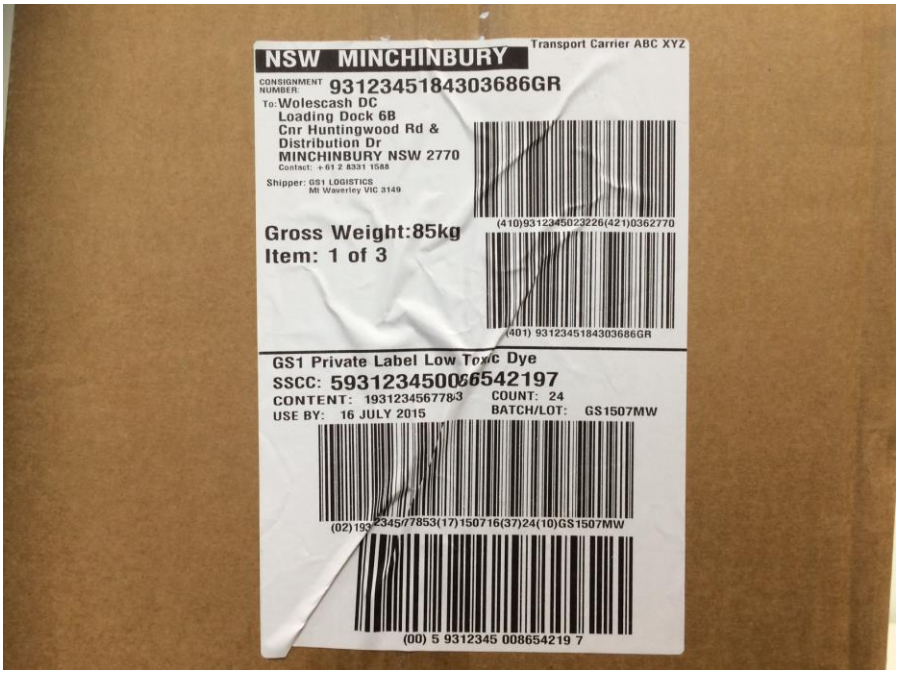
Note: The Transport label should **never** be put over the top of the Logistics label.

10.0 What not to do

10.1 Do not wrap labels around corners

10.2 Do not place label under shrink wrap

10.3 Do not apply label unevenly (wrinkles)



10.4 Do not place Transport label over the top of logistics label

11.0 Glossary of Terms – Transport Industry

Please refer to the Glossary of Terms document for the Transport Industry, available for download at www.gs1au.org.

12.0 References

GS1 General Specifications – Version 15 (issue 2), Jan-2015
http://www.gs1.org/docs/gsmp/barcodes/GS1_General_Specifications.pdf

GS1 Identification Keys in Transport & Logistics - Issue 1, Jun-2013
http://www.gs1.org/docs/tl/T_L_Keys_Implementation_Guideline.pdf

GS1 Logistics Label Guideline - Issue 1.0.1, Ratified, Feb-2015
http://www.gs1.org/docs/tl/GS1_Logistic_Label_Guideline.pdf

GS1 Australia Full Membership Application Form 2015 (GS1 Company Prefix)
https://www.gs1au.org/WorkArea/DownloadAsset.aspx?id=2147485587

Submission and standards review control

Submission date	Submitter name	Context of document – business owner/department, audience, usage, format (Hard copy, flier, web)	Required completion date
11-Nov-2015	Michiel Ruighaver Senior Advisor – Trade & Transport GS1 Australia	Freight Labelling Guideline for Australian Transport Buyers and Suppliers detailing a transport label based on GS1 Global standards. To be made available for download from web.	16-Nov-2015

Review comments

Date	Reviewed by	Identify Capture Share General	Comments
16-Nov-2015	Ankur Vaid Advisor – Standards Development (AIDC) GS1 Australia	Identify, Capture	This is the final version of the Labelling guideline and all previously suggested changes have been incorporated.

Approval

Date	Approver	Identify/Capture/Share
16-Nov-2015	Ankur Vaid	Identify, Capture